

Marc S.M. Sosef, Roy E. Gereau, W.R. Quentin Luke, Salvator Ntore, Murielle Simo-Droissart, Tarig Stévart and Weslev Tack

# Red List of the endemic and subendemic trees of Central Africa

(Democratic Republic of the Congo - Rwanda - Burundi)

Marc S.M. Sosef<sup>1</sup>, Roy E. Gereau<sup>2</sup>, W.R. Quentin Luke<sup>3</sup>, Salvator Ntore<sup>1</sup>, Murielle Simo-Droissart<sup>4</sup>, Tariq Stévart<sup>1,2</sup> and Wesley Tack<sup>1</sup>

#### with contributions from:

Christian Amani<sup>6</sup>, Isabel Baldwin<sup>5</sup>, Patricia Barberá<sup>2</sup>, Henk J. Beentje<sup>5</sup>, T.I. Borokini<sup>7</sup>, D.U. Gael Bouka<sup>8</sup>, Xander van der Burgt<sup>5</sup>, Helen Chadburn<sup>5</sup>, Martin Cheek<sup>5</sup>, Sara Contu<sup>9</sup>, Ariane Cosiaux<sup>10</sup>, Thomas L.P. Couvreur<sup>11</sup>, Gilles Dauby<sup>11</sup>, Aaron P. Davis<sup>5</sup>, Petra De Block<sup>1</sup>, Roy H.J. Erkens<sup>12</sup>, Corneille Ewango<sup>13</sup>, Eberhard Fischer<sup>14</sup>, Lauren M. Gardiner<sup>15</sup>, Serene Hargreaves<sup>5</sup>, Ryan Hills<sup>16</sup>, Davy U. Ikabanga<sup>17</sup>, Edouard Ilunga wa Ilunga<sup>18</sup>, Christine H.S. Kabuye<sup>3</sup>, James Kalema<sup>19</sup>, Peris Kamau<sup>3</sup>, Canisius J. Kayombo<sup>20</sup>, Rogier de Kok<sup>21</sup>, Olivier Lachenaud<sup>1</sup>, Barbara Mackinder<sup>22</sup>, Chris Marquis<sup>5</sup>, Mike Maunder<sup>23</sup>, Paloma Moore<sup>5</sup>, Ithe Mwanga Mwanga<sup>24</sup>, Moses Mwangoka<sup>25</sup>, Sydney T. Ndolo Ebika<sup>26</sup>, Jacques Nkengurutse<sup>27</sup>, Aimable Nsanzurwimo<sup>28</sup>, Samuel Nshutiyayesu<sup>29</sup>, Robert J. O'Sullivan<sup>30</sup>, Malin C. Rivers<sup>16</sup>, Reddy Shutsha Ehata<sup>13</sup>, Lisa Wheeler<sup>31</sup>

## Affiliations:

- <sup>1</sup> Meise Botanic Garden, Nieuwelaan 38, 1860 Meise, Belgium
- <sup>2</sup> Missouri Botanical Garden, 4344 Shaw Blvd., St. Louis, MO 63110-2291, United States
- <sup>3</sup> East African Herbarium, National Museums of Kenya, P.O. Box 451660-0100, Nairobi, Kenya
- <sup>4</sup> Plant Systematics and Ecology Laboratory, University of Yaoundé I, P.O. Box 047, Yaoundé, Cameroon
- $^{\scriptscriptstyle 5}$  Royal Botanic Gardens, Kew, Richmond, Surrey, United Kingdom
- <sup>6</sup> Université Officielle de Bukavu, Bukavu, Democratic Republic of the Congo
- <sup>7</sup> University and Jepson Herbaria, Department of Integrative Biology, University of California, Berkeley, California, United States
- <sup>8</sup> Faculty of Sciences and Techniques, Marien Ngouabi University, Brazzaville, Republic of the Congo
- $^{9}$  Department of Life Sciences, Natural History Museum, Cromwell Road, London SW7 5BD, United Kingdom
- 10 Institute of Geography and Sustainability, University of Lausanne, Lausanne, Switzerland
- <sup>11</sup> Institut de Recherche pour le Développement, Université de Montpellier, Montpellier, France
- <sup>12</sup> Maastricht Science Programme, Maastricht University, The Netherlands
- <sup>13</sup> Centre de Surveillance de la Biodiversité, Université de Kisangani, Kisangani, Democratic Republic of the Congo
- <sup>14</sup> University of Koblenz-Landau, Universitätsstraße 1, Koblenz, 56070, Germany
- 15 Cambridge University Herbarium, Department of Plant Sciences, Cambridge University, Cambridge CB2 1LR, United Kingdom
- <sup>16</sup> Botanic Gardens Conservation International, Richmond, Surrey, United Kingdom
- <sup>17</sup> Université des Sciences et Techniques de Masuku, Franceville, Gabon
- <sup>18</sup> Herbarium de Lubumbashi, Université de Lubumbashi, 1825, Route Kasapa, Lubumbashi, Democratic Republic of the Congo
- <sup>19</sup> Department of Plant Sciences Microbiology and Biotechnology, Makerere University, P.O. Box 7062, Kampala, Uganda
- <sup>20</sup> Forestry Training Institute-Olmotonyi, Box 943, Arusha, Tanzania
- <sup>21</sup> Honorary Research Associate, Singapore Botanic Gardens, National Parks Board, 1 Cluny Road, 259569 Singapore
- <sup>22</sup> Royal Botanic Garden Edinburgh, Edinburgh, United Kingdom
- <sup>23</sup> Cambridge Conservation Initiative, University of Cambridge Judge Business School, Pembroke Street, Cambridge CB2 3QZ, United Kingdom
- <sup>24</sup> Centre de Recherche en Sciences Naturelles, CRSN/Lwiro, D.S. Bukavu, Democratic Republic of the Congo
- <sup>25</sup> Tanzania Forest Conservation Group, PO Box 23410, Dar es Salaam, Tanzania
- <sup>26</sup> Université Marien Ngouabi, Republic of the Congo
- <sup>27</sup> Department of Biology, Faculty of Science, University of Burundi, P.O. Box 2700, Bujumbura, Burundi
- <sup>28</sup> Department of Biotechnologies, Faculty of Applied Sciences, INES-Ruhengeri, P.O. Box 155, Ruhengeri, Rwanda
- <sup>29</sup> Rwanda Institute for Conservation Agriculture, RICA, Bugesera, Rwanda
- 30 Molinare, London, United Kingdom
- <sup>31</sup> Galapagos Conservation Trust, 7-14 Great Dover Street, London SE1 4YR, United Kingdom



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## Introduction

The overwhelming influence of mankind on the planet's environment is now widely accepted and defined as a new epoch: the Anthropocene (Lewis & Maslin 2015). As a result of human activities, our planet faces rapid environmental change such as habitat fragmentation and loss, the spread of exotic species, harvesting of natural products, exploitation of non-renewable natural resources including mining, spilling or discharging pollutants of various sorts and climate change (Camill 2010). The on-going loss of biodiversity is undeniably one of the biggest challenges we face today (Ceballos et al. 2015). Biodiversity loss harms ecosystem functioning at least as much as other kinds of global environmental change. It undermines nature's ability to provide us with a healthy environment and compromises the sustainable provision of many goods and services that support human livelihoods (Brockerhoff et al. 2017, Tilman et al. 2014, Hooper et al. 2012).

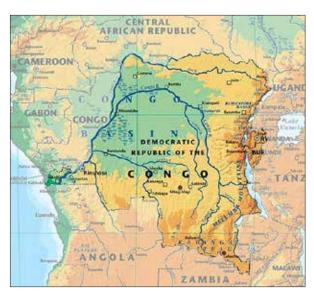
In 1992, international concern about our planet's biological diversity led to a major international treaty, the Convention on Biological Diversity (CBD), now signed by 196 nations. Of the many programmes operating under this Convention, the Global Strategy for Plant Conservation (GSPC) is especially relevant to our subject. Its vision is "of a positive, sustainable future where human activities support the diversity of plant life --, and where in turn the diversity of plants supports and improves our livelihoods and well-being". The GSPC seeks to halt the continuing loss of plant diversity. It is well known that of all vegetation types, tropical forest harbours the highest biological diversity (Gentry 1992, Lewis et al. 2015) and trees are the dominant life form shaping that habitat. In addition, they function as carbon sinks, of great importance in trying to control global climate change, where both the larger canopy trees as well as the understory play important roles (Hubau et al. 2019, Lewis et al. 2009).

Central Africa harbours the second largest area of contiguous rainforest in the world, after the Amazon region. For convenience, in this publication we define 'Central Africa' in a more restricted way than usual, comprising only the countries Democratic Republic of the Congo (DRCongo), Rwanda and Burundi (see Map 1). It covers a total of 2.4 million km² and stretches from a small strip of seashore at the western border of DRCongo, through

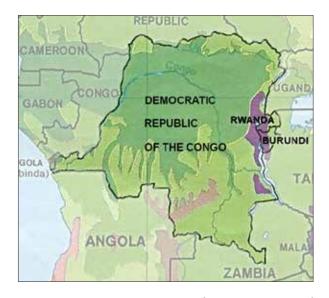
the vast Congo Basin to the montane region of the Albertine Rift with the highest peak, the snow-capped Mount Ngaliema (Stanley), reaching to 5,109 m. The core of this region is formed by the Congo Basin, with its geography of low undulating land at around 300–500(–600) m altitude, covered with rainforest, large tracts of which are swampy or periodically inundated (see Map 2). It is part of the Guineo-Congolian phytoregion (White 1979). In the south-eastern part of DRCongo, the high plateau of the Haut-Katanga province is characterized by the drier Miombo forest and savannahs (the Zambesian forest-savannah mosaic) at altitudes ranging from 600 m at Lake Upemba to 1750 m in the Hauts-Plateaux (Meerts & Hasson 2016). Similar dry forests can be found in the northern region of DRCongo, bordering the Central African Republic and South Sudan, which has been identified as the Guinea-Sudanian phytoregion (White 1983, Droissart et al. 2018).

This Central African region harbours an estimated 11,000 species of vascular plants (Sosef 2016), of which more than 1,800 (over 16%) are endemic (Sosef et al. 2017). This rich flora is still being actively studied by plant taxonomists and species new to science are regularly discovered. From 2010 to 2020, 25 new species were described from Rwanda, 10 new species from Burundi and 74 new species from DRCongo (source: IPNI 2021). Plant information is being centralized in the *Flore d'Afrique centrale* series, available in printed form, in PDF format, as well as from an online e-Flora portal (Sosef 2016). It offers the crucial tools to identify plant material.

Knowledge of the botanical wealth of a tropical region is still largely based on information obtained from herbarium collections, the result of many decades (sometimes centuries) of botanical exploration. In order to be useful, these should have been adequately studied, to arrive at a high percentage of reliable identifications as well as a sound taxonomic framework for the regional flora. For a tropical region to be considered reasonably well-known in terms of its vascular plant flora, the rule of thumb is that at least 1 specimen must have been collected in each km² (Campbell & Hammond 1989). This does not seem much, but it means that for our Central African region some 2.4 million herbarium specimens of vascular plants should have been collected, or per country, some 2.35 million for DRCongo, and around 26,000 and 28,000 respectively for Rwanda and Burundi. To date, the estimated number of available herbarium collections are around 380,000 for DRC, 31,000 for Rwanda and 37,000 for Burundi. This means that while Rwanda and Burundi can be regarded as "reasonably well known", the botanical wealth of DRCongo still remains "poorly known".



Map 1. The Central African region as defined here, showing the topography.



Map 2. Natural vegetation types in Central Africa. Dark green: tropical rainforest; light green: Miombo forest and wooded savannah; pink: dry grassland and semidesert; purple: montane forest and tundra.

## **Threats**

In the context of biodiversity conservation, more specifically related to vascular plants in Central Africa, a threat could be defined simply as any factor that will potentially lead to the death of one or more plants. However, knowing that nature is resilient, it is better to define a threat as any factor potentially leading to the death of one or more plants, without offering the possibility of full recovery. Therefore, sustainable use of forest products, or even extraction of timber, does not necessarily pose a threat to a vegetation or a plant species.

Unfortunately, in Central Africa many of the factors impacting the vegetation are non-sustainable. The ever-growing human population (87 million in DRCongo, over 12.5 million in Rwanda and 11.5 million in Burundi), with high population growth rates of respectively 3.2%, 2.6% and 3.1% implying a doubling of the population in 22-27 years, causes the conversion of ever larger surfaces of natural vegetation into urban areas (Burnley 2011). Because the majority of the population in DRCongo still live without electricity, they depend on the collecting of firewood or the production of charcoal for their daily subsistence Schure et al. 2011, Abernethy et al. 2016. This has a strong negative impact on the woody vegetation around villages and cities, where firewood and charcoal are sometimes harvested/produced as far out as 25 km or more (Ahrends et al. 2010). In eastern DRCongo, refugees from the Rwanda and South Sudan civil wars and other conflicts in the area are housed in large camps, also heavily impacting the surrounding environment Leeper 2017, Asylum Research Centre 2019.

The same growing populations are in need of an ever-increasing area of land for agriculture, often applying small-scale slash-and-burn processes. Agriculture on an industrial scale, mostly oil palm plantations, but also coffee, raphia, eucalyptus and other crops, is particularly developed in the eastern part of DRCongo. Notably, in the region around the former Irangi Research Station, most of the original forest has now disappeared to make way for vast oil palm plantations. In fact, in DRCongo, urbanization and conversion of natural vegetation to agricultural land have a larger effect on tree cover losses than commercial timber extraction (Tchatchou et al. 2015). Between 2001 and 2020, in DRCongo alone, 5.41

Mha of humid primary forest was lost, equalling a loss of 5.1% of its total primary forest surface (Global Forest Watch 2020). In the same period, DRCongo lost 15.9 Mha of total tree cover, equivalent to an 8.0% decrease. In Rwanda, in the same period, 37.7 kha of tree cover was lost, equivalent to a 7.6% decrease, while in Burundi 29.5 kha of tree cover loss was observed, equivalent to a 5.5% decrease. In Rwanda and Burundi much of the forest was already lost before the year 2000, and currently they have a remaining tree cover of only 20% and 21% respectively, where 85% of the surface in DRCongo remains covered by trees (Global Forest Watch 2020), although only 49% is actually covered by primary forest (ETTF & ATIBT 2020). The major environmental issues facing Central Africa's ecosystems are those that affect the rainforest (Aleman et al. 2018). Responses to deforestation and controlling climate change dominate environmental agendas in the region (De Wasseige et al. 2014, Tchatchou et al. 2015). The protected status of an area does not always safeguard it from the threats mentioned above. For example, in the Kahuzi-Biega National Park the residents of the nearby refugee camp collect firewood and convert parts of the park to agricultural land (Papaco 2015) and this has, together with other threats, led to adding this park to the UNESCO List of World Heritage in Danger (UNESCO & World Heritage Convention 2018). In the Yangambi Biosphere Reserve, the expanding human population has occupied important parts of the Reserve, removing the original rainforest (Koy et al. 2019, MAB 2011a).

Another major threat to the natural environment in Central Africa results from mining activities, both those by major companies as well as small-scale artisanal mining (Armstrong 2007, Taylor et al. 2009). In the south-eastern part of DRCongo, rich deposits of copper, cobalt and other minerals are present, but gold, diamonds and coltan are found across larger areas (Yager 2014). Important oil reserves have been located in the Virunga area (Bizawu & Gomes 2016). Some mining activities have a direct impact, such as entire hills being levelled for copper extraction, while others, such as artisanal gold mining, pollute larger areas by the discharge of mercury and cyanide in streams and rivers, also impacting human health (Kilosho et al. 2015).

Logging forests for timber is the next obvious threat. In DRCongo, around 10% of the forest surface is currently allocated to industrial logging (ETTF & ATIBT 2020). Most of the major logging companies are located around the Congo River and its larger tributaries, which are used to transport the logs out to domestic markets. Only a small percentage of the timber is exported, mainly to China and Europe. Some is transported by road to East African countries. Compared to other African countries, the amount of timber extracted by logging companies is comparatively low, annually around 200,000 m³, most likely due to high transportation costs. However, according to Lawson (2014), nearly 90% of logging in the DRCongo is illegal or informal, small-scale logging to supply domestic and regional markets. In response to a growing population and rising income levels, the volume of this harvest is estimated to have doubled in the last six years.

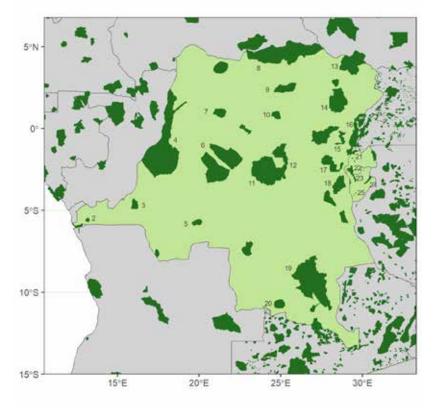
Native species and vegetations can be threatened by invasive plant species, such as *Broussonetia papyrifera*, *Tithonia diversifolia* and *Chromolaena odorata*. Yet, the actual impact of such species on Central African vegetations remains inadequately known; this is a research area in need of development.

Finally, climate change may influence the extent and quality of natural ecosystems. Although heavily debated, the actual impact of this phenomenon on tropical African vegetation, including forests, is still unclear. Data intensive modelling studies, based on reliable data, should lead to well-founded conclusions (De Wasseige et al. 2014).

## Conservation

Map 3. Network of protected areas in Central Africa. 1: Mangrove Nature Reserve; 2: Luki Biosphere Reserve; 3: Bombo Lumene Wildlife Reserve; 4: Ngiri-Tumba-Maï Ndombe REDD+ carbon concession; 5: Mangai Nature Reserve; 6: Salonga National Park; 7: Lomako-Yokokala Nature Reserve; 8: Bili-Uéré Protected Area; 9: Rubi-Tele Hunting Area; 10: Yangambi Biosphere Reserve; 11: Sankuru Nature Reserve; 12: Lomami National Park; 13: Garamba National Park; 14: Okapi Wildlife Reserve; 15: Kisimba Ikobo Primate Nature Reserve; 16: Virunga National Park; 17: Kahuzi-Biega National Park; 18: Itombwe Nature Reserve; 19: Lufira Biosphere Reserve (incl. Upemba National Park and Kundelungu National Park); 20: Lac Tshangalele Hunting Domain; 21: Volcanoes National Park; 22: Nyungwe National Park; 23: Kibira National Park; 24: Ruvubu National Park; 25: Bururi Forest Nature Reserve.

Central Africa has a network of protected areas, including national parks, biosphere reserves, wildlife reserves, nature reserves, forest reserves, scientific reserves, community reserves, and hunting reserves (see Map 3). In DRCongo these areas occupy almost 14% of the country's land area, while in Rwanda and Burundi it is 8.5% and 4.2%, respectively. Although the surface area of the latter two countries is significantly smaller, their protected areas are in general fairly well managed, and thus the vegetation within them is relatively safe. In DRCongo, this situation is often different, mostly due to a problem of understaffing and lack of sufficient funds. In addition, the eastern part of DRCongo has now suffered for decades from the presence of armed militia increasing the insecurity in the region and thus hindering effective park management (Debroux et al. 2007).



In principle, each protected area has, or at least should have, a detailed management plan describing its goals, priorities and main activities, ideally leading to a general conservation of ecosystems. Sometimes, key animals such as Gorilla, Elephant, Chimpanzee and Bonobo are designated with specific text detailing the specific measures to be taken for their protection. Individual plant species rarely play a visible role in such plans, although they are often essential to ecosystem conservation. Identifying plant and animal species threatened with extinction is often the first step in setting priorities for conservation measures to halt further species loss and ecosystem degradation. The dissemination of such threat information is central to the International Union for Conservation of Nature Red List of Threatened Species (hereafter referred to as the IUCN Red List).

Although the IUCN Red List has become a powerful instrument for supporting conservation policy and management, the biases in its taxonomic and geographical coverage need to be addressed zbefore it can truly function as a global barometer of life (Brummitt et al. 2008, Stuart et al. 2010, Bachman et al. 2019). Vascular plant species, in particular, are currently underrepresented. Global biodiversity targets (Convention on Biological Diversity 2012, Hagerman & Pelai 2016) and initiatives such as the Barometer of Life (Stuart et al. 2010) and the Global Tree Assessment (Newton et al. 2015) have certainly spurred an increase in the number of vascular plant species on the IUCN Red List from 12,043 in 2007 (Brummitt et al. 2008) to 54,127 (www.iucnredlist. org, accessed August 6th, 2021), but this still represents only 14% of the estimated 383,671 vascular plant species worldwide (Lughadha et al. 2016). Moreover, significant assessment gaps remain in the tropics (Bachman et al. 2019), where plant diversity and threats to plants are high but where low data availability and lack of resources impede the preparation of conservation assessments (Collen et al. 2008). Performing rapid pre-assessments of large numbers of species, such as those performed by the Global Tree Assessment (Rivers 2017) and Stévart et al. (2019), may offer some help as well. The latter study reveals that potentially one-third of the tropical African flora is threatened.

Although the Congo Basin contains the second-largest area of contiguous rainforest in the world, the under-representation of tropical Africa on the IUCN Red List is striking (Bachman et al. 2019). According to the IUCN's Sampled Red List Index for Plants, 22% of the species in this region are threatened with extinction, most of them occurring in tropical rainforest (Brummitt et al. 2015). Endemic plant species, which make up approximately 16% of the Central African flora (Sosef et al. 2017), are particularly vulnerable to increasing anthropogenic pressure and the potential effects of climate change due to their narrow geographical range, small population numbers or small population sizes (Işik 2011). National governments have a particular international responsibility towards species endemic or mostly confined to their territory.

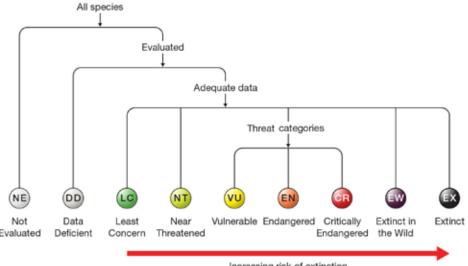
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# \_ The IUCN Red List methodology

The IUCN Red List assessment procedure uses quantitative criteria (IUCN 2012) and Guidelines (IUCN Standards and Petitions Committee 2019) to assign species objectively to categories that reflect their relative risk of extinction according to threats to their population, distribution area and habitat (Rodrigues et al. 2006, Mace et al. 2008). Assessments can be prepared by any expert, but need to be reviewed by the appropriate Red List Authority (RLA) or Specialist Group (SG). For Central African plants, two authorities are relevant: the Central African plant Red List Authority (CARLA, covering western Central Africa, including DRCongo) and the Eastern Africa Plant Red List Authority (EAPRLA, covering eastern Africa including Rwanda and Burundi and eastern DRCongo). The governance of the various IUCN Committees and Authorities has been laid down in a number of rules of procedure (IUCN 2016).

Figure 1. The nine categories used in the IUCN Red Listing process.

IUCN has developed a system of nine Red List categories to which each species can be assigned. These are presented in Figure 1. An assessment can be either Global or Regional. The present publication only presents Global assessments.



Increasing risk of extinction

A Red List assessment of an individual taxon (species, subspecies, variety) is based on all knowledge gathered in the past concerning that particular taxon. Unfortunately, our knowledge of Central African endemic or subendemic trees is generally limited. Because no data on population size or number of mature individuals or any other detailed field observations are generally available for this subgroup of trees, their assessments are usually based on the only reliable information source available: dried herbarium specimens. The identification of these specimens can be verified, and the labels usually contain information as to the collecting date, the locality, the habitat (vegetation type, altitude), and sometimes even indications about their local occurrence, pollination, fruit dispersal and uses. Because of the limited amount of information available for each species, in most cases only two IUCN Red List Criteria can be applied: Criterion B and Criterion D (see Figures 2 and 3). These Criteria are based on information on the taxon's geographical distribution, the threats relevant to the localities where the taxon has been observed and the extent of decline in a number of population factors caused by those threats.

An assessor should start by collecting all information available, generally all existing herbarium specimens and all relevant literature, for the taxon (a species, subspecies, or variety) at hand. The localities indicated by the herbarium specimens should be georeferenced using appropriate literature and online resources and plotted on a map, using for example GeoCat (Bachman et al. 2011) or ConR (Dauby et al. 2017). The area contained within the shortest continuous convex hull that can be drawn to encompass all known sites of present occurrence of the taxon, is called the Extent Of Occurrence (EOO). The Area Of Occupancy (AOO) is defined as the area actually occupied by the taxon. For an assessment with herbarium material the Red List Guidelines (IUCN Standards and Petitions Committee 2019) require the use of a  $2 \times 2$  km grid cell size (hence  $4 \text{ km}^2$ ) around each occurrence to estimate the total AOO. Both AOO and EOO play an important role in the assessment. Then, the assessor should indicate the number of unique occurrences (some herbarium specimens may have been collected in the same locality, but at different occasions) and define the number of subpopulations (sensu IUCN, where all known individuals of a taxon represent the 'population', while subpopulations are defined as "geographically or otherwise distinct groups in the population between which there is little demographic or genetic exchange"). For the latter it is useful to have some information on pollination and seed dispersal vectors, but otherwise it can be estimated by using the buffer method explained by Rivers et al. (2010). Subsequently,

	< 5,000 km² < 500 km²	< 20,000 km <sup>2</sup> < 2,000 km <sup>2</sup>
) km²	< 500 km²	< 2,000 km <sup>2</sup>
1	≤ 5	≤ 10
		occupancy; (iii) area
	ations; (v) number of	y of: (i) extent of occurrence; (ii) area of cations; (v) number of mature individuals

Figure 2. Brief explanation of the application of Criterion B in table format.

	Critically Endangered	Endangered	Vulnerable
D. Number of mature individuals	< 50	< 250	D1. < 1,000
D2. Only applies to the VU category Restricted area of occupancy or number of locations with a plausible future threat that could drive the taxon to CR or EX in a very short time.	1945	S.	D2. typically: AOO < 20 km² or number of locations ≤ :

Figure 3. Brief explanation of the application of Criterion D in table format.

the assessor should formulate all threats relevant to the localities where the taxon is known to occur, or have occurred after the time the herbarium specimen was collected. When this process shows that all suitable habitat has disappeared, the occurrence should be removed from the list, and AOO, EOO, etc. recalculated. It is important to define the main threat and estimate the scale at which it will have an effect on the environment. Small-scale slash-and-burn agriculture, for example, will generally have an impact on only a few kms around a village, while commercial logging or the construction of a hydroelectric power dam will affect much larger surfaces. The scale of this main threat will determine the number of distinct 'locations', defined by IUCN as "a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon". Thus, a single location may include only a part of one subpopulation, or comprise several subpopulations. In the rare occasion where no threats can be defined (for example because all known occurrences are located within a well-managed protected area), as a consequence no locations can be defined. The next step in the process is to check whether continuing decline can be observed, estimated, inferred or projected in the EOO, AOO, extent and/or quality of the habitat, number of locations or subpopulations and number of mature individuals. A second check is needed to see if it is likely that the taxon undergoes extreme fluctuations in the EOO, AOO, number of locations or subpopulations or number of mature individuals, but such conclusions can rarely be drawn based on herbarium data alone.

Then, with all the information gathered at hand, the assessor should first confirm whether the information is sufficient, or sufficiently reliable, to form the basis of an assessment. When crucial data are missing, or when, for example, the taxonomic status of a taxon turns out to be highly questionable and needs to be resolved first, the category Data Deficient (DD) can be applied. When the data available are deemed sufficient and reliable, the assessor should verify using Criterion B (see Figure 2) to see if the taxon meets the conditions of one of the three threatened categories: Vulnerable (VU), Endangered (EN) and Critically Endangered (CR). If not, the assessor should check to see if Criterion D (see Figure 3; very small or restricted population) applies, notably sub-criterion D2 for our type of data. If not either, the taxon will be assessed as Least Concern (LC), or occasionally as Near Threatened (NT) when it is near to qualifying for a threatened category, or when there is reason to believe it may soon become near to qualifying. Finally, when the taxon is assessed as Critically Endangered (CR), but there is a high probability that it is already extinct, the assessor can add the 'tag' "Possibly Extinct", and the taxon will therefore be listed as CR (PE).

# $\_$ The ECAT project

In the second half of 2017, Meise Botanic Garden designed a project aiming at realizing, among other goals, an IUCN Red List assessment for all Endemic (and subendemic) Central African Trees (ECAT). Such activities address the goals of the GSPC as well as regional needs. Funding to achieve the project goals was obtained through the Franklinia Foundation. The paragraphs below provide information on the ECAT workflows leading to the realization of almost 300 IUCN Red List assessments, as well as several generalized results.

#### Tree taxon selection

It was decided to include all taxa at the levels of species, subspecies and variety. A tree was defined as a woody, single-stemmed plant of at least 3 m tall. When a taxon only occasionally appears as a tree (and otherwise as a shrub or even a liana), it was included in the selection. All tree taxa endemic to (confined to) the Central African region, here defined as comprising the countries Democratic Republic of the Congo, Rwanda and Burundi, were included. Additionally, all tree taxa subendemic to this region, defined as having at least 75% of their known occurrences within Central Africa, were added as well. Meise Botanic Garden holds a list of all plant species endemic to Central Africa (dating from c. 2005), from which all tree taxa were extracted, while the BGCI Global Tree Search programme (BGCI 2019a) kindly provided tree taxon lists for various combinations of selection criteria. The IPNI database (IPNI 2021) was checked for any new Central African tree taxa being published after 2005. These three sources were combined into a single list and the taxonomic status of each name was verified using the African Plant Database (2020), as well as various other sources when deemed appropriate. This pre-final list was then checked by several specialists, leading to some final corrections and additions, to arrive at the final working list of tree taxa. The family classification follows APG IV (Angiosperm Phylogeny Group 2016), except in some cases where the authors thought a more conservative approach to be appropriate. During the Red List assessments, several taxa were removed from the list because they were found to be either a synonym of another taxon, or not to be a tree taxon after all. Finally, some of the (sub)endemic taxa had already been assessed recently (within the past 8 years) by other experts, either by EAPRLA, or by specialists elsewhere, or were in the process of being assessed. Such assessments have been incorporated into this book, which thus represents the final list of (sub) endemic Central African trees, comprising a total of 347 taxa, belonging to 305 different species in 153 genera and 52 families (see Table 1). Figure 4 provides the 10 families that have the highest number of (sub)endemic taxa/ species, showing that in Central Africa by far the two most important families in this respect are the Fabaceae and Rubiaceae.

#### Specimen data

The vast majority of herbarium specimens related to Central Africa (DRCongo, Rwanda, Burundi), probably around 85%, can be found in the collections at Meise Botanic Garden, Belgium (BR). [Herbarium acronyms follow Thiers (continuously updated).] Additional material is present in various other herbaria, such as the herbarium of the Université Libre de Bruxelles (BRLU; notably from the Haut-Katanga region), Missouri Bo-

tanical Garden (MO), Naturalis Biodiversity Center (L/WAG; notably from eastern DRCongo), Yangambi (YBI), Gent University (GENT; notably from Rwanda and Burundi), and Poznan (POZG; notably from around Kisangani and the Haut-Katanga region), while the Royal Botanic Gardens, Kew (K) and the University of Hamburg herbarium (HBG) hold some important historical material, often duplicates of material that was lost during the World War II fire at Berlin (B). For the subendemic tree taxa, additional specimens from outside Central Africa are located in a multitude of additional herbaria. All data related to African herbarium material at BR, L/WAG and MO has been digitized in the past (see for example Nieva de la Hidalga et al. 2020).

The majority of the data related to Central African plant specimens, originating from a large number of herbaria and several projects, was assembled by the RAINBIO team (Dauby et al. 2016). Unfortunately, only a comparatively small percentage of the Central African specimen data available at Meise Botanic Garden was included in that dataset, as the majority of these specimens were not georeferenced. For the present ECAT project, however, all specimens relevant to the list of (sub)en-

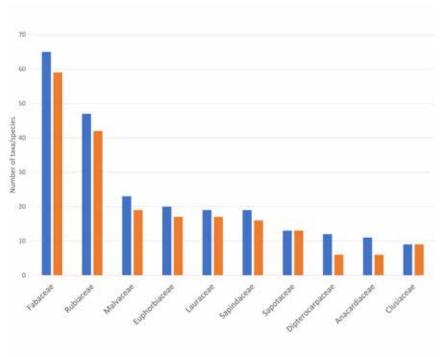


Figure 4. Bar graph showing the number of taxa (blue) and species (orange) for the ten families most commonly represented in the IUCN Red List of (sub)endemic Central African trees.

demic tree taxa were extracted from the BR database. This yielded an additional 3700 specimens for which the latitude/longitude data were subsequently obtained manually and added. The resulting dataset was then checked for inconsistencies, errors in the lat./long. data, etc. (for more details on data cleaning and handling aspects, see Tack et al., submitted).

During the Red List process, the assessor was asked to verify, for each taxon, all specimens for their correct identification, and to add any missing specimens cited in literature or available in herbaria elsewhere. Additionally, the assessor was asked to verify the latitude/longitude data of each specimen. The data related to assessments performed outside of the ECAT project, were obtained from the external authors. All such corrections and additions were incorporated in the final dataset, which contains 6363 unique records related to Central African (sub)endemic trees, and will be published as an Open Access available source in DarwinCore Archive format (Tack et al., submitted).

## **ECAT** workshops

The evaluation of almost 300 taxa dealt with within the ECAT project (the remainder having been performed by external experts) were discussed on two occasions, one at Meise Botanic Garden, Belgium (June 3–7, 2019), and a second at Huyé, Rwanda (January 28–31, 2020). During these events, CARLA and EAPRLA each held a separate Red List workshop and were augmented with additional experts. A total of 8 regional botanists received training in Red List assessment before and during these workshops, and also contributed additional local knowledge concerning threats and other factors. CARLA and EAPRLA members as well as other experts prepared draft assessments beforehand which were then checked, improved, and finalized during the workshops.

Based on the initial specimen data, the assessors were given the output of the ConR software (Dauby et al. 2017), which provides basic data such as EOO and AOO as well as a first estimate of the number of subpopulations and locations and the percentage of occurrences located within protected areas. Then, for each taxon a specific inventory of threats was assembled based on information available from literature, online information sources, personal knowledge of the assessor and workshop participants, and inspection of the occurrence sites using Google Earth.

After the workshops, all Red List assessments were entered into the IUCN SIS system, after which they passed a final review by two independent reviewers. Finally, they were submitted to IUCN, where they were published in the on-line IUCN Red List portal, after having passed several checks for consistency etc.

Table 1. Overview of the occurrence of all (sub) endemic central African trees in protected areas. Totals provided at the bottom for all taxa as well as for all threatened taxa (categories VU, EN, CR and CR(PE)). Protected areas in order of number of taxa contained.

no PA = not present in any protected area

ext. PA = present in a protected area outside of Central Africa

YBI = Yangambi Biosphere Reserve

KAB = Kahuzi-Biega National Park

NYU = Nyungwe National Park

OKA = Okapi Wildlife Reserve

UPE = Upemba National Park VIR = Virunga National Park

SAL = Salonga National Park

KIB = Kibira National Park

SAN = Sankuru Nature Reserve

ITO = Itombwe Nature Reserve

KUN = Kundelungu National Park

LUK = Luki Biosphere Reserve

LOM = Lomami National Park

BUR = Bururi Forest Nature Reserve

GAR = Garamba National Park

 $KIS = Kisimba\ Ikobo\ Primate\ Nature\ Reserve$ 

VOL = Volcanoes National Park

RUB = Rubi-Tele Hunting Area

GIS = Gishwati-Mukura National Park

 $MAI \quad = \quad Lac \; Ma\"i \; Ndombe \; REDD +$ 

carbon concession

LOY = Lomako-Yokokala Nature Reserve

MAN = Mangai Nature Reserve

MAG = Mangrove Nature Reserve

TSH = Lac Tshangalele Hunting Domain

NSE = N'sele National Park

BIL = Bili-Uéré Protected Area

BOM = Bombo Lumene Wildlife Reserve

GAN = Gangala-na Bodio Hunting Area

LUF = Lufira Biosphere Reserve

MUK = Mukura Forest Reserve

RUT = Rutshuru Hunting Area

RUV = Ruvubu National Park

BOE = Boende-Tshopo Forestry Reserve

LUB = Lufira Basin Ramsar Site

MAS = Masako Forestry Reserve

YOK = Yoko Forest Reserve

Taxon name	Family	Category I	no ext.	kt. YBR	R KAB	KAB NYU	OKA	UPE VIR	R SAL	KIB	SAN IT	ITO KUN	LUK	LOM BUR	GAR	KIS V(	VOL RUB	SIS	MAI LOY	Y MAN	MAG	TSH NS	NSE BIL	ВОМ	GAN LUF	IF MUK	RUT	RUV BOE	LUB	MAS Y	YOK
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	Anacardiaceae	ΛΩ	×	×																											
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Cussonia sessilis	Araliaceae	ΛΩ	×																												
Polyscias kivuensis Ara	Araliaceae	EN	×																												
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Maerua robynsii Ca	Capparaceae	EN										×																			
Ritchiea quarrei Caj	Capparaceae	EN	×																												
	Celastraceae	EN	×																												
inii	Chrysobalanaceae	Н	×																												
subsp. butayei	Chrysobalanaceae			×																											
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Harungana montana Clu	Clusiaceae	ΛΩ	_	_	×	×				×																					
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Taxon name	Family	IUCN	no ex PA P	ext. YE	YBR KAB NYU	B NYU	OKA L	UPE VI	VIR SAL	KIB	SAN ITO	O KUN	LUK	LOM BUR	R GAR	KIS	VOL RUB	B GIS	MAI	TOY M.	MAN MAG	G TSH	NSE	BIL BC	BOM GAN	'N LUF	MUK	RUT RE	RUV BOE	LUB	MAS Y	YOK
Monotes autennei		TC		$\vdash$	_			×;			$\vdash$					L						×			H							Ι
Monotes doryphorus	Dipterocarpaceae	D 2	<b>;</b>					×					_									×										
Monotes auvigneauan	Dipterocarpaceae	N (	< ;												_																	
Monotes divigneaudii var. concolor	Dipterocarpaceae	ž 6	< >																													
Monotes hirtii	Dipterocarpaceae	ž	< ×										_																			
Monotes magnificus	Dipterocarpaceae	ГС		×				×				×	_																			
Monotes magnificus var. gigantophyllus	Dipterocarpaceae	ΩΛ						×				×																				
Monotes magnificus var. magnificus	Dipterocarpaceae	ГС	- 1	×																												
Monotes rubriglans subsp. upembensis	Dipterocarpaceae	EN						×					_																			
Monotes rubriglans var. griseocoriaceus	Dipterocarpaceae	EN						×																								
Monotes rubriglans var. upembensis	Dipterocarpaceae	LC(PA)	1	-	-	Ī		×	4			Ī	1	+			+				-	_		1	-				_		1	
ocarpa	Ebenaceae	a i	;	^	×																_											
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Diospyros wagemansii	Ebenaceae	N N	< >							ĺ					Ī				ĺ				Ī				ĺ					
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Euphorbia seretti	Euphorbiaceae	N I	۲;																													
Euphorbia seretti subsp. seretti	Euphorbiaceae	Z	×												_																	
Grossera multinervis	Euphorbiaceae	ΩΛ	×																													
Macaranga dibeleensis	Euphorbiaceae	Z.	×												_																	
Macaranga vanderystii	Euphorbiaceae	EN	×												_																	
Macaranga vermoesenii	Euphorbiaceae	ΩΛ	×																													
Mareya congolensis	Euphorbiaceae	ГС		^	×																											
Necepsia zairensis	Euphorbiaceae	Ľ							×					×	_																	
Necepsia zairensis var. lujae	Euphorbiaceae	ΛΩ	×																													
Necepsia zairensis var. zairensis	Euphorbiaceae	L							×					×	_																	
Pycnocoma reygaertii	Euphorbiaceae	EN	×																													
Pycnocoma subflava	Euphorbiaceae	CR(PE)	×																													
Pycnocoma thonneri	Euphorbiaceae	ГС		^	×				×		×																					
Afzelia peturei	Fabaceae-Caes.	ΛΩ	×																													
Anthonotha gilletii	Fabaceae-Caes.	rc						_	×		×			×	_																	
Aphanocalyx obscurus	Fabaceae-Caes.	K						_	×						_																	
Berlinia phenacoa	Fabaceae-Caes.	rc		~	×			_	_		×				_																	
Berlinia sapinii	Fabaceae-Caes.	DD						×	_						_																	
Bikinia congensis	Fabaceae-Caes.	Ľ	^	×				_	_						_																	
Brachystegia angustistipulata	Fabaceae-Caes.	ΛΩ	^	×				_	_			×			_											×						
Bussea gossweileri	Fabaceae-Caes.	ΛΩ						_	_				×		_										×							
Crudia harmsiana var. harmsiana	Fabaceae-Caes.	CC							×						_						_											
Crudia harmsiana var. velutina	Fabaceae-Caes.	rc	- "	×				_	_						_																	
Crudia laurentii	Fabaceae-Caes.	TN		^	×			_	_						_																	
Crudia michelsonii	Fabaceae-Caes.	EN	×					_	_						_																	
Cynometra michelsonii	Fabaceae-Caes.	EN			×			_	_						_																	
Cynometra palustris	Fabaceae-Caes.	EN	×					_	_						_																	
Cynometra pedicellata	Fabaceae-Caes.	CC		^	×				×						_						_								×			
Cynometra sessiliflora	Fabaceae-Caes.	rc	. 4	×	×			_	×						_								×								×	
Cynometra sessiliflora var. laurentii	Fabaceae-Caes.	CC			×			_	×						_																	
Cynometra sessiliflora var. sessiliflora	Fabaceae-Caes.	rc		×	×			_	×													_	×									
Dialium excelsum	Fabaceae-Caes.	CC	/1		×		×		_				×		_						_											
Dialium hexasepalum	Fabaceae-Caes.	EN					×	_	_						_																	
Dialium kasaiense	Fabaceae-Caes.	X .	×		,		;		_						_						_											
Daltum pentandrum	Fabaceae-Caes.	Z 6		× ×	×		×		_						_						_											
Dialium revoaertii	Fabaceae-Caes.	ž ž	×		×																											
Danium reygueriii	Fabaccac-cacs.	7.47	ĺ		_		Í			ĺ		Í	ĺ		ĺ	ĺ		_	ĺ				ĺ				ĺ					-

Taxon name	Family	IUCN L	no ext. PA PA	t YBR	R KAB NYU		OKA UPE	E VIR	SAL	KIB SAN	OTI N	KUN LI	LUK LOM	BUR	GAR KI	KIS VOL	RUB	GIS MAI	ГОУ	MAN M.	MAG TSH	NSE	BIL BC	BOM GAN	LUF	MUK RUT	RUV	BOE LUB	B MAS	YOK
Englerodendron lebrunii	Fabaceae-Caes.	t	-	L	L		H	L				f			L	L		ŀ					l		Ĺ			-	L	
Englerodendron mengei	Fabaceae-Caes.		: ×																											
Gilbertiodendron bambolense	Fabaceae-Caes.	LN		×												_														
Gilbertiodendron breynei	Fabaceae-Caes.		×					_																						
Isoberlinia paradoxa	Fabaceae-Caes.	EN	×					_													_									
Michelsonia microphylla	Fabaceae-Caes.	ΛΩ			×											_					_									
Normandiodendron romii	Fabaceae-Caes.	rc		×				_	×	×											_									
Tessmannia anomala var. anomala	Fabaceae-Caes.		×				×									_			×											
Tessmannia anomala var. flamignii	Fabaceae-Caes.		×													_					_									
Tessmannia burttii	Fabaceae-Caes.	ΩΛ	×				×									_														
Tessmannia copallifera	Fabaceae-Caes.	n n						_		×	_										_									
Tessmannia yangambiensis	Fabaceae-Caes.		;	×																										
Tetraberlinia baregarum	Fabaceae-Caes.	ଜ	×				;		ĺ					Ī																
Aeschynomene pararubrofarinacea	Fabaceae-Fab.		× ;				×					_																		
Angylocalyx bouttqueanus	Fabaceae-Fab.		× ;																											
Baphia bergeri	Fabaceae-Fab.		×																											
Baphia chrysophylla	Fabaceae-Fab.		×																											
Baphia claessensii	Fabaceae-Fab.		×																											
Baphia dubia	Fabaceae-Fab.	ΛΩ																×												
Baphia incerta	Fabaceae-Fab.	LN					×						×																	
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Bapnia incerta subsp. lebrunu	Fabaceae-Fab.						×																							
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Baphia wollastonii	Fabaceae-Fab.	ГC	×	×				×																						
Erythrina orophila	Fabaceae-Fab.	EN			×																									
Millettia beaugertii	Fahaceae-Fah	<u></u>						×																						
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Millettia hockii	Fabaceae-Fab.	EN					×																							
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Mine nia psiropenia	rabaccac-rab.		;	<			<	<																						
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Ormocarpum wombaliense	Fabaceae-Fab.		×																											
Platysepalum cuspidatum	Fabaceae-Fab.		×																											
Platysepalum ferrugineum	Fabaceae-Fab.	R	×																											
Platysepalum hypoleucum	Fabaceae-Fab.	EN	×																											
Platysepalum vanderystii	Fabaceae-Fab.		×																											
Schefflerodendron oilbertianum	Fahaceae-Fah			,																										
Nontonia devodii	Fabaceae-Mim	i ii	× ×																											
Sanatalia Liina	Fobacca Mim							_																						
Senegana ujae	rabaceae-iviiii.		٠;					_																						
Xylta ghesquierei	Fabaceae-Mim.							1	ĺ																					
Hypericum bequaertii	Hypericaceae	LC(PA)	×	-		1	+	×		1	-					_		+			+			-		+			_	
Vitex rubroaurantiaca	Lamiaceae			×					×	×	×																			
Beilschmiedia ambigua	Lauraceae		×																											
Bettschmedta auriculata	Lauraceae	0.00	×	_								_																		
Denschmedia Oracledia	Lamacac		<										>																	
Beulschmiedta donisu	Lauraceae	CK(PE)		-									<																	
Beilschmiedia gilbertii	Lauraceae			×																										
Beilschmiedia gilbertii var. gilbertii	Lauraceae	_	×																											
Beilschmiedia gilbertii var. glabra	Lauraceae			×																										
Beilschmiedia hermanii	Lauraceae	a	×																											
Beilschmiedia lebrunii	Lauraceae	EN		×											×	×							×	×						
Beilschmiedia louisii	Lauraceae	L										_																		
Beilschmiedia mayumbensis	Lauraceae	EN															×													
Beilschmiedia michelsonii	Lauraceae	EN				×					×	_																		
Beilschmiedia olivacea	Lauraceae	EN	×																											
Beilschmiedia rwandensis	Lauraceae	LC(PA)				×																								
Beilschmiedia schmitzii	Lauraceae	EN					×					×																		
Beilschmiedia troupinii	Lauraceae	LC(PA)				×						_																		
Beilschmiedia variabilis	Lauraceae	rc	—	×			×	×	×	×		_		_	—	_	×	—		_	—	_			_	_	_	—		_

Taxon name	Family	IUCN Category 1	no es PA P	ext. YB	BR KA	YBR KAB NYU	OKA	UPE	VIR SAL	T KIB	SAN	ITO KUN	JN LUK	ГОМ	BUR GAR	AR KIS	NOL	RUB GIS	S MAI	ГОУ	MAN MAG	NG TSH	I NSE	BIL B	BOM GAN	'N LUF	MUK	RUT RUV	JV BOE	LUB	MAS Y	YOK
Beilschmiedia vermoesenii	Lauraceae	-	_		H	L		t	H	L		H	L		H	L		H	L		H	L	L	l	H	L		H	L		t	_
	Lauraceae	ΛΩ				×						×				×																
Hugonia planchonii var. congolensis	Linaceae	ΛΩ			×																											
	Malpighiaceae	CC		+	-			×	+	_		×	~		+	_													_			
Ancistrocarpus bequaertii	Malvaceae	O 1	>	^	×		×																									
a	Malvaceae			×	×				×																							
	Malvaceae	гс		~	×																											
	Malvaceae	DA E									×		×																			
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Figure 5. Bar graph showing the distribution of IUCN Red List categories amongst the 347 (sub)endemic Central African tree taxa.

# General results

Figure 5 and Table 1 provide an overview of the Red List categories assigned to all 347 (sub)endemic tree taxa. No less than 221 of them (64%) were assigned to a threatened category (CR, EN or VU). It has already been shown that one-third of the entire tropical African flora is potentially threatened with extinction (Stévart et al. 2019), and hence our result, related to a subgroup of the rarer components of this flora, does not come as a surprise.

While the rarest endemic tree taxa are known from only one or two herbarium specimens (39 taxa (11.2%) with one and 21 taxa (6.0%) with two specimens), some are more common and may be known from as many as 50 or more specimens (34 taxa, 9.8%; the species with the highest number of records, 130 herbarium specimens, is *Croton haumanianus*); on average, a taxon is known from 18 or 19 specimens.

No less than 34 taxa (10%) have been placed in the category Critically Endangered (CR), of which 25 (7.2%) have obtained the additional 'tag' Possibly Extinct (CR(PE)). Taxa within the CR category are only known from 1 or 2 occurrences, and targeted fieldwork to find out if they still exist, or may indeed be considered extinct, is often recommended.

According to the information provided in the 347 Red List assessments, not a single taxon is protected by a specific conservation action. Table 1 indicates that a large number of the (sub)endemic tree taxa, a total of 125 (36%), do not occur in any protected area and hence are not protected in any way. When we look only at the taxa that were assigned to a threatened category (CR, EN or VU), this number is 114 out of 221, or a staggering 52%! This may pose questions as to the effectiveness or to the design of the protected area network in the region, but may also be at least partly due to the gross under-collecting of the region (see also below).

Figure 6 shows the spatial distribution of (a) all records of (sub)endemic trees, (b) the taxonomic density of (sub)endemic tree taxa, and (c) the density of (sub)endemic tree taxa having a threat status. The three maps are obviously correlated and at the same time suffer from a strong sampling bias effect (Daru et al. 2018). It is interesting though to see that going from (b), taxon

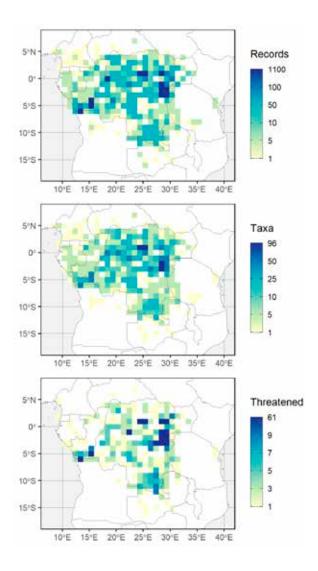


Figure 6. Spatial distribution of (a) all recordss of (sub)endemic trees, (b) the taxonomic density of (sub)endemic tree taxa, and (c) the density of (sub)endemic tree taxa having a threat status.

density, to (c), threat density, some areas decrease in importance (for example in the Equateur Province in western DRCongo, and in northern DRCongo), while others increase in importance (for example in the Ituri Province in north-eastern DRCongo, and in the Haut-Katanga Province in south-eastern DRCongo). This implies that in the latter regions a comparatively high percentage of the (sub)endemic tree flora is threatened. w

## Recommendations

- 1. The availability of adequate and reliable data is crucial to Red List assessment and thus to effective conservation. In our situation, this implies the availability of a stable taxonomy and a sufficient number of reliably identified plant occurrence records for each individual taxon. Both heavily depend on (a) the presence of skilled taxonomists, (b) a sufficient number of well-curated herbaria and taxonomic databases, and (c) a high level of plant taxonomic knowledge and research.
- (a) Capacity building. In Central Africa, the number of well-trained taxonomists is exceptionally low, even when compared with the whole of tropical Africa. We have observed an almost complete absence of suitable plant taxonomy training in most of the universities in the region. In an attempt to support the mitigation of this situation, Meise Botanic Garden recently developed a booklet, presenting an introduction to the field of plant taxonomy (Sosef et al. 2020), subsequently translated into six different languages. The concepts of the crucial importance of and current lack of a sufficient number of trained taxonomists for the region should be communicated to universities, high schools and other educational institutes in order to stimulate incorporation of such teaching in the various curricula. Furthermore, research bodies within the region should develop plant taxonomic research groups to play an active role in the huge work of mapping out the botanical diversity of Central Africa.
- (b) Herbarium collections. As pointed out above, DRCongo notably remains a country that is botanically poorly known based on the current number of herbarium collections. These being the only reliable source of information on the distribution, rarity, etc. of a species, this situation seriously hinders not only the production of high-quality Red List assessments, but also a multitude of other developments. Despite the major efforts of largely Belgian botanists who, mostly during the first half of the previous century, accomplished the collecting of well over 300,000 specimens throughout this vast country (i.e. Robyns 1962), a similarly ambitious current collecting programme is required. Also, because many of the occurrence records date back half a century or more, they often do no longer represent a reliable reflection of the current situation. This will be a huge

task not only the training of a large number of regional plant collectors and herbarium managers, but also the creation of an active network of plant specialists from all over the globe, collaborating to make sure that the material is properly identified and new discoveries are quickly recognized, analysed and published. The data related to each newly collected specimen should be captured in a centralized electronic database, to be made freely available through platforms such as GBIF, thus enhancing the big inventory as well as conservation of Central Africa's botanical wealth.

- (c) Plant taxonomy. Plant taxonomic experts from all over the world, still regularly discover new species and novel phylogenetic relationships, and create an ever more stable taxonomic framework. The Flore d'Afrique centrale, the basic tool for plant identification in the area, still covers only around 60% of the species occurring in Central Africa. Work on the latter is in progress (Sosef 2016), but slow, and will surely benefit from various e-developments, but it is lacking the major funding it deserves. Rwanda is blessed with a completed Flora (Troupin 1978, 1983, 1985, 1987), which however already becoming outdated and would benefit from an updated edition. Meanwhile, individual initiatives such as the African Plant Database (2020) and IPNI (2021), as well as international consortia such as World Flora Online (Borsch et al. 2020), JSTOR Global Plants (plants.jstor. org) and Biodiversity Heritage Library (biodiversitylibrary.org), along with data standardization, allow the creation of a set of currently accepted names of African plants as well as greatly increasing the efficiency of plant taxonomic research.
- 2. The present publication will inform managers of protected areas (PAs) about the (sub)endemic and threatened tree taxa present in their area. Management plans can now be adjusted and improved taking this information into account. Specific programmes could prioritize increasing the botanical knowledge within PAs, notably by a significant intensification of collecting efforts (see item 1b above). It is highly probable that many PAs hold a number of additional rare and (sub)endemic threatened tree species (or taxa) within their boundaries than is presently known. This is due to the present situation of under-collecting, notably within DRCongo. Locating even more threatened tree species (or taxa) within the PAs would in turn promote the adjustment of management plans to target their habitats and regularly check upon the population vitality and dynamics. This increase in collecting activity would then also feed updated information into the Red List process, in some cases leading to a lowering of a threat status.
- **3.** The Red List assessments presented in this book show that not a single (sub)endemic tree species is subject to a specific conservation activity, and only a handful are represented in *ex situ* seed banks or botanic gardens. There are ample opportunities here for both local initiatives and a larger collaborative programme. Such initiatives could involve seed collecting and appropri-

ate storage, efforts to cultivate species either within the region or in botanic gardens across the globe, and even revegetation using seedlings of local species (including those of endemic trees) trying to restore what may have been lost (Holl 2012).

4. The ECAT project proved a successful formula to deliver large numbers of high-quality Red List assessments. Part of the success is that the vast majority of herbarium specimens are available in a single institution (BR), where they are well managed and fully digitized. The methodology could be expanded to cover all other (sub)endemic Central African plants, estimated to comprise an additional 1,500 species. Important funds should be made available to realize such a major additional initiative. Up to now, despite the generous external funding by the Franklinia Foundation, the inkind time investment of a large number of individual researchers has been very substantial.

# \_ Acknowledgements

The ECAT project received important additional funding from the Franklinia Foundation, while Meise Botanic Garden offered a substantial in-kind contribution. Apart from that, many scientists contributed a non-neglectable amount of their valuable time to realize the Red List evaluations. We want to sincerely thank Marleen Derycke and Anja Van Ossel (Meise Botanic Garden) for assisting in the logistics of the successful CARLA and EAPRLA workshops. Nuno Veríssimo Pereira (Meise Botanic Garden) skilfully performed the georeferencing of most of the herbarium specimens. Further project support was obtained from Xavier Scheldeman, Frederik Leliaert, Steven Dessein, Piet Stoffelen, Sofie De Smedt and Henry Engledow, for which we were most grateful. Craig Hilton-Taylor (IUCN) is thanked for his assistance in checking the taxon name list, in importing the data into SIS, and in getting the assessments published on the IUCN Red List portal. Emily Beech (BGCI) is acknowledged for providing various extractions of the GlobalTreeSearch database. Stefan Dressler and Marco Schmidt (Senckenberg Research Institute), assisted in getting the permission to reproduce several colour photographs, through their impressive African Plants Photo Guide (Dressler & al. 2014).

# \_ IUCN Red List assessments

The treatment of all 347 taxa of (sub)endemic Central African trees is presented in alphabetical order, first of the family and then of the species. For convenience, the large family Fabaceae has been subdivided into its three traditional subfamilies: Caesalpinioideae, Faboideae and Mimosoideae.

When a subspecies or variety is (sub)endemic to Central Africa, but the entire species is not, then only the treatment of the infraspecific taxon has been included.

Synonyms of the accepted taxon names have only been provided when they have been in use as the accepted name relatively recently (during the last c. 20 years).

The maps provide, for each taxon, all occurrence points based on herbarium specimen data. Points used in the assessment are given in blue; those that were excluded because the local population was deemed lost are given in red.

## ACHARIACEAE

## **Dasylepis eggelingii** J.B.Gillett

Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

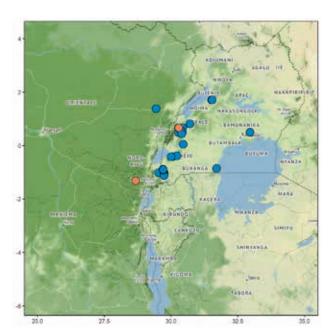
**Distribution** – Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO): 88,327 km<sup>2</sup>; Area of occupancy (AOO): 92 km<sup>2</sup>.

**Habitat** – Moist lower montane forest, riverine forest, regenerating forest (reported once); it can be locally abundant; at 1,050–2,440 m.

**Protected areas** – The species occurs in eight protected areas: Bwindi Impenetrable National Park, Kibale National Park, Queen Elizabeth National Park, Mabira, Kalinzu, Sango Bay and Budongo Forest Reserves, all in Uganda, and in Rutshuru Hunting Area in DRC. There are no current conservation actions for occurrences in unprotected sites.

**Threats** – Some of the protected areas, e.g. Bwindi Impenetrable, are very well protected. However, many of them are Forest Reserves, where the habitat faces considerable threats. The Mabira, Sango Bay and Budongo Central Forest Reserves are faced with illegal tree felling for timber, firewood, poles and charcoal and encroachment for growing *Cannabis*. Mabira is still under pressure to be partly degazetted for sugarcane growing. The invasive *Broussonetia papyrifera* occurs in both Mabira and Budongo CFRs, reducing habitat quality as it takes up vast areas of the forests. In eastern DRC (Kivu Province), there is rampant tree felling for timber and charcoal, mining of gold and coltan and cassiterite in the Walikale area and forest clearing for cultivation, all of which are degrading the habitat leading to a loss of mature individuals of the species.

**Justification** – *Dasylepis eggelingii* is a tree to 10 m tall. It is known from 37 herbarium specimens collected between 1905 and 1998, of which three have been discarded prior to the assessment because the habitat and hence the popula-





Dasylepis eggelingii: Isotype material at BR (Eggeling 3710).

tion is considered gone. The 34 remaining collections represent 28 unique occurrences and 14 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. These threats reduce the number of mature individuals and also degrade the habitat for such an essentially forest-dependent species. This species experiences continuing decline in EOO, AOO, habitat quality, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Bamps (1968), Burnley (2011), Garrett (2008), Global Witness (2015), Internal Displacement Monitoring Centre (2007), Kalema & Beentje (2012), Ministry of Water and Environment (2016), Sleumer (1975), Tetra Tech ARD (2016), UNEP-MONUSCO-OSESG (2015).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

## ANACARDIACEAE

## \_ **Antrocaryon nannanii** De Wild.

Red List category - Least Concern: LC.

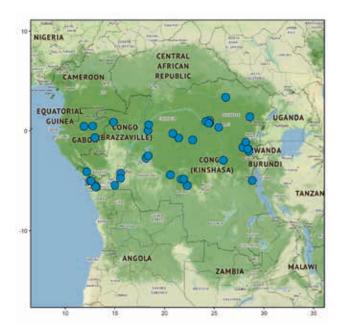
**Distribution** – Gabon, Republic of the Congo, Democratic Republic of the Congo, Angola (Cabinda). Extent of occurrence (EOO): 1,525,078 km²; Area of occupancy (AOO): 168 km².

**Habitat** – Dry forest, periodically flooded forest between rocks along riverbanks; at 300–900 m.

**Protected areas** – Ten occurrences are located within six protected areas. These are the Ivindo National Park (Gabon), the Odzala Kokoua NP (Republic of the Congo), the Kahuzi-Biega NP, the Yangambi and Luki Biosphere Reserves and the Okapi Wildlife Reserve, all four in the Democratic Republic of the Congo.

**Threats** – The species' habitat is mainly threatened by small-scale shifting agriculture. The other threats are timber exploitation, urbanization and charcoal production. For the Luki Reserve some level of threat from human disturbance, notably small-scale shifting agriculture, has been reported.

Justification – Antrocaryon nannanii is a tree to 30 m high. It is known from 77 herbarium specimens collected between 1910 and 2013, representing 42 unique occurrences and 35 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat (i.e. shifting agriculture), 29 to 32 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. We project that human pressure will increase the loss of the species' habitat and of its mature individuals





Antrocaryon nannanii: 1, male flowering branch; 2, part of leaflet, lower surface; 3, young male flower; 4, female flower; 5, idem, longitudinal section; 6, 7, nut, frontal view, view from above. (1, 3: Louis 11388; 2: Toussaint 368; 4, 5: Louis 10201; 6, 7: Louis 4143). Drawing by M. Boutique, Meise Botanic Garden (©).

in the near future. However, notwithstanding these human activities, with varying levels of impact, *A. nannanii* is not threatened because it fails to meet the threshold values for the Vulnerable category under the IUCN Red List criteria.

**Bibliography** – Breteler (2017), Meunier & al. (2015), Oréade-Brèche / FRMi / EGIS-International (2017), Van der Veken (1960a).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

## **Lannea asymmetrica** R.E.Fr.

Red List category – Vulnerable: VU B2ab(ii,iii).

**Distribution** – Democratic Republic of the Congo (Katanga Province), Tanzania and Zambia. Extent of occurrence (EOO): 214,484 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Open forest, savanna shrubland, *Brachystegia* woodland; at 780–1,230 m.

**Protected areas** – Two collecting sites, occur within the Mahali Mounts National Park in Tanzania. The seven other

collecting sites occur outside protected areas. There are no current conservation actions for the species.

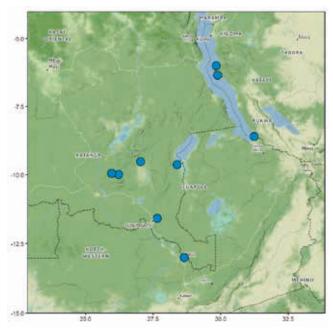
Threats – The suitable habitat for this species is threatened by the growing human population and associated activities such as forest clearing for small-scale and large-scale subsistence farming, mining activities and selective logging. The main threat is forest clearing for agriculture. The southern localities are within the copper belt, e.g. Ndora, where large copper mining operations take place. Ndora is a large city undergoing further urbanization. Lubumbashi is faced with habitat destruction in a large area around the city.

**Justification** – *Lannea asymmetrica* is a shrub or small tree to 5 m tall. It is known from nine herbarium specimens collected between 1954 and 2015, representing nine unique occurrences and eight subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, seven locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We predict that these human activities, which are gradually degrading the habitat of the species, will continue in the future. We expect this to lead to a continuing decline of the AOO.





Lannea asymmetrica: Malawi, Nkhota Kota Game Reserve. Photos by Günter Baumann (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.



**Bibliography** – Exell & Wild (1966), Kokwaro (1986), Van Der Veken (1960a).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

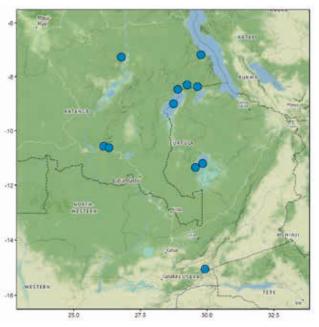
# \_ **Ozoroa kassneri** (Engl. & Brehmer) R.Fern. & A.Fern. var. **kassneri**

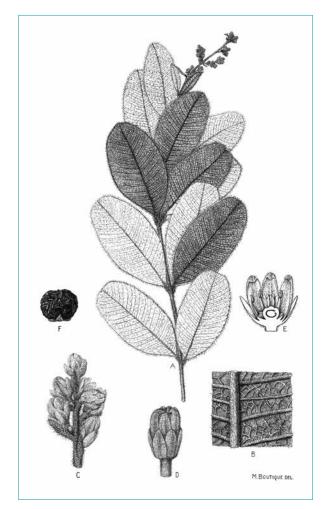
Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo and Zambia. Extent of occurrence (EOO): 236,870 km²; Area of occupancy (AOO): 44 km².

**Habitat** – Miombo woodland on sand, marshes, savannah with *Erythrophleum*; at around 975 m.

 $\mbox{\bf Protected areas}$  – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.





Ozoroa kassneri var. kassneri: A, flowering twig; B, part of leaf, lower surface; C, part of female inflorescence; D, flower bud; E, female flower, longitudinal section; F, drupe. (A, C-E: Kassner 2958; B, F: Schmitz 6476). Drawing by M. Boutique, Meise Botanic Garden (©).

**Threats** – The main threat is clearing for agriculture in eastern Zambia and around Lake Bangweulu, especially around Samfya and Mansa (Fort Rosebery). Samfya is heavily disturbed. In Katanga (Democratic Republic of the Congo), more miombo seems to remain around Lubudi and Manono, less around Pweto and Kapulo.

**Justification** – Ozoroa kassneri var. kassneri is a shrub or small tree to 2(-3) m tall. It is known from 16 georeferenced herbarium specimens collected between 1939 and 1959, representing 11 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Clearing for agriculture in Zambia and in parts of the Democratic Republic of the Congo is destroying the habitat of this taxon in several sites, and diminishing the quality of the habitat in many others. Based on the scale of the threats, 9 or 10 locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the taxon, leading to a decline in its AOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Fernandes (1966), Fernandes & Fernandes (1966), Kokwaro (1986), Van Der Veken (1960a).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

## Ozoroa nigricans (Van der Veken) R.Fern. & A.Fern.

(Synonym: Heeria nigricans Van der Veken)

Red List category - Near Threatened: NT.

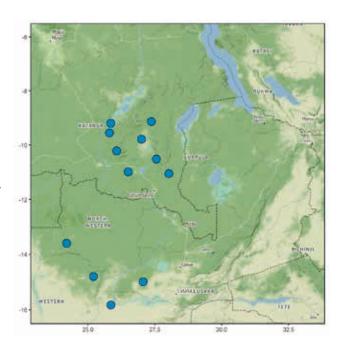
**Distribution** – Democratic Republic of the Congo and Zambia. Extent of occurrence (EOO): 193,546 km²; Area of occupancy (AOO): 48 km².

**Habitat** – Miombo woodland, dambos, savanna with *Pterocarpus*, steppe with *Syzygium-Protea petolaris*, possibly fire-related; at 900–1,600 m.

**Protected areas** – Three collecting sites occur within two protected areas. These are the Kafue National Park (Zambia) and the Kundelungu National Park (Democratic Republic of the Congo). The nine other collecting sites are located in unprotected areas where there are no current conservations actions for the species.

**Threats** – Satellite images show clearance for small-holder agriculture in at least terr. Mitwaba (Democratic Republic of the Congo) and around Mumbwa (Zambia); charcoal harvest threatens the site in central Zambia. At Kafue Hook, most of the miombo has been destroyed.

**Justification** – *Ozoroa nigricans* is a shrub or small tree. It is known from 16 georeferenced herbarium specimens collected between 1899 and 1973, representing 12 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 11 locations (*sensu* IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the species cannot be





Ozoroa nigricans: Type specimen at BR (Herman 2187).

considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite its low AOO. However, satellite images suggest that the 1956 collecting site "entre Kiobo (km 32) et Jadotville" probably no longer offers suitable habitat, which would result in 10 locations and qualify the species for the Vulnerable category. Given this, and the fact that we conclude that the extent and quality of the habitat of the species will continue to decline in the near future, Ozoroa nigricans is assigned a status of NT.

**Bibliography** – Fernandes (1966), Fernandes & Fernandes (1966), Kokwaro (1986), Musambachime (2019), Van Der Veken (1960a).

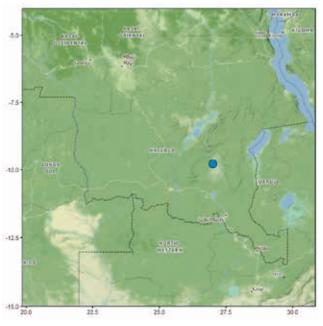
Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

# \_ **Ozoroa nigricans** (Van der Veken) R.Fern. & A.Fern. var. **elongata** (Van der Veken) R.Fern. & A.Fern

(Synonym: *Heeria nigricans* Van der Veken var. *elongata* Van der Veken)

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Katanga region (Mitwaba Territory), Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².





Ozoroa nigricans var. elongata: Holotype specimen at BRLU (Duvigneaud & Timperman 2763H).

**Habitat** – Miombo woodland, possibly linked with fires; at around 900 m.

**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions known for this taxon.

**Threats** – Satellite images of the area (km 32 on the Kiobo-Likasi road) suggest that most of the habitat is gone, with only a few patches of miombo 15 km further south.

**Justification** – Ozoroa nigricans var. elongata is a shrub or small tree known only from the type specimen collected in 1956. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. This taxon is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. The region where Ozoroa nigricans var. elongata occurs is severely under-collected, and no specimens of this taxon were collected after 1956. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat of this taxon. Research is needed to determine its distribution, population size and trends, and the threats that may be affecting it. It may be necessary to establish ex-situ populations if there are still individuals in the wild. Since it has not been observed for a period of 65 years, it has been given the tag Possibly Extinct. Habitat protection is recommended.

**Bibliography** – Fernandes (1966), Van Der Veken (1960a).

**Authors** – H.J. Beentje, M. Simo-Droissart & W. Tack

# **\_ Ozoroa nigricans** (Van der Veken) R.Fern. & A.Fern. var. **nigricans**

(Synonym: Heeria nigricans Van der Veken var. nigricans)

Red List category – Vulnerable: VU B2ab(iii).

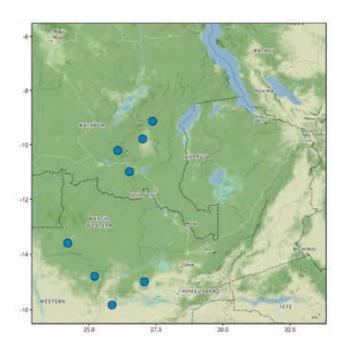
**Distribution** – Democratic Republic of the Congo and Zambia. Extent of occurrence (EOO): 141,782 km2; Area of occupancy (AOO): 32 km².

**Habitat** – Miombo woodland, dambos, savanna with Pterocarpus, steppe with *Syzygium-Protea petolaris*, possibly fire-related; at 995–1,600 m.

**Protected areas** – One collecting site occurs within the Kafue National Park in Zambia. There are no current conservation actions for this taxon in the other collecting sites.

**Threats** – Satellite images show clearance for small-holder agriculture in at least terr. Mitwaba (Democratic Republic of the Congo) and around Mumbwa (Zambia); charcoal harvest threatens the site in central Zambia.

Justification – Ozoroa nigricans var. nigricans is known from 10 herbarium specimens collected between 1911 and 1973, representing eight unique occurrences and eight subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of threats, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable



to infer a decline in the extent and quality of the habitat of the taxon.

**Bibliography** – Fernandes (1966), Fernandes & Fernandes (1966), Kokwaro (1986), Musambachime (2019), Van Der Veken (1960a).

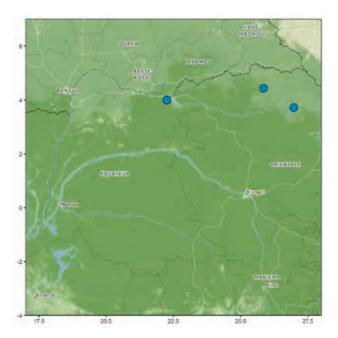
Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

## \_ **Ozoroa uelensis** (Van der Veken) R.Fern. & A.Fern.

(Synonym: Heeria uelensis Van der Veken)

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO):  $18,750 \text{ km}^2$ ; Area of occupancy (AOO):  $12 \text{ km}^2$ .





Ozoroa uelensis: Holotype specimen at BR (Gerard 3400).

**Habitat** – Most likely in gallery forest surrounded by savanna; at around 500 m.

 $\mbox{\bf Protected areas}$  – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Its habitat is threatened by shifting agriculture for subsistence and selective logging for charcoal production and fuelwood. However, satellite images show that there seems to be a significant amount of suitable habitat left. The area seems sparsely populated with small villages, but exploitation of forest and conversion to agriculture takes place (Ithe Mwanga Mwanga, pers. comm.) and gallery forests along streams would be a prime target for such agricultural activities.

Justification – Ozoroa uelensis is a small tree known from five herbarium specimens collected between 1934 and 1959, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a continuing decline in the extent and quality of the species'

habitat. Despite the variety *isotricha* being assessed as DD, the importance of the more common variety outweighs the rarer one, according to the IUCN Guidelines.

Bibliography – Fernandes (1966), Van Der Veken (1960a).

Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

# **\_ Ozoroa uelensis** (Van der Veken) R.Fern. & A.Fern. var. **isotricha** (Van der Veken) R.Fern. & A.Fern.

(Synonym: *Heeria uelensis* Van der Veken var. *isotricha* Van der Veken)

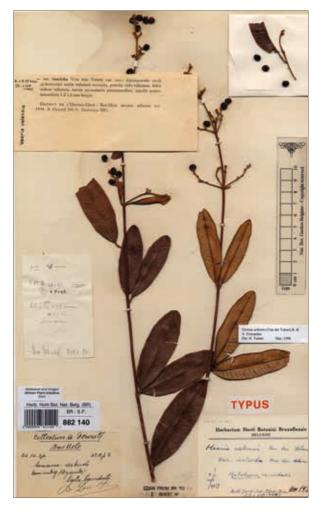
Red List category – Data Deficient: DD.

**Distribution** – Endemic to Bas-Uele in the Democratic Republic of the Congo, without precise locality. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat – Savanna; around 400–500 m.

**Protected areas** – Since the locality where the variety was collected is too imprecise, it is impossible to provide information about any conservation actions for this taxon.

**Threats** – With the locality so vaguely described (Bas-Uele Province is 148,331 km²), it is impossible to assess the threats to this taxon's habitat.



Ozoroa uelensis var. isotricha: Holotype specimen at BR (De Wulf 243).



**Justification** – *Ozoroa uelensis* var. *isotricha* is known only from the type specimen collected in 1934, for which the precise locality is unknown, since the only indication is the rather broad "Bas-Uele" on the herbarium label. It is therefore difficult to determine in which habitat this taxon occurs, and impossible to assess any decline in AOO, EOO, number of locations or number of mature individuals, as well as to determine if there is a potential decline in area, extent or quality of the habitat. While waiting for new information about this taxon, this situation justifies an assessment of DD.

Bibliography – Fernandes (1966), Van Der Veken (1960a).Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

# \_ **Ozoroa uelensis** (Van der Veken) R.Fern. & A.Fern. var. **uelensis**

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

**Habitat** – Most likely in gallery forest surrounded by savanna; elevation is uncertain, and is estimated at around 500 m.

**Protected areas** – Both known collecting sites occur outside protected areas. There are no current conservation actions for this taxon.

**Threats** – The two collecting sites occur in unprotected localities where their habitat is threatened by shifting agriculture for subsistence and selective logging for charcoal production and fuelwood. However, satellite images show that there seems to be a significant amount of suitable habitat left. The area seems sparsely populated with small towns, but the forest is exploited and conversion to agriculture takes place (Ithe Mwanga Mwanga, pers. comm.) and gallery forest along streams would be a prime target for such agricultural activities.



**Justification** – Ozoroa uelensis var. uelensis is known from four herbarium specimens collected between 1954 and 1959, representing two unique occurrences and two subpopulations separated by a distance of ca. 150 km. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of the threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the taxon's habitat.

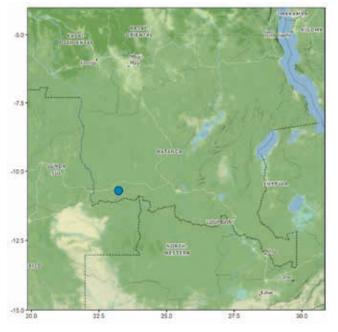
Bibliography – Fernandes (1966), Van Der Veken (1960a).

Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

## \_ **Searsia grossireticulata** (Van der Veken) Moffett

(Synonym: Rhus grossireticulata Van der Veken)

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).





Searsia grossireticulata: Type specimen at BR (Duvigneaud 2336).

**Distribution** – Endemic to the Katanga region of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – Open forest with *Brachystegia* and *Pseudoberlinia paniculata*, on thick red soil surrounding the manganese mound; elevational range is unknown but is estimated at around 500 m.

**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions for the species.

**Threats** – Mining activities (manganese and copper), thriving in the region and specifically within and surrounding the type locality, are liable to cause a drastic decline in habitat quality and to impact the survival of this species.

Justification – Searsia grossireticulata is known only from the type specimen collected in 1956. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. The region where it was found is severely under-collected, and no specimens were collected after 1956. Further collecting efforts are needed to confirm whether the species is already extinct or not, and to gain a better understanding of its distribution area, its abundance and the threats it faces. Based

on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

Bibliography - Moffett (2007), Van Der Veken (1960a).

Authors - C. Ewango, M. Simo-Droissart & W. Tack

# ANNONACEAE

## \_ **Annickia ambigua** (Robyns & Ghesq.) Setten & Maas

(Synonym: Enantia ambigua Robyns & Ghesq.)

Red List category – Least Concern: LC.

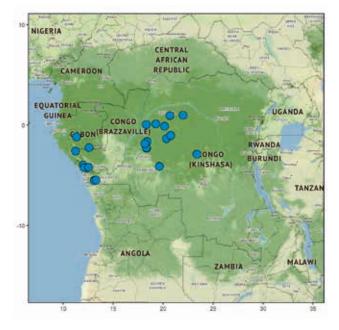
**Distribution** – Disjunct; from the southern part of Gabon to the western parts of the Republic of Congo and the Democratic Republic of Congo (Mayombe forest), and also in the central part of the Democratic Republic of Congo. Extent of occurrence (EOO): 638,638 km²; Area of occupancy (AOO): 96 km².

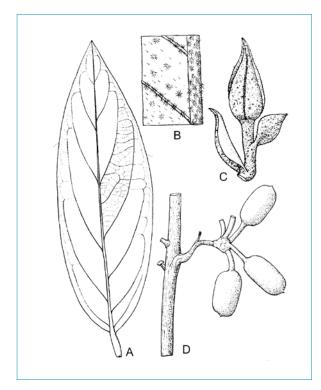
**Habitat** – Understorey of primary and old secondary forests. It inhabits the lowland regions from 300 to 750 m elevation that seems to represent the drier areas within the Central African rainforest.

**Protected areas** – This species is known to occur in the Biosphere Reserve of Dimonika (Congo). The other collecting sites occur outside officially protected areas, although there are three collections from the Lac Maï Ndombe REDD+ carbon concession. There are no current conservation actions for the species.

**Threats** – This species is facing local habitat loss and degradation due to logging activities.

**Justification** – *Annickia ambigua* is a small tree growing up to 8 m tall known from 25 herbarium specimens collected





Annickia ambigua: A, leaf, lower surface; B, idem, detail; C, floral bud; D, fruit (A-D: Sargos 193). Publications Scientifiques de Muséum national d'Histoire naturelle, Paris (©), reproduced with permission from Le Thomas (1969).

between 1913 and 2016. These represent 24 unique occurrences and 21 subpopulations. It is reported to be abundant where it occurs. Its extent of occurrence (EOO) is far exceedis the threshold of the Vulnerable category under sub-criterion B1. Its limited area of occupancy (AOO) is thought to be a result of its ecological preferences and under-collection of the species by botanists. Considering its wide EOO, a more accurate estimation of its AOO would likely be higher than the 2,000 km², the threshold for any threat categories. Although the species is locally facing habitat loss and degradation, mainly due to logging, there is no major threat which would affect the survival of the species across its large geographic range.

**Bibliography** – Cosiaux & al. (2019a), Versteegh & Sosef (2007), WRI (2013a, 2013b, 2016).

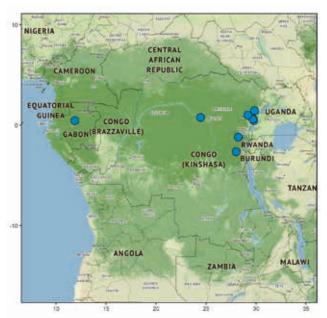


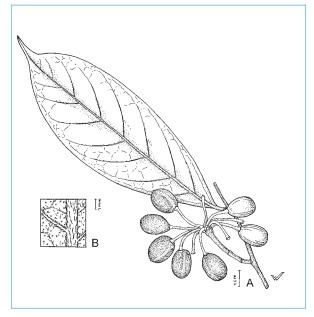
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Gabon and Democratic Republic of the Congo. Extent of occurrence (EOO): 454,986 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Understorey of forest on sandy-clay soils; at 700–1,200 m.

**Protected areas** – This species is known to occur in two protected areas in the Democratic Republic of Congo: the Virunga National Park and the Yangambi Biosphere Reserve.





Annickia lebrunii: A, leaf, lower surface; B, detail, lower leaf surface (A, B: Leonard 1595). Drawing by Mrs. W. Wessel-Brand, Naturalis Biodiversity Center (©), reproduced with permission from Versteegh & Sosef (2007).



*Annickia lebrunii*: Young infructescence Photo by Quentin Luke (©).

**Threats** – Across the eastern part of the DRC, the species is threatened by habitat loss and degradation due to mining activities. This species is present at high densities in these areas. The species may also be threatened by forest clearance for subsistence agriculture and tree cutting for charcoal production. In Gabon, the species may be affected by habitat degradation and loss due to logging. The Virunga NP is affected by encroachments and land conversion for agriculture, by tree cover removal for fuelwood and by making 21% of the National Park surface area available for oil exploitation. The Yangambi Biosphere Reserve is also affected by forest clearance for subsistence agriculture.

Justification – This species is a small tree growing up to 8 m tall. It presents a wide but disjunct geographic distribution. It is mainly distributed across the eastern part of DRC. To the west, a single collection is known from Gabon. This species is poorly documented and is only represented by 10 herbarium specimens, representing nine unique occurrences. Its extent of occurrence (EOO) far exceeds the threshold of the Vulnerable category under sub-criterion B1. Its area of occupancy (AOO) qualifies for the Endangered category under sub-criterion B2. The nine occurrences are estimated to correspond to seven threat-defined locations (sensu IUCN), which falls within the limits of the Vulnerable category under sub-criterion B2. All the sites where the species is known to occur are threatened by habitat loss (mainly due to mining activities).

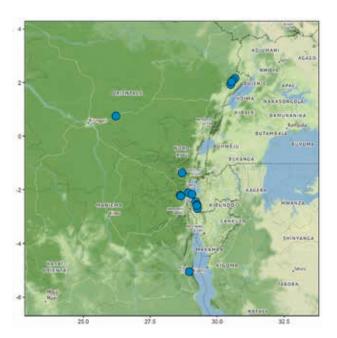
**Bibliography** – Agence France Presse (2018), Cosiaux & al. (2019b), Ickowitz & al. (2015), Potapov & al. (2012), Tsongo (2017), UICN & UNEP-WCMC (2018), WRI (2013a, 2016).

Authors - A. Cosiaux, T.L.P. Couvreur & R.H.J. Erkens

## \_ *Isolona lebrunii* Boutique

Red List category – Vulnerable: VU B2ab(ii,iii).

**Distribution** – Eastern part of the Democratic Republic of Congo, Rwanda and Burundi. Extent of occurrence (EOO): 179,960 km²; Area of occupancy (AOO): 60 km².





Isolona lebrunii: Herbarium specimen at BR (Lebrun 2097).

Habitat – Moist montane forests; at 1,650–2,150 m.

**Protected areas** – This poorly known species is known to occur in only one protected area: the Nyungwe National Park in Rwanda.

**Threats** – The species is distributed throughout the most densely populated areas of the Democratic Republic of Congo, while Burundi and Rwanda are among African countries with the highest population densities. These areas are affected by severe forest loss due to a combination of various human activities, including forest clearance for subsistence agriculture, timber exploitation for charcoal production and artisanal mining (gold and coltan), especially in DRC.

**Justification** – *Isolona lebrunii* is a poorly known tree, growing up to 15 m tall. The species is only known from 20 herbarium collections and the most recent ones date back to 1971 in DRC, 1969 in Burundi and 1999 in Rwanda. These represent 15 unique occurrences and 13 subpopulations. Its extent of occurrence (EOO) far exceeds the threshold of the Vulnerable category under sub-criterion B1. However, its area of occupancy (AOO) qualifies for the Endangered category under sub-criterion B2. The 13 known subpopulations of the species correspond to nine locations (*sensu* IUCN), which falls within the limits of the Vulnerable category under condition "a" of sub-criterion B2. More than half of the taxon's range is affected by the threats mentioned.

Due to the threats, we infer a continuing decline in the extent and quality of its habitat and its AOO.

**Bibliography** – Cosiaux & al. (2019c), Couvreur (2009), Ickowitz & al. (2015), IUCN & UNEP-WCMC (2018), Potapov & al. (2012).

Authors - A. Cosiaux, T.L.P. Couvreur & R.H.J. Erkens

## \_ *Monanthotaxis orophila* (Boutique) Verdc.

(Synonym: Popowia orophila Boutique)

Red List category – Near Threatened: NT.

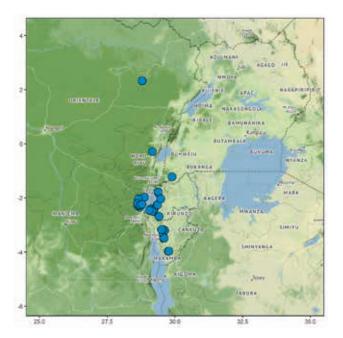
**Distribution** – Eastern parts of the Democratic Republic of the Congo, western Burundi, western and south-eastern Rwanda, and south-western Uganda. Extent of occurrence (EOO): 20,109 km²; Area of occupancy (AOO): 128 km².

**Habitat** – Upland forest; at 1,900–2,520 m. Its seed is probably dispersed by birds and/or mammals.

**Protected areas** – This species is present in three protected areas across its range: the Kahuzi-Biega National Park in DRC, the Kibira National Park in Burundi, and the Nyungwe National Park in Rwanda.

**Threats** – Apart from being present in three protected areas across its range, it also occurs in several non-protected areas where human activities have a strong impact on its upland forest habitat, particularly in Burundi. Large tracts of forest habitat ideal for the species have been lost due to conversion of land to agricultural production, intensive harvesting of wood for fire and construction, as well as conversion to pastures.

**Justification** – *Monanthotaxis orophila* is a liana or lianescent tree to 10 m long. It is represented by 48 herbarium specimens, representing 32 unique occurrences, of which a fair number were recently collected, and the species might be considered as relatively abundant. Based on the known threats, we infer a continuing decline in the number of







Monanthotaxis orophila: A, older flower and leaves (lower surface); B, young fruits. Photos by Eberhard Fisher (©), Rwanda, Kamiranzovu.

subpopulations and mature individuals, and also in the extent of occurrence (EOO) and area of occupancy (AOO). It almost qualifies for a threatened status under criterion B1; the EOO and number of locations (11) are just above the thresholds.

**Bibliography** – Boutique (1951a, 1951b), Fischer & Killmann (2008), IUCN (2017), Ntore & al. (2017a, 2018), Verdcourt (1971).

**Authors** – S. Ntore, S. Nshutiyayesu, M. Mwangoka, M. Maunder, W.R.Q. Luke, J. Kalema, C. Kabuye, R. Gereau & H.J. Beentje

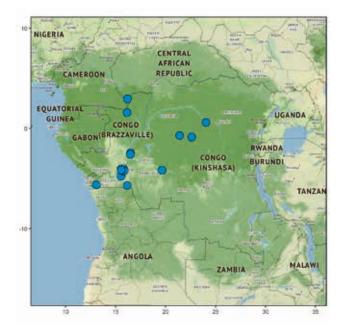
## \_ Polyceratocarpus gossweileri (Exell) Paiva

Red List category – Least Concern: LC.

**Distribution** – Angola (Cabinda), Central African Republic and Democratic Republic of the Congo. Extent of occurrence (EOO): 648,448 km²; Area of occupancy (AOO): 64 km².

Habitat - Rainforest and riverine forest.

**Protected areas** – This species is not known to occur in any protected area. There are no current conservation actions for the species.



A C

Polyceratocarpus gossweileri: A, leaves; B, detail of lower leaf surface; C, detail of petiole and leaf base, seen from below. (A-C: Harris 6164). Drawing by Rosemary Wise, Royal Botanic Garden Edinburgh (©), reproduced with permission from Harris & Wortley (2006).

**Justification** – This species is a climbing shrub or small tree. It is known from 26 herbarium specimens collected between 1919 and 2012, representing 16 unique occurrences and 11 subpopulations. It has a comparatively wide

distribution with large populations. It is not currently experiencing any major threats and no significant future threats have been identified. This species is therefore assessed as Least Concern.

**Bibliography** – BGCI (2018, 2019a, 2019b), IUCN SSC Global Tree Specialist Group (2021).

Authors - IUCN SSC Global Tree Specialist Group

#### Uvaria laurentii De Wild.

Red List category – Least Concern: LC.

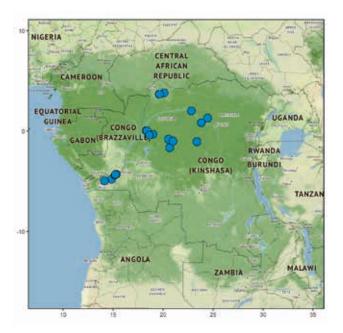
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO):  $465,327 \text{ km}^2$ ; Area of occupancy (AOO):  $84 \text{ km}^2$ .

**Habitat** – Primary forest, periodically or permanently inundated forest, swamp forest, riverine forest, shrub esobé's (small savannah or marsh surrounded by forest); at 200–635 m.

**Protected areas** – One collecting site is located in a protected area, the Salonga National Park. All other collecting sites occur outside protected areas. There are no current conservation actions for the species outside the protected areas.

**Threats** – The main threat to the suitable habitat of this species is forest conversion to agricultural land. In DRC, forest outside protected areas is threatened because of pressure of growing human populations and growing demands to extend their cultivated land. The regions where *Uvaria laurentii* occurs are no exception. The species is also threatened by urbanization; the subpopulation recorded for the surroundings of Kinshasa is most likely under severe pressure of urbanization, or even already gone. In DRC, in general, control of logging for timber or slash-and-burn agriculture leading to habitat destruction is weak.

**Justification** – *Uvaria laurentii* is a liana, scrambling shrub or small tree, and is known from 26 herbarium specimens collected between 1902 and 2010, representing 22 unique





*Uvaria laurentii:* Flower. Photo by Bart Wursten (CC-BY-NC), Democratic Republic of Congo, Equateur, Itimbiri River, near Bumba, June 2010.

occurrences and 16 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the main threat, i.e. shifting agriculture, 16 locations (sensu IUCN) can be distinguished, above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a continuing decline in extent and quality of habitat. Since the species cannot be considered as severely fragmented and the conditions for applying a threatened category under criterion B are not met, it cannot be regarded as threatened despite its low AOO.

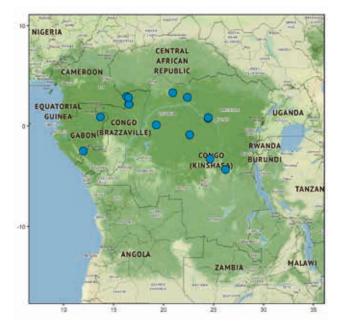
Bibliography – Boutique (1951b).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Uvariastrum germainii Boutique

Red List category – Least Concern: LC.

**Distribution** – Gabon, Republic of the Congo, Central African Republic, and Democratic Republic of the Congo.



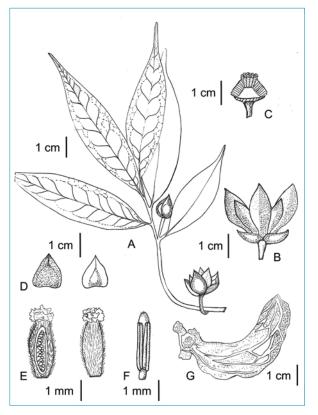
Extent of occurrence (EOO): 892,778 km<sup>2</sup>; Area of occupancy (AOO): 56 km<sup>2</sup>.

**Habitat** – *Gilbertiodendron* forests, semi-deciduous forests; at 400–900 m.

**Protected areas** – The species is known to occur in three protected areas: the Dzanga-Sangha National Park (Central African Republic), the Nouabale-Ndoki National Park (Rep. Congo) and the Yangambi Biosphere Reserve (DRC). However, in the latter it may be affected by habitat loss due to agricultural encroachment.

**Threats** – The species may be locally threatened by habitat degradation due to logging in Gabon, Rep. Congo and DRC. It may also be locally affected by habitat loss due to forest clearance for agriculture. In the Yangambi Biosphere Reserve, it may be affected by habitat loss due to agricultural encroachment.

**Justification** – *Uvariastrum germainii* is a tree growing up to 25 m tall, with a relatively wide geographic distribution across the Congo Basin. It is known from 22 herbarium specimens, collected between 1913 and 2008, representing 14 unique occurrences and 13 subpopulations. Its extent of occurrence (EOO) far exceeds the threshold of the Vulnerable category under sub-criterion B1. Its area of occupancy (AOO) appears to be limited, but this is thought to be a result of under-collecting of the species. Considering its wide EOO and the ecology of the species, a more accurate estimation of its AOO would clearly be higher than the 2,000 km², the threshold for any threatened category.



Uvariastrum germainii: A, flowering branch; B, flower; C, transverse section of flower showing carpels and stamens; D, detail of sepals; E, detail of carpels and placentation; F, stamen; G, detail of a monocarp. Drawing by Fadia, EPHE in MNHN-Palynothèque (Paris) (©), reproduced with permission from Couvreur (2014).

**Bibliography** – Cosiaux & al. (2019d), Couvreur (2014), Dauby & al. (2016), Ickowitz & al. (2015), IUCN & UNEP-WCMC (2018), Potapoy & al. (2012), WRI (2013a, 2013b, 2016).

Authors - A. Cosiaux, T.L.P. Couvreur & R.H.J. Erkens

### \_ Xylopia wilwerthii De Wild. & T.Durand

Red List category – Least Concern: LC.

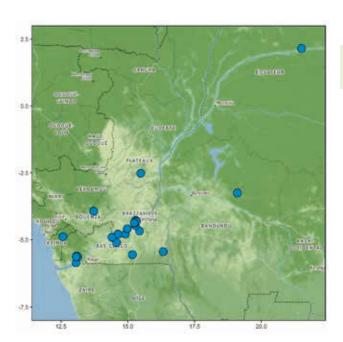
**Distribution** – Republic of the Congo, south-western part of the Democratic Republic of Congo (DRC) and Angola (Cabinda). Extent of occurrence (EOO): 279,124 km<sup>2</sup>; Area of occupancy (AOO): 92 km<sup>2</sup>.

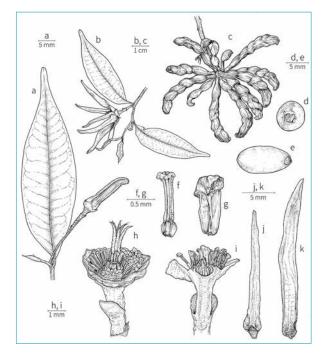
**Habitat** – Lowland forest, gallery forest and forest/savanna edges; reported to be a dominant understory species; at 400–500 m.

**Protected areas** – The species is known to occur in the UNESCO-MAB Biosphere Reserve of Luki in DRC and in the Lefini Wildlife Reserve in the Republic of Congo. It is not known to occur in any *ex situ* collection.

**Threats** – This tree is locally threatened by habitat loss/degradation due to human activities. In the Republic of Congo and DRC the species is inferred to be locally affected by habitat degradation due to logging. It is also locally threatened by habitat loss due to the expansion of urban areas (especially in and around Brazzaville and Kinshasa).

**Justification** – *Xylopia wilwerthii* is a small tree to 15 m tall, with a wide geographic distribution across the south-western part of the Congo Basin. It is known from 52 herbarium specimens collected between 1896 and 2010. These represent 26 unique occurrences. Its extent of occurrence (EOO) far exceeds the threshold for the Vulnerable category under sub-criterion B1. Its area of occupancy (AOO) is within the limits of the Endangered category under sub-criterion B2. The scale of the main threat leads to the recognition of 20 locations (*sensu* IUCN), which falls outside of the threshold for any threatened category under criterion B.





Xylopia wilwerthii: a, leaf and nearly mature flower bud; b, twig with open flower; c, fruit, side view; d, seed, view of micropylar end; e, seed, side view; f, fertile stamen, abaxial view; g, staminode, abaxial view; h, flower with petals and some stamens removed, side view; i, longitudinal section of flower, with petals removed, showing ovaries surrounded by staminal cone; j, inner petal, adaxial view; k, outer petal, adaxial view. (A, C: Carrington 7; B, F-K: Donis 2041; D, E: Trochain 9603). Drawing by Catherine Beach, Department of Botany and Microbiology, Ohio Wesleyan University (©), reproduced with permission from Johnson & Murray (2018).

**Bibliography** – Bachmann & al. (2011), Couralet (2010), IUCN and UNEP-WCMC (2020), Johnson & Murray (2018), World Resources Institute (2013b), World Resources Institute (2016).

Authors – A. Cosiaux & W. Tack

# **APOCYNACEAE**

### \_ **Hunteria densiflora** Pichon

Red List category - Endangered: EN B2ab(iii).

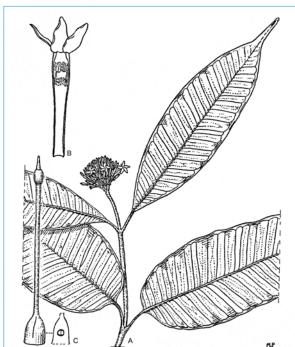
**Distribution** – Endemic to the central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 68,188 km²; Area of occupancy (AOO): 12 km².

Habitat – Semi-deciduous forest; around 500 m.

 $\mbox{\bf Protected areas}$  – All known collecting sites occur outside protected areas.

**Threats** – The main threats to the species' habitat are forest clearance for smallholder agriculture and selective logging for domestic use. At Bokata, satellite imagery shows that





Hunteria densiflora: A, flowering twig; B, corolla, longitudinal section; C, pistil, with ovary in longitudinal section. (A-C: Michelson 941). Drawing by Marcel Pichon, Muséum national d'Histoire naturelle, Paris (©), adapted and reproduced with permission from Pichon (1953).

much of the forest has been destroyed, with only small areas left. Kindu has more remaining blocks of forest, but here as well a significant amount of forest has disappeared since the 1949 and 1959 collections.

**Justification** – *Hunteria densiflora* is a medium-sized tree to 18 m tall, with a bole to 55 cm in diameter. It is known from three herbarium specimens collected between 1949 and 2004, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion

B2. Considering the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a continuing decline in extent and quality of the species' habitat.

Bibliography – Omino (1996).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

## \_ **Hunteria myriantha** Omino

Red List category - Endangered: EN B2ab(iii).

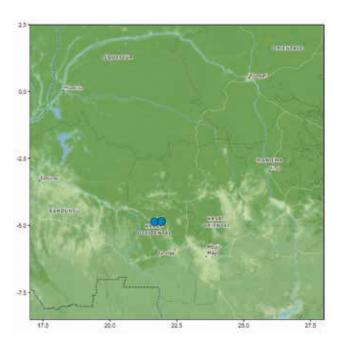
**Distribution** – Endemic to the Kasai Province, southern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

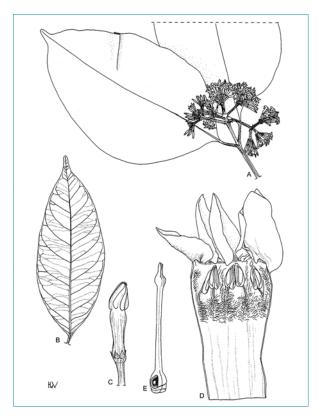
Habitat – Semi-deciduous rainforest; at around 500 m.

**Protected areas** – Both collecting sites occur in non-protected areas.

**Threats** – The main threat is forest clearing for smallholder agriculture. Satellite imagery for Kakenge shows that much forest has been converted to agricultural land, with only a small amount of forest remaining. A similar situation applies to Bena Longo.

**Justification** – *Hunteria myriantha* is a shrub or small tree to 14 m tall, with a bole to 25 cm in diameter. It is known from four herbarium specimens, collected between 1958 and 1960, which represent two distinct collecting sites 28 km apart. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of the main threat, two locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The threat to this tree is deemed to be high. Based on the information we have, it is reasonable to infer a decline in extent and quality of the species' habitat. Intensive fieldwork must be performed to search





Hunteria myriantha: A, flowering twig; B, leaf, lower surface; C, flower bud; D, corolla, opened out; E, pistil with ovary opened up. (A: Deschamps 5; B: Deschamps 242; C-E: Declercq 32). Drawing by Hans de Vries, Naturalis Biodiversity Center (©), reproduced with permission from Omino (1996).

for *Hunteria myriantha* and, if found, the species should at least be introduced into cultivation.

Bibliography - Omino (1996).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

## \_ **Voacanga pachyceras** Leeuwenb.

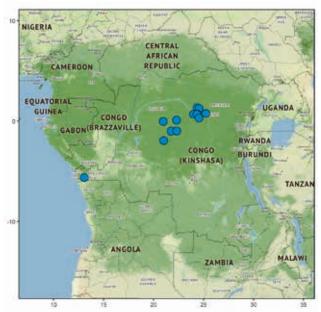
Red List category - Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 164,245 km²; Area of occupancy (AOO): 56 km².

Habitat – Swampy riverine forest; at 450–500 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

Threats – The main threat to the suitable habitat of this species is forest clearing for smallholder agriculture. Emengeye (Monkoto terr.) looks in good shape as regards this habitat, as do Loholo (Isangi), Itoko and Bokota (Bokungu); Bawi near Buta has quite some agricultural smallholder clearings. Yambuya (Banalia) and Mogandjo (Basoko) have some clearing but much forest still remains, as is the case at Bongoy (Boende), Befori (Bokungu), and Yafunga. In Yatolema (Opala) much forest has been cleared, with only a few blocks left. Lukula (Bas Congo) has most forest cleared, with only a few small areas of forest remaining.





Voacanga pachyceras: A, flowering twig; B, flower, calyx removed; C-E, calyxes, opened up, view from inside; F, part of calyx, view from inside; G, corolla tube, opened up; H, pistil; I, fruit; J, mericarp, transverse section; K, seeds, with detail of testa. (A, D, F: Maudoux 325; B, C, G-K: J. Léonard 1449; E: Évrard 5200). Drawing by Juliet Williamson, Naturalis Biodiversity Center (©), reproduced with permission from Leeuwenberg (1985).

**Justification** – *Voacanga pachyceras* is a shrub or small tree to 5 m tall. It is known from 15 herbarium specimens collected between 1906 and 1984, representing 14 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) far exceedis the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occu-

pancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The unprotected sites appear threatened by forest clearing for small-scale subsistence agriculture and we anticipate that this pressure will continue in the future. Considering the scale of the main threat, i.e. shifting agriculture, 12 different locations (sensu IUCN) can be distinguished, which is just slightly more than the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite the fact that the size of its AOO is limited. However, considering that the species is currently known from only 12 locations, close to the threshold for the Vulnerable category, and because we project a continuing decline of its habitat quality within the near future, Voacanga pachyceras is assigned a status of NT.

Bibliography - Leeuwenberg (1985).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

# ARALIACEAE

#### \_ Cussonia sessilis Lebrun

Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 40,592 km²; Area of occupancy (AOO): 32 km².

**Habitat** – Savanna and miombo woodland; at 900–1,020 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.





Cussonia sessilis: Holotype specimen at BR (Quarré 2783).

Threats – The habitat of the species is threatened by firewood extraction for domestic purposes and small-scale agriculture.

Justification – Cussonia sessilis is a small tree to 7 m tall. It is known from nine herbarium specimens collected between 1930 and 1959, representing eight unique occurrences and eight subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We predict that the human activities, which are gradually transforming the habitat of the species into a secondary vegetation, will continue in the future. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the species' habitat.

Bibliography – Bamps (1974).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

#### \_ **Polyscias kivuensis** Bamps

Red List category - Endangered: EN B2ab(iii).

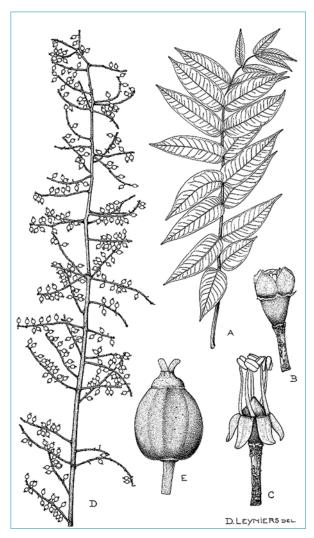
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 9,387 km²; Area of occupancy (AOO): 28 km².

**Habitat** – Dense rainforest, secondary forest and clearings; at 800–1,800 m.

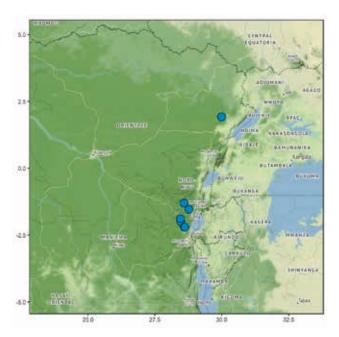
**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

Threats – The distribution of this species is quite restricted, but seems to be a pioneer of secondary forest and clearings, where it can grow very fast. The site at Mongbwalu (the most recent collection) has much artisanal mining, and there has also been civil unrest. The other collections also occur outside protected areas, where the main threat is logging; other threats are mining activities and civil unrest.

**Justification** – *Polyscias kivuensis* is a tree to 30 m tall with a trunk to 35 cm in diameter. It is known from eight herbarium specimens, collected from 1954 to 1959 and one in 2010. These represent seven unique occurrences and five subpopulations. Its extent of occurrence (EOO) falls within the



Polyscias kivuensis: A, leaf; B, young flower; C, mature flower; D, infructescence; E, fruit. (A, D, E: Pierlot 1762; B, C: Troupin 10060). Drawing by D. Leyniers, Meise Botanic Garden (©).



limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the species' main threat, i.e. logging, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that this habitat degradation will continue in the future. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the species' habitat.

Bibliography – Bamps (1974).

Authors – E. Fischer, M. Simo-Droissart & W. Tack

# ARECACEAE

#### **Raphia gentiliana** De Wild.

Red List category - Least Concern: LC.

**Distribution** – From central to northern Democratic Republic of Congo, in the Central African Republic and Angola. Extent of occurrence (EOO): 722,754 km²; Area of occupancy (AOO): 36 km².

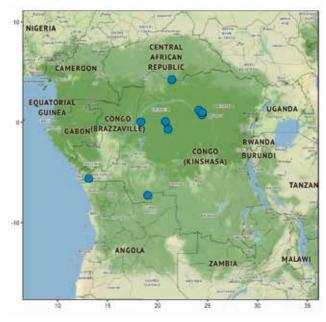
Habitat - Papyrus swamps, occasionally on dry land.

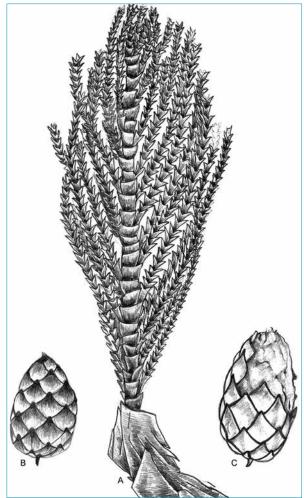
**Protected areas** – This species is not known to occur in any protected areas. However, it is known to be present in two *ex situ* conservation collections (BGCI 2016).

**Threats** – There are no major threats to this species across its large distribution range, although it is locally threatened by habitat loss.

**Justification** – *Raphia gentiliana* has relatively modest proportions, with a trunk no more than 6 m high and leaves to 10 m long. It is known from 9 herbarium specimens collected between 1912 and 1958, representing nine unique

occurrences and 8 or 9 locations. Although it is locally facing habitat loss, the overall extent of occurrence is large. However, further studies are recommended to better understand the area of occupancy (AOO) of this relatively





Raphia gentiliana: A, part of inflorescence; B, young fruit; C, mature fruit with some scales removed. (A-C: Lubini s.n. and Léonard 1612). Drawing by Dibalu, Dép. des Sciences de l'Environnement, Univ. de Kinshasa (©), reproduced with permission from Mbandu Luzolawo et al. (2020).

poorly known palm. Raphia palms are generally undercollected by researchers because they are massive plants (with large leaves and inflorescences), and hard to collect, which would imply a larger AOO and number of locations than presently obtained.

**Bibliography** – BGCI (2016), Cosiaux & al. (2018a, 2018e), Latham & Konda Ku Mbuta (2006), Mbandu Luzolawo & al. (2020), Nzuki Bakwaye & al. (2013), Otedoh (1976), Tuley (1995).

Authors - A. Cosiaux, L.M. Gardiner & T.L.P. Couvreur

## \_ **Raphia rostrata** Burret

**Red List category** – Data Deficient: DD.

**Distribution** – Cameroon, Gabon, the south-western part of the Democratic Republic of the Congo and Angola (Cabinda).

Habitat - Swampy valleys, river banks; at up to 500 m.

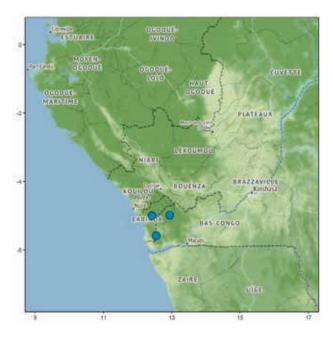
**Protected areas** – This species is not known to occur in any protected areas. There are no known conservation actions for this palm.

**Threats** – Due to the lack of available data, it is not possible to identify the potential threats to this species' survival.

**Justification** – *Raphia rostrata* is reported to be a large and vigorous palm, with leaves to 15 m in length. It is character-



Raphia rostrata: Gabon, Mitzic. Photo by Thomas Couvreur (©).



ized by abundant broad, curled, dark, ribbon-like fibres covering the leaf sheaths. The best data we currently have are insufficient to determine the conservation status. The species is known from only six herbarium specimens, collected from three sites, between 1923 and 1956, and there are no recent observations from the area. Its overall distribution remains uncertain and it presents morphological similarities with *Raphia hookeri* G.Mann & H.Wendl., which makes its taxonomic status unclear. Further research is required to better understand the taxonomic status of this palm. If it is a taxonomically distinct taxon, more research is needed to understand the species' distribution and threats. The ongoing taxonomic revision of the genus *Raphia* will provide new information on this species.

**Bibliography** – Cosiaux & al. (2018b), Mbandu Luzolawo & al. (2020), Mogue Kamga & al. (2019), Otedoh (1976), Tuley (1995).

Authors - A. Cosiaux, L.M. Gardiner & T.L.P. Couvreur

### Raphia ruwenzorica Otedoh

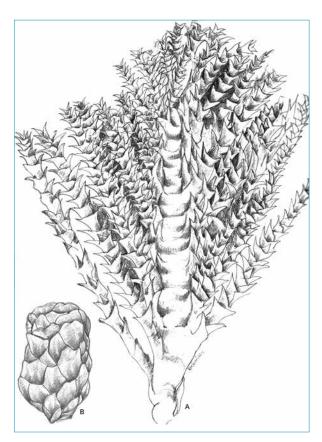
Red List category - Data Deficient: DD.

**Distribution** – The east of the Democratic Republic of the Congo (around the Lakes Edwards and Kivu) and Burundi. Its presence in Rwanda and Uganda is also reported but no herbarium specimens have been collected there. Extent of occurrence (EOO): 12,178 km²; Area of occupancy (AOO): 12 km².

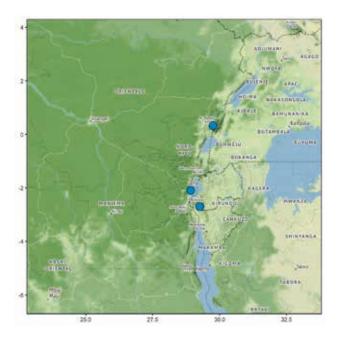
**Habitat** – Valley bottoms of high-elevation savannas, montane forest, gallery forest; at 800–1500 m.

**Protected areas** – Present in one protected area: the Virunga National Park in DRC.

**Threats** – The major threat to this species appears to be human activities in the Virunga National Park in DRC, as this National Park is currently threatened by oil exploration activities. Eighty-five percent of the Park has been awarded to an oil company for oil exploration (see: www.save-



Raphia ruwenzorica: A, part of inflorescence; B, fruit. (A, B: Robyns 4039). Drawing by Dibalu, Dép. des Sciences de l'Environnement, Univ. de Kinshasa (©), reproduced with permission from Mbandu Luzolawo et al. (2020).



virunga.com). We can infer that this palm is threatened by habitat degradation as a result of this information, although the intensity of this threat is not currently known.

**Justification** – *Raphia ruwenzorica* has a solitary trunk to 10 m high. It is a poorly known species and recent observations of this palm are missing. Only six herbarium species of this palm exist, the most recent one collected in 1983, with no recent observations. These represent three unique occurrences and three subpopulations. Its area of

occupancy appears to be very limited, but this is thought to be a result of under-collecting of the species. The overall extent of occurrence is below the Vulnerable category threshold for sub-criterion B1, and the AOO is within the limits for the Endangered category under sub-criterion B2. However, necessary data about the occurrences and their potential threats in the other areas of DRC and in Burundi are missing. Field data are urgently needed to clarify the extent of and threats to this species in the wild. With so little information it is not clear if the species is naturally range-restricted and rare, potentially threatened, or even widespread and simply under-collected. Raphia palms are generally under-collected by researchers because they are massive plants (with large leaves and inflorescences) and hard to collect, which would imply a larger AOO than calculated. Moreover, the area where the species occurs in DRC has been subject to civil war conflicts for many years which has made field surveys impossible.

**Bibliography** – Cosiaux (2018c, 2018e), Mbandu Luzolawo & al. (2020), Ntore & al. (2018), Otedoh (1976), Tuley (1995), WWF (2016).

Authors - A. Cosiaux, L.M. Gardiner & T.L.P. Couvreur

## \_ Raphia sese De Wild.

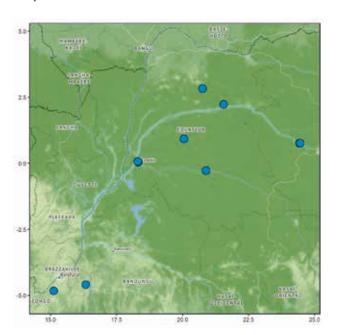
Red List category - Least Concern: LC.

**Distribution** – Through Central and north-eastern Democratic Republic of the Congo, also in the Bas-Congo Province in the south-western part of the country and in the Republic of the Congo. Extent of occurrence (EOO): 306,322 km²; Area of occupancy (AOO): 44 km².

**Habitat** – Riparian forests, swamp forests, periodically inundated forests, always near water; at 280–550 m.

**Protected areas** – The species is present in one protected area: the Yangambi Biosphere Reserve.

**Threats** – There are no major threats to this species across its distribution range, although it isy be locally threatened by habitat loss.





Raphia sese: Democratic Republic of the Congo. Photo by Suzanne Kamga Mogue (©).

**Justification** – *Raphia sese* grows up to 15 m high, with a trunk up to 9 m tall. The species is characterized by abundant broad, curled, dark, ribbon-like fibres covering the leaf sheaths. It is known from 11 herbarium specimens collected between 1900 and 1982, representing 11 unique occurrences and 9 subpopulations. Although it is locally facing habitat loss, its overall extent of occurrence is large, and the species is found in one protected area, therefore the species is listed as Least Concern. Raphia palms are generally undercollected by researchers because they are massive plants (with large leaves and inflorescences), and hard to collect, which would imply a larger AOO than calculated.

**Bibliography** – Cosiaux (2018d), Mbandu Luzolawo & al. (2020), Otedoh (1976), Tuley (1995).

Authors - A. Cosiaux, L.M. Gardiner & T.L.P. Couvreur

# ASTERACEAE

# \_ **Vernonia hochstetteri** Sch.Bip. ex Hochst. var. **kivuensis** (Humb. & Staner) C.Jeffrey

Red List category – Least Concern: LC.

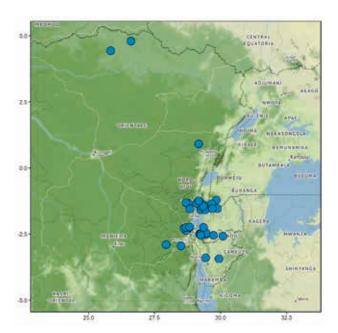
**Distribution** – Democratic Republic of the Congo, Rwanda, Burundi and Uganda. Extent of occurrence (EOO): 207,665 km²; Area of occupancy (AOO): 152 km².

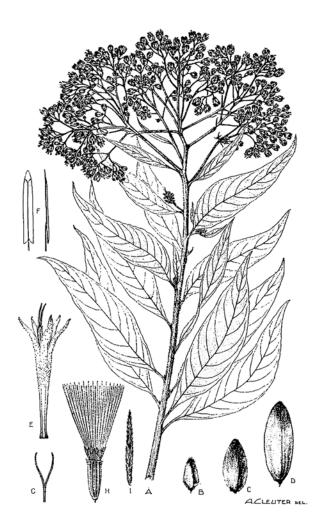
**Habitat** – Montane forest, forest with *Morella*, road sides, riverine forest, gallery forest, border of Eucalypt forest, savannah; at 700–2,450 m.

**Protected areas** – Sixteen collecting sites occur within six protected areas: the Bili-Uere Protected Area and the Muko Forest Reserve in Uganda, the Kahuzi-Biega National Park and the Virunga National Park in DRC and the Nyungwe National Park and the Volcans National Park in Rwanda. There are no current conservation actions for collecting sites occurring in unprotected sites.

Threats – A fair proportion of the occurrences are situated within protected areas and seem to be reasonably safe. The two outlier occurrences in the North are in a region with low population density and occur within an area designated as Bili-Uere, with unknown protected area status, and seem to be reasonably safe as well. The main threats are logging and subsequent habitat destruction and forest conversion to agricultural land. In DRC, where control of logging activities or slash-and-burn agriculture is generally weak, habitats outside protected areas are threatened because of pressure of growing human populations and growing demands to extend their cultivated land. In Burundi, agriculture and livestock farming have had a very high impact on natural vegetations throughout the country.

**Justification** – *Vernonia hochstetteri* var. *kivuensis* is a subshrub or small tree to 4 m tall, with a bole to 7 cm in diameter. It is known from 48 herbarium specimens





**Vernonia hochstetteri** var. **kivuensis**: A, flowering twig; B, external involucral bract, outer surface; C, median involucral bract, outer surface; D, internal involucral bract, outer surface; E, corolla and style branches; F, stamen, inner and side view; G, style branches; H, nutlet; I, pappus scale. (A-I: *de Witte 1216*). Drawn by A. Cleuter, Meise Botanic Garden (©).

collected between 1914 and 2008, representing 39 unique occurrences and 28 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the information available to us, it is reasonable to infer a decline in the extent and quality of habitat as well as in the number of mature individuals in the densely populated regions in Kivu, Rwanda and Burundi. Considering the scale of threats, 20 locations (sensu IUCN) can be distinguished, well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the taxon cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite its low AOO.

Bibliography – Chifundera (2001), IUCN & UNEP-WCMC (2018), Jeffrey & Beentje (2000), Kalanda & Lisowski (1995), Ntore & al. (2018).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# **BIGNONIACEAE**

## Stereospermum harmsianum K.Schum.

Red List category - Least Concern: LC.

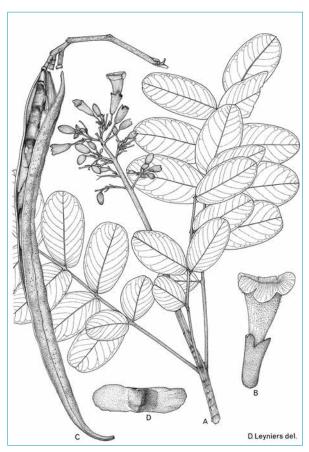
**Distribution** – Democratic Republic of the Congo, Burundi and Zambia. The species is also mentioned for Angola, but no specimen could be located to verify this. Extent of occurrence (EOO): 475,078 km²; Area of occupancy (AOO): 124 km².

Habitat - Miombo dry forest; at 600-1,400 m.

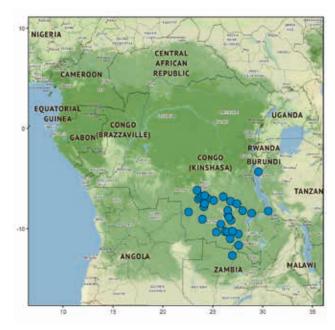
**Protected areas** – The species occurs within the Upemba and Kundelungu National Parks, where the suitable habitat is well managed.

**Threats** – Several collecting sites are located in unprotected areas where the species' habitat is mainly threatened by forest clearing for small-scale agricultural development. Notwithstanding these human activities, with varying levels of impact, the species is locally abundant.

**Justification** – *Stereospermum harmsianum* is known from 47 herbarium specimens collected between 1896 and 1986 (with the majority collected before 1960), representing 31 unique occurrences and 31 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the



Stereospermum harmsianum: A, flowering branch; B, flower; C, capsule; D, seed. (A: de Witte 3450; B: Quarré 2699; C: Vanderyst 22600; D: Thiébaud 602). Drawing by D. Leyniers, Meise Botanic Garden (©).



Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the main threat, 24 different locations (sensu IUCN) can be distinguished, well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although the habitat is under pressure, the species does not currently qualify as threatened. While we project that the human pressure will increase the loss of its habitat, we do not project any significant decline for the species within the near future. Applied research and action are needed in the future, as well as an evaluation of existing populations.

Bibliography – Figueiredo & Smith (2008), Liben (1977).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

# BORAGINACEAE

#### **\_ Cordia gilletii** De Wild.

Red List category – Endangered: EN Bıab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,370 km²; Area of occupancy (AOO): 24 km².

Habitat – Forest margins, secondary forest; at 250–600 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The species is facing threats from urbanisation (at Mbanza Ngungu and Kisantu, both large towns), charcoal burning, quarries (for cement at Yombe), and agricultural conversion at Yombe and the two aforementioned towns. This species is used for the production of charcoal,



Cordia gilletii: Herbarium specimen at BR (Callens 2006).



but according to the specimen labels, it is able to survive along the edges of fields. Intensive wood collecting to supply fuel in urban centres is an important cause of forest degradation and deforestation in the province of Bas-Congo (Atyi and Bayol 2008). Urbanisation and general development have also caused forest loss and degradation.

**Justification** – Cordia gilletii is a tree to 15 m tall. It is known from eight herbarium specimens, collected between 1900 and 2005, representing six unique occurrences and four subpopulations. Its extent of occurrence (EOO) and (AOO) both fall within the limits of the Endangered category under the sub-criteria B1 and B2. Considering the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. The Thysville subpopulation is strongly threatened by urbanization, which makes us infer a decline in EOO, AOO and number of locations. Clearance for agriculture would directly or indirectly reduce the number of mature individuals. Applied research and action is needed in the future: for instance, securing the land where the remaining subpopulations still occur, e.g. by purchasing land. Ex-situ conservation actions should be considered.

**Bibliography** – Atyi & Bayol (2008), Taton (1971), WCS (2003), Wolfire & al. (1998).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

## \_ Ehretia microcalyx Vaupel

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): inapplicable; Area of occupancy (AOO): 8 km².

Habitat - Rainforest; at 700-1,100 m.

**Protected areas** – The known occurrences are both situated outside protected areas. There are no current conservation actions for the species.

**Threats** – Habitat destruction and degradation due to intensive urbanization, land conversion to agriculture and mining activities in Irumu (Ituri) and Beni (North Kivu) are identified as the main threats. The species was collected in one of the regions of DRC with high human population densities and civil unrest.



Justification – Ehretia microcalyx is a shrub or small tree to 4 m tall. It is known from two georeferenced herbarium specimens, both collected in 1908, representing two unique occurrences and two subpopulations. Its Area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the scale of the threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. The species has not been observed for more than a century; hence field data are required to confirm its current status.

Bibliography - Taton (1971).

Authors - C. Amani, M. Simo-Droissart & W. Tack

# BURSERACEAE

### \_ Dacryodes bampsiana Pierlot

Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo, where it occurs in the North and South Kivu Provinces. Extent of occurrence (EOO): 1,543 km<sup>2</sup>; Area of occupancy (AOO): 12 km<sup>2</sup>.

**Habitat** – Lowland to montane evergreen forest; between 650 and 1,950 m.

**Protected areas** – All known collecting sites occur outside protected areas. One collecting site occurs close to the northern edge of the eastern part of Kahuzi-Biega National Park and the species might also occur within the park boundaries. There are no current conservation actions for the species.





Dacryodes bampsiana: Herbarium specimen at BR (Pierlot 3203).

Threats - In the densely populated Kivu Region, most people depend on subsistence farming for their livelihood and on forest and other natural vegetations for additional subsistence and raw materials. Furthermore, forest is cleared for large-scale oil palm plantations. The three known occurrences are in areas of severe forest fragmentation and deforestation, leading to a reduction of suitable habitat. Throughout its range, the growing human population will certainly lead to the conversion of more primary vegetation to, for example, agricultural land, so we expect a further reduction of the habitat of the species in the near future. Its presence in the Kahuzi-Biega National Park would provide a degree of protection for the species, but the species has not yet been documented there and in any case would not be a guarantee of its survival. Kahuzi-Biega National Park is under severe threat and is now designated as a UNESCO natural world heritage site in danger (https:// whc.unesco.org/en/danger/).

**Justification** – *Dacryodes bampsiana* is a tree to 26 m tall, with a bole to 70 cm in diameter. It is known from three herbarium specimens, all collected before 1957 in the Kivu Province, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, three locations (*sensu* IUCN) can

be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. These locations are strongly disturbed, resulting in habitat loss for the species. The region where *Dacryodes bampsiana* occurs is severely under-collected. Further collecting would give a better understanding of its distribution area. Observations on pollination and seed dispersal would also be useful. It would be interesting to check whether this species has edible fruits and whether it has agroforestry potential like *Dacryodes edulis*.

**Bibliography** – Onana (2008), Pierlot (1996), Verheij (2002).

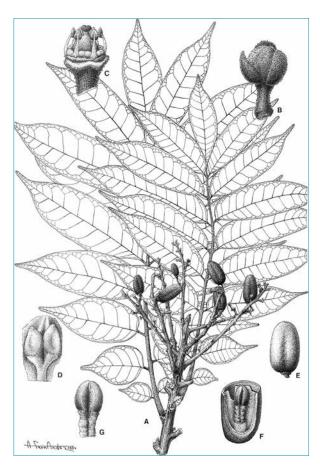
Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Pseudodacryodes leonardiana Pierlot

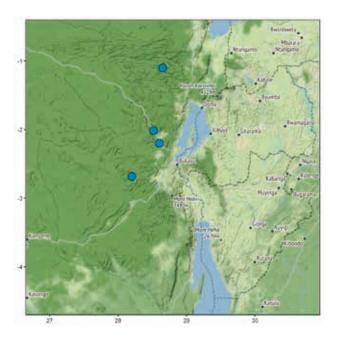
Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 2,557 km<sup>2</sup>; Area of occupancy (AOO): 16 km<sup>2</sup>.

**Habitat** – An obligate forest species; at 1,000–1,850 m. Seeds are dispersed by animals (zoochory).



Pseudodacryodes leonardiana: A, fruiting branch; B, female flower bud; C, female flower, perianth removed showing staminodes, disk and ovary; D, embryo of young fruit; E, mature fruit; F, fruit, opened to show embryo, eccentric intrusion separating the two locules and thin endocarp; G, embryo of mature fruit with 2 entire cotyledons. (A-D: Michelson 798; E-G: Pierlot 2879). Drawing by Antonio Fernandez, Meise Botanic Garden (©).



**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The threats include replacement of forest by oil palm plantations and small-holder agriculture, urbanization, mining (for gold, cassiterite), and charcoal harvesting, especially near Bitale and Bunyakiri, to supply the large city of Bukayu

**Justification** – *Pseudodacryodes leonardiana* is a tree to 21 m tall, with a bole to 55 cm in diameter. It is known from five herbarium specimens, collected between 1948 and 1959, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. The threats are gradually degrading the species' habitat. Based on the information we have, a decline in the extent and quality of the habitat is inferred.

Bibliography - Pierlot (1997).

Authors – I. Mwanga Mwanga, M. Simo-Droissart & W. Tack

# **CAPPARACEAE**

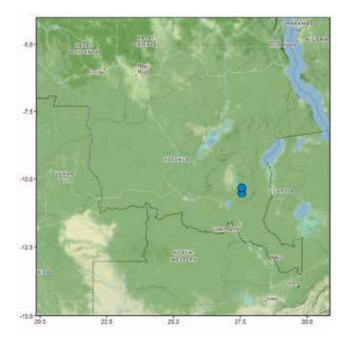
## \_ **Boscia praecox** Hauman

Red List category – Least Concern: LC.

**Distribution** – Endemic to the Katanga province in the south-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

**Habitat** – *Acacia* savanna; shade in wooded savanna; at 1,400–1,500 m.

**Protected areas** – The two collecting sites occur within the Kundelungu National Park, in an area that is well managed.





Boscia praecox: Holotype specimen at BR (Duvigneaux 1263).

**Threats** – The species is only known from the well-protected Kundelungu National Park. The effectiveness of this protection determines the level of safety of the species in this protected area. Threats of settlement, cultivation and mining have been reported within the Upemba-Kundelungu complex, but mainly in the wetland systems where *Boscia preacox* does not occur.

**Justification** – *Boscia praecox* is a shrub or small tree, known from three herbarium specimens, collected between 1899 and 1948, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. In the absence of a known threat, no locations (*sensu* IUCN) can be defined, although *Boscia praecox* depends on continued conservation efforts for its non-threatened status.

Bibliography – Cotterill (2005), Hauman & Wilczek (1951).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

### \_ Capparis pseudocerasifera Hauman

Red List category - Data Deficient: DD.

**Distribution** – Only known from Lukafu, Kasenga Territory of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat - On termite hills; at around 930 m.

**Protected areas** – The only known collecting site occurs in a well-managed part of the Kundelungu National Park. This is a well-surveyed and easily accessible area.

**Threats** – Threats of settlement, cultivation and mining have been reported within the Upemba-Kundelungu complex, but mainly in the wetland systems. This species grows on termite mounds in savanna habitats and is therefore not immediately threatened.





Capparis pseudocerasifera: Holotype specimen at BR (Verdick 203).

**Justification** – *Capparis pseudocerasifera* is a shrub or small tree, only known from the type specimen collected in 1899 in Lukafu, Katanga Province, Kasenga Territory of the Democratic Republic of the Congo, representing one subpopulation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under subcriterion B2. Since the only known subpopulation falls within the well-protected Kundelungu National Park, no threat can be defined and hence no locations distinguished. This would lead to an assessment as LC, with the survival of the species depending on the conservation efforts within the protected area. As this species is known from a single record of 120 years ago and no other collections have been made in this well-surveyed area since then, doubts remain about the status of this species: is it extinct? Surveys of Katanga's biodiversity have been sporadic and patchy, but by far the greatest effort has been devoted to the nearby Upemba National Park and its surroundings. It is peculiar that there is only a single, very old collection. A survey to search for the species in the National Park and its surroundings is recommended.

**Bibliography** – Broadley & Cotterill (2004), Cotterill (2005), Hauman & Wilczek (1951).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

#### \_ **Maerua homblei** De Wild.

**Red List category** – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – South-eastern Democratic Republic of the Congo and northern Zambia. Extent of occurrence (EOO): 12,394 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

**Habitat** – Miombo woodland, termite hills; at 1,175–1,330 m.

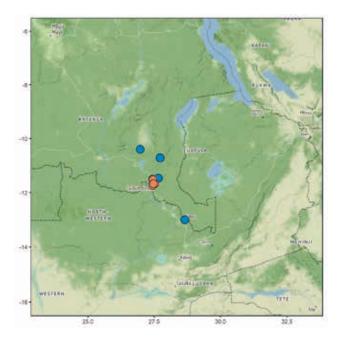
**Protected areas** – The species occurs within the Kundelungu National Park. The other collecting sites occur in unprotected areas where there are no current conservation actions for the species.



Maerua homblei: Type specimen at BR (Homblé 140).



**Maerua homblei**: Fruiting twig. Sactuaire Mikembe, 30 km N. of Lubumbashi, Haut-Katanga, DRCongo. Photo by Michel Hasson (©).



Threats – A number of collecting sites around Lubumbashi were discarded prior to EOO/AOO computation because of total destruction of suitable habitat: e.g. Keyberg, Katuba and Marie-Jose (urbanisation) and Luiswishi (mining). Some areas, such as Penga Penga, suffer from copper smelting - toxic smoke (industrial pollution: acid rain), with no vegetation left at all. In the Lubumbashi area, bricks are made from termite mounds and extensive firewood collecting takes place to feed the brick kilns. There are two remaining sites to be considered near Lubumbashi, separated by some 40 km, but under the same threat of wood harvesting for the enormous city and hence represent a single location. In Kundelungu N.P. the habitat is not under threat.

**Justification** – Maerua homblei is a shrub or small tree to 5 m tall. It is known from 20 herbarium specimens, collected between 1912 and 2014, of which 14 have been discarded prior to the assessment because they occur in a region where the natural vegetation has been completely destroyed (around Lubumbashi). The six remaining collections (the most recent one from 2014) represent five unique occurrences and five subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Four of the five collecting sites occur in unprotected sites that are subject to urbanisation, shifting agriculture for subsistence, mining activities and selective logging. Considering the scale of these threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Because of these threats, some collecting sites and subpopulations have already disappeared. We project that this habitat degradation will continue in the future, resulting in a continuing decline in EOO, AOO, number of subpopulations/locations and number of mature individuals.

Bibliography – Hauman & Wilczek (1951), Meerts (2016). Authors – P. Kamau, M. Simo-Droissart & W. Tack

## \_ **Maerua robynsii** R.Wilczek

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): 25,114 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

Habitat – Termite mounds in savanna; at 1,250–1,480 m.

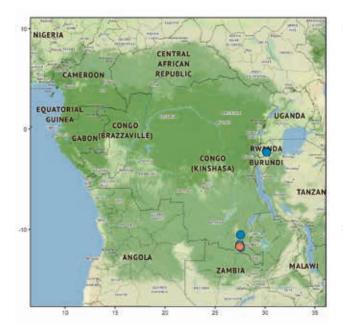
**Protected areas** – One collecting point occurs within the well-managed Kundelungu National Park. There are no current conservation actions for the four other extant occurrences.

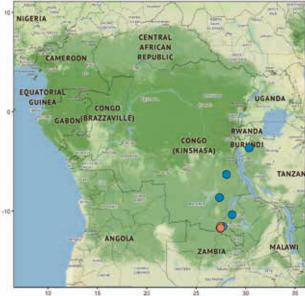
Threats – Bugesera (Rwanda) is the site of the new airport, where a substantial area of its habitat may have been damaged or completely destroyed. It is possible that the species has disappeared within Rwanda, but we are not entirely sure of this. The other main threat, in the south, is around the Lubumbashi area, where urbanization, harvest of termite hill clay for bricks, and wood harvesting for kilns is impacting the habitat and probably the species. Kafubu (Catholic mission) has some vegetation left. Kundelungu: Lukafu is within the park and reasonably well protected.

**Justification** – *Maerua robynsii* is a shrub or small tree to 4 m tall. It is known from seven herbarium specimens collected between 1939 and 1959, of which one has been discarded prior to the assessment due to habitat loss (Mont Mukwene, Lubumbashi). The remaining six collections represent five unique occurrences and four subpopulations.



Maerua robynsii: Type specimen at BR (Robyns 1627).





The extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer that the threats causing loss of habitat will continue in the future. Considering the fact that the Lubumbashi subpopulation is already gone, we can infer a past decline in EOO, AOO, number of subpopulations/locations and number of mature individuals. Moreover, the subpopulation in Rwanda may already have disappeared. Research on the species' association with termite mounds should be conducted.

Bibliography - Hauman & Wilczek (1951).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

## \_ **Ritchiea quarrei** R.Wilczek

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo and Burundi. Extent of occurrence (EOO):  $114,336 \, \mathrm{km^2}$ ; Area of occupancy (AOO):  $24 \, \mathrm{km^2}$ .

**Habitat** – Termite mounds on the edge of gallery forests and in dense, dry forest; at 850–1,210 m.

**Protected areas** – All known collecting points occur outside protected areas. There are no current conservation actions for the species.

Threats – A number of collecting sites around Lubumbashi were discarded prior to EOO/AOO computation because of total vegetation destruction: e.g. Keyberg (urbanization) and Luiswishi (mining). In the remaining sites the habitat is threatened by tree cutting, wood harvesting, and collection of termite clay to be used for bricks. Near Kasenga agricultural expansion and charcoal production take pace, but some natural vegetation remains. In the Nyunzu



Ritchiea quarrei: Type specimen at BR (Quarré 5166).

territory clearing for agriculture is continuing. At Mosso and Kinyinya the population is growing and the vegetation is not in good condition due to agricultural expansion and cattle herding.

**Justification** – *Ritchiea quarrei* is a shrub or small tree to 4.5 m tall. It is known from seventeen herbarium specimens

collected between 1933 and 2012, of which ten have been discarded prior to the assessment due to habitat loss (around Lubumbashi). The remaining seven collections represent six unique occurrences and six subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The main threats to the species are urbanization, shifting agriculture, small-scale timber exploitation, charcoal production and cattle herding, which are degrading the species' habitat. Based on the scale of these threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that the degradation of the species' habitat will continue in the future. The expected loss of habitat has already led and will lead to a further decline in the EOO, AOO, number of subpopulations/ locations and number of mature individuals of the species, especially as some of the collecting sites around Lubumbashi and Luiswishi have already disappeared. Studies on its regeneration potential are needed.

Bibliography – Hauman & Wilczek (1951).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

# **CELASTRACEAE**

#### \_ Salacia ndakala R.Wilczek

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 198 km²; Area of occupancy (AOO): 12 km².





Salacia ndakala: Herbarium specimen at BR (Troupin 4675).

**Habitat** – Evergreen, mid-elevation forests, rainforests, dry secondary forests; at 900–1,350 m.

**Protected areas** – The three extant collecting sites occur in non-protected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the species' habitat is forest clearing for agricultural expansion, followed by habitat loss due to selective logging and charcoal production.

**Justification** – Salacia ndakala is a small tree to 8 m tall. It is known from 14 herbarium collections, of which 11 have been discarded prior to the assessment because they occur in a region where the natural vegetation has been completely destroyed (Irangi forest, now a vast oil palm plantation). The three remaining collections (the most recent one in 1959) represent three unique occurrences and two subpopulations. The extent of occurrence (EOO) and area of occupancy (AOO) both fall within the limits of the Endangered category under sub-criteria B1 and B2. Considering the scale of the main threat, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. The threat activities are gradually transforming the species' habitat, and we project that this degradation will continue in the future. The disappearance of the subpopulation in Irangi has led to a decrease in the number of locations/subpopulations and in the number of mature individuals, as well as a significant decrease in EOO and AOO.

# **CHRYSOBALANACEAE**

## \_ **Dactyladenia sapinii** (De Wild.) Prance & F.White

(Synonym: Acioa sapinii De Wild.)

Red List category – Critically Endangered: CR B2ab(iii,v).

**Distribution** – Endemic to the Democratic Republic of the Congo (Bandundu Province). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat – Gallery forest; at around 500 m.

**Protected areas** – The only known collecting point occurs in an unprotected area.

**Threats** – The main threats to the species' habitat are urbanization, charcoal production and shifting agriculture for subsistence.

**Justification** – *Dactyladenia sapinii* is a tree of unknown size, only known from the type collection, made in 1907. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2.



Dactyladenia sapinii: Holotype specimen at BR (Sapin s.n.).



The habitat of *Dactyladenia sapinii* is probably gallery forest as it is the only forest type occurring around the type locality. Considering the main threat, one location (*sensu* IUCN) can be distinguished, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. As the only occurrence is near a small city (Malodi-Mukedi), the quality of its habitat is likely to have declined and will continue to decline in the near future due to forest cover loss for charcoal production. This will lead to a decline in the number of mature individuals.

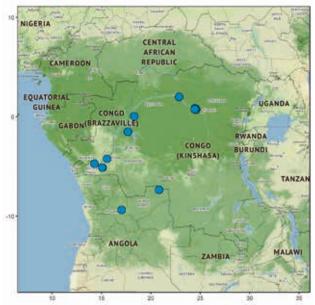
Bibliography - Hauman (1952).

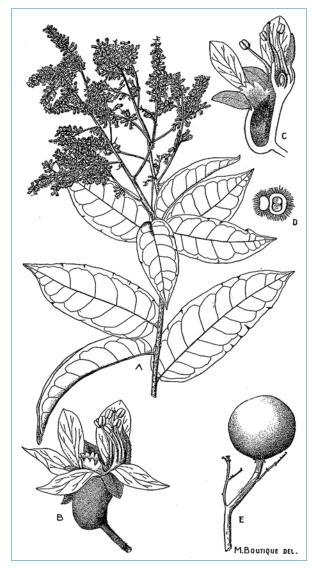
**Authors** – G. Dauby, M. Simo-Droissart & W. Tack

### \_ Magnistipula butayei De Wild. subsp. butayei

**Red List category** – Near Threatened: NT.

**Distribution** – Democratic Republic of the Congo and Angola. Extent of occurrence (EOO): 753,121 km²; Area of occupancy (AOO): 64 km².





Magnistipula butayei: A, flowering branch; B, mature flower; C, flower, longitudinal section; D, pistil, transverse section; E, drupe. (A: Corbisier 1357; B-D: Donis 2980; E: Louis 16861). Drawing by M. Boutique, Meise Botanic Garden (©).

**Habitat** – Primary forests, periodically inundated forests, riverine forests, forest dominated by *Gilbertiodendron dewevrei*, secondary forests; at 300–600 m.

**Protected areas** – Seven of the 16 unique occurrences are located within the Yangambi Biosphere Reserve in DRC. There are no current conservation actions for this taxon outside this protected area.

**Threats** – The main threat to this taxon is the destruction of its habitat by logging and forest conversion to agricultural land. In DRC, forest outside protected areas is threatened because of pressure of rapidly growing human populations and growing demands to extend their cultivated land. The regions where *Magnistipula butayei* subsp. *butayei* occurs are no exception. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak. Within the Yangambi Biosphere Reserve protection is not effective.

**Justification** – *Magnistipula butayei* subsp. *butayei* is a medium-sized tree to 20 m tall and is known from 33 herbarium specimens collected between 1900 and 2013,

representing 16 unique occurrences and 9 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 12 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the taxon. Since the taxon cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite its low AOO. However, the taxon is currently known from 12 locations, a number very close to 10 (the upper limit for a threat status), and four of these locations occur in the Yangambi Biosphere Reserve where the habitat is not very well protected.

**Bibliography** – Champluvier (1990), Texier & Mayaux (2014), White (1976).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# \_ *Magnistipula butayei* De Wild. subsp. *glabriu-scula* (Hauman) Champl.

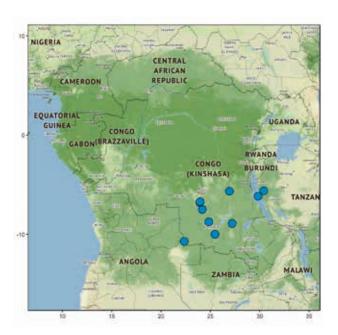
(Synonym: Hirtella bangweolensis (R.E.Fr.) Greenway var. glabriuscula Hauman)

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Democratic Republic of the Congo and Tanzania. Extent of occurrence (EOO): 243,603 km²; Area of occupancy (AOO): 40 km².

 ${f Habitat}$  – Gallery forests, swamp forests; at 800–1,800 m.

**Protected areas** – Two collecting points occur within protected areas and seem to be fairly well protected. These protected areas are the Upemba National Park (DRC) and the Mahale Mountains National Park (Tanzania). There are no current conservation actions in-place for the taxon in unprotected sites.



**Threats** – The main threat is forest conversion to agricultural land. In RDC, forest outside protected areas is threatened because of pressure of growing human populations and growing demands to extend their cultivated land. The majority of localities are located in heavily populated regions where much of the original forest has disappeared. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak.

Justification – Magnistipula butayei subsp. glabriuscula is a fairly small tree to 20 m tall and is known from 13 georeferenced herbarium specimens collected between 1934 and 1958, representing 10 unique occurrences and 10 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Although this taxon occurs in gallery forest, which is often left standing even in regions where human activities have destroyed the original vegetation, the quality of its habitat will have greatly decreased. We expect that this habitat degradation will continue in the future. Despite known collecting efforts in the broader region of the south-eastern part of the DRC, it has not been collected since 1958, indicating that this taxon is probably rare, or has become rarer. The risk of local extinction therefore seems high.

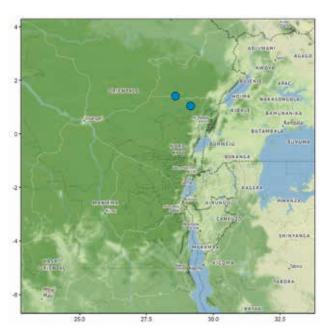
**Bibliography** – Champluvier (1990), Texier & Mayaux (2014), White (1976).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# \_ *Magnistipula butayei* De Wild. subsp. *ituriensis* Champl.

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the north-eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².





*Magnistipula butayei* subsp. *ituriensis*: Holotype specimen at BR (*T. Hart* 824).

**Habitat** – Mixed primary forest, swamp forest; at around 750 m.

**Protected areas** – One collecting site occurs within the Okapi Wildlife Reserve. There are no current conservations actions for this taxon outside this protected area.

**Threats** – The main threat to this taxon is the destruction of its habitat by logging and forest conversion to agricultural land. One of the collecting sites lies within a protected area and seems to be fairly well protected. The other, however, occurs in a heavily populated region between Beni and Irumu in the north-eastern part of the DRC, where much of the original forest has disappeared. This taxon occurs scattered, hence not in dense populations, and therefore local extinction risk seems high.

**Justification** – Magnistipula butayei subsp. ituriensis was described in 1990, is a fairly large tree, possibly to 45 m tall, and is known from four georeferenced herbarium specimens collected between 1943 and 1989 representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the scale of the threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat.

**Bibliography** – Champluvier (1990), Texier & Mayaux (2014), White (1976).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# \_ *Magnistipula butayei* De Wild. subsp. *montana* (Hauman) F.White

Red List category - Vulnerable: VU B2ab(iii).

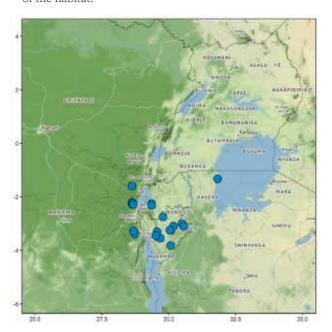
**Distribution** – Democratic Republic of the Congo, Burundi, Rwanda and Tanzania. Extent of occurrence (EOO): 61,523 km²; Area of occupancy (AOO): 230 km².

**Habitat** – Montane forests, swamp forests; at 1,140–2,550 m.

**Protected areas** – Three occurrences are situated within two protected areas: Nyungwe National Park in Rwanda and Ruvubu National Park in Burundi.

**Threats** – In Burundi, general threats are agriculture and firewood collecting. In Central Burundi, especially in sites such as Gitega and Mwishanga and Karuzi, all forest has disappeared. In Rwanda, outside protected areas, the land is densely populated with intense agriculture activities. In Tanzania, although the single collecting site is not very precisely located, it is in the vicinity of the large, spreading urban centre of Bukoba and therefore very probably threatened by urbanization.

**Justification** – *Magnistipula butayei* subsp. *montana* is a medium-sized tree to 30 m tall and is known from 23 georeferenced herbarium specimens collected between 1947 and 1980, representing 23 unique occurrences. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, while the area of occupancy falls within the limits of the Vulnerable category under sub-criterion B2. Relative to the main threat, the number of locations is 6 or 7, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat.



**Bibliography** – Gereau & al. (2019a), Graham (1960), Hauman (1952), White (1976).

**Authors** – R. Gereau, C. Kabuye, W.R.Q. Luke, S. Nshuti-yayesu, S. Ntore & H.J. Beentje

# \_ **Magnistipula butayei** De Wild. subsp. **youngii** (Mendes) F.White

(Synonym: Magnistipula youngii Mendes)

Red List category – Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo and Angola. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Gallery forests; at 800–1,000 m.

**Protected areas** – The two known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.



**Threats** – The threats to the taxon are forest conversion to agricultural land. Both collecting sites are situated in an area with high agricultural activity, where much of the original vegetation has disappeared. This taxon occurs scattered, hence not in dense populations, and therefore local extinction risk seems high.

**Justification** – *Magnistipula butayei* subsp. *youngii* is a shrub or small tree to 4 m tall that was described in 1960. It is known from two georeferenced herbarium specimens collected in 1932 and 1955, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Both localities are situated in populated regions, where much of the original vegetation has disappeared. Based on the scale of the threats, two locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. In fact, we suspect that the location of Angola is gone, but this needs confirmation. Based on the

information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the taxon and to suspect a decline in its AOO, number of locations/ subpopulations and number of mature individuals.

**Bibliography** – Champluvier (1990), Texier & Mayaux (2014), White (1976).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# **CLUSIACEAE**

#### \_ Allanblackia kimbiliensis Spirlet

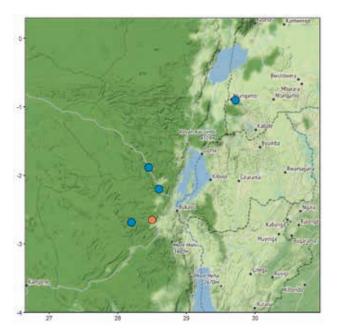
Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Eastern Democratic Republic of the Congo and south-western Uganda. Extent of occurrence (EOO): 4,726 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Primary montane forests, rainforest on steep rocky gorge slopes, forest clearings along roads; at 1,250–1,800 m.

**Protected areas** – One collecting point occurs within the Bwindi Impenetrable National Park in Uganda.

Threats – One threat is selective logging, since one herbarium specimen mentions it was collected in a timber concession. Another threat is forest conversion to agricultural land. The region in DRC where Allanblackia kimbiliensis has been collected, around the Kahuzi-Biega National Park, is known for its high population density, while, additionally, refugee camps have been installed. Here, the human population puts high demands on the natural vegetation in terms of fire wood collecting and conversion of forest to agricultural land. Furthermore, the eastern part of DRC is suffering from a civil war. The presence of armed groups leads to a lack of security and instability, making the region vulnerable to illegal logging and habitat destruction.





Allanblackia kimbiliensis: Type specimen at BR (Michelson 766).



Allanblackia kimbiliensis: A, Disk; B, stamen bundle, inner and outer view. (A, B: Lebrun 5302). Drawing by D. Leyniers, Meise Botanic Garden (©).

Justification – Allanblackia kimbiliensis was assessed as Least Concern by Kalema & Beentje (2012), but this assessment was not published on the Red List website. It is a forest tree to 36 m tall and is known from six herbarium collections made between 1932 and 1998, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Based on the scale of threats, four locations (sensu IUCN 2019) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. South Uganda and the Kivu area are relatively well collected, meaning that it is probably quite a

rare species and local extinction risk seems high. In Uganda, only a single individual could be found after an extensive survey in 2016, indicating that the subpopulation size is very small. In DRC, three specimens were collected just outside the Kahuzi-Biega National Park. One of the specimens from DRC was collected in a timber concession and it is likely that this subpopulation has already disappeared or has at least suffered from that activity. From the above, it is reasonable to infer a decline in the extent and quality of the habitat.

**Bibliography** – Bamps (1970), Bamps & al. (1978), Kalema & Beentje (2012), UNESCO & World Heritage Convention (2018).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Allanblackia kisonghi Vermoesen

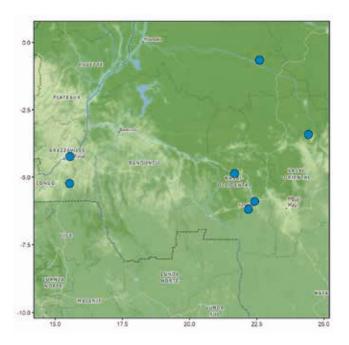
Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 340,318 km²; Area of occupancy (AOO): 28 km².

**Habitat** – Primary forest, semi-deciduous forest and dry forest on sandy soil; at 300–675 m.

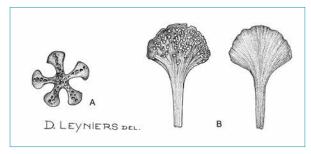
**Protected areas** – One subpopulation is present in the Réserve naturelle de Sankuru.

Threats – The species is threatened by urbanization and logging. Other threats are forest conversion to urban and agricultural land. Notably the two westernmost collecting sites are from regions with high population density and high pressure on the natural vegetation in terms of conversion of forest to agricultural land and fire wood collecting. Actually, the site near Kinshasa has probably no natural vegetation left. In the Réserve naturelle de Sankuru, the level of protection seems to be weak. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak.





Allanblackia kisonghi: A, Disk; B, stamen bundle, inner and outer view. (A, B: Corbisier-Baland 1412). Drawing by D. Leyniers, Meise Botanic Garden (©).



**Allanblackia kisonghi**: Herbarium specimen at BR (Évrard 5253).

**Justification** – *Allanblackia kisonghi* is a forest tree to 36 m tall and known from ten herbarium specimens collected between 1911 and 1958, representing seven unique occurrences and seven subpopulations. Its extent of occurrence (EOO) exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, seven locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. The species is scattered and rare and has not been reported for 63 years. From the above, and based on the anticipated disappearance of the collect-

ing site from Kinshasa, it is reasonable to infer a decline in EOO, AOO, extent and quality of habitat, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Bamps (1970), Orwa & al. (2009), UNEP-WCMC (2021).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### Allanblackia marienii Staner

Red List category - Near Threatened: NT.

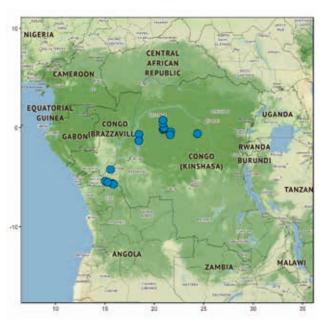
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 273,068 km²; Area of occupancy (AOO): 60 km².

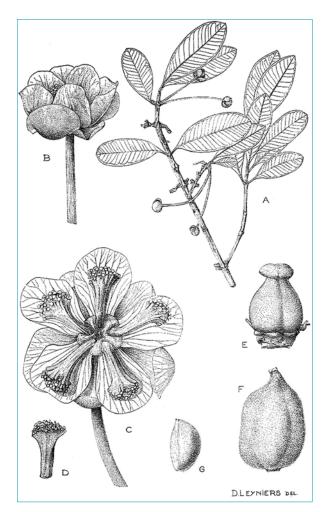
**Habitat** – Swamp forest, riverine forest, gallery forest, inundated forest; at 325–800 m.

**Protected areas** – None of the known collecting sites is situated within a protected area.

**Threats** – The main threats are small scale logging for timber and forest conversion to agricultural land. In DRC, forest outside protected areas is threatened because of pressure of growing human populations and growing demands to extend their cultivated land and charcoal production for domestic uses are the main threats to the species. The regions where *Allanblackia marienii* occurs are no exception, but the one close to Kinshasa and the others in the Bas-Congo region are probably most subject to these threats. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak.

**Justification** – *Allanblackia marienii* is a forest tree up to 25 m tall, known from 16 herbarium specimens collected between 1930 and 1982, representing 15 unique occurrences and 15 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, 12 locations (*sensu* IUCN) can be distinguished, which is slightly above the upper limit of the Vulnerable category under condition





Allanblackia marienii: A, flowering branch; B, male flower; C, idem, spread out; D, staminal bundle, outer view; E, female flower, pistil; F, fruit. G, seed. (A-D: Lebrun 1377; E: Évrard 3212; F, G: Germain 5109). Drawing by D. Leyniers, Meise Botanic Garden (©).

'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in extent and quality of habitat. We also project a decline in the number of occurrences, notably in the Bas-Congo region, that will lead to a future decline in EOO, AOO, subpopulations, and number of mature individuals. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite the fact that its AOO is limited. However, the species is currently known from only 12 locations, a number very close to 10 (the upper limit for the Vulnerable category), and the subpopulation close to Kinshasa might disappear in a near future.

**Bibliography** – Bamps (1970), Texier & Mayaux (2014). **Authors** – M.S.M. Sosef, M. Simo-Droissart & W. Tack

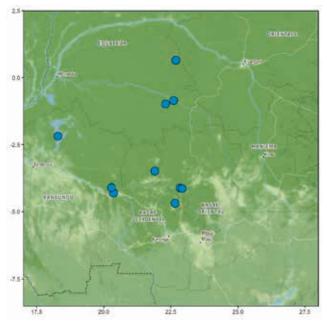
### \_ **Garcinia lujae** De Wild.

Red List category – Vulnerable: VU B2ab(iii).

 $\begin{array}{l} \textbf{Distribution} - \text{Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 177,002 km²; Area of occupancy (AOO): 40 km². \end{array}$ 

**Habitat** – Primary forest, semi-deciduous rainforest, swamp forest, forest dominated by *Gilbertiodendron*; at 320–550 m.

**Protected areas** – Except for the occurrence in REDD++ Lac Maï Ndombe Carbon Concession, where the species seems to be well protected, all collecting sites occur outside





Garcinia lujae: Holotype specimen at BR (Luja 263).

protected areas. There are no current conservation actions for the species outside that Concession.

**Threats** – The main threat is forest conversion to agricultural land. In DRC, forest outside protected areas is threatened because of pressure of fast-growing human population and growing demands for fire wood and to extend their cultivated land. The regions where *Garcinia lujae* occurs are no exception. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak. The species is rare, and therefore local extinction risk seems high, as well as loss of local genetic variation.

**Justification** – *Garcinia lujae* is a small tree to 15 m tall known from ten herbarium specimens collected between 1899 and 2012, representing ten unique occurrences and nine subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the main threats, nine locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in extent and quality of the species' habitat.

**Bibliography** – Bamps (1970), Bamps & al. (1978), UNESCO & World Heritage Convention (2018).

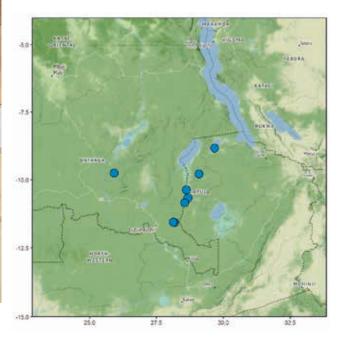
Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Garcinia robsoniana Bamps

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Democratic Republic of the Congo and Zambia. Extent of occurrence (EOO): 54,139 km²; Area of occupancy (AOO): 32 km².

**Habitat** – Gallery forest, steep slopes, often in water; at 900–1,100 m. It is common in the riverbed of the Luapula river and its tributaries.





Garcinia robsoniana: A, fruiting branch; B, male flower; C, stamen; D, female flower; E, fruit. (A, E: Schmitz 6686; B, C: R.E. Fries 546; D: Tyrer 331). Drawing by D. Leyniers, Meise Botanic Garden (©).

**Protected areas** – Except for the subpopulation in Kaputa Game Management Area (Zambia), all collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threats are the collection of firewood and agriculture. In addition, mining would affect the water level in the streams and cause pollution. In general, control of logging activities or slash-and-burn agriculture leading to habitat destruction in DRC is weak.

**Justification** – *Garcinia robsoniana* is a small evergreen tree to 9 m tall, known from ten herbarium specimens collected between 1911 and 2014. These represent eight unique occurrences and seven subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The scale of the threats leads to the recognition of six locations (*sensu* IUCN), which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in the extent and quality of the habitat.

**Bibliography** – Bamps (1970), Mewerts & Hasson (2016), Robson (1960).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Harungana montana Spirlet

Red List category – Vulnerable: VU B1ab(iii,v)+2ab(iii,v).

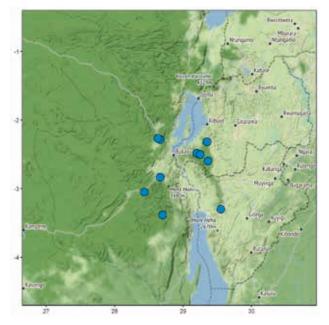
**Distribution** – Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 13,104 km²; Area of occupancy (AOO): 90 km².

**Habitat** – Montane rainforest; at 2,000–2,300 m. Its seed is eaten by brids and dispersed over long distances (endo-ornithochory).

**Protected areas** – Three of the collecting sites fall within protected areas (Nyungwe National Park in Rwanda, Kibira National Park in Burundi and Kahuzi-Biega National Park in DRC).

**Threats** – Outside protected areas, the rainforest habitat is being lost and degraded by human activities. The loss of forest habitat through conversion of land for agricultural use and logging operations is the main threat.

**Justification** – *Harungana montana* is a tree to 20 m tall. The species is known from 13 herbarium specimens, of which the most recent one was collected in 1999. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, while the area of





**Harungana montana**: Young infructescence. Kamiranzovu Swamp, Rwanda. Photo by Eberhard Fischer (©).

occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the main threat, six to seven locations (*sensu* IUCN) can be defined, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above observations, we infer a future decline in extent and quality of the habitat, and number of mature individuals.

Bibliography - Bamps (1970), Ntore & al. (2019a).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### Lebrunia bushaie Staner

Red List category – Vulnerable: VU B1ab(ii,iii,v)+2ab (ii,iii,v).

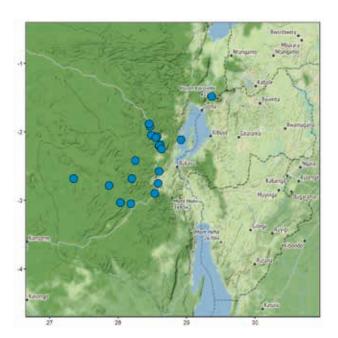
**Distribution** – Endemic to the Albertine Rift Valley, in the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 11,105 km<sup>2</sup>; Area of occupancy (AOO): 130 km<sup>2</sup>.

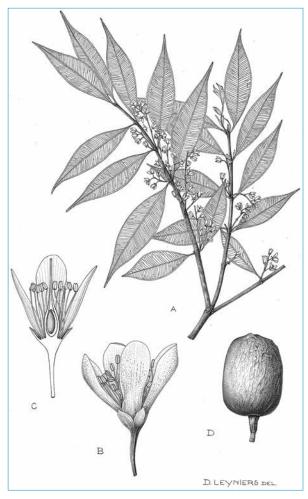
**Habitat** – A dominant tree in tropical lowland and montane rainforest; at 700–2,000 m elevation.

**Protected areas** – All except one collecting site occur outside of protected areas. One collecting site is located within the Itombwe Natural Reserve (a new protected area).

Threats – Mining for coltan (often illegal), gold and tin, expanding agricultural activities and settlement expansion are all threats to this species along with logging. Military activities in the area also have impacts on the habitat. Even within the Itombwe Natural Reserve (a new protected area), it is not well protected because of military activity. There are gold mining and settlements within the protected area.

**Justification** – *Lebrunia bushaie* is a tree to 30 m tall. The extent of occurrence (EOO) is within the threshold values for Vulnerable under sub-criterion B1, and the area of occupancy (AOO) is within the thresholds for the Endangered category under sub-criterion B2. Relative to the main threat,





Lebrunia bushaie: A, flowering branch; B, flower; C, idem, longitudinal section; D, fruit. (A-C: Michelson 794; D: Pierlot 764). Drawing by D. Leyniers, Meise Botanic Garden (©).

it is known from eight locations (*sensu* IUCN) and there is a continuing decline in the AOO, extent and quality of the habitat, and number of mature individuals due to a variety of threats. Efforts are required to monitor and protect this species. If it becomes a target for commercial harvesting it could very quickly disappear.

**Bibliography** – Bamps (1970), IUCN SSC East African Plants Red List Authority (2013a).

**Authors** – IUCN SSC East African Plants Red List Authority

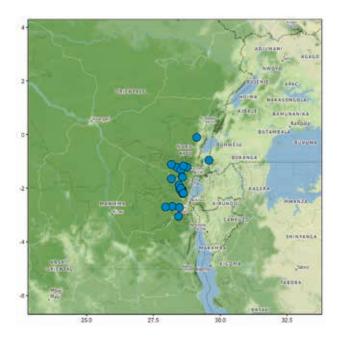
#### \_ **Pentadesma lebrunii** Staner

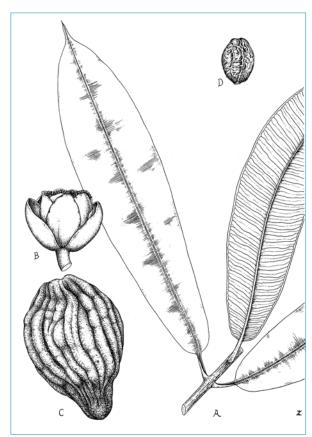
Red List category – Vulnerable: VU B2ab(ii,iii,v).

**Distribution** – Endemic to the Albertine Rift Valley, in the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 20,922 km²; Area of occupancy (AOO): 100 km².

 ${f Habitat}$  – A dominant tree of tropical lowland and montane rainforest, often in association with *Lebrunia bushaie*; at 700–2,000 m.

**Protected areas** – Recorded from the Itombwe Natural Reserve (a new protected area). The species may also occur in the Virunga National Park.





Pentadesma lebrunii: A, leafy branch; B, flower; C, berry; D, seed. (A: Troupin 3691B: Ghesquiere 6661; C-D: Lebrun 5612). Drawing by Ike Zewald, Naturalis Biodiversity Center (©), reproduced with permission from van Meer (1965).

Threats – Mining for coltan (often illegal), gold and tin, expanding agricultural activities and settlement expansion are all threats to this species along with logging. Military activities in the area also have impacts on the habitat. Even within the Itombwe Natural Reserve (a new protected area), it is not well protected because of military activity. There are gold mining and settlements within the protected area.

**Justification** – *Pentadesma lebrunii* is a tree of up to 35 m tall. The area of occupancy (AOO) is well within the threshold for the Vulnerable category, while the extent of occurrence (EOO) is just above the threshold for a threatened category. Based on the scale of the threat, nine locations (*sensu* IUCN) can be distinguished. We infer a continuing decline of the AOO, extent and quality of the habitat, and number of mature individuals due to a variety of threats.

**Bibliography** – Bamps (1970), IUCN SSC East African Plants Red List Authority (2013b).

Authors – IUCN SSC East African Plants Red List Authority

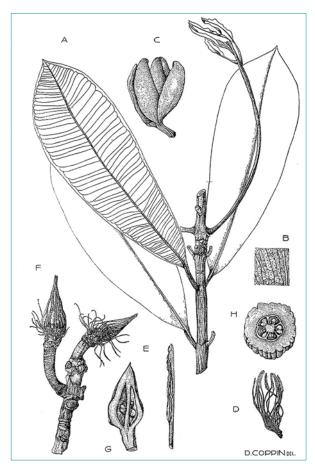
#### \_ Pentadesma reyndersii Spirlet

Red List category – Least Concern: LC.

**Distribution** – Endemic to the western part of Nyungwe National Park in Rwanda. Extent of occurrence (EOO): 150 km²; Area of occupancy (AOO): 63 km².

**Habitat** – Lower montane rainforest, on deep and fertile soils; at 1,700–2,200 m. The species is pollinated by bats.

**Protected areas** – This species is found in Nyungwe National Park and is well protected.



Pentadesma reyndersii: A, part of branch; B, part of leaf, lower surface; C, flower; D, staminal bundle; E, stamen; F, young infructescence; G, young fruit, longitudinal section; H, idem, transverse section. (A, B: Reynders 45; C: A. Léonard 5113; D-H: Reynders 312). Drawing by D. Coppin, Meise Botanic Garden (©).



**Threats** – The main potential threats to this species are its probably small population size and its restricted range.

**Justification** – *Pentadesma reyndersii* is a tree to 30 m tall, known from eight herbarium specimens representing seven unique occurrences collected between 1958 and 1999. As the species is restricted to a National Park where it seems to be well protected, no locations (*sensu* IUCN) can be defined and it has been assessed as Least Concern. However, it is conservation dependent and should any negative change occur in the status of the protected areas within which the taxon is found, this would rapidly change its Red List status.

**Bibliography** – Bamps (1970), Fischer & Killmann (2008), Ntore & al. (2019c), Troupin (1982).

**Authors** – S. Ntore, S. Nshutiyayesu, W.R.Q. Luke, C.J. Kayombo, J. Kalema, C. Kabuye, E. Fischer & H.J. Beentje

# COMBRETACEAE

#### \_ Combretum kasaiense Liben

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Maniema Province in east-central Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat - Wooded ravine; at around 500 m.

 $\mbox{\bf Protected areas}$  – The only collecting site known is not located within a protected area.

**Threats** – Selective logging and forest clearance for shifting agriculture are the main threats to the habitat of this species. Its habitat is presumed to have declined or even been



Combretum kasaiense: Holotype material at BR (Bequaert 9).



lost due to human pressure such as forest clearance for shifting agriculture and selective logging.

**Justification** – *Combretum kasaiense* is a shrub or small tree. It is known only from the type specimen, collected in 1934. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of the threats, one location (*sensu* 

IUCN) can be distinguished, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Since the species has not been found since 1934, it is highly recommended that its occurrence be confirmed through fieldwork. If the species is found, conservation measures should be implemented, but it might even be extinct. Fruits of this species are not known, and its regeneration potential needs to be studied. Close monitoring is required.

Bibliography - Liben (1968).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

#### \_ Combretum lokele Liben

Red List category - Near Threatened: NT.

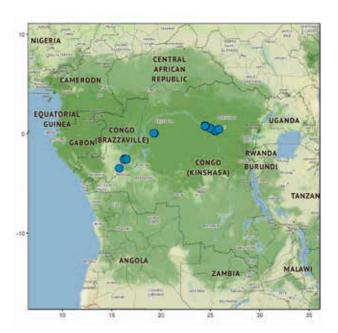
**Distribution** – South-eastern part of the Republic of the Congo and along the Congo River and its tributaries in the Democratic Republic of the Congo. Extent of occurrence (EOO): 167,944 km²; Area of occupancy (AOO): 80 km².

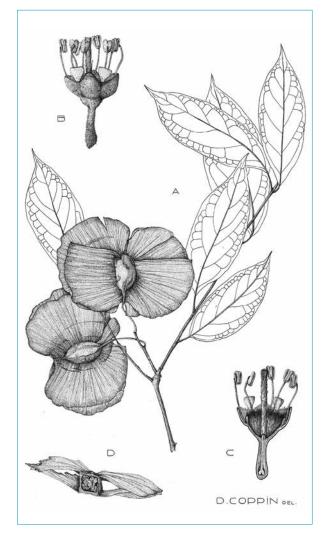
Habitat – Rainforest, semi-deciduous forest; at 280-400 m.

**Protected areas** – One collecting site is present within the Yangambi Biosphere Reserve. The other collecting sites occur in non-protected areas.

**Threats** – In the Republic of the Congo, the species is used for charcoal production. The habitat is threatened by shifting agriculture for subsistence in both the Republic of the Congo and the Democratic Republic of the Congo.

**Justification** – Combretum lokele is a large tree to 35 m tall, with a trunk to 2 m in diameter. It is known from 39 herbarium specimens collected between 1935 and 2013, representing 22 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. We anticipate that the pressure from the threats will continue in the future. Considering the scale of threats, 11 or 12 locations (sensu





Combretum lokele: A, fruiting branch; B, flower; C, idem, longitudinal section; D, fruit, transverse section. (A: Évrard 3581; B, C: Louis 1181; D: Louis 292). Drawing by D. Coppin, Meise Botanic Garden (©).

IUCN) can be distinguished, slightly exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened despite the fact that its AOO is limited. However, the species is known from only 11 or 12 locations, a number very close to 10, the upper limit for a threated category under sub-criterion B2, and it is threatened by shifting agriculture and charcoal production.

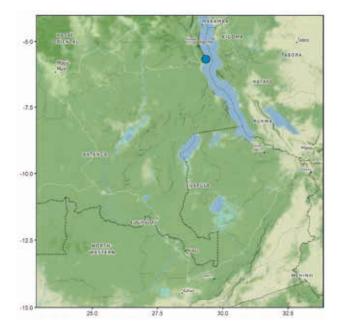
Bibliography - Liben (1968).

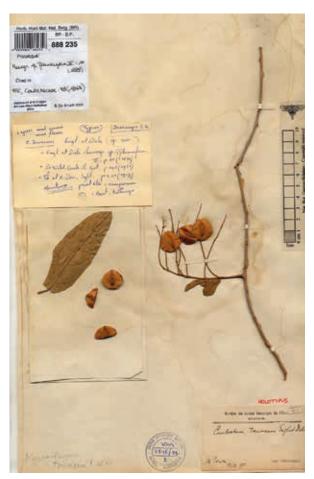
Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

#### **Combretum towaense** Engl. & Diels

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².





Combretum towaense: Holotype material at BR (Capt. Descamps s.n.).

**Habitat** – The species' habitat is uncertain. It is assumed to be miombo dry forest; at around 800 m. The seeds are most likely wind-dispersed and flowers pollinated by bees.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – The main threat to the species' habitat is intensive urbanization.

**Justification** – *Combretum towaense* is known only from the type locality near Lake Tanganyika in the Katanga region of the Democratic Republic of the Congo, and has not been recorded since its discovery in 1895. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one occurrence and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Given the fact that the only collecting site occurs in a region with intensive urbanization (Kalemie, DRC), it is very well possible that the species has undergone serious reductions in its populations, or has even become extinct. However, the region where the species occurs is severely under-collected and targeted fieldwork is needed to confirm whether the species is extinct or not, and to gain a better understanding of its distribution area, its abundance and the threats it faces. It may be necessary to establish ex-situ populations if there are still individuals in the wild.

Bibliography – Liben (1968), Meerts (2016).

Authors - C. Amani, M. Simo-Droissart & W. Tack

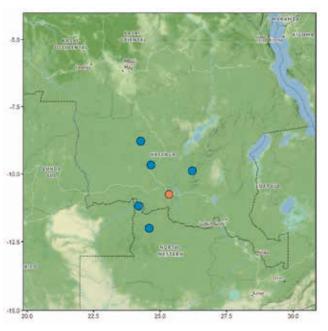
#### \_ Terminalia griffithsiana Liben

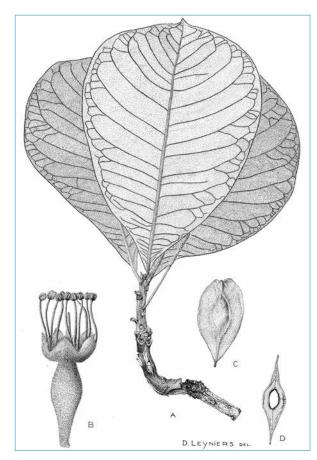
Red List category – Endangered: EN B2ab(ii,iii,iv).

**Distribution** – Democratic Republic of the Congo and Zambia; Extent of occurrence (EOO): 41,698 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Shrubby savannah; at around 1,100 m. Its flowers are bee pollinated.

**Protected areas** – One collecting site occurs within the Lunda Forest Reserve (Zambia); the others are located in non-protected areas. There are no current conservation actions for the species in unprotected sites.





Terminalia griffithsiana: A, branch; B, flower; C, fruit; D, idem, transverse section. (A: Angus 539A; B: Huart 48; C, D: Schmitz 5981). Drawing by D. Leyniers, Meise Botanic Garden (©).

**Threats** – The main threats to the species' habitat are mining in Kolwezi (DRC), urbanization in Zambia, and agriculture in both countries.

Justification – Terminalia griffithsiana is a shrub or small tree to 8 m tall. It is known from six herbarium specimens collected between 1948 and 1974, one of which was discarded for evaluation because the habitat has been destroyed due to mining activities (Kolwezi, DRC). The five remaining collections represent five unique occurrences and five extant subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of these threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. These threatening activities negatively impact the species' habitat and we project that this degradation will continue in the future. We infer a continuing decline in the extent and quality of the habitat of the species, and the loss of the occurrence at Kolwezi has already led to a decline in its AOO and number of locations/ subpopulations.

Bibliography - Liben (1965, 1968), Rhind (2010).

Authors - A. Nsanzurwimo, M. Simo-Droissart & W. Tack

#### DICHAPETALACEAE

#### \_ **Dichapetalum germainii** Hauman

**Red List category** – Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 257,392 km²; Area of occupancy (AOO): 68 km².

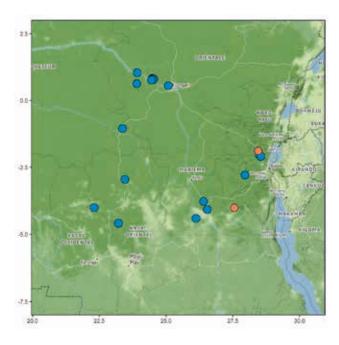
**Habitat** – Humid forests, sometimes in swamp or periodically flooded forest; at 150–950 m.

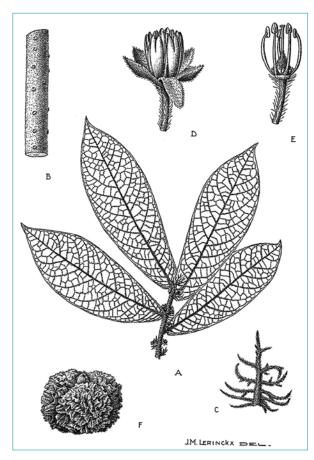
**Protected areas** – Five of the 18 unique occurrences are within the Yangambi Biosphere Reserve. There are no current conservation actions for the species in unprotected sites.

Threats – Four unique occurrences in two locations have already disappeared. This is the case for Irangi ("vers km 110 route Kavumu-Walikale, Irangi, réserve I.R.S.A.C"), where the forest has been replaced by oil palm plantations, and for Namoya, which was destroyed by gold mining. The Yangambi Biosphere Reserve, one of the three Biosphere Reserves in the DRC, does not provide effective protection for the species. Satellite images show that the Yangambi area is highly subject to urbanization. The human population in this area increased nearly 10-fold in 62 years, from 8,500 in 1955 to 80,000 in 2017, increasing agricultural needs and pressure for extraction of resources such as fuel wood and charcoal. The rate of forest cover loss in Yangambi and surrounding areas between 2000 and 2017 was 18%.

Gold production increased with the opening of the Namoya Mines. BANRO began production at the Namoya Mine in 2013. Gold output was likely to reach the mine's full capacity in 2014. At Yumbi, there is mining of gold and cassiterite.

Malela is only a few kilometers west of the large town Kasongo. Tree cutting for fuel wood to supply the town is a threat. The Ikela site is threatened by the installation of





Dichapetalum germainii: (A) Extrémité du rameau florifère, face inférieure des feuilles (× ½) (B) Partie de tige lignifiée avec lenticelles (× ½) (C) Stipule, face externe (× 2) (D) Fleur épanouie (× 5) (E) Androcée et gynécée (× 5) (F) Fruit mûr (× ½). — D'après Louis 3175 (A, C-E), Germain 8566 (B), 7546 (F). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

rubber plantations. Ikela is one of the investment opportunities being promoted by COMESA Regional Investment Agency. Bunyakiri is a palm-oil producing and mining area. The region is a key supplier of agricultural and forest products to the markets in Bukavu, for cassava, construction wood, charcoal and palm oil. Artisanal gold mining is a means of livelihood to the population in the Bunyakiri area, e.g. at Kamole. Mingazi and Buribariba, both close to Irangi, are heavily disturbed, the first one because of oil palm plantations and the second one because of urbanization and subsistence farming.

Justification – Dichapetalum germainii is a shrub or small tree reaching 8 m in height and is known from 38 herbarium specimens collected between 1903 and 1971 with a single recent specimen from 2008, which, however, was collected in a locality that is now destroyed (Namoya, gold mining). Three other collections were also discarded for evaluation because they occur in an area where the natural vegetation has been completely destroyed (Irangi, now an oil palm plantation). The 34 remaining collections represent 18 unique occurrences and 14 extant subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1. Its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 12 locations (sensu IUCN) can be distin-

guished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Two locations have already disappeared in the past. A reduction in the extent and quality of the habitat is inferred. In the near future, with a growing human population, further habitat reduction is predicted as a result of subsistence farming, agro-industry, artisanal and industrial mining, urbanization, and tree felling for timber, fuel wood and charcoal for local use and to supply nearby cities. Because of the 12 locations, the species does not currently meet the criteria for any threatened category. However, with continuing threats of agriculture, logging for charcoal, and mining, the species is drawing close to qualifying as threatened.

Bibliography – Armstrong (2007), BANRO Corporation (2016), Breteler (1979), COMESA Regional Investment Agency (2012), Calisesi & al. (2016), Cooleman & al. (2015), Cuvelier (2010), Ferf & al. (2016), FORETS (2018), Gosline & al. (2019), Hauman (1958a), International Alert (2010), Kamalebo & al. (2018), Kilosho & al. (2015), Koy & al. (2019), KPMG International (2014), Likoko & al. (2019), MAGIC (2018), Neumann & al. (2019), Romkema (2007), U.S. Department of State (2013), Weyns & al. (2016), Yager (2014).

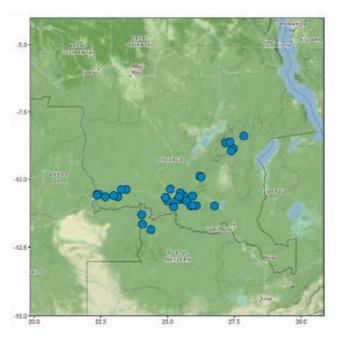
Authors - J. Kalema, M. Simo-Droissart & W. Tack

## DIPTEROCARPACEAE

#### \_ Monotes autennei P.A.Duvign.

Red List category – Least Concern: LC.

**Distribution** – South-eastern Democratic Republic of the Congo (Haut Katanga province) and northern Zambia (Mwinilunga District). Extent of occurrence (EOO): 101,308 km²; Area of occupancy (AOO): 136 km².





Monotes autennei: herbarium specimen at BR (Malaisse 11939).

**Habitat** – Miombo woodland, notably in mixed high woodlands with *Marquesia acuminata* and *M. macroura*, on grey compact soil and in chipya (fire-induced wooded grassland) on Kalahari sand; at 1,000–1,700 m.

**Protected areas** – Three of the 36 unique occurrences occur within two protected areas: the Lac Tshangalele Hunting Domain and the Upemba National Park, both within DRC. There are no conservation measures currently in place for the species.

**Threats** – Katanga, where M. autennei occurs, is densely populated. Furthermore, southern Katanga and northern Zambia are extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat to the natural vegetation. Circa 75% of the known localities show fragmentation and destruction of the Miombo woodland as a result of anthropogenic pressure, mostly subsistence farming, so a reduction of suitable habitat for the species is inferred. This threat is especially serious near towns, such as Mitwaba, Kisenge and Kolwezi. Around Kolwezi, mining of copper and coltan is the most important factor responsible for the destruction of suitable habitat. In other localities, although habitat destruction is ongoing, some more intact Miombo woodland patches still exist (e.g., Kifinga and Kasekalesa). Growing human populations will certainly lead to the conversion of more primary vegetation throughout the distribution range of Monotes autennei, e.g.

to agricultural land. Upemba National Park is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups, and due to logistical problems effective protection of the remaining natural vegetation cannot be guaranteed. Despite all these problems, the vegetation in Upemba National Park is relatively intact.

**Justification** – *Monotes autennei* is a tree to 17 m high. It is known from 61 herbarium specimens collected between 1938 and 2005, representing 35 unique occurrences and 25 to 30 subpopulations. Most of these specimens were collected in the 1950s, and only two after the year 2000. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 25 to 30 locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Of the known localities, 75% are heavily impacted, resulting in habitat loss for the species. The low AOO might qualify for the Endangered status, but the high number of locations prevents Monotes autennei from qualifying for any threatened status. Furthermore, the species is relatively wellprotected within the Upemba National Park.

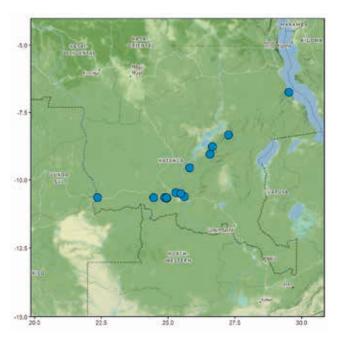
**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Meerts & al. (2017), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Monotes doryphorus P.A.Duvign.

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the south-eastern region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 75,324 km<sup>2</sup>; Area of occupancy (AOO): 52 km<sup>2</sup>.





Monotes doryphorus: Isotype specimen at BRLU (Duvigneaud & Timperman 2530M1).

**Habitat** – Miombo woodland, wooded savannah, bushy savannah, chypia (fire-induced wooded grassland), degraded forest, on various kinds of soil but often on rocky slopes on kibarian shale; at 600–1,400 m.

**Protected areas** – Five of the 13 unique occurrences are situated within two protected areas: the Lac Tshangalele Hunting Domain and the Upemba National Park. There are no current conservation actions for the species outside protected areas.

**Threats** – The Katanga region, where M. doryphorus occurs, is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals and large-scale mining is a serious threat for the natural vegetation. Several localities show deforestation and forest fragmentation as a result of anthropogenic pressure, mostly subsistence farming. This threat is especially serious in three localities, notably around Nzilo, Mpala and Mukulakulu. In the region of Nzilo, there is also large-scale deforestation resulting from mining. In other localities, although deforestation advances, more intact forest patches still exist (e.g., Kasekalesa). But growing human populations will certainly lead to the conversion of more primary vegetation to agricultural land. The Upemba National Park is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups, and due to logistical problems

efficient protection of the remaining natural vegetation cannot be guaranteed. Despite all these problems, the vegetation in Upemba National Park is relatively intact.

**Justification** – *Monotes doryphorus* is a tree to 12 m high. It is known from 18 herbarium specimens collected between 1952 and 1960, representing 13 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Based on the scale of the threats, 10 locations (sensu IUCN) can be distinguished, which is the upper limit of the Vulnerable category under condition 'a' of subcriterion B2. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful. We infer present and projected future habitat loss resulting from anthropogenic pressure.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Meerts & al. (2017), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

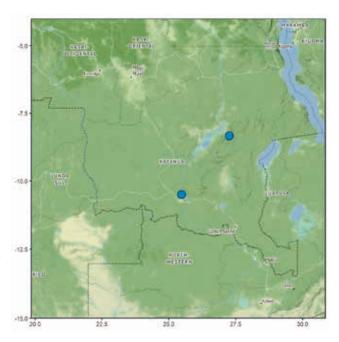
#### \_ Monotes duvigneaudii Meerts

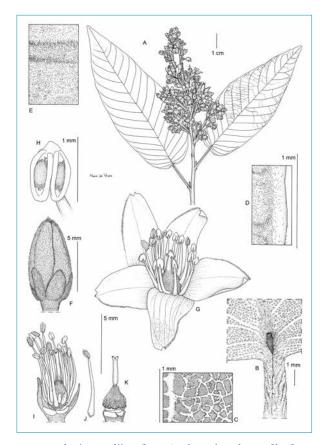
Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the south-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Miombo woodland, shrub savannah or herbaceous savannah; at 1,300–1,600 m.

**Protected areas** – The two collecting sites occur outside protected areas. There are no conservation measures currently in place for the species.





Monotes duvigneaudii: A, flowering branch; B, base of leaf, with gland; C, leaf, detail of upper surface; D, idem, detail of margin; E, idem, detail of lower surface with secondary nerve; F, flower bud; G, flower; H, anther; I, flower, opened, with 2 stamens removed; J, stamen; K, ovary. (A-D, F-K: Duvigneaud 5268M4; E: Duvigneaud 4570M3). Drawing by Hans de Vries, Meise Botanic Garden (©).

**Threats** – The Katanga region, where *Monotes duvigneaudii* occurs, is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals and large-scale mining is a serious threat for the natural vegetation. The two occurrences of M. duvigneaudii show destruction and fragmentation of the Miombo woodland and savanna habitat as a result of slashand-burn agriculture (Kibara Mountains; Lake Nzilo) or mining (Lake Nzilo). In both occurrences, more intact vegetations remain at higher elevations. Though neither of the two occurrences is located in a protected area, the collecting site of M. duvigneaudii var. duvigneaudii occurs close to the Tshangalele-Kolwezi Nature Reserve and that of M. duvigneaudii var. concolor occurs close to the Upemba National Park, so the taxon may possible be present there. This would give the species a certain degree of protection, but would not guarantee its survival since these protected areas are subject to land clearing for slash-and-burn agriculture, logging for building and firewood, hunting and poaching. Logistical problems include understaffing and insufficient funding to guarantee effective protection of the remaining natural vegetation.

**Justification** – *Monotes duvigneaudii* is a small tree to 5 m high. It is known from three georeferenced herbarium specimens collected between 1949 and 1960, representing two unique occurrences and two subpopulations (one for each

variety). The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The main threat is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the Miombo woodland and savanna vegetation for subsistence farming and mining. Based on the scale of these threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The region where Monotes duvigneaudii occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful. Given the threats, a reduction in the extent and the quality of the suitable habitat is inferred.

**Bibliography** – Inogwabini & al. (2005), Meerts (2017), Meerts & al. (2017), Robyns (1948).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Monotes duvigneaudii Meerts var. concolor Meerts

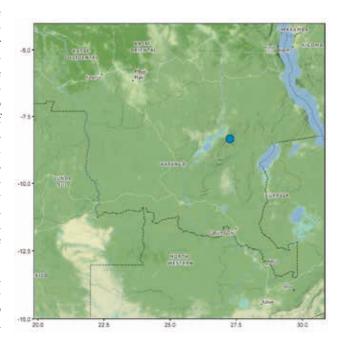
Red List category - Critically Endangered: CR B2ab(iii).

**Distribution** – Endemic to the south-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – Shrub savannah or herbaceous savannah; at around 1,400 m.

**Protected areas** – The only known collecting site occurs in an unprotected area, but close to the north-eastern edge of Upemba National Park. There are no current conservation actions for the taxon.

**Threats** – The Katanga region, where the variety occurs, is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat for the natural



vegetation. Destruction of the savanna vegetation resulting from slash-and-burn agriculture is observed at the lower elevations in the single known locality. Higher up in the Kibara Mountains, the vegetation remains relatively intact. As this subpopulation occurs close to the north-eastern edge of the relatively intact Upemba National Park, the taxon could possibly occur also within this protected, area which would give it a certain degree of protection.

**Justification** – Monotes duvigneaudii var. concolor is only known from the type specimen, collected in 1949. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. This taxon is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. The main threat to this taxon is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the savanna for subsistence farming. However, growing human populations will certainly lead to the conversion of more primary vegetation to agricultural land, so a further reduction of the suitable habitat of the taxon is projected in the future. The region where this variety occurs is severely under-collected. Research and fieldwork are needed to better determine its distribution, population size and trends and the threats that may be affecting it. Ex-situ populations might need to be established should any further individuals be located in the wild. Observations on pollination and seed dispersal would also be useful.

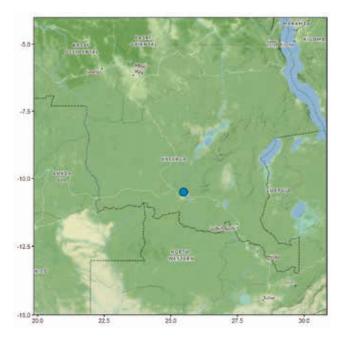
**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Monotes duvigneaudii Meerts var. duvigneaudii

Red List category - Critically Endangered: CR B2ab(iii).

**Distribution** – Endemic to the south-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.



Habitat - Miombo woodland; at 1,300-1,600 m.

**Protected areas** – The only known collecting site occurs in an unprotected area, but close to the north-eastern edge of the Lac Tshangalele Hunting Domain. There are no current conservation actions for the taxon.

**Threats** – The only known collecting site falls in a region where most people depend on subsistence farming for their livelihood. Most people also depend on forest and other natural vegetations for additional subsistence and raw materials. The Katanga region, where this variety occurs, is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat for the natural vegetation. The single location shows considerable fragmentation and destruction of the Miombo woodland as a result of subsistence farming. Additionally, several mining operations are ongoing in the surroundings of Lake Nzilo. At the moment, more intact Miombo woodland remains at higher elevations. However, growing human populations will certainly lead to the conversion of more primary vegetation throughout the distribution range of the variety, e.g. to agricultural land.

Justification – Monotes duvigneaudii var. duvigneaudii is a small tree to 5 m tall. It is known from three herbarium specimens collected around 1960, one of which has no locality data. The two georeferenced collections represent one unique occurrence and one subpopulation in the region of Lake Nzilo (= Lac Delcommune). The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the scale of the threat, one location (sensu IUCN) can be defined, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in extent and quality of the habitat. The region where Monotes duvigneaudii var. duvigneaudii occurs is severely under-collected. Research and fieldwork are needed to gain a better understanding of its distribution, population size and trends and the threats that may be affecting it. Ex-situ populations might need to be established should any further individuals be located in the wild. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

**Authors** – P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Monotes hirtii** P.A.Duvign.

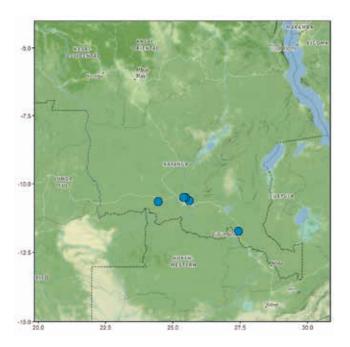
Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the south-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): 9,489 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Open Miombo woodland, wooded savannah, mostly on rocky slopes and shallow stony soil, more rarely on deep sandy soil; at 1,000–1,400 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no conservation measures currently in place for the species.

**Threats** – The Katanga region, where *Monotes hirtii* occurs, is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat for the natural vegetation. The four occurrences of *M. hirtii* show destruction and fragmentation of the Miombo woodland and





**Monotes hirtii**: Holotype specimen at BRLU (Duvigneaud & Hirt 3514M1).

savanna vegetation. Near Lubumbashi, habitat destruction is the result of urbanization, slash-and-burn agriculture and the production of firewood/charcoal for the city. In the region of Lake Nzilo, habitat destruction results from subsistence farming and mining. The fourth occurrence, Mutshatsha, is also close to habitation and shows habitat destruction as a result of slash-and-burn agriculture. More intact Miombo woodland remains at higher elevations in the region of Lake Nzilo and in the vicinity of Mutshatsha.

**Justification** – *Monotes hirtii* is a small tree known from 12 herbarium specimens collected between 1956 and 1982, representing five unique occurrences and four subpopulations. Most of the specimens are from the region of Lake Nzilo. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Growing human populations will certainly lead to the conversion of more primary vegetation, e.g. to agricultural land, so a further reduction of the habitat of the species is projected for the future. The region where Monotes hirtii occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

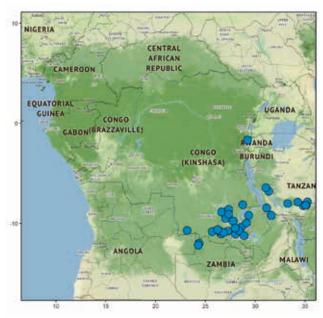
**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Monotes magnificus** Gilg

Red List category - Least Concern: LC.

**Distribution** – Democratic Republic of the Congo, Malawi, Tanzania and Zambia. Extent of occurrence (EOO): 749,239 km²; Area of occupancy (AOO): 148 km².





Monotes magnificus: Flowers. Photo by Quentin Luke (©).



Monotes magnificus: Fruit. Photo by Quentin Luke (©).

**Habitat** – Wooded savannah, scrub, herbaceous savannah, often at the periphery of slightly mineralized clearings, open miombo woodland, dambos, grassy savannah, strictly endemic to copper-rich soil; at 900–2,200 m.

**Protected areas** – Four of the 38 known unique occurrences occur within four protected areas. These are the Ruaha and the Katavi National Parks both in Tanzania, and the Kundelungu and the Upemba National Parks both in the Democratic Republic of the Congo. No conservation measures are known for the species outside these protected areas.

Threats – The Katanga region is densely populated (8 million people in 2003). Furthermore, southern Katanga and northern Zambia are extremely rich in copper, cobalt, uranium and other minerals and large-scale mining is a serious threat to the natural vegetation. Several occurrences of *Monotes magnificus* suffer destruction and fragmentation of the natural vegetation as a result of slash-and-burn agriculture or mining, e.g. Tilwizembe near Lake Nzilo, Kisenge-Kamata, Mitwaba, Kasenga in the Democratic Republic of the Congo, Abercorn and Kawamba in Zambia, or as a result of large-scale agriculture, e.g. Mbeya in Tanzania. The growing human populations will certainly lead to the conversion of more primary vegetation, e.g. to agricultural land.

**Justification** – Monotes magnificus is a small tree to 8 m tall. It has two varieties, var. magnificus and var. gigantophyllus.

It is known from 58 herbarium specimens collected between 1898 and 2011, representing 37 unique occurrences and 32 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The main threat is the destruction of suitable habitat as a result of anthropogenic pressure, notably clearing of the savanna and miombo vegetation for subsistence farming, plantations, mining, etc. However, some localities in the distribution range show less human impact or are seemingly undisturbed. Based on the scale of the threats, 34 locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful. There is inferred current and projected future reduction in the area, extent and quality of its habitat in several of the known localities of the species. However, the largenumber of locations prevents the species from qualifying for any threatened category.

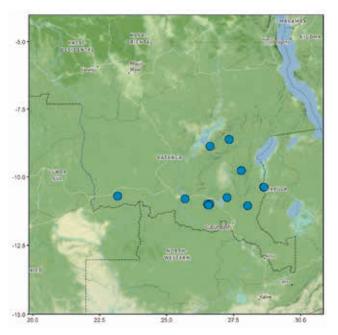
Bibliography – Campbell & Hammond (1989), De Wildeman (1927a, 1927b), Duvignaud (1949), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Lutete Landu & al. (2016), Malaisse & al. (2016), Meerts (2017), Meerts & al. (2017), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

# \_ **Monotes magnificus** Gilg var. **gigantophyllus** (P.A.Duvign.) Meerts

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 87,251 km²; Area of occupancy (AOO): 48 km².









Monotes magnificus var. gigantophyllus: Fruiting branch. Young fruit. Ripe fruit. RDCongo, Haut-Katanga, Ruwe hill near Kolwezi. Photos by Edouard Ilunga wa Ilunga (©).

**Habitat** – Wooded savannah, open miombo woodland, dambos, grassy savannah and occasionally on slightly mineralized soil; at 900–1,600 m.

**Protected areas** – Two of the 12 known unique occurrences are situated within protected areas. These are the Kundelungu and the Upemba National Parks in Democratic Republic of the Congo. There are no conservation measures known for the taxon outside these protected areas.

**Threats** – The Katanga region is densely populated. Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat to the natural vegetation. Several occurrences suffer from destruction and fragmentation of the Miombo woodland and savanna vegetation as a result of slash-and-burn agriculture or mining, e.g. Tilwizembe near Lake Nzilo, Kisenge-Kamata, Mitwaba, Kasenga. Growing human populations will certainly lead to the conversion of

more primary vegetation, e.g. to agricultural land. However, other sites show less human impact. Upemba National Park is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups. However, despite all these problems, the vegetation in Upemba National Park still remains relatively intact. The main threat is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the Miombo woodland and savanna vegetation for subsistence farming, mining and habitation. In addition, Kundelungu and Upemba are located in the savanna eco-region and therefore are especially affected by bush fires that significantly impact the biodiversity through the destruction of tree cover.

**Justification** – Monotes magnificus var. gigantophyllus is a small tree known from 15 herbarium specimens collected between 1948 and 1959, representing 12 unique occurrences and 9 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Based on the scale of the threats, nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above we infer a current and projected future reduction in the area, extent and quality of its habitat. The region where Monotes magnificus var. gigantophyllus occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this taxon, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Lutete Landu & al. (2016), Meerts (2017), Meerts & al. (2017), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Monotes magnificus Gilg var. magnificus

Red List category - Least Concern: LC.

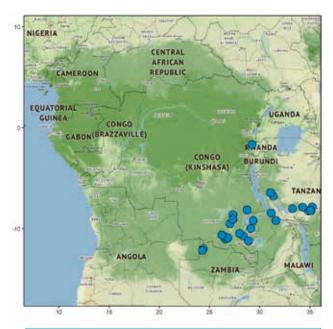
**Distribution** – Democratic Republic of the Congo, Malawi, Tanzania and Zambia. Extent of occurrence (EOO): 635,098 km²; Area of occupancy (AOO): 108 km².

**Habitat** – Wooded savanna, scrub, herbaceous savanna, often at the periphery of mineralized clearings; at 900–2,200 m.

**Protected areas** – Two of the 27 unique occurrences fall within protected areas. These are the Ruaha National Park and the Katavi National Park, both in Tanzania. There are no conservation measures currently in place for the taxon outside these protected areas.

**Threats** – The Katanga region is densely populated (8 million people in 2003). Furthermore, southern Katanga and Northern Zambia are extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat to the natural vegetation. Several occurrences show

deforestation as a result of slash-and-burn agriculture, e.g., Mbala (Abercorn) and Kawamba in Zambia, or as a result of large-scale agriculture, e.g. Mbeya in Tanzania. Growing human populations will certainly lead to the conversion of more primary vegetation, e.g. to agricultural land. However,





Monotes magnificus var. magnificus: A, flowering branch; B, hairs of upper leaf surface; C, idem, of lower leaf surface; D, stipule; E, flower, longitudinal section; F, anther; G, top of style with stigmas; H, ovary, longitudinal section; I, idem, transverse section; J, fruit. (A-C: Richards 11598; D: Brenan & Greenway 8086; E-I: Boaler 1040; J: B.D. Burtt 5916). Drawing by Maureen Church (©), reproducied with permission from Verdcourt (1989).

other localities show less human impact or are seemingly undisturbed. Protected areas in savanna eco-regions are especially affected by bush fires which significantly impact the biodiversity through the destruction of forest cover. The main threat is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the savanna vegetation for subsistence farming, plantations, mining, etc.

**Justification** – Monotes magnificus var. magnificus is a small tree to 8 m tall. It is known from 29 herbarium specimens collected between 1898 and 2011: 12 collections from the Democratic Republic of the Congo, 10 from Tanzania, 6 from Zambia and a single one from Malawi (but with unspecified collecting site). The 28 specimens represent 27 unique occurrences and 25 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1. The area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 25 locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. A reduction in habitat quality and extent is inferred and projected in certain locations. Further collecting would give a better understanding of the distribution area of this taxon, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography – Campbell & Hammond (1989), De Wildeman (1927a, 1927b), Duvignaud (1949), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Lutete Landu & al. (2016), Meerts (2017), Meerts & al. (2017), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

## \_ **Monotes rubriglans** H.H.Bancr. subsp. **upembensis** Meerts

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 9,219 km²; Area of occupancy (AOO): 24 km².

**Habitat** – Miombo woodland, wooded savannah; at 600–1,500 m.

**Protected areas** – Three of the six unique occurrences are located within the Upemba National Park. There are no current conservation actions for subpopulations occurring in unprotected sites.

Threats –The Katanga region is densely populated (8 million people in 2003). Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals, and large-scale mining is a serious threat to the natural vegetation. The three occurrences outside Upemba National Park all show some degree of habitat degradation resulting from slash-and-burn agriculture and habitation (Masolwa, Mitwaba, Mukulakulu). Growing human populations will certainly lead to the conversion of more primary vegetation throughout the distribution range, e.g. to agricultural land.

The three occurrences within Upemba National Park are in relatively undisturbed vegetation, but the park is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups. But, overall, the park is relatively well-protected and its vegetation is relatively intact. The main threat to this

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Monotes rubriglans subsp. upembensis: Holotype specimen at BR (De Witte 4232).

taxon is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the savannah vegetation for subsistence farming and habitation. This threat is more severe outside the protected area than in Upemba National Park, but cannot be excluded in this location in the future.

**Justification** – *Monotes rubriglans* subsp. *upembensis* is a small tree and includes two varieties: var. *griseocoriaceus* and var. *upembensis*. The subspecies is known from nine herbarium specimens collected between 1921 and 1953, representing six unique occurrences and six subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub- sub-criterion B2. We infer current and projected future reduction in the extent and quality of suitable habitat.

**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

Authors - P. De Block, M. Simo-Droissart & W. Tack

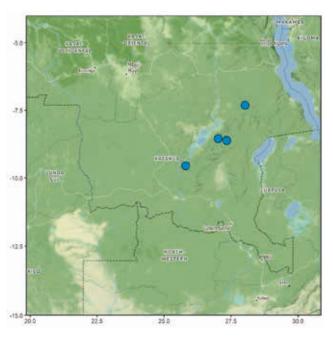
# \_ *Monotes rubriglans* H.H.Bancr. subsp. *upembensis* Meerts var. *griseocoriaceus* Meerts

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 8,191 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Miombo woodland, wooded savannah; at 900-1,500 m.

**Protected areas** – One of the four unique occurrences is located within the Upemba National Park. There are no



current conservation actions for the taxon in the three other collecting sites.

Threats - The Katanga region is densely populated (8 million people in 2003). Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other minerals and large-scale mining is a serious threat to the natural vegetation. Three of the four known unique occurrences of this taxon suffer some degree of habitat degradation. In Masolwa, Mitwaba and Mukulakulu, the destruction and fragmentation of the Miombo woodland and savanna vegetation is the result of slash-and-burn agriculture. Growing human populations will certainly lead to the conversion of more primary vegetation throughout the distribution range, e.g. to agricultural land. The fourth locality is in Upemba National Park, which is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups. However, despite all these problems, the park is relatively wellprotected and its vegetation relatively intact.

Justification – Monotes rubriglans subsp. upembensis var. griseocoriaceus is a small tree of up to 9 m tall. It is known from five herbarium specimens collected between 1921 and 1953, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The main threat to this taxon is the destruction of its natural habitat as a result of anthropogenic pressure, notably clearing of the savannah vegetation for subsistence farming. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a current and future reduction in extent and quality of suitable habitat for the taxon. The region where this taxon occurs, is severely under-collected. Further collecting would give a better understanding of the distribution area of this taxon, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

Authors - P. De Block, M. Simo-Droissart & W. Tack

# \_ **Monotes rubriglans** H.H.Bancr. subsp. **upembensis** Meerts var. **upembensis**

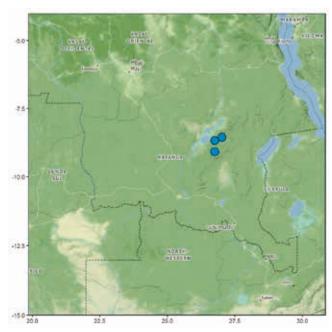
Red List category – Least Concern: LC.

**Distribution** – Endemic to the Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 676 km<sup>2</sup>; Area of occupancy (AOO): 12 km<sup>2</sup>.

Habitat – Miombo woodland; at 600–1,600 m.

**Protected areas** – All three occurrences are located within the Upemba National Park.

**Threats** – The Katanga region is densely populated (8 million people in 2003). Furthermore, southern Katanga is extremely rich in copper, cobalt, uranium and other



minerals and large-scale mining is a serious threat to the natural vegetation. The three known occurrences are situated within the limits of the Upemba National Park in relatively undisturbed vegetation. While Upemba National Park is confronted with poaching, illegal settlements, illegal mining, hydroelectric interests and the presence of heavily armed Mai Mai groups, most of the park is relatively undisturbed. There is no current threat for the taxon, but its survival depends completely on the status of this park as a protected area.

**Justification** – Monotes rubriglans subsp. upembensis var. upembensis is a tree of unknown size. It is known from four herbarium specimens collected between 1948 and 1953, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) and area of occupancy (AOO) both fall within the limits of the Endangered category under the sub-criteria B1 and B2. Since, no current threat exists no locations (sensu IUCN) can be defined. However, the survival of this taxon depends entirely on the future status of Upemba National Park as a protected area.

**Bibliography** – Meerts (2017), Meerts & al. (2017), Robyns (1948).

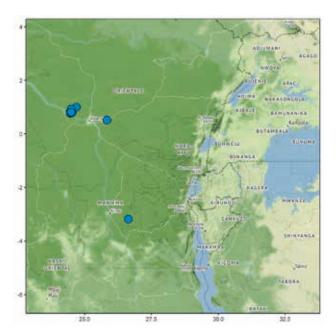
**Authors** – P. De Block, M. Simo-Droissart & W. Tack

## **EBENACEAE**

#### \_ Diospyros chrysocarpa F.White

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the eastern part of the Congo Basin in the Democratic Republic of the Congo. Extent of occurrence (EOO): 32,802 km²; Area of occupancy (AOO): 44 km².

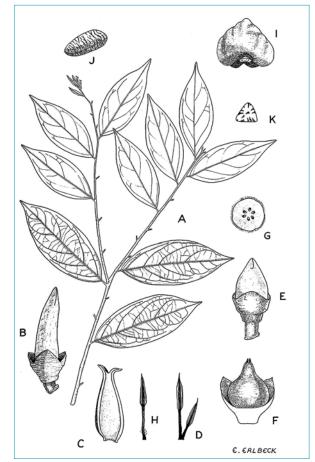


**Habitat** – Mixed, dry or evergreen plateau forest, *Scorodophloeus zenkeri* forest (Yangambi), *Cynometra alexandri* forest (Yalibwa) and *Brachystegia laurentii* forest; at 300–500 m.

**Protected areas** – Twelve of the fourteen unique occurrences occur within the Yangambi Biosphere Reserve. There are no current conservation actions for the species in the other two collecting sites.

**Threats** – The main threat is the destruction of its natural habitat as a result of increasing anthropogenic pressure. The human population in the eastern part of the Congo Basin depend on subsistence farming for their livelihood and depend on the forest for additional subsistence and raw materials. All sites where the species occurs (Yangambi; 70 km E de Kisangani; Pangi) are close to habitation and show forest fragmentation and clearing for agricultural use. However, in all three areas, seemingly more intact forests are relatively close by. Road construction facilitates access to the interior of the forest and provokes relocation of people to previously closed localities. Subsistence and commercial bushmeat hunting and logging for building and firewood degrade the natural vegetation. Furthermore, logging and mining (gold, diamonds, coltan) concessions and oil palm plantations threaten large forest tracts. The Yangambi Biosphere Reserve is protected only to a certain extent, since the reserve is under no specific form of management and its limits are contested. Furthermore, several villages occur within the Reserve and agricultural activities, including land clearing, take place as well as gathering, hunting, logging and artisanal gold mining.

**Justification** – *Diospyros chrysocarpa* is a tree to 15 m tall. It is known from 19 herbarium specimens collected mainly between 1935 and 1973. Five specimens were collected in 2013 at the Yangambi Biosphere Reserve. The specimens represent 14 unique occurrences and 3 subpopulations. The extent of occurrence (EOO) exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. Considering the scale of the main threat, i.e. the destruction of its natural habitat as a



Diospyros chrysocarpa: A, leafy branch; B, male flower bud; C, corolla of male flower, longitudinal section; D, stamens; E, female flower bud; F, pistil; G, ovary, transverse section; H, staminode; I, fruit; J, seed; K, idem, transverse section. (A, E-H: Louis 2533; B-D: Louis 11353; I-K: Louis 2224). Drawing by E. Erlbeck, Meise Botanic Garden (©).

result of anthropogenic pressure, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of subcriterion B2. Based on the above, a continuing decline in the extent and quality of the habitat is inferred.

**Bibliography** – Germain & Évrard (1956), MAB (2011a), Robyns (1948), Vliet & al. (2018), White (1978, 1987).

**Authors** – P. De Block, M. Simo-Droissart & W. Tack

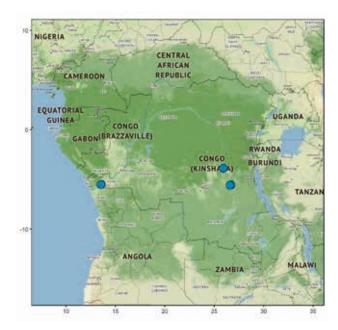
#### \_ **Diospyros grex** F.White

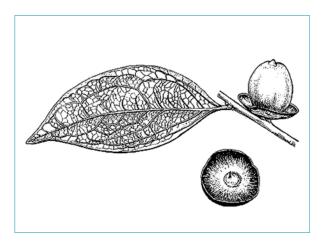
Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo, where it is only known from a few widely scattered localities near the southern limits of the Congo Basin and in the Guinea-Congolia/Zambesian transition zone. Extent of occurrence (EOO): 139,036 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Gallery forest, Muhulu (dry evergreen forest); at 250–700 m.

**Protected areas** – The five unique occurrences occur outside protected areas.





Diospyros grex: Leaf, fruit and fruiting calyx. (Delvaux 602). Drawing by R. Schurmans, Meise Botanic Garden (©).

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure (agriculture and probably charcoal production). In DRCongo, regions are densely populated and populations growing, with most people still depending on subsistence farming for their livelihood. As a result, forest is being cleared for agriculture and grazing for livestock, wood is logged for building and firewood. All five collecting sites in which *Diospyros grex* was collected are close to habitation and show forest fragmentation and clearing for agricultural use.

**Justification** – *Diospyros grex* is a tree (12–)20–30 m tall. It is known from ten herbarium specimens collected between 1949 and 1966, representing five unique occurrences and three subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1. Its area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. Considering the scale of the main threat, i.e. the destruction of its natural habitat as a result of anthropogenic pressure, three locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered

category under condition 'a' of sub-criterion B2. Based on the threats, a decline in the extent and quality of the habitat is inferred.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Küper & al. (2006), Robyns (1948), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003), White (1978, 1987).

Authors – P. De Block, M. Simo-Droissart & W. Tack

#### **Diospyros troupinii** F.White

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

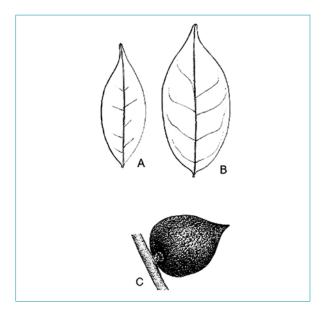
**Distribution** – Endemic to the Democratic Republic of the Congo, only known from the Kalehe Territory in Kivu Province. Extent of occurrence (EOO): 31 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Humid forests (e.g. *Julbernardia seretii* forest or transitional rainforest with *Turraeanthus africanus*, *Bosqueia angolensis* and *Newtonia buchananii*); at 850–1,590 m.

**Protected areas** – No specific conservation measures for this species are known. All specimens occur outside protected areas where their habitat is threatened.

Threats – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. The Kivu Province is densely populated with most people depending on subsistence farming for their livelihood. The forest habitat is converted to pastures and agricultural land, degraded from logging and hunting and destroyed for artisanal mining and charcoal production. With the exception of the westernmost collecting sites (Forêt de Bwemba and near Shabundu), the forest at the localities where the species occurs (Bunyakiri, Irangi) is highly fragmented and only small patches remain between agricultural and degraded terrains. None of the occurrences are in a protected area,





Diospyros troupinii: A. leaf, upper surface; B, idem, lower surface; C, fruit. (A, B: Troupin 3980; C, A. Léonard 3263). Drawing by R. Schurmans, Meise Botanic Garden (©).

but they are close to Kahuzi-Biega National Park. Even if the species did occur in the Park, this would not guarantee its continued existence. Kahuzi-Biega National Park is listed as a UNESCO natural world heritage site in danger because even within the protected area, the forest is subject to the same anthropogenic pressure as outside the park. After the 1994 Rwandan Civil War, the park was overrun by refugees and armed militias, resulting in strongly increased anthropogenic pressure and large-scale destruction of primary habitat. Furthermore, Kahuzi-Biega National Park is subject to traditional mining for gold, diamonds, coltan and tin, e.g. in the region of Bunyakiri.

Justification - Diospyros troupinii a shrub or tree 2.5-8(-12) m tall. It is known from fourteen herbarium specimens collected between 1955 and 1960. We have discarded eight of them prior to the assessment because they were collected in Irangi forest, where the natural vegetation has been replaced by a vast oil palm plantation. The six remaining collections represent five unique occurrences and three subpopulations. The extent of occurrence (EOO) falls within the limits of the Critically Endangered category under sub-criterion B1, whereas its area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. Considering the scale of the main threat, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. The loss of forest cover in Irangi has in the past led to a decline in quality of the species' habitat, as well as a decline of EOO, AOO and number of locations/ subpopulations, while we also infer a decline in number of mature individuals. The region where Diospyros troupinii occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Aveling (2010), Kirkby & al. (2015), Robyns (1948), UNESCO (2017), White 1978, 1987).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Diospyros wagemansii** F.White

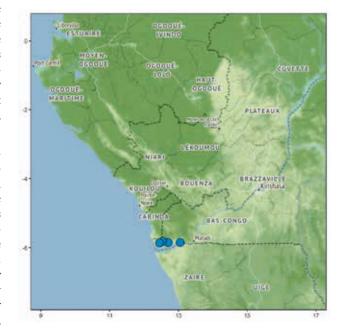
Red List category – Endangered: EN B1ab(iii)+2ab(iii).

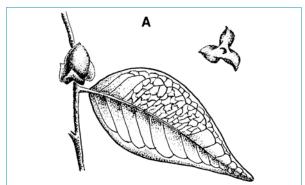
**Distribution** – Endemic to the Democratic Republic of the Congo, only known from a small area near the mouth of the Congo River from the coast of the Atlantic Ocean to c. 75 km inland. Extent of occurrence (EOO): 175 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Sclerophyllous thicket on white sand; at around 20–150 m.

**Protected areas** – No conservation measures are known for the species. All occurrences are located outside of protected areas.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. The coastal region of the Democratic Republic of the Congo is densely populated with most people still depending on subsistence farming for their livelihood. As a result, forest is being cleared for agriculture and grazing for livestock, wood is logged for building and firewood. Local people also depend on the forest for additional subsistence and raw materials. All known locations of *Diospyros wagemansii* are close to habitation and show forest fragmentation and clearing for agricultural use.





Diospyros wagemansii: A, leaf, fruit and fruiting calyx. (Wagemans 2237). Drawing by R. Schurmans, Meise Botanic Garden (©).

**Justification** – *Diospyros wagemansii* is a shrub to 4 m tall. It is known from six herbarium specimens, five of which were collected between 1956 and 1960 with the most recent one in 1980. These collections represent four unique occurrences and four subpopulations. The extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. It is unlikely that Diospyros wagemansii occurs in the nearby Luki Biosphere Reserve since the vegetation type there is humid rainforest. Considering the scale of the species' main threat, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. From the threats, we infer a continuing decline in the extent and quality of the habitat. The region where Diospyros wagemansii occurs is severely under-collected.

**Bibliography** – MAB (2011b), Robyns (1948), White (1978, 1987).

Authors - P. De Block, M. Simo-Droissart & W. Tack

## **EUPHORBIACEAE**

#### \_ Argomuellera pierlotiana J.Léonard

Red List category – Endangered: EN Bıab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 2,928 km<sup>2</sup>; Area of occupancy (AOO): 16 km<sup>2</sup>.

Habitat - Rainforest; at around 500 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.





**Argomuellera pierlotiana**: Inflorescences. Photo by Quentin Luke (©).



Argomuellera pierlotiana: A, flowering twig; B, detail of lower leaf surface with small glands; C, leaf margin; D, inflorescence; E, open male flower; F, detail of filament inserted in receptable cavities; G, female flower; H, idem, opened and ovary removed; I, capsule; J, seed (immature). (A-H: Troupin 9218; I, J: Troupin 10031). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

**Threats** – Outside protected areas, the habitat is threatened by forest clearing for shifting agriculture or selective logging and, in two of the occurrences, by urbanization and mining. In the southernmost occurrence, gold mining is now completely destroying the forest habitat.

**Justification** – Argomuellera pierlotiana is a shrub or small tree to 6(-8) m tall. It is known from 25 herbarium

specimens collected between 1955 and 2008, of which 20 have been discarded prior to the assessment because the natural vegetation has been completely destroyed (Irangi forest, now a vast oil palm plantation). The five remaining collections represent five unique collecting sites and four subpopulations. Its extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. Based on the scale of the threats, four different locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. The disappearance of the Irangi subpopulation already led to a past decline in AOO, number of locations and number of mature individuals. We expect that the ongoing loss of the suitable habitat, especially in the southernmost location, is leading to and will continue to lead to the decline in its mature individuals and number of subpopulations in the near future, as well as a decline in its EOO and AOO.

Bibliography – Lebrun & Stork (2006), Léonard (1996a).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Croton congensis De Wild.

**Red List category** – Critically Endangered: CR B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the western part of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – There is no information about the ecology or the preferred habitat of *Croton congensis*. Since it occurs around 500 m elevation, its habitat is likely to be lowland forest vegetation.

**Protected areas** – The known occurrences are located in unprotected areas.

**Threats** – The sites where *Croton congensis* occurs are close to populated places, so there are significant threats of urbanization, shifting agriculture, selective logging and





Croton congensis: Holotype specimen at BR (Ducoffre s.n.).

wood cutting for small-scale subsistence. We project that this human pressure will continue to exist and intensify in the near future.

**Justification** – *Croton congensis* is a large tree. It is known from three herbarium specimens representing two distinct collecting sites. The site in Kisantu, where the species was collected in 1900 and 1901, is easily accessible and there is no protection. Since it has not been collected again while the region is comparatively well-collected, we infer that it has disappeared. The remaining collecting site (Matadi; the specimen does not bear an indication of the collecting date) represents a single subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Fieldwork is needed to see if there are more trees in the area and if regeneration occurs, or if the species has become extinct instead. Considering the scale of the main threat, i.e. shifting agriculture, one location (sensu IUCN) can be distinguished, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. We predict that human pressure on the habitat will continue to exist and increase in the near future. The disappearance of the subpopulation in Kisantu has led to a decrease in the number of locations/ subpopulations and in the number of adult individuals, as well as a significant decrease in AOO.

**Bibliography** – Lebrun & Stork (2006), Léonard (1962). **Authors** – P. Barberá, M. Simo-Droissart & W. Tack

#### Croton haumanianus J.Léonard

Red List category – Least Concern: LC.

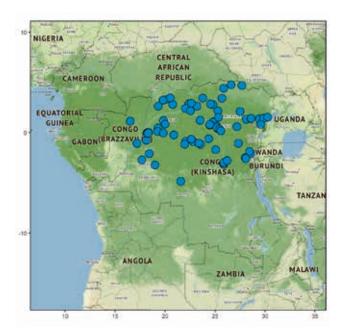
**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): over 1.1 million km²; Area of occupancy (AOO): 308 km².

**Habitat** – Very common in regrowth and secondary formations in rainforest areas, reaching larger dimensions in old regrown forests; normally not exceeding 900–1,000 m, exceptionally up to 1,200 m.

**Protected areas** – *Croton haumanianus* occurs within four protected areas, most of which appear well managed: the Okapi Wildlife Reserve, the Lomami National Park, the Yangambi Biosphere Reserve and the Kahuzi-Biega National Park, all in the Democratic Republic of the Congo. There are no current conservation actions for the species for the collecting sites occurring outside protected areas.

**Threats** – Some collecting sites are easily accessible by local residents and are threatened by selective logging for timber exploitation and small-scale activities such as shifting agriculture.

**Justification** – *Croton haumanianus* is a tree to 15(-35) m tall. It is known from 130 herbarium specimens collected between 1910 and 2012, representing 77 unique occurrences and 60 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Croton haumanianus is used in natural medicine and is also used as a shade tree in coffee and cacao plantations. This species is mostly collected in unprotected areas, where some collecting sites are under some form of anthropogenic pressure. Considering the scale of the threats, at least 40 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Despite the likely threats, we do not project that the ongoing loss of its habitat will lead to a strong continuing decline in the number of subpopulations or mature individuals in the near future. Since this species is fairly common in a large part of







Croton haumanianus: Republic of Congo, Sangha (Harris 10010). Photos by David J. Harris, Royal Botanic Garden Edinburgh (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.

its range, we do not predict any significant decline in its EOO and AOO in the near future. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened.

Bibliography – Lebrun & Stork (2006), Léonard (1962).

Authors – P. Barberá, M. Simo-Droissart & W. Tack

#### \_ **Croton jansii** J.Léonard

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the western-central part of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.



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Croton jansii: Type specimen at BR (Jans 1985TER).

Habitat – Forest margins; at 300–400 m.

**Protected areas** – *Croton jansii* is not known to occur within a protected area. There are no ongoing conservation actions for this species.

**Threats** – The species' habitat is under significant threats from shifting agriculture, selective logging and wood cutting

for small-scale subsistence. *Croton jansii* grows at forest margins and such sites are easily accessible and not well protected.

Justification – *Croton jansii* is a small monoecious tree. It is known from three herbarium specimens collected in 1957–1959 in a very small area in Bandundu Province, western-central Democratic Republic of the Congo. These specimens represent two unique occurrences and two subpopulations about 23 km apart. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of the threats, two locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that human pressure on the habitat will continue and intensify in the near future, leading to a continuing decline in extent and quality of habitat. Fieldwork should be conducted to search for the species and to check whether there is regeneration or not.

Bibliography – Lebrun & Stork (2006), Léonard (1962). Authors – P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Croton laciniatistylus J.Léonard

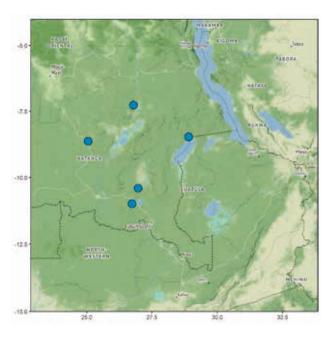
**Red List category** – Data Deficient: DD.

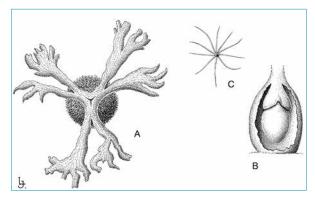
**Distribution** – Endemic to the Katanga Province in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 87,086 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Forest, but mostly collected in villages; at 470-700 m.

**Protected areas** – All known collecting sites occur in non-protected areas. There are no ongoing conservation actions for this species.

**Threats** – There is not enough information about the species' population and possible threats. However, it is likely that only one occurrence is natural and that the four





Croton laciniatistylus: A, ovary, seen from above, showing 3 style; B, ovule with obturator; C, stellate hair. (A, C: Delvaux 578; B: Dubru s.n.). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).



Croton laciniatistylus: Type specimen at BR (Delvaux 578).

others are planted in or near villages. The main threat to the species' habitat is small-scale shifting agriculture.

**Justification** – *Croton laciniatistylus* is a small tree to 10 m tall, with a trunk measuring to 30 cm in diameter. It is known from eight herbarium specimens collected between 1945 and 1970, representing five unique occurrences and five subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion

B2. Considering the scale of the species' main threat, i.e. shifting agriculture, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. According to Léonard (1962), the origin of this species is unknown and it is planted in villages as a shade tree. It is recommended to carry out fieldwork to locate this species and check whether or not regeneration is taking place. There is insufficient information on whether it is cultivated in or near the villages and whether the trees came from nearby forests or from farther away.

Bibliography - Lebrun & Stork (2006), Léonard (1962).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Croton poggei Pax

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Kasai Province of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Riverine forest; at around 500 m.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – The site where *Croton poggei* occurs is easily accessible and located in the vicinity of several populated places, and is seriously threatened by shifting agriculture, selective logging and wood cutting for small-scale subsistence.

**Justification** – *Croton poggei* is a tree of unknown size, known from a single herbarium specimen collected in 1882, representing a single subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of the threat, the occurrence represents one location (*sensu* IUCN), which is the upper limit of the Critically Endan-





Croton poggei: Fragment of type specimen at BR (Pogge 1368).

gered category under condition 'a' of sub-criterion B2. We project that this human pressure will continue and intensify in the near future. This species might in fact already be extinct and should be searched for in the area where it was collected or in areas with a similar habitat.

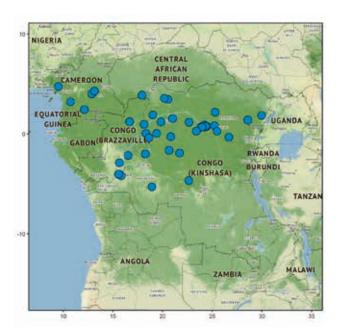
Bibliography – Lebrun & Stork (2006), Léonard (1962).

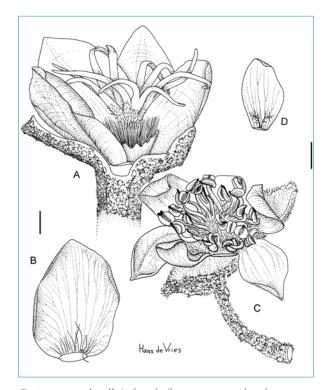
Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Crotonogyne giorgii De Wild.

Red List category - Least Concern: LC.

**Distribution** – Cameroon, Republic of the Congo, Democratic Republic of the Congo and Central African Republic.





Crotonogyne giorgii: A, female flower, one sepal and one petal removed; B, female petal inside; C, male flower, one petal removed; D, male petal inside. (A, B: L. Dubois 384; C, D: De Giorgi 1327). Scale bars = 1 mm. Drawing by Hans de Vries, Meise Botanic Garden (©).

Extent of occurrence (EOO): over 1.40 million km²; Area of occupancy (AOO): 172 km².

**Habitat** – Swamp forest, riverine forest, periodically inundated forest; at 100–770 m.

**Protected areas** – *Crotonogyne giorgii* occurs within five protected areas: one in Cameroon (the Abong Mbang Forest Reserve), one in the Republic of the Congo (Léfini Wildlife Reserve), and three in the Democratic Republic of the Congo (Yangambi Biosphere Reserve, Salonga National Park and Okapi Wildlife Reserve).

**Threats** – Most of the specimens have been collected in unprotected sites, and some are currently subjected to high human pressure, especially from shifting agriculture and selective logging.

**Justification** – *Crotonogyne giorgii* is a shrub or small tree to 10(-12) m tall. It is known from 59 herbarium specimens collected between 1913 and 2011, representing 43 unique occurrences and 32 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, 34 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information available to us, we see no indications that the EOO, AOO, number of locations/subpopulations or number of mature individuals will decrease noticeably in the near future. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened.

Bibliography - Breteler (2018).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### **Euphorbia seretii** De Wild.

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Disjunct; in north-eastern Democratic Republic of the Congo and in northern Zambia. Extent of occurrence (EOO): 46,625 km²; Area of occupancy (AOO): 12 km².

**Habitat** – Rocky woodland with *Brachystegia*, rocky gorges, rocky savannas; at 800–1,200 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The species' habitat is threatened by shifting agriculture and wood cutting for small-scale subsistence. Kabompo Gorge, a Heritage site in Zambia, is now the site of a large hydropower dam project and is not protected. At another occurrence, Mkushi Boma, Zambia, the natural vegetation has been greatly depleted by agriculture and urbanization and the habitat is completely lost and the subpopulation considered gone.

Justification – Euphorbia seretii is a succulent shrub or small tree that includes two subspecies, one in north-eastern DRCongo, the other in Zambia. It is known from five herbarium specimens collected between 1906 and 1974, of which one (Mkushi Boma, Zambia) was discarded prior to the assessment because the habitat is considered lost. The four remaining collections represent three unique occurrences and three subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under





Euphorbia seretii: Herbarium specimen at BR (Lebrun 3455).

condition 'a' of sub-criterion B2. We expect that the ongoing loss of the species' habitat has led to and will lead to decline in its EOO, AOO, extent and quality of habitat, number of locations and subpopulations, and number of mature individuals in the near future.

**Bibliography** – Carter & Leach (2001), Lebrun & Stork (2006).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Euphorbia seretii De Wild. subsp. seretii

**Red List category** – Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Endemic to north-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

**Habitat** – Rocky savannas; at 800–850 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

**Threats** – The collecting sites are easily accessible and have no protection. The main threat is habitat degradation by shifting agriculture and wood cutting for small-scale subsistence.





Justification – Euphorbia seretii subsp. seretii is a succulent shrub or small tree known from two herbarium specimens collected in 1906 and 1931, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the scale of this threat, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that the anthropogenic pressure on the habitat will continue to increase in the near future, which will lead to a decline in the number of mature individuals, number of locations and its AOO.

Bibliography – Lebrun & Stork (2006).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ **Grossera multinervis** J.Léonard

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

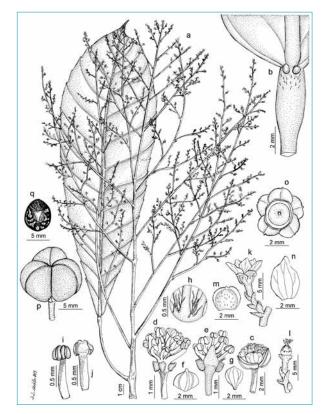
**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 112,815 km²; Area of occupancy (AOO): 68 km².

**Habitat** – Primary or secondary rainforest, locally very common; at 350–1,350 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Shifting agriculture, mining and charcoal production are the three main threats to the species and its habitat. The species is also threatened by urbanization.

**Justification** – *Grossera multinervis* is a shrub or tree to 12(–18) m tall, its trunk having a diameter to 40 cm. It is known from 65 herbarium specimens of which the two most recent ones date from 2010 and 1984. The remaining specimens were collected between 1942 and 1978. A total of 38 specimens (from Irangi forest, now a vast oil palm plantation) have been discarded because they occur in a region



Grossera multinervis: A, male flowering branch; B, glands at junction petiole and lamina; C, male flower; D, idem, sepals and petals removed; E, idem, longitudinal section; F, male sepal; G, male petal; H, androphore indumentum; I, J, stamen, adaxial and abaxial view; K, female flower; L, idem, sepals and petals removed; M, female sepal; N, female petal; O, female disc; P, fruit; Q, seed, ventral view. (A, B: Troupin 4700; C-J: Lisowski 49896; K-Q: Christiaensen 1171). Drawing by Juan L. Castillo, Real Jardín Botánico, Madrid (©), reproduced with permission from Barberá & al. (2014).

that is completely degraded and represent a subpopulation that should be considered extirpated. The 27 remaining collections represent 18 unique occurrences and eight subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-

criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the main threat, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information available to us, it is reasonable to infer a decline in extent and quality of habitat. In addition, the destruction of the Irangi sub-population in the past has led to a decline in AOO of the species, as well as in the number of locations and number of mature individuals.

**Bibliography** – Barberá & al. (2014), Lebrun & Stork (2006), Léonard (1962).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Macaranga dibeleensis De Wild.

Red List category - Endangered: EN B2ab(i,ii,iii,iv,v).

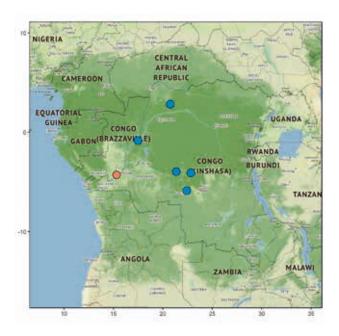
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 255,135 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

Habitat - Secondary forest; at around 300-600 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threats are selective logging and timber harvesting for small-scale subsistence, urbanization and shifting agriculture.

**Justification** – *Macaranga dibeleensis* is a small tree known from seven herbarium specimens collected between 1903 and 1961. The most south-western collecting site has already disappeared because of the construction of the University of Kinshasa. Thus, we currently count six collections, representing five unique occurrences and five subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the





Macaranga dibeleensis: Herbarium specimen at BR (Malchair 111).

Endangered category under sub-criterion B2. Considering the scale of the threats, five locations (sensu IUCN) can be distinguished, which is the upper limit of the Endangered category under condition 'a' of sub-criterion B2. The destruction of the Kinshasa subpopulation in the past has led to a decline in AOO and EOO of the species, as well as in the number of locations, while the additional ongoing loss of the species' habitat leads us to predict a continuing decline in the number of mature individuals.

Bibliography – Lebrun & Stork (2006), Whitmore (2008).

Authors – P. Barberá, M. Simo-Droissart & W. Tack

#### **\_ Macaranga vanderystii** De Wild.

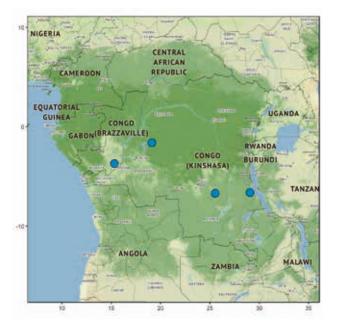
Red List category - Endangered: EN B2ab(iii).

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 313,767 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Swamp forest, gallery forest; at 300–1300 m. The fruits are capsules and the seeds are dispersed notably by small birds and mammals (zoochory).

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Shifting agriculture is the main threat (found everywhere) for the species' habitat. This habitat is also facing urbanization in the region of Maès (Rep. Congo), between the Lubue and Luange rivers, and mining in Pola (DRC).





Macaranga vanderystii: Syntype material at BR (De Giorgi 574).

**Justification** – *Macaranga vanderystii* is a tree of unknown size known from five herbarium specimens collected between 1910 and 1968, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) far exceeds the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Even though the specimens were all collected more than 50 years ago, we cannot conclude that the corresponding subpopulations have disappeared because the habitat type is still present in the collection areas. Given the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of subcriterion B2. We infer a past, present and future decline in quality of the species' habitat.

Bibliography – Davies & Ashton (1999), Whitmore (2008). Authors – P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Macaranga vermoesenii De Wild.

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

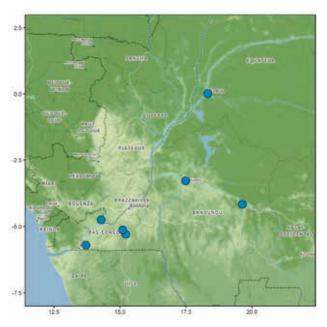
**Distribution** – Endemic to the western half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 171,491 km²; Area of occupancy (AOO): 28 km².

**Habitat** – Forest on dry, sandy ground, in lowland and submontane rainforest and forest regrowth; probably at 200–1,200 m, based on the type of vegetation where it occurs.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threats to the species are forest clearing for shifting agriculture and charcoal production.

**Justification** – *Macaranga vermoesenii* is a tree with a trunk to 50 cm in diameter. It is known from eight herbarium specimens collected between 1904 and 1921 representing





**Macaranga vermoesenii:** Syntype material at BR (Vanderyst 8575).

seven unique occurrences and six subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The habitat of one subpopulation is highly threatened, which may lead to the disappearance of that subpopulation in the near future. Considering the scale of the main threat, i.e. shifting agriculture, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We project that this habitat degradation will continue in the future. The ongoing loss of the habitat of the most threatened subpopulation leads us to predict a continuing decline in the number of locations/subpopulations and mature individuals of the species, as well as a decline in its AOO.

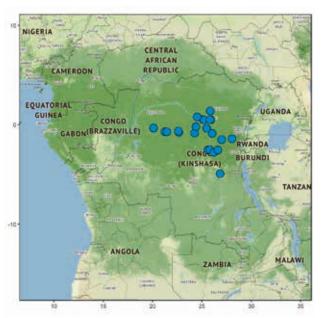
Bibliography – Lebrun & Stork (2006), Whitmore (2008).

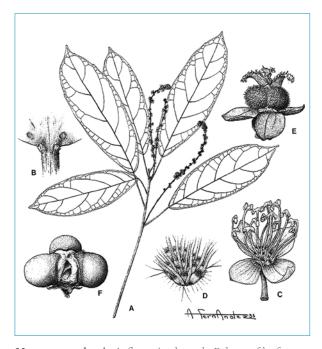
Authors – P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Mareya congolensis (J.Léonard) J.Léonard

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 304,258 km<sup>2</sup>; Area of occupancy (AOO): 88 km<sup>2</sup>.





Mareya congolensis: A, flowering branch; B, base of leaf, upper surface, with appendages and glands; C, male flower; D, idem, detail of glands between stamens; E, female flower; F, fruit. (A-D: A. Léonard 5936; E: Germain 4986; F: Bequaert 6947). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

Habitat – Forest, regrowth, along rivers; at 300–800 m.

**Protected areas** – Of the 22 known collecting sites, one occurs within a protected area, the Yangambi Biosphere Reserve. For the other subpopulations, there are no current conservation actions for the species.

**Threats** – The habitat is threatened by shifting agriculture for subsistence, selective logging and mining.

**Justification** – *Mareya congolensis* is a small to medium-sized tree to 15(-30) m tall. It is known from 26 herbarium specimens collected between 1896 and 1978, representing 22 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the

Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the main threat, i.e. shifting agriculture, 16 locations (sensu IUCN) can be distinguished, exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information available to us, we see no indications that the EOO, AOO, number of locations/subpopulations or number of mature individuals will decrease noticeably in the near future. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be assigned to a threatened category.

Bibliography – Lebrun & Stork (2006), Léonard (1996).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Necepsia zairensis Bouchat & J.Léonard

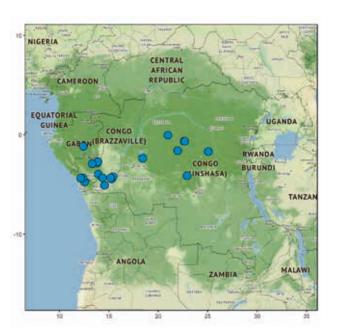
Red List category – Near Threatened: NT.

**Distribution** – Gabon, Republic of the Congo, Democratic Republic of the Congo and Angola. Extent of occurrence (EOO): 583,020 km²; Area of occupancy (AOO): 84 km².

**Habitat** – Rainforest, mostly of *Gilbertiodendron dewevrei* or with *Scorodophloeus zenkeri*, rarely with *Gilbertiodendron*, *Dacryodes pubescens* and *Paramacrolobium coeruleum* (along rivers); at 200–500 m.

**Protected areas** – The species is known from two protected areas in the Democratic Republic of the Congo: the Salonga National Park and the Lomami National Park. For the other collecting sites, there are no in-place conservation actions.

**Threats** – Within the two protected areas, the habitat does not appear threatened because they are well managed. Outside of these areas, the habitat is threatened by shifting agriculture, selective logging and/or small-scale subsistence forest exploitation.







Necepsia zairensis: Flowering twig (lower leaf surfaces). Male flower. Photos by Ehoarn Bidault (CC-BY-NC-ND), Republic of Congo (Bidault 3080).

Justification – Necepsia zairensis is a shrub or small tree to 8 m tall and is subdivided into two varieties. It is known from 24 herbarium specimens collected between 1901 and 2017, representing 22 unique occurrences and 16 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, 14 locations (sensu IUCN) can be distinguished, which falls outside the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be assigned to a threatened cate-

gory. However, considering the fact that the species is currently known from only 14 locations, a number close to 10, it is assigned a status of Near Threatened.

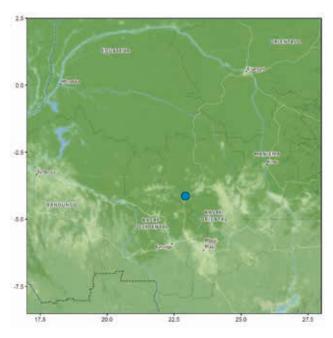
Bibliography - Bouchat & Léonard (1986), Léonard (1996).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

## \_ **Necepsia zairensis** Bouchat & J.Léonard var. **lujae** Bouchat & J.Léonard

Red List category - Vulnerable: VU D2.

**Distribution** – Endemic to the Sankuru Province of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.





Necepsia zairensis var. lujae: A, male flowering branch; B, male flower; C, idem, longitudinal section; D, stamen; E, interstaminal gland; F, female flower, 2 sepals removed. (A-E: Luja s.n. holotype; F: Luja s.n.). Drawing by M. Allard, Meise Botanic Garden (©).

Habitat – Dense lowland forest; at around 400 m.

**Protected areas** – The only known occurrence of the variety is situated outside any protected area. There are no current conservation actions for this taxon.

**Threats** – There is no threat currently recorded for the variety's habitat. However, shifting agriculture could be a plausible threat in a near future.

**Justification** – *Necepsia zairensis* var. *lujae* is a shrub or small tree known only from the type specimen collected in 1907, representing one subpopulation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. We have no recorded current threat to the variety's habitat. However, shifting agriculture could take place in the near future (based on the appearance of the area on Google Earth), and will lead this variety to qualify very quickly for a Critically Endangered or even Extinct status.

**Bibliography** – Bouchat & Léonard (1986), Lebrun & Stork (2006), Léonard (1996).

Authors – P. Barberá, M. Simo-Droissart & W. Tack

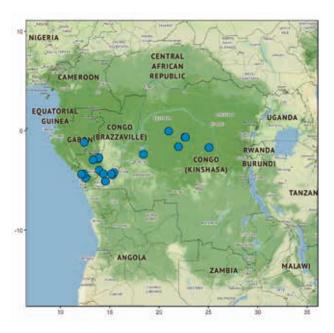
## \_ Necepsia zairensis Bouchat & J.Léonard var. zairensis

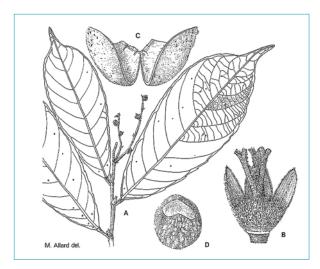
**Red List category** – Near Threatened: NT.

**Distribution** – Gabon, Republic of the Congo, Democratic Republic of the Congo and Angola. Extent of occurrence (EOO): 471,462 km²; Area of occupancy (AOO): 80 km².

**Habitat** – Rainforest, mostly of *Gilbertiodendron dewevrei* or *Scorodophloeus zenkeri*, rarely with *Gilbertiodendron*, *Dacryodes pubescens* and *Paramacrolobium coeruleum* (along rivers); at 200–500 m.

**Protected areas** – The variety is known from two protected areas in the Democratic Republic of the Congo: the Salonga National Park and the Lomami National Park. For the other collecting sites, there are no in-place conservation actions.





Necepsia zairensis var. zairensis: A, female flowering branch; B, female flower, 2 sepals removed; C, dehisced fruit; D, seed. (A, B: Compère 1669; C, D: Breyne 2519). Drawing by M. Allard, Meise Botanic Garden (©).

**Threats** – Within the two protected areas, the habitat does not appear threatened since they are well managed. Outside of these areas, the habitat is threatened by shifting agriculture, selective logging and/or small-scale subsistence forest exploitation.

Justification - Necepsia zairensis var. zairensis is a shrub or small tree to 8 m tall. It is known from 23 herbarium specimens collected between 1901 and 2017, representing 21 unique occurrences and 15 subpopulations. Its extent of occurrence (EOO) falls outside the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the threats, 13 locations (sensu IUCN) can be distinguished, which falls outside the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Since the variety cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be assigned to a threatened category. However, considering the fact that the variety is currently known from only 13 locations, a number very close to 10, Necepsia zairensis var. zairensis is assigned a status of Near Threatened.

**Bibliography** – Bouchat & Léonard (1986), Lebrun & Stork (2006), Léonard (1996).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

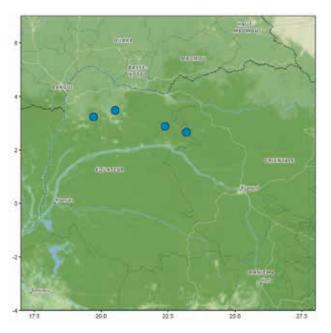
### \_ **Pycnocoma reygaertii** De Wild.

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 8,094 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Riverine forest, swamp forest; at 500–700 m. The species can be locally abundant.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.





**Pycnocoma reygaertii**: Herbarium specimen at BR (*Mortehan 925*).

**Threats** – The habitat is threatened by selective logging and forest clearing for small-scale shifting agriculture.

**Justification** – *Pycnocoma reygaertii* is a shrub or small tree to 8 m tall. It is known from five herbarium specimens collected between 1913 and 1955, representing four unique occurrences and four subpopulations. Its extent of

occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the species' main threat, i.e. shifting agriculture, four different locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the species' habitat.

Bibliography – Lebrun & Stork (2006), Léonard (1996a, 1996b).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

#### \_ Pycnocoma subflava J.Léonard

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo; known only from the type locality in the Kivu Province. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Lowland rainforest; at around 860 m.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by human activities such as shifting agriculture for small-scale subsistence and wood cutting for domestic needs.

**Justification** – *Pycnocoma subflava* is a shrub or small tree of up to 6 m tall. It is known only from three herbarium specimens collected from the same locality between 1959 and 1960, which represent a single subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Considering the scale of that main threat, a single location (*sensu* IUCN) can be defined, which is the upper limit of the Critically





**Pycnocoma subflava**: Herbarium specimen at BR (*Troupin* 10042).

Endangered category under condition 'a' of sub-criterion B2. There is past, ongoing and future decline in the quality of the species' habitat. Because the species has not been recollected since 1960, it might already have gone extinct.

Bibliography – Lebrun & Stork (2006), Léonard (1996a, 1996b).

Authors – P. Barberá, M. Simo-Droissart & W. Tack

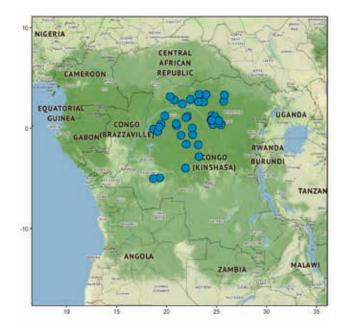
#### \_ **Pycnocoma thonneri** Pax ex De Wild. & T.Durand

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Congo Basin in the Democratic Republic of the Congo. Extent of occurrence (EOO): 516,584 km²; Area of occupancy (AOO): 172 km².

**Habitat** – Rainforest, secondary dry land forest with *Scorodophloeus zenkeri* or with *Gilbertiodendron dewevrei*, rarely in riverine or swamp forests; at 350–500 m.

**Protected areas** – It occurs in four protected areas: these are the Salonga National Park, the Yangambi Biosphere Reserve, the Sankuru Nature Reserve and the Luo Scientific Reserve, all in the Democratic Republic of the Congo. There are no current conservation actions for the species there, nor for its habitat.



F C

Pycnocoma thonneri: Example of leaf variation. (A, E: Lubini s.n.; B, F: Évrard 4666; C: De Wanckel 107; D: Louis 464). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

**Threats** – The main threats to the habitat are shifting agriculture, logging, mining and urbanization.

**Justification** – *Pycnocoma thonneri* is a shrub or small tree to 5 m tall. It is known from 90 herbarium specimens collected between 1896 and 1988, representing 43 unique occurrences and 34 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable

category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Considering the scale of the species' main threat, i.e. shifting agriculture, the 43 unique occurrences represent 20 locations (sensu IUCN), exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Despite the threats resulting from human activities, with varying levels of impact, Pycnocoma thonneri cannot be assigned to a threatened category because it fails to meet the threshold values. Based on the information available to us, we see no indication that the EOO, AOO, number of locations/subpopulations or number of mature individuals will decrease noticeably in the near future. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be regarded as threatened.

Bibliography – Lebrun & Stork (2006), Léonard (1996a, 1996b).

Authors - P. Barberá, M. Simo-Droissart & W. Tack

# FABACEAE - CAESALPINIOIDEAE

#### \_ **Afzelia peturei** De Wild.

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Democratic Republic of the Congo (Katanga and Orientale Province) and northern Zambia. Extent of occurrence (EOO): 378,492 km<sup>2</sup>; Area of occupancy (AOO): 28 km<sup>2</sup>.

**Habitat** – Humid, swampy gallery forests; at 900–1,200 m.





Afzelia peturei: Holotype specimen at BR (Péture 3001).

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threats to the habitat are forest encroachment for agricultural expansion and urbanization.

Justification – Afzelia peturei is a tree to 20 m tall, with a trunk to 75 cm in diameter. It is known from eight herbarium specimens collected between 1934 and 1959, of which one has been discarded prior to the assessment as the natural vegetation has been completely destroyed by urbanization (Keyberg). The seven remaining specimens represent seven unique occurrences and six subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. With respect to the scale of the main threat, six locations (sensu IUCN) can be distinguished by geographic clustering, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat.

**Bibliography** – Bingham & al. (2020), Brummitt & al. (2007), Léonard & al. (1952).

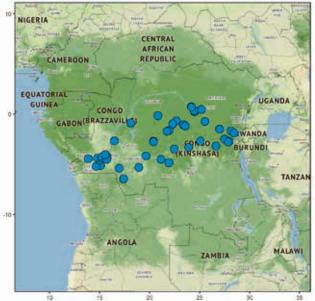
Authors - P. Kamau, M. Simo-Droissart & W. Tack

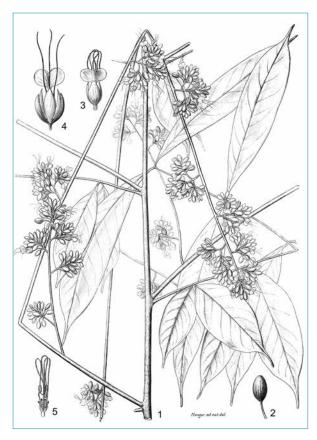
#### \_ **Anthonotha gilletii** (De Wild.) J.Léonard

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 691,714 km²; Area of occupancy (AOO): 176 km².

**Habitat** – Rainforest, gallery forest, swamp forest; at 300–900 m.





 $\label{eq:Anthonotha gilletii: 1, flowering branch; 2, flower bud; 3, flower, dorsal view; 4, idem, ventral view; 5, stamens and staminodes. Drawing by Menger, Meise Botanic Garden (©).$ 

**Protected areas** – The species occurs within three protected areas in the Democratic Republic of the Congo: the Salonga National Park, the Lomami National Park and the Sankuru Nature Reserve. For the other collecting sites, there are no current conservation actions for the species' habitat.

**Threats** – Six collecting sites are undergoing, or have undergone, significant threats because they occur in areas where either human-impacted land-cover (urban areas, agriculture, charcoal production) is dominant or where at least half of the forest cover has been lost during the last 20 years.

**Justification** – *Anthonotha gilletii* is a tree to 25(–30) m tall, with a trunk to 40(-70) cm in diameter. It is known from 47 herbarium specimens collected between 1903 and 2015, representing 44 unique occurrences and 22 to 41 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 40 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2, and the species therefore cannot be assigned to a threatened category under criterion B. At least six known subpopulations are undergoing significant threats due to forest cover loss that may lead (or perhaps has already led) to local extinction. However, the loss of these subpopulations would result in a population decline of less than 20% of its EOO and 2% of its observed AOO, so the species also cannot be considered as threatened under Criterion A.

**Bibliography** – Breteler (2010), Léonard & al. (1952), Mayaux & al. (2004), Milesi & al. (2006), Taylor & al. (2009).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

#### \_ Aphanocalyx obscurus Wieringa

Red List category - Near Threatened: NT.

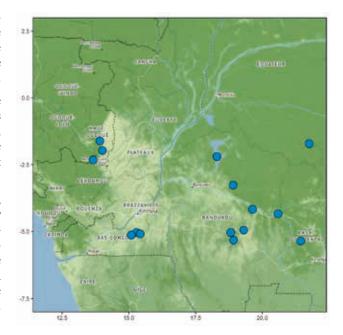
**Distribution** – Gabon, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 323,220 km²; Area of occupancy (AOO): 60 km².

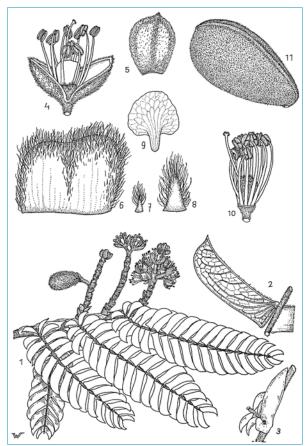
**Habitat** – Dry land forest and on river banks; at 400–500 m. Often growing gregariously.

**Protected areas** – One collecting site occurs within the Salonga-north National Park in DRC. There are no current conservation actions for the other occurrences.

**Threats** – Charcoal production, timber exploitation and forest clearing for shifting agriculture are the main threats to the species' habitat.

**Justification** – *Aphanocalyx obscurus* is a tree to 25 m tall, with a trunk to 120 cm in diameter. It is known from 19 herbarium specimens collected between 1907 and 2009, representing 15 unique occurrences and 9 to 15 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 12 different locations (*sensu* 





Aphanocalyx obscurus: 1, flowering twig; 2, leaflet from below; 3, stipule; 4, flower; 5, bracteole from outside; 6, fused adaxial sepals; 7, lateral sepal; 8, abaxial sepal; 9, adaxial petal; 10: flower with bracteoles, sepals and petal removed; 11, pod. (1-10: Wieringa & v.d. Poll 1544; 11: Wieringa & v.d. Poll 1540). Drawing by Wil Wessels, Naturalis Biodiversity Center (©), reproduced with permission from Wieringa (1999).

IUCN) can be distinguished, which is a little more than the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the conditions for applying condition 'a' under sub-criterion B2 are not met, *Aphanocalyx obscurus* cannot be regarded as threatened under the IUCN

Red List criteria. We infer a continuing decline in the extent and quality of the habitat of the species, leading to a decline in its EOO, AOO, number of locations/subpopulations and number of mature individuals. The subpopulations from Madimba and Bulungu will probably disappear in a near future.

Bibliography – Wieringa (1999).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

#### \_ **Berlinia phenacoa** Mackinder

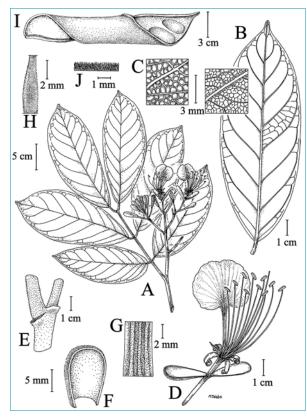
Red List category - Least Concern: LC.

**Distribution** – Southern Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 890,071 km<sup>2</sup>; Area of occupancy (AOO): 108 km<sup>2</sup>.

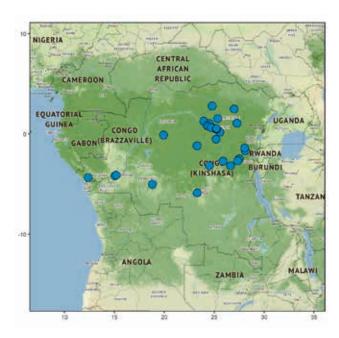
**Habitat** – Gallery forest, forest with *Gilbertiodendron* dewevrei and Hallea stipulosa; at 350–900 m.

**Protected areas** – Some collecting sites occur within protected areas: the Sankuru Réserve naturelle and the Yangambi Biosphere Reserve. There are no known *ex situ* collections of this species.

**Threats** – This species occurs in the Congo Basin region where deforestation is known to be occurring, mostly



Berlinia phenacoa. A, flowering branch; B, leaflet; C, details of adaxial leaflet surface; D, flower; E, stem node with indumentum; F, bracteole; G, detail of hypanthium indumentum; H, detail of ovary; I, valve of dehisced pod; J, detail of pod surface. (A, D-H: J. Louis 2322; B, C: J. Louis 10106; I, J: J. Louis 1334). Drawing by Margareth Tebbs (©), reproduced with permission from Mackinder & Pennington (2011).



through an increasing population's expanding agricultural activities and the demand for fuelwood.

**Justification** – *Berlinia phenacoa* is a tree to 20(–24) m tall, with a trunk to 35 cm in diameter. It is known from 53 herbarium specimens representing 31 unique occurrences and 27 subpopulations. Botanical surveys and monitoring of the species is required. There are no estimates of population numbers for this species and population decline cannot be assessed with certainty, however population decline is not thought to be over the threshold for a threatened category under the A criterion. At present this species is assessed as Least Concern and further research is recommended into the population size and rates of deforestation occurring within this species range. *Ex situ* conservation is recommended.

**Bibliography** – BGCI (2016), Mackinder & Hargreaves (2017a), Mackinder & Pennington (2011), Mayaux & al. (2013).

Authors - B. Mackinder & S. Hargreaves

#### Berlinia sapinii De Wild.

Red List category – Data Deficient: DD.

**Distribution** – Endemic to the southern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 192,355 km²; Area of occupancy (AOO): 24 km².

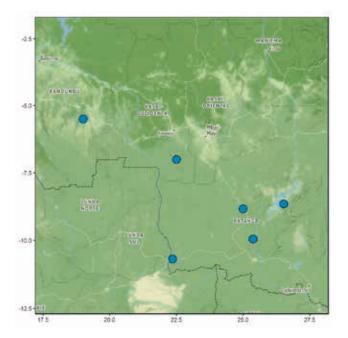
**Habitat** – Woodland, wooded grassland, savannas; at 600–1,000 m.

**Protected areas** – The species occurs within the Upemba National Park. There are no known *ex situ* collections of this species.

**Threats** – This species occurs in the Congo Basin region where deforestation is known to be occurring, mostly through an increasing human population that is expanding its agricultural activities and the increasing demand for fuelwood. The level of deforestation and natural habitat

degradation in some of the areas in which the species occurs are high.

**Justification** – *Berlinia sapinii* is a small tree, known from six herbarium specimens collected between 1907 and 1987, representing six unique occurrences and six subpopula-





Berlinia sapinii: Herbarium specimen at BR (De Witte & Van Meel 5996).

tions. Botanical surveys and monitoring of the species is required. This species is known from limited collections, and there has been only one collection in the last 60 years. Due to the uncertainty which of the range of categories could be applicable to this species, it is assessed here as Data Deficient, with expeditions to the area highly recommended. *Ex situ* conservation is also recommended.

**Bibliography** – BGCI (2016), Mackinder & Hargreaves (2017b), Mackinder & Pennington (2011), Mayaux & al. (2013).

Authors - B. Mackinder & S. Hargreaves

## \_ **Bikinia congensis** Wieringa

**Red List category** – Near Threatened: NT.

**Distribution** – Gabon, the Republic of the Congo and south-western Democratic Republic of the Congo. Extent of occurrence (EOO): 45,437 km²; Area of occupancy (AOO): 52 km².

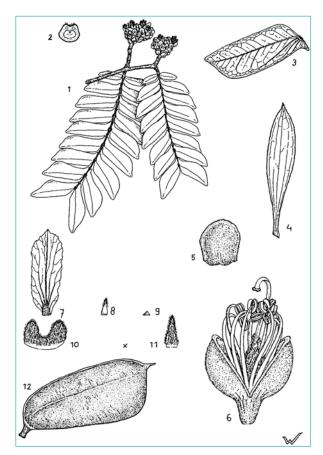
**Habitat** – Gallery forest, dense moist forests; at 200–600 m. It grows gregariously and can be locally abundant.

**Protected areas** – One occurrence is located within the Dimonika Biosphere Reserve in the Republic of the Congo. The others are located in unprotected areas. There are no current conservation actions for the species.

**Threats** – Seven subpopulations are under serious threat because they occur in areas of high population density, along the Congo River and near Kinshasa. These occurrences are suffering from a significant loss of forest cover as a result of agricultural expansion, charcoal production and urbanization.

**Justification** – *Bikinia congensis* is a tree to 30 m tall, with a trunk to 100 cm in diameter. It is known from 30 herbarium specimens collected between 1903 and 2006, one of which was discarded for evaluation because we can assume that the habitat has disappeared due to urbanization (near





Bikinia congensis: 1, flowering twig; 2, cross section of leaf rachis; 3, medial leaflet, lower surface; 4, stipule; 5, bract from outside; 6, flower; 7, adaxial petal; 8, lateral petal; 9, abaxial petal; 10, adaxial sepals from outside; 11, abaxial sepal from outside; 12, pod. (1-3, 5-11: Kibungu Kembelo in Wieringa 3466; 4: Pauwels 5615 & Kibungu Kembelo in Wieringa 3468; 12: Kibungu Kembelo in Wieringa 3467). Drawing by Wil Wessel-Brand, Naturalis Biodiversity Center (©), reproduced with permission from Wieringa (1999).

Kinshasa). The 29 remaining collections represent 14 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 11 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in the extent and quality of the habitat of the species, leading to a decline in its EOO, AOO, number of locations/subpopulations and number of mature individuals. Since the conditions for applying condition 'a' under sub-criterion B2 are not met, Bikinia congensis cannot be regarded as threatened under the IUCN Red List criteria. The species is currently known from 11 locations and one location has already disappeared.

Bibliography - Wieringa (1999).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

#### **\_ Brachystegia angustistipulata** De Wild.

Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

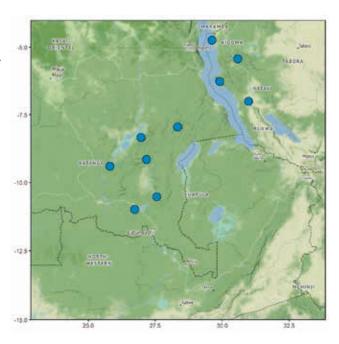
**Distribution** – Southern Democratic Republic of the Congo and western Tanzania. Extent of occurrence (EOO): 170,299 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Deciduous miombo woodland with *Acacia*, *Combretum* or *Terminalia* on semi-drained soil or near wet sites; at 980–1,525 m.

**Protected areas** – *Brachystegia angustistipulata* occurs within four protected areas: the Lufira Biosphere Reserve (DRC), the Kundelungu National Park (DRC), the Gombe National Park (Tanzania) and the Mahale Mts National Park (Tanzania). There are no current conservation actions for subpopulations occurring in unprotected sites.

**Threats** – The species is threatened by forest encroachment and human activities (logging, farming). The site near Katavi is not protected, and under threat with increasing human population. The southernmost site, Likasi in DRC, is close to major copper mining operations, and all miombo in that area is very likely now gone.

**Justification** – *Brachystegia angustistipulata* is a tree 2.5–6 m tall. It is known from 10 herbarium specimens collected between 1911 and 2002, representing 10 unique occurrences and 10 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 10 locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We project that the habitat degradation will continue in the future, while the ongoing loss of the habitat leads us to predict a continuous decline in the number of locations/subpopulations and mature individuals, while the likely loss of the Likasi subpopulation leads us to infer a decline of its EOO and AOO. In DRC, the species was last collected in 1953. A survey should be conducted to find out if the species still exists there and its regeneration







Brachystegia angustistipulata: Tree. Stipules. Young inflorescence. DRCongo, Haut-Katanga, Kibula. Photos by Michel Hasson (©).

potential should be studied. The human activities are gradually transforming the species' habitat into degraded miombo.

**Bibliography** – Brenan (1967), Knox (1995), Léonard & al. (1952), Lock (1989), Ndjele (1997).

**Authors** – P. Kamau, M. Simo-Droissart & W. Tack

## \_ Bussea gossweileri Baker f.

Red List category - Vulnerable: VU B2ab(iii).

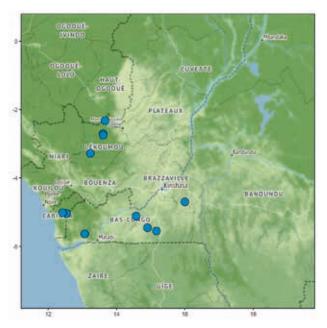
**Distribution** – Republic of the Congo, Democratic Republic of the Congo and Angola (Cabinda). Extent of occurrence (EOO): 82,088 km²; Area of occupancy (AOO): 44 km².

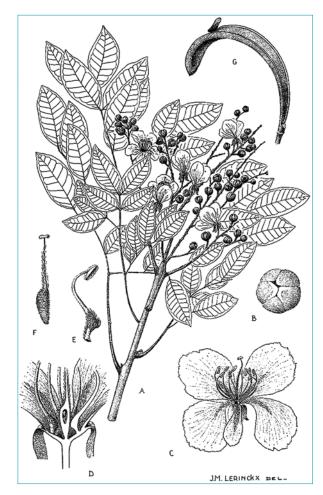
**Habitat** – Evergreen forest, forest at a water source, disturbed forest, Leguminosae forest with *Aphanocalyx*, understorey mostly of small shrubs, few lianas, some rattans; at 100–660 m.

**Protected areas** – One collecting site occurs within the Bombo Lumene Wildlife Reserve, and one occurs near the edge of or possibly inside the Luki Biosphere Reserve, both within DRC. All other occurrences are outside protected areas. There are no current conservation actions for the species.

**Threats** – Current threats to the species include the destruction of habitat for small-scale agriculture, logging activities for the construction of forest roads, and mining. The main threat to the species is small-scale agriculture, which affects 10 out of 11 unique occurrences.

**Justification** – *Bussea gossweileri* is a tree to 30 m high. It is known from 26 herbarium specimens collected between 1916 and 2010, representing 11 unique occurrences and seven subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, nine





Bussea gossweileri: A, flowering branch; B, flower bud, view from above; C, flower; D, idem, longitudinal section; E. stamen; F, pistil; G, pod, one valve fallen off. (A-F: Devred 3304; G: Toussaint 2402). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

locations (sensu IUCN 2019) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a decline in the quality of the species' habitat.

Bibliography – Exell (1928), Wilczek (1952).

Authors – S.T. Ndolo Ebika, M. Simo-Droissart & W. Tack

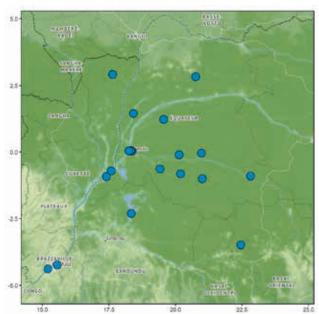
## \_ Crudia harmsiana De Wild. var. harmsiana

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 473,987 km²; Area of occupancy (AOO): 80 km².

**Habitat** – Riverine, shoreline, swamp and flooded forests; presumably at about 50–250 m.

**Protected areas** – This variety occurs in the Salonga National Park (DRC), where it has at least partial protection, and also in the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or not be significant for its conservation. The 15 remaining occurrences are in unprotected areas. There are no current conservation actions for the taxon.





*Crudia harmsiana* var. *harmsiana*: Herbarium specimen at BR (*Jans* 553).

**Threats** – The habitat is threatened due to human activities such as forest clearing for shifting agriculture (the main threat), urbanization around Kinshasa and selective logging and timber harvesting for small-scale subsistence.

**Justification** – *Crudia harmsiana* var. *harmsiana* is a tree to 20 m tall, with a trunk to 100 cm in diameter. It is known

from 32 herbarium specimens collected between 1896 and 1966, representing 20 unique occurrences and 16 or 17 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 17 different locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The taxon does not appear as severely fragmented and thus does not qualify as threatened under criterion B. Although the habitat is under pressure and we project a decline of the taxon, it does not appear to qualify as threatened under the IUCN Red List criteria.

Bibliography – Léonard & al. (1952).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

#### Crudia harmsiana De Wild. var. velutina J.Léonard

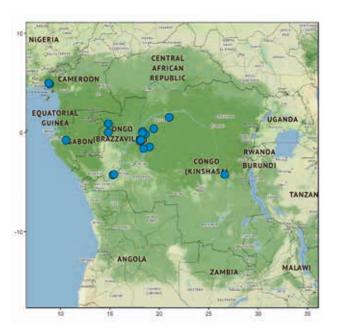
Red List category - Least Concern: LC.

**Distribution** – Cameroon, Gabon, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 1,099,130 km²; Area of occupancy (AOO): 84 km².

**Habitat** – Riparian forest, inundated forest and swamp forest; at 0–350 m.

**Protected areas** – This variety has been collected in two protected areas: the Korup National Park in Cameroon and the Odzala National Park in the Republic of the Congo. It has also been collected in the Bas Ogooué Ramsar Site (Gabon) and the Ngiri-Tumba-Maï Ndombe Ramsar Site (DRC), which may or may not be significant for its conservation. For the other collecting sites, there are no current conservation actions for the taxon and its habitat.

**Threats** – The main threats to this taxon's habitat are forest clearing for agricultural activities, selective logging, industrial oil palm plantations, mining and urbanization.





Crudia harmsiana var. velutina: Holotype specimen at BR (J. Léonard 683).

**Justification** – *Crudia harmsiana* var. *velutina* is a small tree to 12 m tall, with a trunk to 30 cm in diameter. It is known from 26 herbarium specimens collected between 1903 and 2012, representing 21 unique occurrences and 12 to 18 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 15 different locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Notwithstanding these human activities, with varying levels of impact, Crudia harmsiana var. velutina cannot be assigned to a threatened category, because it is not severely fragmented and thus fails to meet the IUCN Red List threshold values under criterion B.

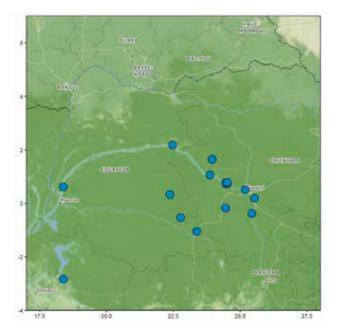
Bibliography – Léonard & al. (1952).

Authors – P. Kamau, M. Simo-Droissart & W. Tack

#### \_ Crudia laurentii De Wild.

**Red List category** – Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 262,558 km²; Area of occupancy (AOO): 68 km².





*Crudia laurentii*: Holotype specimen at BR ( $Laurent \stackrel{.}{E} \& M. s.n.$ ).

**Habitat** – Riverine forest, periodically flooded forest, flooded grassy meadows; up to 500 m.

**Protected areas** – Two occurrences are situated within the Yangambi Biosphere Reserve. The other collections of the species are located outside protected areas. There are no current conservation actions for the species.

**Threats** – The threats to the habitat are loss of forest cover due to small-scale shifting agriculture (the main one) and urbanization in Kisangani, Yangambi and Ubundu Bumba. Logging (and road construction) occurs in Bokori and Basoko.

Justification – Crudia laurentii is a tree to 25 m tall, with a trunk to 75 cm in diameter. It is known from 36 herbarium specimens collected between 1896 and 1981, representing 17 unique occurrences and six or seven subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 14 locations (sensu IUCN) can be distinguished, which is somewhat above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since the species cannot be considered as severely fragmented, it cannot be assigned to any threatened category, despite its low AOO. The species is currently known from 14 locations, a number close to 10, and we project a continuing decline in quality of the species' habitat within the near future.

Bibliography - Léonard & al. (1952).

Authors – D.U. Ikabanga, M. Simo-Droissart & W. Tack

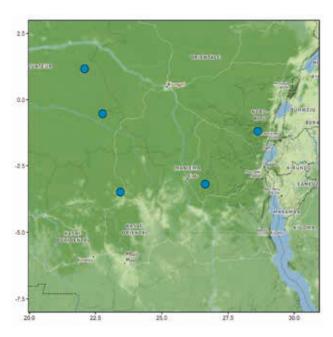
#### \_ Crudia michelsonii J.Léonard

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 203,155 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Rainforest, swamp forest, secondary forest; at 400–500 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.





Crudia michelsonii: Holotype specimen at BR (Michelson 346).

**Threats** – The main threats are forest conversion for small-holder agriculture (slash-and-burn) and specific targeting for several uses. Urbanization is also causing a decline in the extent of habitat.

Justification – Crudia michelsonii is a large tree to 40 m tall, with a trunk to 2 m in diameter. It is known from five herbarium specimens collected between 1912 and 1958, representing five unique occurrences and five subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Human activities are gradually transforming the species' habitat into secondary forest. Based on the scale of the threats, five locations (sensu IUCN) can be distinguished, which is the upper limit of the Endangered category under condition 'a' of sub-criterion B2. We project that this habitat degradation will continue in the future, further reducing its extent and quality.

Bibliography - Léonard (1950), Léonard & al. (1952).

**Authors** – I. Mwanga Mwanga, M. Simo-Droissart & W. Tack

#### \_ Cynometra michelsonii J.Léonard

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 5,721 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Lowland rainforest, on quarzitic and schistose soil; at 560–700 m.

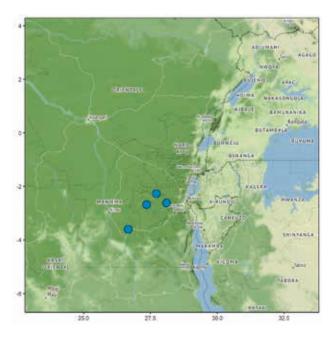
**Protected areas** – One collecting site occurs within the Kahuzi-Biega National Park. There are no current conservation actions for the three other collecting sites occurring in unprotected areas.

**Threats** – One collection is located close to the inner boundary of the Kahuzi-Biega National Park and is subject to land conversion for agriculture and mining as well as selective logging. Within the Kahuzi-Biega National Park, the habitat is threatened by human activities. The northernmost population is situated close to mining activities; two others are in areas of increasing human activities and habitat destruction. *Cynometra michelsonii* produces good charcoal and this negatively influences its survival. In all, habitat destruction caused by various human activities is the main threat to this species.

**Justification** – *Cynometra michelsonii* is a medium-sized tree with a bole to 4 m high and to 17 cm in diameter. It is known from four herbarium specimens collected between 1949 and 1959, representing four unique occurrences and



Cynometra michelsonii: Type specimen at BR (Michelson 898)





four subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under subcriterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that habitat degradation will continue in the future. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

## \_ **Cynometra palustris** J.Léonard

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

Habitat – Swamp forests; around 300 m.

**Protected areas** – The two occurrences are located in unprotected areas. There are no current conservation actions for the species.

**Threats** – The species is threatened by illegal logging and wood cutting for fuelwood and carpentry. The type specimen was collected in 1952 at Bokoro, a locality which is currently facing human pressure by local residents. Another specimen was collected in 1955 at Lac Leopold II (Lac Maï Ndombe).

**Justification** – Cynometra palustris is a tree of 20 m tall, with a bole of 100 cm in diameter. It is known from two herbarium specimens collected in 1952 and 1955, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the scale of the threats, two locations (sensu IUCN) can



Cynometra palustris: Holotype specimen at BR (Jans 909bis).

be defined, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. Intensive fieldwork in Bokoro and at Lac Leopold II must be performed to search for the species and, if found, it should be at least introduced into cultivation.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

#### \_ Cynometra pedicellata De Wild.

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 607,283 km²; Area of occupancy (AOO): 92 km².

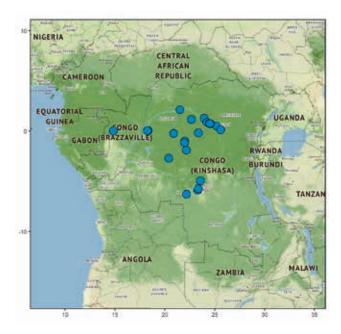
**Habitat** – Lowland rainforest on schistose soil, swamp forest, gallery forest; at around 300 m.

**Protected areas** – This species occurs in three protected areas in the Democratic Republic of the Congo: the Salonga South National Park, the Boende-Tshopo Forestry Reserve and the Yangambi Biosphere Reserve. There are no current conservation actions for the collecting sites occurring in unprotected areas.

**Threats** – Outside of the protected areas, the species' habitat is subject to a high human pressure, especially from shifting agriculture, selective logging, and timber harvesting for small-scale subsistence. The main threat to the species' habitat is the conversion of forests to agricultural land, followed by illegal logging.



*Cynometra pedicellata*: Herbarium specimens at BR (*J. Louis* 14309).



**Justification** – Cynometra pedicellata is a tree to 30 m tall, with a bole of 20 m long and 100 cm in diameter. It is known from 41 herbarium specimens collected between 1904 and 2004 (most before 1957, only five after 1989), representing 23 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 17 locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although its habitat is under pressure, Cynometra pedicellata is not threatened because it is not severely fragmented and it fails to meet or even approach the threshold values for the Vulnerable category under sub-criterion B2. While we expect that human pressure will increase the loss of its habitat, we do not predict a significant decline in its EOO, AOO, number of locations/subpopulations or number of mature individuals in the near future.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

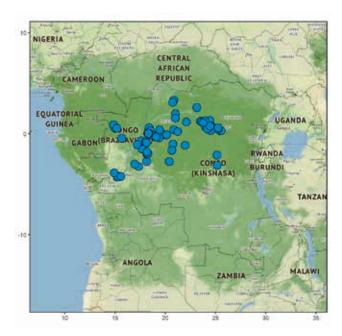
## \_ *Cynometra sessiliflora* Harms

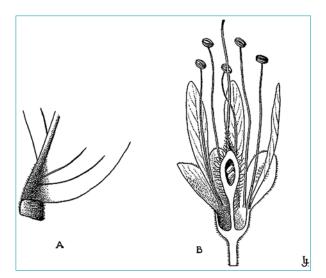
Red List category – Least Concern: LC.

**Distribution** – Republic of the Congo and in the Democratic Republic of the Congo. Extent of occurrence (EOO): 765,601 km²; Area of occupancy (AOO): 352 km².

**Habitat** – Gallery forest (Uapacetum heudelotii), temporarily flooded and periodically inundated riverine forests; at 300–470 m.

**Protected areas** – This species occurs in five protected areas: one in the Republic of the Congo (Odzala National Park) and four in the Democratic Republic of the Congo (N'sele National Park, Salonga National Park, Yangambi Biosphere Reserve and Masako Forestry Reserve). It also occurs in a number of localities in the Ngiri-Tumba-Maï





*Cynometra sessiliflora*: (A) Pétiolule tordu (× 5). (B) Fleur, coupe longitudinale (× 5). — D'après COUTEAUX 44. Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

Ndombe Ramsar Site, which may or may not be significant for its conservation. There are no current conservation actions for the habitat of the collecting sites occurring in unprotected areas.

**Threats** – In unprotected areas, the species' habitat is currently facing threats due to human pressure. The main threat is the loss of its habitat due to the conversion of forests to agricultural land, followed by illegal logging and urbanization.

**Justification** – *Cynometra sessiliflora* is a tree to 20 m tall with a bole to 80 cm in diameter. It is known from 149 herbarium collections made between 1902 and 2013, representing 89 unique occurrences and 41 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 25 to 30 locations (*sensu* IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable

category under condition 'a' of sub-criterion B2. Although its habitat is under pressure, the species is not threatened following the IUCN criteria (2019) because it fails to meet the threshold values for Vulnerable under the B criterion and does not appear as severely fragmented. We expect that human pressure will increase the loss of its habitat and we predict a significant decline in its AOO, number of locations/subpopulations or number of mature individuals in the near future.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

## \_ Cynometra sessiliflora Harms var. laurentii (De Wild.) J.-P. Lebrun

Red List category - Least Concern: LC.

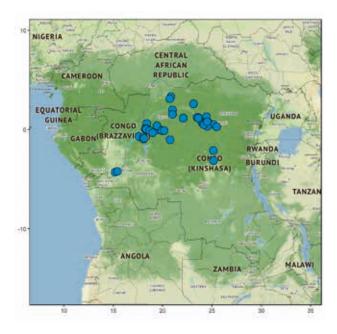
**Distribution** – Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 577,677 km²; Area of occupancy (AOO): 208 km².

**Habitat** – Gallery forest, periodically inundated riverine forests; at 360–470 m.

**Protected areas** – This variety occurs in two protected areas: Salonga-Nord National Park and the Yangambi Biosphere Reserve. It also occurs in a number of localities in the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be significant for its conservation. There are no current conservation actions for the habitat of the collecting sites occurring in unprotected areas.

**Threats** – In unprotected areas its habitat is currently facing threats due to human pressure. The main threat is the loss of its habitat due to the conversion of forests to agricultural land, followed by illegal logging and urbanization.

**Justification** – *Cynometra sessiliflora* var. *laurentii* is a tree to 20 m tall, with a bole to 80 cm in diameter. It is known from 93 herbarium specimens collected between 1903 and 2010, representing 53 unique occurrences and 25 subpopulations. Its extent of occurrence (EOO) is well above the





Cynometra sessiliflora var. laurentii: Holotype specimen at BR (Laurent É. & M. s.n.).

upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 18 to 22 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although its habitat is under pressure, the taxon is not severely fragmented and with the information available it fails to meet the threshold value of any threatened category. While we expect that human pressure will increase the loss of its habitat, we do not predict a significant decline in its EOO, AOO, number of locations/subpopulations or number of mature individuals in the near future.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

#### \_ Cynometra sessiliflora Harms var. sessiliflora

 $\label{eq:category} \textbf{-} \ \texttt{Least Concern: LC.}$ 

**Distribution** – Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 462,219 km²; Area of occupancy (AOO): 156 km².

**Habitat** – Gallery forest (Uapacetum heudelotii), periodically inundated forest; at 300–350 m.

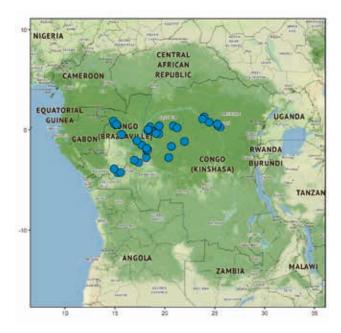








*Cynometra sessiliflora* var. *sessiliflora*: Flowering branch. Leaf. Inflorescence. Flowers. Lobaye tributary of the Lomami River, Tshopo, Democratic Republic of the Congo. Photos by Bart Würsten, Meise Botanic Garden (CC-BY-NC).



**Protected areas** – This variety occurs in five protected areas: one in the Republic of the Congo (Odzala National Park) and four in the Democratic Republic of the Congo (N'Sele National Park, Salonga National Park, Yangambi Biosphere Reserve and Masako Forestry Reserve). It also occurs in a number of sites in the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be significant for its conservation. There are no current conservation actions for the habitat for the collecting sites occurring in unprotected areas.

**Threats** – In unprotected areas, its habitat is currently facing threats due to human pressure. The main threat to this taxon is the loss of its habitat due to the conversion of forests to agricultural land, followed by illegal logging and urbanization.

**Justification** – Cynometra sessiliflora var. sessiliflora is a tree to 20 m tall, with a bole to 50 cm in diameter. It is known from 56 herbarium specimens collected between 1902 and 2013, representing 41 unique occurrences and 21 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 20 to 23 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although its habitat is under pressure, the taxon is not severely fragmented and with the information available it fails to meet the threshold value of any threatened category. We expect that human pressure will increase the loss of its habitat and we predict a significant decline in its AOO, number of locations/subpopulations and number of mature individuals in the near future due to the future loss of at least the occurrence from Kinshasa.

Bibliography - Léonard & al. (1952).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

#### \_ **Dialium excelsum** Louis ex Steyaert

Red List category – Least Concern: LC.

**Distribution** – Republic of the Congo and the Democratic Republic of the Congo (Ituri Forest), where the species is fairly common but scattered. The species possibly also occurs in South Sudan (fide checklist) and Uganda (Budongo, fide Kalema); these are not taken into account for this assessment as no associated herbarium material could be located. Their inclusion would increase the EOO and AOO but would not change the Red List category. Extent of occurrence (EOO): 1,347,153 km²; Area of occupancy (AOO): 148 km².

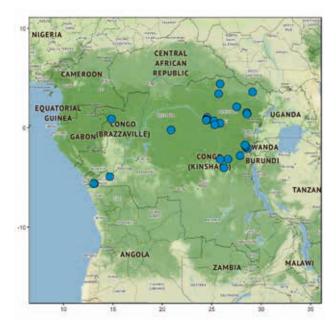
**Habitat** – Old-growth terra-firma moist tropical forests; at 450–1,050 m.

**Protected areas** – Thirteen collecting sites occur within four protected areas. These are the Odzala National Park in the Republic of the Congo (one); in the Democratic Republic of the Congo, the Luki (one) and Yangambi (eight) Biosphere Reserves and the Okapi Wildlife Reserve (three). For the other collecting sites occurring outside protected areas, there are no current conservation actions for the species.

**Threats** – General threats of mining, overcutting for charcoal production and expanding agriculture affect unprotected parts of the species' range. Its habitat is facing forest cover loss due to charcoal production, conversion into agricultural land and urbanization near larger cities such as



Dialium excelsum: Herbarium specimen at BR (Gilbert 8955).



Kisangani. Six known subpopulations occur in areas where at least half of the land cover is human-impacted (urban areas, fragmented forest cover due to deforestation).

**Justification** – *Dialium excelsum* is a tree to 50 m tall, with a bole to 1.5 m in diameter. It is known from 65 herbarium specimens collected between 1935 and 2013, representing 39 unique occurrences and 30 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of threats, 24 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Human-induced land use and land cover changes indicate that six subpopulations are under serious threat. However, since the species cannot be considered as severely fragmented and the number of locations is beyond any threatened category, it cannot be regarded as threatened despite its low AOO.

**Bibliography** – Brenan (1967), Katende (1993), Lock (1989), Mayaux & al. (2004), Okullo & al. (1997), Pomeroy & Hart (1997), Steyaert (1952).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

## \_ **Dialium hexasepalum** Harms

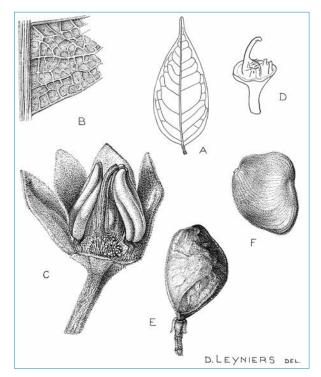
Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 367 km²; Area of occupancy (AOO): 12 km².

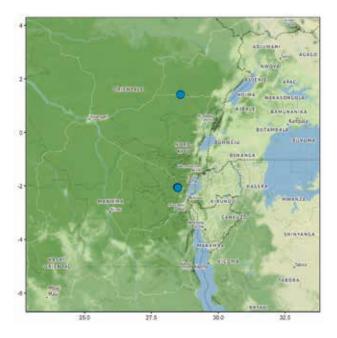
**Habitat** – Old-growth and secondary rainforest; at 750–975 m.

**Protected areas** – One collecting site occurs in the Okapi Wildlife Reserve. There are no current conservation actions for the species.

**Threats** – The two southern collecting sites occur in an area where between 10% and 30% of the vegetation is either



Dialium hexasepalum: A, leaflet; B, detail of leaf venation; flower, longitudinal section; D, flower receptacle and ovary; E, fruit; F, seed. (A-D: Pierlot 736; E, F: A. Léonard 5477). Drawing by D. Leyniers, Meise Botanic Garden (©).



human-impacted land cover (mosaic of agriculture land and forest) or has suffered from forest cover loss during the last two decades, probably because of forest conversion into agricultural land. Both of the southernmost collecting sites have some forest left, but are near oil palm plantations, and also subject to charcoal production (Ithe Mwanga Mwanga, pers. comm.). The Okapi Wildlife Reserve is subject to some threats of civil unrest, military action, logging and mining, but forested areas not on village lands are reasonably well protected (C.E.N. Ewango, pers. comm.).

**Justification** – *Dialium hexasepalum* is a shrub or small tree to 20 m tall. It is known from six herbarium specimens

collected between 1955 and 2000, representing three unique occurrences and two subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. Based on the scale of threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under conditions B1a and B2a. Based on the information available to us, we infer a decline in the extent and quality of the habitat.

Bibliography – Mayaux & al. (2004), Steyaert (1952).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

## \_ **Dialium kasaiense** Louis ex Steyaert

Red List category – Endangered: EN B2ab(iii).

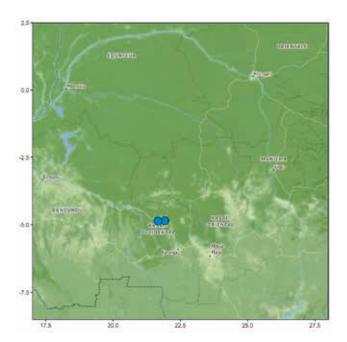
**Distribution** – Endemic to southern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

Habitat – Forests on sandy soils; at 500–600 m.

**Protected areas** – The two known collecting sites occur in unprotected areas. There are no current conservation actions for the species.

**Threats** – The threats to the species' habitat are forest cover loss due to charcoal production and forest conversion into agricultural land. Both known collecting sites occur in very disturbed areas where at least 30% of land cover is human-impacted (urban areas, fragmented forest cover due to deforestation).

**Justification** – *Dialium kasaiense* is a tree to 25 m tall. It is known from two herbarium specimens collected in 1958, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The most serious threat appears to be forest cover loss, probably due to charcoal production and slash-and-burn agriculture. Given the scale of the threats (the two occur-





*Dialium kasaiense*: Herbarium specimen at BR (*Flamigni* 7043TER).

rences are apart 28 km and located within range of two different villages), two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat of the species.

Bibliography – Mayaux & al. (2004), Steyaert (1952).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

#### \_ **Dialium pentandrum** Louis ex Steyaert

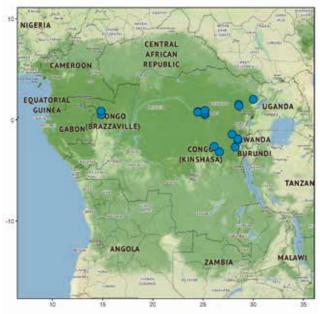
**Red List category** – Near Threatened: NT.

**Distribution** – Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 533,119 km²; Area of occupancy (AOO): 84 km².

**Habitat** – Old-growth terra-firma rainforest, monodominant *Gilbertiondendron dewevrei* forest; at 470–930 m.

**Protected areas** – The species occurs in three protected areas: the Odzala National Park in the Republic of the Congo, and the Yangambi Biosphere Reserve and the Okapi Wildlife Reserve in the Democratic Republic of the Congo. There are no current conservation actions for the collecting sites occurring outside protected areas.

**Threats** – Several collecting sites occur in areas where between 10% and 30% of land cover is degraded by humans (mosaic of agricultural land and forest) or in areas where there has been a significant loss of forest cover over the last two decades, probably due to the conversion of forest to





Dialium pentandrum: A, flowering branch; B, leaf venation, lower surface; C, flower; D, E, stamens, frontal and lateral view; F, receptacle and ovary, longitudinal section; G, pod; H, seed. (A-F: Louis 4017; G, H: Louis 6224). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

agricultural land. The most serious threats appear to be loss of forest cover due to agriculture, charcoal production and mining.

Justification – Dialium pentandrum is a tree to 40 m tall, with a bole to 1 m in diameter. It is known from 28 herbarium specimens collected between 1936 and 2011, representing 21 unique occurrences and 9 to 12 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 11 locations (sensu IUCN) can be distinguished, which falls just beyond the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the species, which may in time lead to a decline in its AOO, number of locations/subpopulations and number of mature individuals. The species is currently known from  $\ensuremath{^{11}}$ locations with a current decline in the number of locations, a number very close to 10, the threshold for the threatened category Vulnerable under the B2 sub-criterion.

Bibliography – Mayaux & al. (2004), Steyaert (1952).

Authors – G. Dauby, M. Simo-Droissart & W. Tack

## \_ **Dialium poggei** Harms

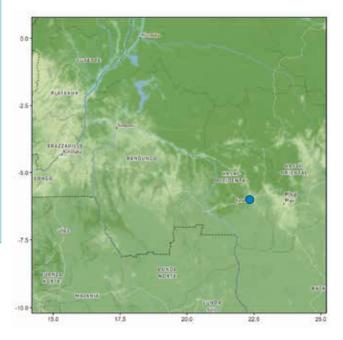
**Red List category** – Data Deficient: DD.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

**Habitat** – Probably found in lowland rainforest; at 500–600 m.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – There is a possible threat from habitat degradation due to shifting agriculture and fuelwood collecting.



**Justification** – *Dialium poggei* is a tree known only from the type specimen collected in 1881 from the Kasaï region. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The collection represents one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. The habitat at the type locality was not recorded on the specimen and the type specimen has apparently been lost at Berlin. Some woody vegetation persists along water courses near the coordinates of the type and the species could still exist there, but lacking knowledge of the precise type locality, the principal threat of shifting agriculture is more plausible than definite. Steyaert (1952) states that Dialium poggei might be a synonym of either D. gossweileri or D. corbisieri and the African Plant Database considers the status of the name to be uncertain. Until the type specimen is located or the name is lectotypified to fix its application, Dialium poggei is assigned a precautionary assessment of DD because of taxonomic and ecological uncertainty.

**Bibliography** – African Plant Database (2020), BGCI (2019), Steyaert (1952).

Authors - C. Amani, M. Simo-Droissart & W. Tack

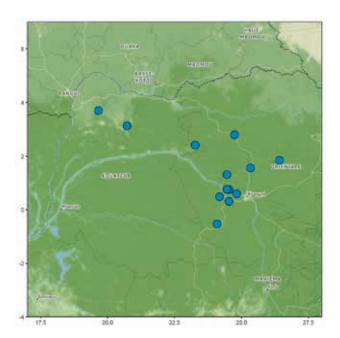
## \_ **Dialium reygaertii** De Wild.

Red List category – Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 146,147 km²; Area of occupancy (AOO): 52 km².

**Habitat** – Swamp forest, riverine forest, gallery forest; at 300–500 m.

**Protected areas** – Two (or three depending on geo-referencing accuracy) collecting sites constituting two subpopulations occur in the Yangambi Biosphere Reserve. There are no current conservation actions for the ten remaining occurrences of the species.









*Dialium reygaertii*: Flowering branch. Flowers. Fruits. Lobaye tributary of the Lomami River, Tshopo, Democratic Republic of the Congo. Photos by Bart Würsten, Meise Botanic Garden (CC-BY-NC).

**Threats** – Five collecting sites occur in areas where at least 50% of the forest cover is degraded by humans (mosaic of agricultural land and forest) or in areas where there has been a significant loss of forest cover over the last two decades, probably due to the conversion of forest to agricultural land.

**Justification** – *Dialium reygaertii* is a tree to 15 m tall, with a bole to 45 cm in diameter. It is known from 16 herbarium specimens collected between 1913 and 2010, representing 13 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 12 locations (*sensu* IUCN) can be distinguished, which exceeds the limits of the Vulnerable category under

condition 'a' of sub-criterion B2. We project that the habitat loss will continue in the near future. Since the species is not severely fragmented, the conditions for applying condition 'a' under sub-criterion B2 are not met. Therefore, the species cannot be regarded as threatened under the IUCN Red List criteria. Given that the species is known from 12 locations, a number very close to 10, and the observed habitat loss, *Dialium reygaertii* is assigned a status of Near Threatened.

Bibliography – Mayaux & al. (2004), Steyaert (1952).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

# \_ **Englerodendron lebrunii** (J.Léonard) Estrella & Ojeda

(Synonyms: Anthonotha lebrunii (J.Léonard) J.Léonard, Isomacrolobium lebrunii (J.Léonard) Aubrév. & Pellegr. ex Breteler)

Red List category – Vulnerable: VU D2.

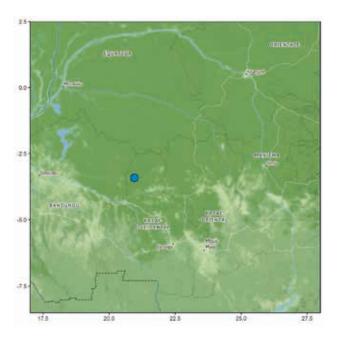
**Distribution** – Endemic to the Democratic Republic of the Congo (Kasai Province). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat – Lowland rainforest; at around 350–400 m.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – The habitat might be threatened in the near future by human activities such as small-scale shifting agriculture and wood harvesting for domestic uses.

**Justification** – Englerodendron lebrunii is a small tree to 15 m tall. It is known only from the type specimen collected in 1932, between Dekese and Bumbuli. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The single collection represents one subpopulation and one location (sensu IUCN),





Englerodendron lebrunii: Holotype specimen at BR (Lebrun 6497).

which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Given the uncertainty of the type locality and the variable quality of the habitat between Dekese (patchy forest with some agricultural clearings) and Bumbuli (patchy forest with some agricultural clearings, with somewhat larger openings), the threats seem plausible but not certain. Considering that fact, the criterion D2 (very small population, AOO < 20 km²) has been assigned.

**Bibliography** – Breteler (2008a, 2011), de la Estrella & al. (2019), Léonard (1957), Léonard & al. (1952), Lock (1989).

Authors – R. Shutsha Ehata, M. Simo-Droissart & W. Tack

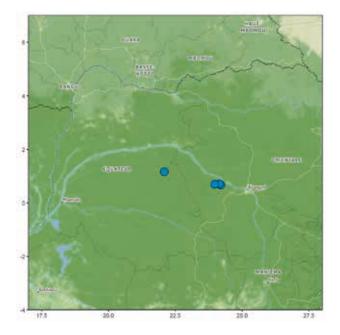
## \_ **Englerodendron mengei** (De Wild.) Estrella & Ojeda

(Synonym: Pseudomacrolobium mengei (De Wild.) Hauman)

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO):  $54,283 \text{ km}^2$ ; Area of occupancy (AOO):  $16 \text{ km}^2$ .

**Habitat** – Secondary forest, along rivers; at 300–470 m. Within the genus, fruits are leathery to woody pods that are dehiscent or only dehiscent after falling to the forest floor.



Englerodendron mengei: A, flowering branch; B, flower, male by suppression of ovary, longitudinal section; C, calix and corolla spread out, androecium and ovary in transverse section; D, valve of pod; E, seed. (A-C: Louis 3666; D, E: Germain 4536). Drawing by M. Boutique, Meise Botanic Garden (©).

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the species is habitat degradation caused by small-scale agriculture, which affects three out of the four occurrences. The species is listed in the category IV of logging.

**Justification** – *Englerodendron mengei* is a tree to 20 m tall. It is known from four georeferenced herbarium specimens collected between 1913 and 1958, representing four unique occurrences and three subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, three locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in quality of the species' habitat.

**Bibliography** – de la Estrella & al. (2019), Léonard & al. (1952), Neuwinger (2004).

Authors - S.T. Ndolo Ebika, M. Simo-Droissart & W. Tack

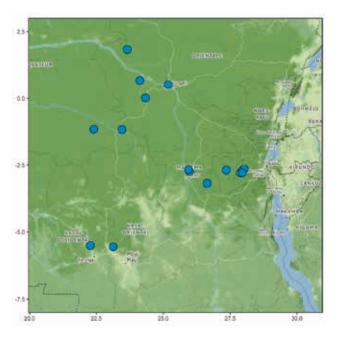
## \_ Gilbertiodendron bambolense Burgt

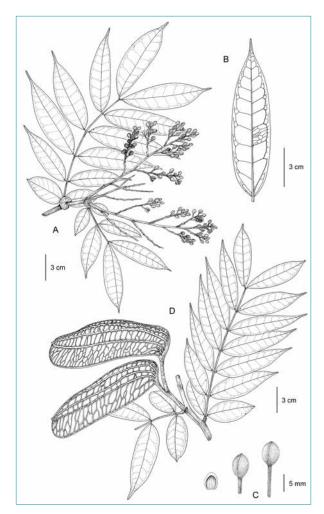
Red List category - Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo and fairly widespread in the country. Extent of occurrence (EOO): 294,568 km<sup>2</sup>; Area of occupancy (AOO): 68 km<sup>2</sup>.

**Habitat** – Evergreen rainforest on well-drained soil; at 400–800 m.

**Protected areas** –The species is found in one protected area, the Yangambi Biosphere Reserve, however whether the species is effectively protected at this site needs confirmation. This species is not recorded in any *ex situ* collections.





Gilbertiodendron bambolense: A, flowering branch; B, leaflet, lower surface; C, floral bract; flower buds with short and long pedicel; D, fruiting branch. (A: Michelson 873; B, C: Louis 11234; D: A. Leonard 5149). Drawing by Margaret Tebbs (©), reproduced with permission from Burgt & al. (2015).

**Threats** – There has been deforestation in parts of this species' distribution due to human activities including urban and agricultural expansion, logging and mining.

**Justification** – Gilbertiodendron bambolense is a large tree to 40 m in height and with a trunk to 120 cm in diameter. It was described in 2015 and is known from 18 herbarium specimens collected between 1938 and 1980, representing 17 unique occurrences. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Given the extent of the main threat, 12 or 13 locations (sensu IUCN) can be recognized. The threats cause a decline in extent and quality of the habitat, the area of occupancy, the extent of occurrence and the number of subpopulations. The species is assessed as Near Threatened as it almost reaches the threshold for a threatened category under criterion B. Further, in situ conservation efforts for the species should be investigated to identify if any existing protected areas could be made or expanded to accommodate the species and other threatened trees in DRC. It is recommended that there should be survey and monitoring of the population of this species.

**Bibliography** – BGCI (2013, 2019), van der Burgt & al. (2015), Hills & van der Burgt (2020), World Resources Institute (2019).

Authors - R. Hills & X. van der Burgt

## \_ **Gilbertiodendron breynei** Bamps

Red List category – Endangered: EN B2ab(ii,iii,iv,v).

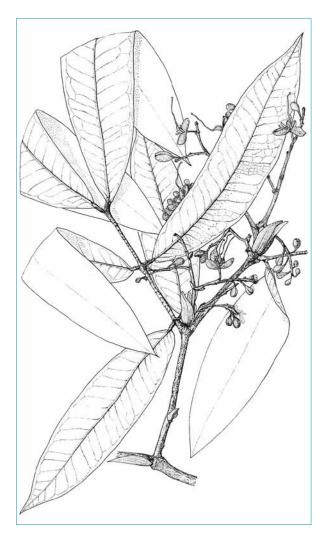
**Distribution** – Gabon and the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

Habitat – Old-growth rainforest; at 280–400 m.

**Protected areas** – Both collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – One collecting site is situated in the northern part of Kinshasa, where the road network and urban areas are expanding and where forests are being replaced by agricultural areas.

**Justification** – *Gilbertiodendron breynei* is a tree to 25 m tall, with a bole to 25 cm in diameter. It is known from 12 herbarium specimens collected between 1976 and 1993, repre-



Gilbertiodendron breynei: flowering branch. (Breyne 4000). Drawing by M. Allard, Meise Botanic Garden (©).



senting two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The two subpopulations represent two locations (sensu IUCN), one in each country, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. From the threats, we infer a decline in its AOO, extent and quality of its habitat, number of locations/subpopulations and number of mature individuals in the near future.

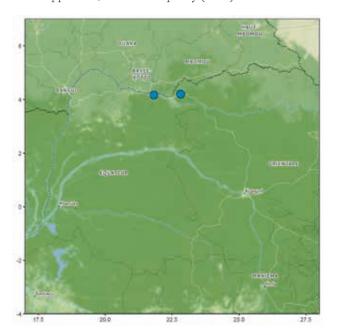
Bibliography - Bamps (1980).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

#### \_ Isoberlinia paradoxa Hauman

Red List category – Endangered: EN B2ab(iii,v).

**Distribution** – Endemic to the northern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.





Isoberlinia paradoxa: Holotype material at BR (Lebrun 2215)

**Habitat** – *Borassus* savanna; at ca. 400 m. The main dispersal mode is by explosive splitting of the pod, with seeds dropping under or near the mother tree, and root suckering. This comparatively inefficient dispersal mode encourages a gregarious distribution, thereby limiting the chances of recolonization of a site should a subpopulation be depleted.

**Protected areas** – The two known collecting sites occur outside protected areas. There are no current conservation actions for the species.

Threats – The habitat is under anthropogenic pressure, e.g. by urbanization, subsistence farming and the harvesting of wood for timber and charcoal. Kakaï and Sinsin (2010) have underlined the serious threat to *Isoberlinia* spp. in general; there is over-exploitation of trees from this genus for timber and charcoal. There is evidence of limited cultivation and human settlement around the first occurrence (between Banzyville and Yakoma). The second collecting site, Monga, is a slowly expanding city. It is very likely that trees will be cut down to provide the population with charcoal, as is the case with other cities in the Democratic Republic of Congo. The growing human population will increase the pressure on the savannah.

**Justification** – *Isoberlinia paradoxa* is a tree to 15 m tall and a trunk to 25 cm in diameter. It is known from two herbarium specimens collected in 1931, representing two unique

occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Given the scale of these threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a further habitat loss and degradation for the future, also leading to a decline in the number of mature individuals due to their use for charcoal production. In addition, the inefficient method of seed dispersal increases the risk of local extinction of the species. Since the species has not been collected since 1931, we recommend field work to gain a better understanding of the distribution area of this species, its abundance and the threats it faces.

**Bibliography** – Asylum Research Centre (2019), Debroux & al. (2007), Goussanou & al. (2017), Kakaï & Sinsin (2009, 2010), Kipalu & al. (2016), Kusakana (2016), Léonard & al. (1952), Novosseloff & al. (2019).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

### \_ Michelsonia microphylla (Troupin) Hauman

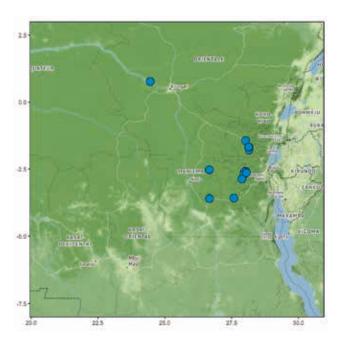
Red List category – Vulnerable: VU B2ab(i,ii,iii,iv).

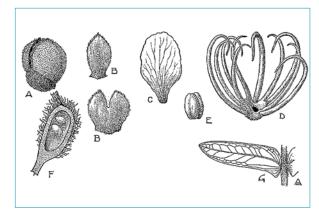
**Distribution** – Endemic to the eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 83,121 km²; Area of occupancy (AOO): 44 km².

**Habitat** – Rainforests, where it may be locally dominant; at 400–1,200 m.

**Protected areas** – The species is currently known to occur in only one protected area: the Kahuzi-Biéga National Park. There are no known conservation measures specifically for this species. The seeds of this species are not currently held in any seed bank.

**Threats** – All but one of the collections were made from the area surrounding Kahuzi-Biéga National Park, one of the most densely populated areas in DRC. The habitat is threatened by slash and burn agriculture, mining activities and





Michelsonia microphylla: A, flower bud with bracts and bracteoles; B, lower sepal, outer side; C, upper sepal, outer side; D, filaments; E, anther; F, ovary, longitudinal section; G, leaflet, lower surface. (A-G: Michelson 844). Drawing by A. Cleuter, Meise Botanic Garden (©).

growing human populations. This region has over 300 people per sq.km, some 90% of whom depend mainly on agriculture. Slash and burn farming and tea-growing occurs on the forest margins. Banana beer is locally important, and the demand for land for banana plantations is high, as it is also now for cattle raising. Fifteen existing villages of shifting cultivators, and mining settlements for gold, cassiterite and coltan were located in the western section of the Park. The 1994 war in Rwanda caused an influx of an estimated up to 2 million refugees into the Democratic Republic of the Congo. A refugee camp for 50,000 was sited next to the Park. Derived from an area of habitat (AOH) analysis over a ~30-year timescale, several occurrences show ongoing decline in availability of suitable habitat. The timber is considered of good quality and easy to process.

Justification – Michelsonia microphylla is a tree to 25 m tall, with a bole to 125 cm in diameter. It is known from 13 herbarium specimens collected between 1943 and 2010, representing 13 unique occurrences and 10 or 11 subpopulations. Its distribution range appears to be quite restricted; the estimated area of occupancy meets the threshold to be evaluated in a threatened category. Based on the scale of the threats, we distinguish 6 to 9 locations (sensu IUCN), which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the threats we also infer a decline in quality and extent of the natural habitat. The seed storage behaviour is predicted to be orthodox, therefore seed collecting for ex situ storage is recommended. Most sites are known from historical collections from the 1950s and have not been observed in recent years. Known sites of occurrence should be revisited to ensure this species is still extant.

**Bibliography** – BGCI (2020), Bamps & Champluvier (1990), Contu (2012a), Doumenge (1990), ESA CCI (2015, 2018), Léonard & al. (1952), Omari & al. (1999), UNEPWCMC & IUCN (2021), Wyse & Dickie (2018), Yumoto & al. (1995).

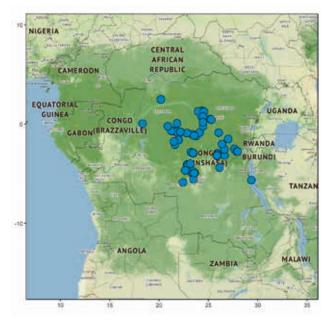
Authors - P. Moore.

#### \_ Normandiodendron romii (De Wild.) J.Léonard

(Synonym: Leonardoxa romii (De Wild.) Aubrév.)

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 671,168 km²; Area of occupancy (AOO): 220 km².





**Normandiodendron romii**: Herbarium specimen at BR (*Claessens s.n.*).

**Habitat** – Primary forest on dry land, *Gilbertiodendron* forest, swamp forest, gallery forest, locally common; at 460–750 m.

**Protected areas** – Three collecting sites are located within the Salonga-Nord National Park, one collecting site is located within the Yangambi Biosphere Reserve, and two sites are apparently within but very near the outer boundary of the Sankuru Nature Reserve. There are no current conservation actions for the species.

**Threats** – Outside the protected areas, the main threat to the habitat is slash-and-burn agriculture, followed by firewood collection and artisanal and industrial timber exploitation. The young leaves are collected and eaten like spinach or used in an infusion against coughs.

**Justification** – *Normandiodendron romii* is a tree to 30 m tall, with a bole to 60 cm in diameter. It is known from 75 herbarium specimens collected between 1888 and 2004, representing 55 unique occurrences and seven subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 25 to 30 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Notwithstanding the threats posed by human activities, with varying levels of impact, Normandiodendron romii is not threatened because it fails to meet the threshold values for the Vulnerable category under the IUCN Red List criteria. However, we project that human pressure will increase the loss of its habitat, and we project a significant decline in AOO, EOO, number of locations and mature individuals of the species in the near future.

**Bibliography** – Léonard (1957), Léonard & al. (1952), Lock (1989).

Authors - R. Shutsha Ehata, M. Simo-Droissart & W. Tack

#### \_ Tessmannia anomala (Micheli) Harms var. anomala

Red List category – Least Concern: LC.

**Distribution** – Cameroon, Equatorial Guinea (Rio Muni), Gabon, the Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,380,302 km²; Area of occupancy (AOO): 156 km².

Habitat – Rainforest; at 400–800 m.

**Protected areas** – The taxon occurs in the Lopé National Park in Gabon, and the Yangambi Biosphere Reserve, the Okapi Wildlife Reserve and the Lomako-Yokokala Nature Reserve, in the Democratic Republic of the Congo. There are no current conservation actions for this taxon.

**Threats** – The threats to the habitat are land conversion for shifting agriculture (the main one) and logging activities. In some of the regions where it occurs, logging activities may be very intense. Its wood is also collected to be used for carpentry.









**Tessmannia anomala** var. **anomala**: Flowering crown. Leaves. Flowering twigs. Flowers. Aruwimi River, Tshopo, Democratic Republic of the Congo. Photos by Bart Würsten, Meise Botanic Garden (CC-BY-NC).

Justification – Tessmannia anomala var. anomala is a large tree to 50 m tall, with a bole to 130 cm in diameter. It is known from 52 herbarium specimens collected between 1906 and 2013, representing 40 unique occurrences and 32 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 30 to 33 locations (sensu IUCN) can be distinguished, which far exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Notwithstanding the threats posed by human activities with varying levels of

impact, *T. anomala* var. *anomala* is not threatened because it fails to meet the threshold values for a threatened category under the IUCN Red List criteria. We project that human pressure will negatively impact its habitat and we also infer a decline of its EOO, AOO, number of locations and mature individuals in the near future.

Bibliography – Léonard & al. (1952).

Authors - C. Amani, M. Simo-Droissart & W. Tack

## \_ **Tessmannia anomala** (Micheli) Harms var. **flamignii** J.Léonard

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Gabon and the Democratic Republic of the Congo. Extent of occurrence (EOO): 103,635 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

**Habitat** – Rainforest, coastal forest; probably at 400–800 m.

**Protected areas** – All the subpopulations occur outside protected areas. There are no current conservation actions for the taxon.



Tessmannia anomala var. flamignii: Herbarium specimen at BR (Flamigni 8026).



**Threats** – The threats to the habitat are oil drilling (the main one in Gabon), followed by small-scale agriculture (DRC) and logging activities (Gabon).

**Justification** – *Tessmannia anomala* var. *flamignii* is a tree of unknown height. It is known from seven herbarium specimens collected between 1941 and 2002, representing five unique occurrences and four subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1 while the area of occupancy (AOO) falls within the thresholds of the Endangered category under sub-criterion B2. Given the scale of the main threat (i.e. oil drilling), four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under sub-criterion B2. We anticipate that the loss of its habitat will increase in the future.

Bibliography - Léonard & al. (1952).

Authors - C. Amani, M. Simo-Droissart & W. Tack

#### \_ **Tessmannia burttii** Harms

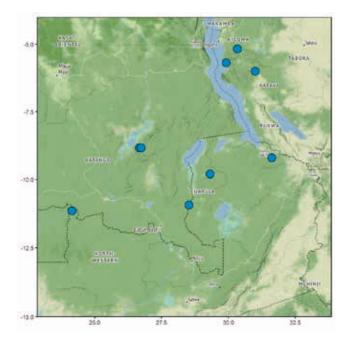
Red List category – Vulnerable: VU B2ab(iii).

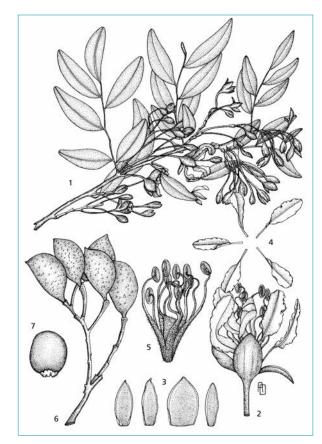
**Distribution** – South-eastern Democratic Republic of the Congo, western Tanzania and northern Zambia. Extent of occurrence (EOO): 248,917 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Evergreen forest on valley slopes and along rivers, riverine forest; at 800–1,100 m. Like all *Tessmannia*, the seeds are dispersed by means of the explosive pods.

**Protected areas** – The species is present in three protected areas: the Upemba National Park in the Democratic Republic of the Congo, and the Kungwe Bay Forest Reserve and Uvinza Forest Reserve, both in Tanzania.

**Threats** – Threats to the habitat are forest conversion for agriculture, mining, infrastructure, urbanization and fuelwood collecting.





Tessmannia burttii: 1, flowering branch; 2, flower; 3, sepals; 4, petals; 5, stamens and gynoecium; 6, pods; 7, seed. (1-5: Burtt 6004; 6, 7: Fanshawe 3586). Drawing by Ann Davies, reproduced with permission from Brummitt & al. (2007).

**Justification** – *Tessmannia burttii* is a tree to 13 m tall. It is known from 10 herbarium specimens collected between 1936 and 2012, representing nine unique occurrences and eight subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The specimens from coastal Tanzania that were

previously placed under *T. burttii* represent a new taxon (revision ongoing) and were not included in the assessment. Given the scale of the threats, eight locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

**Bibliography** – Brenan (1978), Brummitt & al. (2007), Léonard & al. (1952).

**Authors** – A. Nsanzurwimo, M. Simo-Droissart, X. van der Burgt & W. Tack

#### \_ Tessmannia copallifera J.Léonard

Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

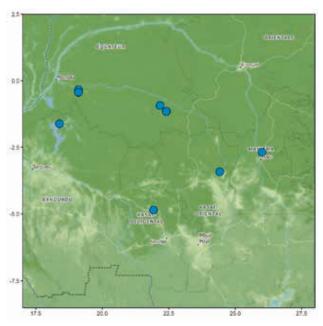
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 212,087 km²; Area of occupancy (AOO): 32 km².

**Habitat** – Forests on sandy soil, riparian forests, swamp forests; at 460–580 m.

**Protected areas** – One collecting site occurs within the Sankuru Nature Reserve. The seven other occurrences are located in unprotected areas. There are no current conservation actions for the species.

**Threats** – The threats to the habitat are shifting agriculture (the main one), urbanization, artisanal and industrial exploitation of timber and collecting of firewood. It produces an aromatic resin (copal).

**Justification** – *Tessmannia copallifera* is a tree to 35 m, with a cylindrical bole to 110 cm in diameter. It is known from eight herbarium collections made between 1910 and 1959, representing eight unique occurrences and six subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2.





**Tessmannia copallifera**: Herbarium specimen at BR (Dechamps 77).

Given the scale of the main threat, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under the condition 'a' of sub-criterion B2. We expect that this human pressure will continue and intensify within the near future, and that the decline in quality of the species' habitat will lead to a continuous decline in the number of subpopulations and mature individuals of the species, as well as its AOO and EOO.

Bibliography – Léonard (1957), Lock (1989).

Authors - R. Shutsha Ehata, M. Simo-Droissart & W. Tack

## \_ **Tessmannia yangambiensis** Louis ex J.Léonard

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the area around Yangambi in the Democratic Republic of the Congo. Extent of occurrence (EOO): 51 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Primary forest, riverine forests, *Scorodophloeus zenkeri* forest; at around 470 m.

**Protected areas** – The species occurs within the Yangambi Biosphere Reserve. There are no current conservation actions for the species outside the Reserve.





**Tessmannia yangambiensis**: Herbarium specimen at BR (*J. Louis* 3684).

**Threats** – The threats to the habitat are land conversion for shifting agriculture (the main threat), urbanization (in Yangambi), artisanal timber exploitation, artisanal gold and diamond mining and fuelwood collecting. Even within the Yangambi Biosphere Reserve, its habitat is under threat due to human activities.

Justification – Tessmannia yangambiensis is a large tree to 48 m tall, with a bole to 130 cm in diameter. It is known from six herbarium specimens collected between 1936 and 1948, representing four unique occurrences and one subpopulation. The extent of occurrence (EOO) falls within the limits of the Critically Endangered category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. We project that the degradation of its habitat will continue in the future and leads us to predict a continuous decline in its EOO, AOO, number of locations/subpopulations and number of mature individuals.

Bibliography - Léonard (1957), Léonard & al. (1952).

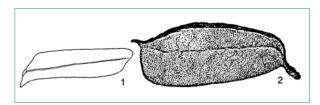
Authors - R. Shutsha Ehata, M. Simo-Droissart & W. Tack

#### \_ **Tetraberlinia baregarum** Wieringa

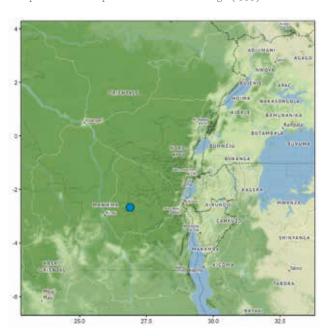
**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Maniema Province in the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – The species is a large dominant (or co-dominant) tree, growing in small groups on hill tops and slopes (Ulindi riverside forest); at ca. 650 m.



**Tetraberlinia baregarum**: 1, leaflet; 2, pod. (1, 2: *Michelson 520b*). Drawing by W. Wessel, Naturalis Biodiversity Center (©), reproduced with permission from Wieringa (1999).



**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – In 1943, the species was logged in large numbers for making planks. Currently, mining activities for cassiterite and gold take place in the area, as well as forest conversion for small-holder farming.

Justification – Tetraberlinia baregarum is a large tree known from a single specimen collected in 1943. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Although the single known specimen represents an old collection and the species hasn't been found in more than 75 years, the species was said to be locally common. Scattered individuals might possibly be present, as the forest where it was found still exists, although there is disturbance from mining, charcoal production and agricultural conversion. The ongoing loss of the habitat of Tetraberlinia baregarum is likely to increase in the near future.

Bibliography – Wieringa (1999).

Authors – I. Mwanga Mwanga, M. Simo-Droissart & W. Tack

## FABACEAE - FABOIDEAE

## \_ Aeschynomene pararubrofarinacea J.Léonard

Red List category – Least Concern: LC.

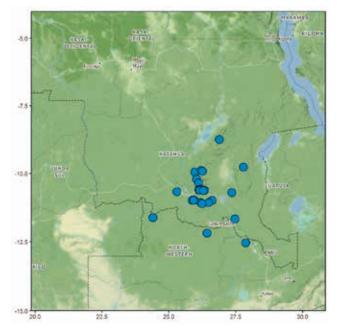
**Distribution** – South-eastern Democratic Republic of the Congo and northern Zambia. Extent of occurrence (EOO): 88,863 km²; Area of occupancy (AOO): 124 km².

**Habitat** – Woodland on rocky hills, Brachystegia woodland, open forest with Brachystegia utilis or B. floribunda, rocky hills with Brachystegia bussei, dembo forest with Uapaca, shrubby savannah with Uapaca robynsii, steppe savannah (including copper ecotones), steppe savannah on humid grey soil after fire with Rendlia-Eragrostis capensis, low and open forest and rocky places; at 1,400–1,600 m.

**Protected areas** – The species occurs within two protected areas: the Upemba National Park in the Democratic Republic of the Congo and the Luakera River Forest Reserve in Zambia. The other collecting sites occur in unprotected areas where there are no current conservation actions for the species.

**Threats** – The habitat is threatened by forest clearance for shifting agriculture, grazing, fire, mining, urbanization and fuelwood collection.

**Justification** – *Aeschynomene pararubrofarinacea* is a shrub or small tree to 4.5 m tall. It is known from 43 herbarium specimens collected between 1933 and 2008, representing 34 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the





Aeschynomene pararubrofarinacea: Rép. dém. Congo, Shimbidi. Photo by F. Malaisse (©).

Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 15 to 20 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The species is fairly common, and therefore local extinction risk seems relatively low. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. No extreme fluctuations can be assumed and hence the conditions for any threatened category under criterion B are not met.

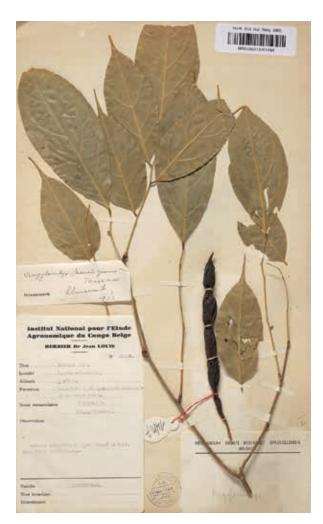
**Bibliography** – Faucon (2009), Léonard (1954), Léonard & al. (1954), Malaisse & al. (2016).

Authors - A. Nsanzurwimo, M. Simo-Droissart & W. Tack

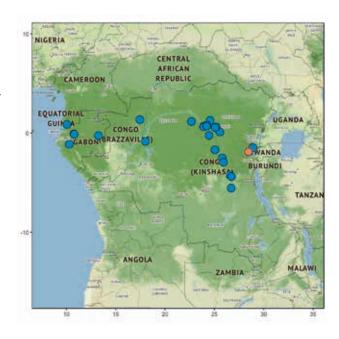


Red List category - Least Concern: LC.

**Distribution** – Gabon, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 995,979 km²; Area of occupancy (AOO): 100 km².



Angylocalyx boutiqueanus: Holotype material at BR (J. Louis 14127).



**Habitat** – Dense forests, riverine forests, secondary forest, locally common; at 250–750 m.

**Protected areas** – The species is not currently known to occur any protected area. There are no current conservation actions for the species.





Angylocalyx boutiqueanus: Pods. Itindi, Tshopo, Democratic Republic of the Congo. Photos by Bart Würsten, Meise Botanic Garden (CC-BY-NC).

**Threats** – An analysis of area of habitat (AOH) suggests ongoing decline of habitat across the range of this species due to conversion of forest related to expansion of urban areas and agriculture. In spite of that, the habitat of the majority of occurrences seems intact. That near Goma may have become extinct.

**Justification** – Angylocalyx boutiqueanus is a perennial shrub or small tree to 7 m high. It is known from 32 herbarium specimens collected between 1896 and 2015, representing 25 unique occurrences and 22 subpopulations. The extent of occurrence (EOO) is greater than the threshold for any threatened category under sub-criterion B1, while the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 18 locations (sensu IUCN) can be defined, which falls above the threshold for the Vulnerable category under condition 'a' of sub-criterion B2. At present it does not meet any of the criteria for a threatened status. Seeds of A. boutiqueanus should be collected and stored in the Millennium Seed Bank as an ex situ conservation measure. Further occurrences may be revealed across the large range of this species as sampling intensity increases, but threats at known localities should be monitored as ongoing declines may push this species towards a Near Threatened, or even a threatened category.

**Bibliography** – BGCI (2020), Champluvier & Dowsett-Lemaire (1999), Contu (2012c), ESA CCI (2015, 2018), Genesys (2020), UNEP-WCMC & IUCN (2021), Maesen & Sosef (2016), Toussaint (1953a, 1953b), Wyse & Dickie (2018).

Author - C. Marquis

#### \_ Baphia bergeri De Wild.

Red List category - Vulnerable: VU B2ab(iii).

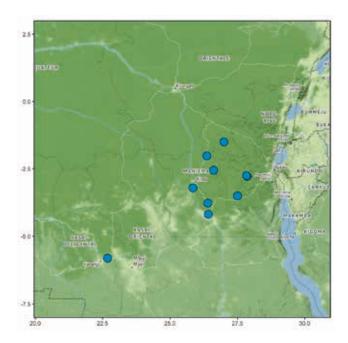
**Distribution** – Endemic to eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 80,806 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Rainforest, riparian forest and fallow land; at 660–920 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threat is habitat degradation due to forest clearing for agriculture and shelter, and probably also mining activities. Although the species has been recorded from fallow land, it would probably not survive there for long.

**Justification** – *Baphia bergeri* is a scrambling shrub or tree to 8 m tall. It is known from 13 herbarium specimens collected between 1908 and 1959, representing ten unique occurrences and nine subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, nine locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We project that





Baphia bergeri: Herbarium specimen at BR (Lebrun 5694).

habitat degradation will continue in the future, further reducing the extent and quality of the habitat.

Bibliography - Toussaint (1953b).

Authors - E. Ilunga wa Ilunga, M. Simo-Droissart & W. Tack

#### \_ Baphia chrysophylla Taub.

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the western part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 74,664 km²; Area of occupancy (AOO): 28 km².

**Habitat** – Savanna, transition zone between forest and savanna; at 300–800 m.

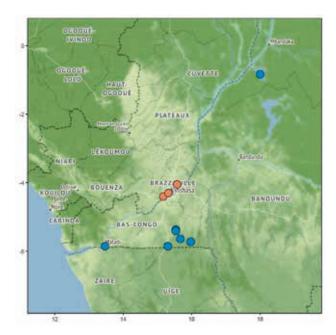
**Protected areas** – Only the northernmost collecting site occurs within the Ngiri-Tumba-Maindombe Ramsar Site, but this may not represent an effective protection. All other collecting sites occur in unprotected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the habitat is anthropogenic pressure, notably from the human population in Kinshasa using large amounts of fuelwood. In general, the habitat is threatened by shifting agriculture, small-holder farming and plantations, selective logging for construction of houses and domestic uses, and urbanization.

**Justification** – Baphia chrysophylla is a shrub or tree to 6.5 m tall. It is known from 20 herbarium specimens collected between 1903 and 1960. Seven of these, representing six unique occurrences and four subpopulations, were collected in what is now the city centre of Kinshasa. It is very likely that these subpopulations no longer exist due to a growing human population and urbanization and they were



**Baphia chrysophylla**: Herbarium specimen at BR (*Vanderyst 25932*).



removed prior to the species' assessment. The 13 remaining specimens represent seven unique occurrences and five extant subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of these threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. The human activities are gradually transforming the species' habitat into secondary forest. We infer a past decline in the extent and quality of the habitat of the species, leading to a decline in its AOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Mackinder & Clark (2012), Soladoye (1985), Toussaint (1953b).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

#### \_ **Baphia claessensii** De Wild.

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the central-south-eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 30,602 km²; Area of occupancy (AOO): 16 km².

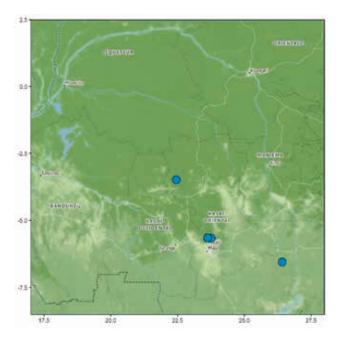
**Habitat** – Transitional zone between forest and savanna; at 400–800 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by forest clearance for agricultural development, charcoal production, urban expansion and mining activities. In Kole, the causes of forest degradation and forest loss, exacerbated by rapid population growth, are mainly agricultural development, charcoal production, fuelwood collecting, urbanization and mining activities. Several mining companies operating in



Baphia claessensii: Herbarium specimen at BR (Gillardin 124).



Katanga have a heavy impact on the natural environment. In Bakambe (Sankuru), forests are disrupted to make way for agriculture.

**Justification** – *Baphia claessensii* is a small tree to 6 m tall. It is known from four herbarium specimens collected between 1909 and 1948, representing four unique occur-

rences and three subpopulations. The extent of occurrence (EOO) exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a decline in the quality and extent of the species' habitat.

**Bibliography** – Mackinder & Clark (2012), Soladoye (1985), Toussaint (1953b).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ **Baphia dubia** De Wild.

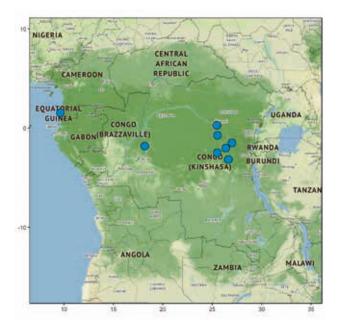
Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Equatorial Guinea (Rio Muni) and the Democratic Republic of the Congo. Extent of occurrence (EOO): 456,527 km²; Area of occupancy (AOO): 32 km².

Habitat - Rainforest, swamp forest; at 310-1,350 m.

**Protected areas** – Most of the collecting sites are located outside protected areas. The single collection from Bandundu Province is from a well-protected REDD+ carbon concession at Lac Maï Ndombe where the habitat is secure for the foreseeable future. There are no current conservation actions for the species.

Threats – The species is threatened by forest conversion to agricultural land and by logging activities. Equatorial Guinea's National Forestry Program aims to expand the logging industry in the country. In DRC, Maniema province, Pangi, and along the road to Lubutu deforestation by logging takes place. The nearby Sankuru Nature Reserve lost over 136,000 hectares of primary rainforest between 2001 and 2018, primarily due to expanding agriculture. Much of the area surrounding the REDD+ carbon concession at Lac Maï Ndombe is under great logging pressure.





Baphia dubia: Type specimen at BR (Bequaert 6888).

**Justification** – Baphia dubia is a tree to 10 m tall. It is known from 11 herbarium specimens collected between 1896 and 2012, representing eight unique occurrences and eight subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

**Bibliography** – Collins & al. (1992), de la Estrella & al. (2010), Sikiti da Silva (2018), Soladoye (1985), Toussaint (1953), Volckhausen (2019).

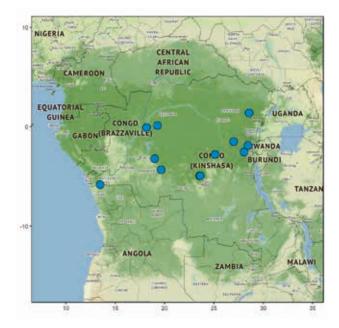
Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### **Baphia incerta** De Wild.

Red List category - Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 808,337 km<sup>2</sup>; Area of occupancy (AOO): 48 km<sup>2</sup>.

**Habitat** – Forest, in transition zone between forest and savannah; at 0–1,350 m.



**Protected areas** – One collecting site occurs within the Lomami National Park where the habitat does not appear to be threatened. A second occurs at the edge of the Kahuzi-Biega National Park. A third collecting site occurs within the Okapi Wildlife Reserve (near Epulu), where the habitat is probably secure, and a fourth occurs within the Ngiri-Tumba-Maï Ndombe Ramsar Site, whose impact on the conservation of the species is unknown.

Threats – Outside the protected areas, the habitat is threatened by forest clearance for agricultural activities and urban expansion. In addition, there is a high demand for fuelwood, notably around several expanding cities, where it is also threatened by urbanization. In the Kahuzi-Biega National Park, its habitat is under threat. Bampumu and the surroundings of Bombaie are threatened by forest degradation. The high demand for wood in construction and for energy purposes in Kinshasa, Matadi and Boma is accelerating the rate of deforestation in the Lower Congo Province. In the eastern part of the country, forests are threatened by clearing for supplying the expanding cities with fuelwood.

**Justification** – *Baphia incerta* is a small tree to 10 m tall. It is known from 13 herbarium specimens collected between 1909 and 2015, representing 12 unique occurrences and 11 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 11 locations (*sensu* IUCN) can be distinguished, which falls slightly above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2; hence the category Near Threatened has been assigned.

**Bibliography** – Megeyand (2013), Soladoye (1985), Toussaint (1953).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ Baphia incerta De Wild. subsp. incerta

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the southwest and central parts of the Democratic Republic of the Congo. Extent of occurrence (EOO): 445,483 km²; Area of occupancy (AOO): 20 km².

Habitat – Forest; at up to 440 m.

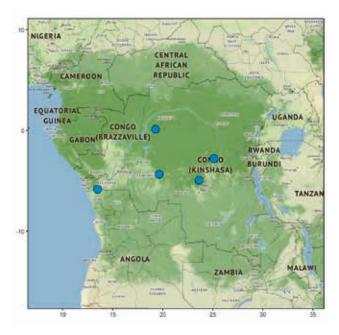
**Protected areas** – One of the five collecting sites occurs within the Lomami National Park. The other occurrences are located in unprotected areas. There are no current conservation actions for the taxon.

**Threats** – The habitat is threatened by forest clearance for shifting agriculture and firewood, and by urban expansion. Bampumu and the surroundings of Bombaie are threatened by forest degradation. The high demand for wood in construction and for energy purposes in the expanding city of Matadi (the most important maritime port of DRC) is accelerating the rate of deforestation in the Lower Congo Province.

**Justification** – Baphia incerta subsp. incerta is a small tree to 10 m tall, with a bole to 7 cm in diameter. It is known from five herbarium specimens collected between 1909 and 2015, representing five unique occurrences and five subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion



Baphia incerta subsp. incerta: Herbarium specimen at BR (Dracemont 315).



B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, five locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a decline in the quality of the taxon's habitat.

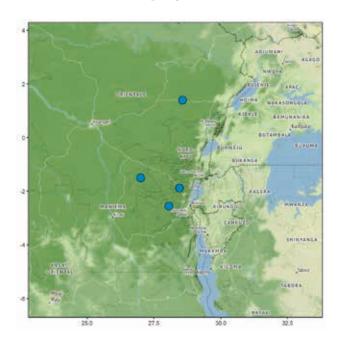
**Bibliography** – Lock (1989), Megeyand (2013), Soladoye (1985), Toussaint (1953).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

# \_ **Baphia incerta** De Wild. subsp. **lebrunii** (L.Touss.) Soladove

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 36,509 km<sup>2</sup>; Area of occupancy (AOO): 16 km<sup>2</sup>.





Baphia incerta subsp. lebrunii: Herbarium specimen at BR (Lebrun 5315).

**Habitat** – Transitional zone between forest and savannah; at 750–1,350 m.

**Protected areas** – One collecting site occurs at the edge of the Kahuzi-Biega National Park. Another is located within the Okapi Wildlife Reserve. There are no current conservation actions for the taxon.

Threats – The habitat is threatened by mining, by deforestation resulting from conversion of land for agriculture and by fuelwood collecting. One subpopulation occurs at the edge of the Kahuzi-Biega National Park, where the protection is not effective. The occurrence near Epulu, located within the Okapi Wildlife Reserve, may also be threatened by illegal logging for fuelwood and slash-and-burn agriculture. Outside protected areas, forests are threatened by clearing to supply the expanding cities with fuelwood. The occurrence between Walikale and Kalehe is likely threatened by forest degradation, along the road, resulting from forest conversion.

**Justification** – *Baphia incerta* subsp. *lebrunii* is a small tree to 8 m tall. It is known from four herbarium specimens collected between 1932 and 1957, representing four unique occurrences and four subpopulations. The extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, four locations (*sensu* IUCN) can be distinguished, which

falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a decline in the quality of the taxon's habitat.

**Bibliography** – Lock (1989), Megeyand (2013), Soladoye (1985), Toussaint (1953).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

## \_Baphia longepedicellata De Wild. subsp. longepedicellata

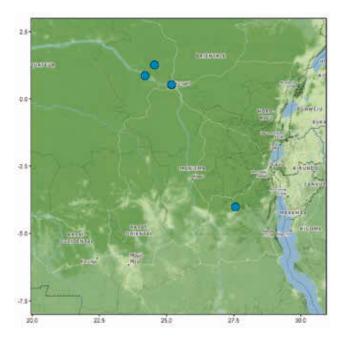
Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 25,818 km<sup>2</sup>; Area of occupancy (AOO): 16 km<sup>2</sup>.

Habitat – Riverine forests; at 0-400 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

Threats - One specimen was collected on the Elelwa Island, where the habitat of the species still seems relatively intact according to Google Earth images. The other collecting sites appear to be impacted by urbanization, shifting cultivation or mining. Two specimens were collected in 1915 around Kisangani, the third largest city in the DRC. This occurrence is likely lost due to urbanization. Moreover, the inhabitants of this large city depend almost entirely on fuelwood and charcoal for cooking. As fuelwood and charcoal are supplied from a distance of 25 km and 35 km respectively, this has led to a loss of forest cover in a large area around the city. Another specimen was collected in the vicinity of the Tshopo Falls near Kisangani in 1926. Even if it was collected in the Zoological Garden of Kisangani, located on the right side of the falls, the species would no longer exist there since no natural vegetation remains. In Namoya, the habitat is threatened by gold mining and the conversion of forest to agricultural land.





Baphia longepedicellata subsp. longepedicellata: Type specimen at BR (Claessens 667).



Baphia longepedicellata subsp. longepedicellata: Inflorescence. Photo by Quentin Luke (©).

**Justification** – Baphia longepedicellata subsp. longepedicellata is a small tree to 8 m tall (but probably taller considering the measurements of the other subspecies). It is known from six herbarium specimens collected between 1910 and 2008, representing five unique occurrences and three subpopulations. Its extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the

Endangered category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the taxon, leading to a decline in its EOO, AOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Musée royal de l'Afrique centrale (2015), Schure & al. (2011), Soladoye (1985), Toussaint (1953), Verdict Media Limited (2021).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ Baphia wollastonii Baker f.

Red List category - Least Concern: LC.

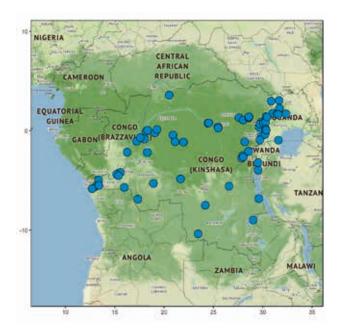
**Distribution** – Democratic Republic of the Congo, Burundi, Uganda and Zambia. Extent of occurrence (EOO): 2,266,808 km²; Area of occupancy (AOO): 308 km².

**Habitat** – Moist forest, swamp forest, montane forest, riverine forest in savanna regions (with one mention of dry woodland); at 350–1,900 m.

**Protected areas** – The species is fairly widespread in Central and Eastern Africa and occurs in 12 protected areas, some of which are well-protected National Parks while others are less-protected Forest Reserves. These protected



**Baphia wollastonii**: Herbarium specimen at BR (*Van Der Ben* 1284).







Baphia wollastonii: Flowering twig. Flower and young fruit. Photos by Quentin Luke (©).

areas are: Bwindi Impenetrable National Park, Virunga National Park, Queen Elizabeth National Park, Semuliki National Park, Murchison Falls National Park, Okapi Wildlife Reserve, Yangambi Biosphere Reserve, Kasyoha-Kitomi Forest Reserve, South Maramagambo Forest Reserve, Budongo Forest Reserve, Malabigambo Forest Reserve and Zoka Forest Reserve. For the collecting sites occurring outside these protected areas, there are no current conservation actions.

Threats - The species is protected in some sites but its habitat is under threat in many others. Malabigambo Forest Reserve is facing illegal tree felling for timber and charcoal production, degrading the habitat quality. The tree itself would not be spared by charcoal burners. Budongo is faced with ongoing illegal logging and pole cutting that affect the quality of its habitat, especially in blocks far away from the research centre. The invasive Broussonetia papyrifera and Senna spectabilis also reduce habitat quality. In many parts of eastern DRC, particularly in Katanga Province, there is tree felling for timber and charcoal, mining of minerals and forest clearance for cultivation, all of which degraded the habitat. In the Ituri forest near Epulu, tree felling has been reported, due to insecurity from insurgents and armed rebellions. Gold mining activities are carried out in Kivu, in Maniema and in Ituri. Artisanal extraction of cassiterite by the local communities is reported. Artisanal mining is reported to have caused direct dumping of waste, tailings, effluents and river damage in alluvial areas, as well as mercury pollution, land degradation, soil erosion and deforestation. At the Escarpement de Kasenyi, on the shores of Lake Albert, there is gold mining activity as is the case in many parts of Kivu. Gold mining is reported at Avakubi, Orientale Province, Bafwasende Territory as well as tree logging. Around Lesse in Beni Territory, just west of Rwenzori, there is mining for gold and coltan and the general insecurity continues to lead to illegal tree felling which is uncontrolled.

**Justification** – *Baphia wollastonii* is a small tree to 10 m tall. It is known from 98 herbarium specimens collected between 1905 and 2008, representing 77 unique occurrences and 66 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 55 to 60 locations (*sensu* IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although we expect the human pressure on its habitat to increase further, we do not predict a significant decline for the species in the near future.

Bibliography – Armstrong (2007), Burnley (2011), Country of Origin Research and Information (2013), Global Witness (2015), Internal Displacement Monitoring Centre (2007), Kalema & Beentje (2006), Kok & al. (2009), Matthysen & Montejano (2013), Ministry of Water and Environment (2016), Soladoye (1985), Tetra Tech ARD (2016), Toussaint (1953). United Nations (2001), UNEP (2011b), UNEP-MONUSCO-OSESG (2015), UNICEF (2017), Wolfire & al. (1998).

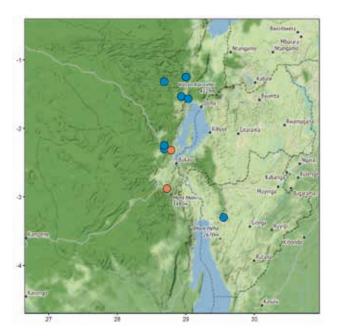
Authors - J. Kalema, M. Simo-Droissart & W. Tack

### Erythrina orophila Ghesq.

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo and Burundi. Extent of occurrence (EOO): 9,458 km<sup>2</sup>; Area of occupancy (AOO): 28 km<sup>2</sup>.

**Habitat** – Montane forest, afromontane grassland, hill slopes, ravines; at 1,850–2,400 m.





Erythrina orophila: Herbarium specimen at BR (Pierlot 694).

**Protected areas** – The species occurs within the Kahu-zi-Biega National Park in DRC. There are no current conservation actions for the collecting sites occurring in non-protected areas.

**Threats** – The main threats are agriculture (mostly on afromontane grassland), urbanization and recently mining



*Erythrina orophila*: Inflorescences. Photo by Quentin Luke (©).

activities on a proposed tailing site on the Mwama river near Kashane in Twangiza (Kivu Province, DRC). Here, the occurrence can be considered destroyed, as can the one in INEAC Mulungu, where agriculture and urbanization has destroyed all original vegetation.

**Justification** – *Erythrina orophila* is a tree to 20 m tall. It is known from nine herbarium specimens collected between 1937 and 2008, of which two have been discarded prior to the assessment because of habitat destruction. The seven remaining specimens represent seven unique occurrences and seven subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Based on the scale of the threats, five locations (sensu IUCN) can be distinguished, which is the upper limit of the Endangered category under condition 'a' of subcriterion B2. We project that the habitat degradation will continue in the future. The destruction of the habitat at two collecting sites has led to a past decline in the number of subpopulations, number of mature individuals and of its AOO and EOO.

Bibliography - Hauman & al. (1954).

Authors - E. Ilunga wa Ilunga, M. Simo-Droissart & W. Tack

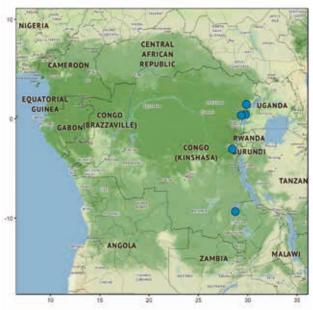
# \_ **Millettia bequaertii** De Wild.

Red List category – Vulnerable: VU B1ab(i,ii,iii)+2ab(i,ii,iii).

**Distribution** – Endemic to eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 10,947 km²; Area of occupancy (AOO): 16 km². The species has been reported from northern Zambia (*Bingham 3711*), and inclusion of this disjunct record would increase the extent of occurrence (EOO) to 68,724 km², but would have little impact on the area of occupancy (AOO). Due to some doubt about its correct identification, this specimen was excluded from the assessment.

**Habitat** – Gallery forest in savannah plains, secondary forest; at 800–1,500 m. The species flowers from March to May.

**Protected areas** – One collecting site occurs within a protected area: the Virunga National Park. One occurrence





Millettia bequaertii: Herbarium specimen at BR (Bequaert 2782)

is reported from 'Ruwenzori foothills' so may also be found within the Rwenzori Mountains National Park.

**Threats** – The region is subject to ongoing habitat loss due to agricultural conversion and expansion of urban areas. Google Earth images of a 10 km buffer around the historical collecting sites indicate that all have experienced a decline in suitable habitat over the past ~30 years.

**Justification** – *Millettia bequaertii* is a small tree to 8 m tall. It is only known from four herbarium specimen records representing four unique occurrences and has not been observed for more than 60 years. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The ongoing decline in habitat at the known collection localities suggests that four locations (sensu IUCN) can be defined, relative to the scale of this threat. From the above, we infer a continuing decline in the EOO, AOO and extent and quality of the habitat. There are no known seed collections, but seed storage behaviour has been predicted to be orthodox, therefore seed collecting is recommended. Surveys in proximity of the historical collecting sites is recommended to determine if the species is still extant.

**Bibliography** – ESA CCI (2015, 2018), Genesys (2020), Hauman & Cronquist (1954), Olson & al. (2001), Verdcourt (2007), Wyse & Dickie (2018).

Author - C. Marquis

### Millettia dubia De Wild.

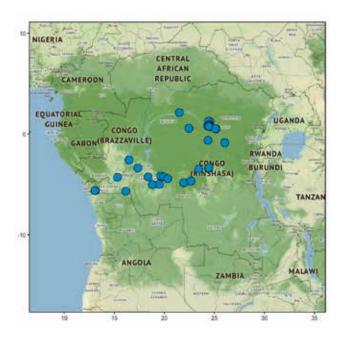
Red List category – Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 649,527 km²; Area of occupancy (AOO): 148 km².

**Habitat** – Palm groves, riverine forest, gallery forest, secondary forest, forest edges; at 320–580 m.

**Protected areas** – *Millettia dubia* occurs within three protected areas: the Sankuru Nature Reserve, the Yangambi Biosphere Reserve and the Luki Biosphere Reserve. Outside these protected areas, there are no current conservation actions for the species.

**Threats** – The main threat to the species' habitat is forest clearing for agricultural expansion, followed by urbanization around Kinshasa and selective logging.





Millettia dubia: Herbarium specimen at BR (A. Léonard 929).

Justification – Millettia dubia is a big liana to 45 m long, or a small lianescent tree. It is known from 82 herbarium specimens collected between 1902 and 2007, representing 37 unique occurrences and 21 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 17 to 20 different locations (sensu IUCN) can be distinguished, exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Millettia dubia is not severely fragmented and does not meet the threshold values for any threatened category. Although we expect that human pressure will increase the loss of its habitat, we do not predict a significant decline in its EOO, AOO, number of locations/subpopulations or number of mature individuals in the near future.

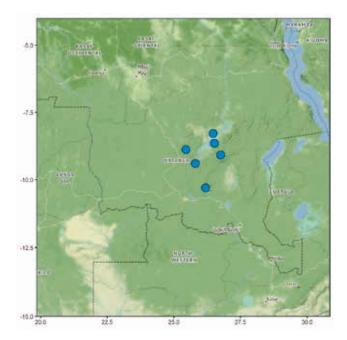
Bibliography – Hauman & Cronquist (1954).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

### \_ **Millettia hockii** De Wild.

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 16,288 km²; Area of occupancy (AOO): 24 km².





Millettia hockii: Herbarium specimen at BR (De Witte 2817).

Habitat – Savanna woodland, miombo; at 585–1,200 m.

**Protected areas** – Three collecting sites occur within the Upemba National Park, a well-protected area. The three other collecting sites are located in unprotected areas where there are no current conservation actions for the species.

Threats – Threats are forest clearing for agricultural expansion; one label mentions invasive species (possibly *Tithonia diversifolia*) affecting the seedlings. In the three sites outside protected areas the habitat is threatened. In the Bukama site wood is harvested for smoking fish (Ilunga wa Ilunga, pers. comm.). At Sankisia, a large area has been converted to agricultural smallholdings, plus the impact of fire and some urbanization, as well as large scale quarrying. In the Kapiri valley, there are some villages nearby with agriculture, as well as a large cement quarry.

**Justification** – *Millettia hockii* is a small to medium-sized tree. It is known from seven herbarium specimens collected between 1911 and 1955, representing six unique occurrences and six subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats we distinguish four locations (sensu IUCN; the three subpopulations within the Upemba National Park are considered to represent a single location), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that this habitat degradation will continue in the future, leading to a further decline in the extent and quality of the species' habitat. Applied research and action is needed in the future. As the most recent collection was from 1955, a search for the species seems in order.

Bibliography – Hauman & Cronquist (1954).

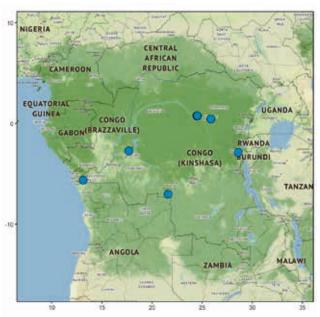
Authors - P. Kamau, M. Simo-Droissart & W. Tack

### *Millettia hylobia* Louis ex Hauman

Red List category – Vulnerable: VU B2ab(ii,iii).

**Distribution** – Democratic Republic of the Congo and northern Angola. Extent of occurrence (EOO): 739,975 km<sup>2</sup>; Area of occupancy (AOO): 52 km<sup>2</sup>.

**Habitat** – Rainforest, including areas of disturbed forest on dry land or swampy areas; at 375–1,000 m. Flowering has been observed in June.





Millettia hylobia: Holotype specimen at BR (J. Louis 13001).

**Protected areas** – The species has been reported from two protected areas in the Democratic Republic of the Congo: the Luki Biosphere Reserve and, more recently, the Yangambi Biosphere Reserve. There are no reported ex situ living collections.

Threats – There is ongoing loss of humid forest throughout the range of this species, driven primarily by conversion to shifting agriculture, as well as forestry/logging and growth of urbanized areas. Even within protected areas such as the Yangambi Biosphere Reserve, there is ongoing conversion of forest. An analysis of the area of habitat (AOH) shows at least four out of the known six collection localities have been subject to a decline in habitat over the past ~30 years due to conversion of forest for expansion of agriculture and settlements. The population is therefore considered to be in decline.

**Justification** – *M. hylobia* is a tree to around 15 m in height. It is known from 28 herbarium specimens, collected between 1938 and 2013, which, however, represent only six unique occurrences and six subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, we define six locations (*sensu* IUCN). From the above, we infer a decline in AOO and in extent and quality

of the habitat. Seed behaviour has been predicted to be orthodox, and seed collection for ex situ storage is therefore recommended. Existing collecting localities should be revisited to support ongoing monitoring of this species. A monitoring program is recommended as it would help to identify any declines in population size.

Bibliography – BGCI (2020), Blom (2001a, 2001b), ESA CCI (2015, 2018), Global Forest Watch (2020), Genesys (2020), Hauman & Cronquist (1954), ILDIS (2005), Lebrun & Stork (2008), Malhi & al. (2013), Wyse & Dickie (2018).

Author - C. Marquis

### \_ Millettia macroura Harms

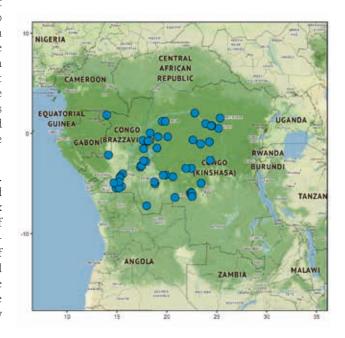
Red List category - Least Concern: LC.

**Distribution** – Gabon, Republic of Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 1,045,378 km²; Area of occupancy (AOO): 240 km².

**Habitat** – Rainforest with *Scorodophloeus*, secondary forests, forest edges, river sides and clearings, flooded islands and wooded savannas; at 300–750 m.

**Protected areas** – Occurrences have been reported from the following protected areas: Plateaux Batéké National Park (Gabon), and Yangambi Biosphere Reserve, Réserve du triangle de la Ngiri Ramsar Site and Sankuru Nature Reserve (DRC). The seeds of this species are not currently known to be held in any seed bank.

**Threats** – There are no specific threats affecting the species; however, there are some general threats to the habitats. Much of the lower north-western Congolian forest has been allotted to forestry concessions. Logging remains a concern even within protected areas in this region. The logging in these areas tends to be selective and habitat conversion is fairly limited. Other general threats in this area included development and conversion to agricultural land but it is not known what effect these threats will have on the taxon. The central Congolian forest is considered to be largely





Millettia macroura: Kasangulu, Bas-Congo, Democratic Republic of the Congo; Photo by Paul Latham (©), available from African Plants - A Photo Guide. www.africanplants. senckenberg.de.

intact with minimal threats posed by a very low population density. Some logging does take place as well as conversion to agricultural land but this is considered to be at a sustainable level at present. An analysis of area of habitat (AOH) trends over the last ~30 years shows fluctuations, but an overall increase in habitat across the range of this species, implying a stable population. The taxon is utilized for its wood and its branches for traps, but this is at a subsistence level and thus is not considered to pose a threat.

Justification – Millettia macroura is a fairly common medium-sized tree, known from 88 herbarium specimens collected between 1882 and 2010, representing 62 unique occurrences. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The number of locations (sensu IUCN) is estimated to be 52, well above the threshold of any threatened category under condition 'a' of sub-criterion B2. The seed storage behaviour is predicted to be orthodox and seed collecting for ex situ storage is recommended.

**Bibliography** – BGCI (2020), Blom (2001a, 2001b), ESA CCI (2015, 2018), Groom (2012), Hauman & Cronquist (1954), ILDIS (2005), Lebrun & Stork (2008), Millenium Seedbank Partnership (2020), Minnemyer (2002), Wyse & Dickie (2018).

Author - P. Moore.

### \_ *Millettia psilopetala* Harms

Red List category - Least Concern: LC.

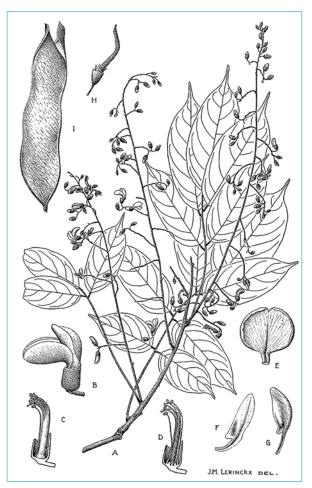
**Distribution** – Burundi, Democratic Republic of the Congo, Rwanda and Uganda. Extent of occurrence (EOO): 291,367 km²; Area of occupancy (AOO): 300 km².

Habitat - Moist to wet forest; at 470-2,410 m.

**Protected areas** – Eleven of the 30 collections are from within eight protected areas: Nyungwe National Park, Yangambi Réserve de Biosphère, Parc national des Virunga, Rutshuru Hunting Area, Bwindi Impenetrable Forest (World Heritage Site), Réserve de Faune à Okapis (World Heritage Site), Queen Elizabeth National Park (UNESCO-MAB Biosphere Reserve) and North Maramagambo Forest Reserve.

**Threats** – In Kalinzu Forest there is a threat to the habitat of tea plantations and illegal felling; in Kirima there is heavy agricultural activity; Yangambi is a protected area but is quite disturbed; Mongbwalu is a proposed site for a goldmine mill.

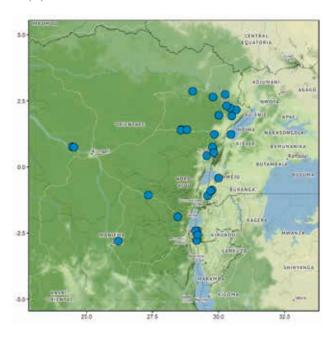
**Justification** – *Millettia psilopetala* is a shrub, tree, or liana. It is known from 123 herbarium specimens collected between 1905 and 2011, 92 of which were not used for the



Millettia psilopetala: A, flowering branch; B, flower; C, calix, longitudinal section, and androecium; D, calyx and androecium, longitudinal section, and pistil; E, standard, spread out, inner surface; F, wing, inner surface; G, keel petal, external surface; H, young posd; I, mature pod. (A-G: Germain 5199; H: Louis 7505; I: Gille 231). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).



Millettia psilopetala: Inflorescence. Photo by Quentin Luke (©).



assessment since they would not affect the conclusion. Based on the threats, 14 to 18 locations can be identified. With a number of locations above the threshold of a threatened category, and a large extent of occurrence, it is not thought that any decline is likely to meet (or be close to meeting) the threshold for Vulnerable, despite the threats developing in parts of its range.

**Bibliography** – Gereau & al. (2019b), Gillett & al. (1971), Hauman & Cronquist (1954).

**Authors** – R. Gereau, C. Kabuye, W.R.Q. Luke, S. Nshuti-yayesu, S. Ntore & H.J. Beentje

### \_ *Millettia stenopetala* Hauman

Red List category – Data Deficient: DD.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat - Transitional forest; at around 800-900 m.

**Protected areas** – There are no known conservation measures specifically for the species, and it is not known to occur within the protected areas network at present.

**Threats** – The collecting locality is too vague to be able to indicate a threat.

**Justification** – *M. stenopetala* is a tree or possibly a liana. It is only known from the type specimen (*Lebrun 5249*) collected in 1932. There are no data about its ecological preferences, population size, trends and possible threats. Further research and field work is required to gain a better understanding of the distribution range and habitat of this species and to make sure that it is still extant. Samples of seed of *M. stenopetala* should be collected and stored as an *ex situ* conservation measure. The species has been listed as Rare in the IUCN Red List of Threatened Plants. *Millettia stenopetala* is assessed as Data Deficient as there is inadequate information to make a reliable conservation status assessment.



Millettia stenopetala: Holotype specimen at BR (Lebrun 5249).



**Bibliography** – Contu (2012c), Hauman & Cronquist (1954), Walter & Gillett (1998).

Author - S. Contu.

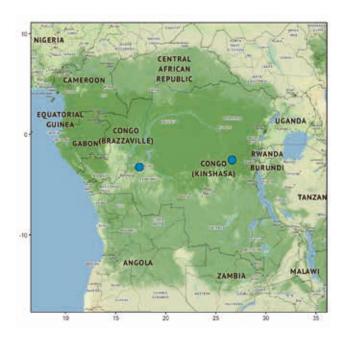
## \_ **Ormocarpum wombaliense** (J.Léonard) O.Lachenaud, *comb. nov. ined.*

(syn.: Ormocarpum verrucosum P.Beauv. var. wombaliense J.Léonard)

Red List category – Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

**Habitat** – Forest regrowth; at 300–700 m. It is probably pollinated by insects, with a limited seed dispersal (the dry pods break into segments).





Ormocarpum wombaliense: A, fruiting branch; B, flower; C, idem, longitudinal section; D, calix, spread out; E, standard, inner surface; F, wing, outer surface; G, keel petal, outer surface; H, pod. (A, H: Vanderyst 1857; B-G: Vanderyst 1443). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

**Protected areas** – Neither of the two collecting sites occurs within a protected area. There are no current conservation actions for the species.

**Threats** – Both collecting sites occur close to human settlements (one to a major city) where deforestation for agriculture, charcoal production and/or urbanization are strong threats. In both areas, significant forest degradation is apparent from satellite images.

Justification – Ormocarpum wombaliense is a small tree. It is known from three herbarium specimens collected in 1913 and 1959, of which only two could be georeferenced (the locality of the third, "Kwango", being too vague), representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Relative to the scale of the known threats, the species is known from two locations (sensu IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the species at both localities, and the probable extirpation of the occurrence near a major city implies a decline in its AOO, number of locations/ subpopulations and number of mature individuals.

Bibliography – Léonard & al. (1954).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

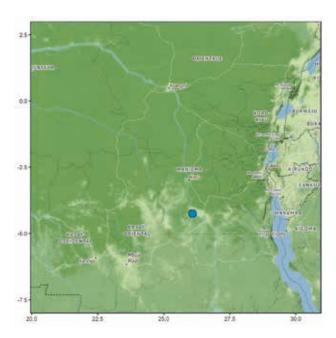
### \_Platysepalum cuspidatum Taub.

Red List category - Data Deficient: DD.

**Distribution** – Endemic to south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Riverine forest; at around 470 m.

**Protected areas** – The only known collecting site of the species occurs in unprotected area. There are no current conservation actions for the species.



**Threats** – The main threat is the destruction of its habitat due to anthropic pressure for subsistence farming.

**Justification** – *Platysepalum cuspidatum* is a tree of unknown size. It was described in 1897 from the type specimen collected before 1881 (*Pogge 766*) and has not been recollected since. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The type (and only) specimen was destroyed in Berlin and no duplicates have been found. The African Plant Database (2020) lists its status as "uncertain" and, like Hauman & Cronquist (1954), states that it is probably a synonym of *Platysepalum violaceum*. Until an isotype is located or the name is neotypified to fix its application, a precautionary assessment of DD because of taxonomic uncertainty is the only reasonable option here.

Bibliography – Hauman & Cronquist (1954).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

# \_ **Platysepalum ferrugineum** Taub.

Red List category – Data Deficient: DD.

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

Habitat - Gallery forest; at 520-570 m.



**Protected areas** – Both occurrences are located in unprotected areas. There are no current conservation actions for the species.

**Threats** – The species is threatened by shifting agriculture. This activity is leading to a decline in quality of its habitat.

Justification - Platysepalum ferrugineum is a tree of unknown size. It was described in 1897 from the type specimen collected before 1881 (Pogge P. 799) in the Democratic Republic of the Congo, and has subsequently been recollected only once (Pobéguin 87) in 1920 in the Republic of the Congo. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The type specimen was destroyed in Berlin and no duplicates have been found. The African Plant Database (2020) lists its taxonomic status as "uncertain" and states that it is probably a synonym of Platysepalum pulchrum. Without knowing the basis of the identification of Pobéguin 87 (comparison with the then-extant type? since it is currently identified as P. cf. ferrugineum) and until an isotype is located or the name is neotypified to fix its application, a precautionary assessment of DD because of taxonomic uncertainty is preferable. The areas where P. ferrugineum is present are severely under-collected. Additional collections would make it possible to gain a better understanding of the range of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography - Hauman & Cronquist (1954).

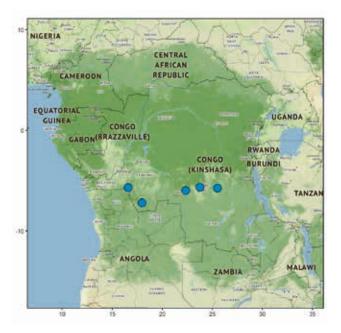
Authors – D.U.G. Bouka, M. Simo-Droissart & W. Tack

### \_ Platysepalum hypoleucum Taub.

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to central and south-western Democratic Republic of the Congo. Extent of occurrence (EOO): 86,782 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Savannah, gallery forest; at 350–940 m. It appears to occur as scattered individuals.





**Platysepalum hypoleucum**: Neotype specimen at BR (Bequaert 1).

**Protected areas** – All known subpopulations occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the habitat is subsistence farming, followed by urbanization. One collecting site occurs in an area degraded by shifting slash-and-burn

agriculture. It may disappear in a near future, since the probability of recolonization is very low.

**Justification** – *Platysepalum hypoleucum* is a bushy tree to 5 m tall, with drooping branches. It is known from five herbarium specimens collected between before 1881 and 1934, representing five unique occurrences and five subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We anticipate that the continued loss of its habitat will result in a continuing decline in the number of subpopulations and mature individuals in the near future at the collecting site near Bandundu, as well as a significant decline in EOO and AOO. Areas where Platysepalum hypoleucum is present are severely under-collected. This is evidenced by the fact that no specimen of this species was collected after 1934. The species might not be taxonomically distinct from P. poggei and additional collections would allow a better understanding of the taxonomic status of this species, as well as of it range, its abundance and the threats it actually faces. Observations on pollination and seed dispersal would also be useful. The holotype and paratype collections were lost at B, but a neotype has been assigned by Maesen (2010).

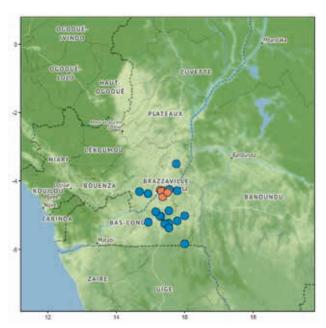
**Bibliography** – Hauman & Cronquist (1954), Maesen (2010).

Authors – D.U.G. Bouka, M. Simo-Droissart & W. Tack

# \_ Platysepalum vanderystii De Wild.

Red List category - Near Threatened: NT.

**Distribution** – Republic of the Congo (plateaux (Léfini) and south of Brazzaville, more precisely towards Kinkala and Ngéla) and Democratic Republic of the Congo (around





*Platysepalum vanderystii*: Flowering branch. DRCongo, Bas-Congo, Kinsadi.Photo by Paul Latham (©), available from African plants - A Photo Guide. www.africanplants. senckenberg.de.

Kinshasa and in lower Congo). Extent of occurrence (EOO): 22,699 km²; Area of occupancy (AOO): 64 km².

Habitat – Sandy savannah, gallery forest; at 450–750 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threat is the destruction of its habitat due to anthropic pressure for subsistence farming and urbanization. Agriculture threatens all the occurrences in the southern part of the distribution area of the species. Urbanization threatens all occurrences close to big cities like Kinshasa, Brazzaville and Kinkala, and some are likely to have already disappeared.

Justification - Platysepalum vanderystii is a tree, shrub or shrubby liana. It is known from 27 herbarium specimens collected between 1908 and 1981. We have discarded four occurrences from Brazzaville and Kinshasa because the habitat has become unsuitable due to urbanization and wood harvesting. The remaining 16 unique occurrences represent 15 subpopulations. The extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The scale of the main threat leads us to distinguish 12 locations (sensu IUCN), which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The loss of occurrences at Brazzaville and Kinshasa has led to a decline in mature individuals, number of locations, number of subpopulations and AOO of the species. We anticipate the continuing loss of the species' habitat. Since 12 locations is close to 10, the upper limit for the Vulnerable category, the species is therefore assigned a status of Near Threatened. The areas where Platysepalum vanderystii is present are severely under-collected. Additional collections would allow a better understanding of the range of this species, its abundance and the threats it actually faces.

Bibliography - Hauman & Cronquist (1954).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

### Schefflerodendron gilbertianum J.Léonard & Latour

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Republic of the Congo and the Democratic Republic of the Congo. Extent of occurrence (EOO): 53,143 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

**Habitat** – Dry land forest, riparian forest; at 350–570 m.

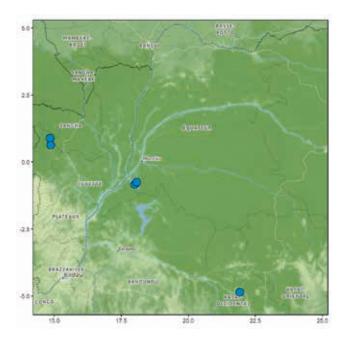
**Protected areas** – The species occurs within the Odzala National Park. Three other occurrences are outside protected areas, where there are no current conservation actions for the species. Although two of these three occurrences are in the Ngiri-Tumba-Maï Ndombe Ramsar Site, this may or may not offer some level of protection.

Threats – In the Democratic Republic of the Congo, the species is facing the threat of deforestation for industrial logging (Ngombe Forest Management Unit), firewood extraction and shifting or small-scale agriculture, the latter being the main threat. Small-scale agriculture is common in the Kasai Occidental Province and in the locality Kakenge in particular. According to Amat & al. (2008), dry land forest, the dominant habitat at Kakenge, is the best provider of agricultural land and firewood. This may already have led to the eradication of the occurrence there.

**Justification** – *Schefflerodendron gilbertianum* is a deciduous tree to 30 m tall. It is known from eight herbarium specimens collected between 1937 and 1995, representing five



Schefflerodendron gilbertianum: Type specimen at BR (J. Léonard 659).



unique occurrences and four subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We anticipate that the continued loss in extent and quality of its habitat will also result in a continuing and marked decline in the number of subpopulations and mature individuals in the near future, while the loss of the Kakenge occurrence will lead to a decline in its EOO and AOO.

**Bibliography** – African Plant Database (2020), Amat & al. (2008), CBF (2005), Hauman & Cronquist (1954), Léonard & Latour (1950).

Authors - S.T. Ndolo Ebika, M. Simo-Droissart & W. Tack

# FABACEAE - MIMOSOIDEAE

### \_ **Newtonia devredii** G.C.C.Gilbert & Boutique

(Synonym: Newtonia aubrevillei Pellegr. var. lasiantha Brenan & Brummitt)

Red List category - Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Democratic Republic of the Congo, Republic of the Congo and Zambia. Extent of occurrence (EOO): 332,755 km²; Area of occupancy (AOO): 20 km².

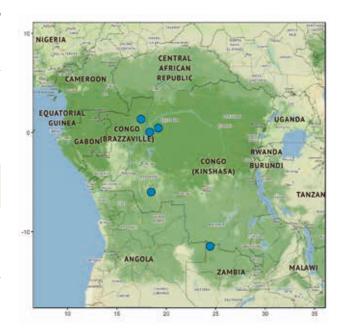
**Habitat** – Swamp forest, seasonally flooded forest, border between seasonally flooded forest and seasonally flooded grassland; at 310–1,420 m.

**Protected areas** – Two collecting sites occur within one protected area: the Lac Télé Community Reserve in the





Newtonia devredii: Leaf; Part of inflorescence. Republic of the Congo, Nsassa forest, Lac Télé Community Reserve (Moutsamboté 6055, 6077). Photos by David Harris (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.



Republic of the Congo. There are no current conservation actions for the species at the other collecting sites.

**Threats** – Around Eala (DRC) dense forest occurs, but there is agricultural activity (main threat) in the vicinity of this site. There are diamond-bearing gravels along the Lower Kwango River (Kwango Sud). Nsassa Forest is only 2 km NW of Epena in Republic of the Congo, a fairly big

town providing a major threat of expansion of urbanization into the forest and tree cutting for fuel wood. Lac Télé Community Reserve and surrounding forests are faced with an imminent threat of construction of new roads, hydrocarbon (oil) prospecting on the south-west periphery, allocation of logging concessions and an increasing human population. Some cash crops are grown, mainly cocoa and kola nuts. Wildfires have also been reported. The Zambia site in the Mwinilunga area is threatened with cultivation. Shifting cultivation (locally known as Chitemene) of cassava and sorghum for subsistence is a common farming system, causing deforestation. There is also mining, infrastructure development (roads, dams) and settlement.

Justification – Newtonia devredii is a medium-sized tree. It is known from seven herbarium specimens collected between 1936 and 2008, representing seven unique occurrences and five subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat (i.e. forest clearing for agriculture), five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in the extent and quality of the habitat of the species, in time leading to a decline in its AOO, number of locations/ subpopulations and number of mature individuals.

Bibliography – Chundama (2009), FAO (2017), GEF-SGP (2016), Greenpeace (2017), Kambayi (2017), Kirkby (2014), Kleinschroth & al. (2019), Miles & al. (2017), Rainey & al. (2009), Tyukavina & al. (2018), Villiers (1990), de Wit & Thosose (2015).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

### \_ Senegalia lujae (De Wild. & T.Durand) Kyal. & Boatwr.

(Synonym: Acacia lujae De Wild. & T.Durand)

Red List category – Least Concern: LC.

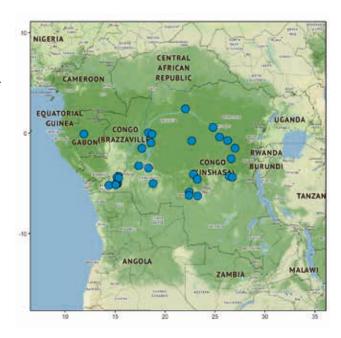
**Distribution** – Gabon and the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,135,229 km<sup>2</sup>; Area of occupancy (AOO): 132 km<sup>2</sup>.

**Habitat** – Secondary forests, swamps, gallery forests, fallow land, palm groves; up to 700 m.

**Protected areas** – One occurrence is within the Ngiri-Tumba-Maï Ndombe Ramsar site near the eastern edge of the Tumba-Lediima Nature Reserve, which may or may not be relevant to its conservation status. All other known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The habitat is mainly threatened by shifting small-scale agriculture, industrial plantations, urbanization and selective logging for small-scale subsistence.

**Justification** – *Senegalia lujae* is a liana or sometimes reported as a tree. It is known from 40 herbarium specimens collected between 1896 and 2007, representing 34 unique occurrences and nine or ten subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of





Senegalia lujae: Herbarium specimen at BR (Germain 7258).

the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 26 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. While we project that the human pressure will increase the





Senegalia lujae: Leaves. Inflorescence. Photos by Quentin Luke (©).

loss of its habitat and the decline in mature individuals, we do not project any other significant decline for the species in the near future and it cannot be assigned to any threatened category.

Bibliography – Gilbert & Boutique (1952), Villiers (1989).

Authors – D.U. Ikabanga, M. Simo-Droissart & W. Tack

# \_ **Xylia ghesquierei** Robyns

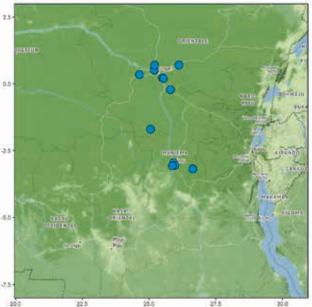
Red List category - Vulnerable: VU B2ab(iii).

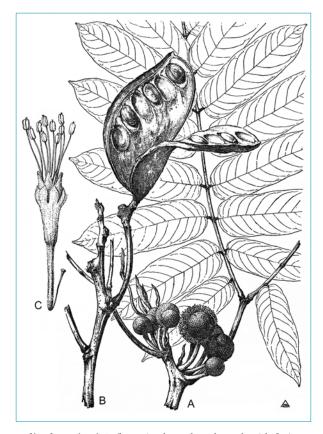
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 60,552 km²; Area of occupancy (AOO): 48 km².

**Habitat** – Primary forest with *Gilbertiodendron dewevrei* or *Scorodophloeus zenkeri*, semi-deciduous forest with *Cynometra hankei*, old fallow land, forest regrowth, ruderal areas, disturbed rainforest; at 450–500 m. Ripe dried fruits burst and forcefully expel seeds; regeneration is reported as good.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threats to the habitat are urbanization (especially near Walikale, Kindu and Kisangani), fuelwood collecting, agriculture and mining activities.





*Xylia ghesquierei*: A, flowering branch; B, branch with fruit; C, flower. (A-C: *Louis* 11254). Drawing by A. Cleuter, Meise Botanic Garden (©).

**Justification** – *Xylia ghesquierei* is a tree to 30 m tall, with a bole to 60 cm in diameter. It is known from 18 herbarium specimens collected between 1921 and 1980, representing 13 unique occurrences and nine subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, nine locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable

category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

**Bibliography** – Gilbert & Boutique (1952), Mbangilwa & al. (2019), Robyns (1946).

Authors – J. Nkengurutse, M. Simo-Droissart & W. Tack

# Hypericaceae

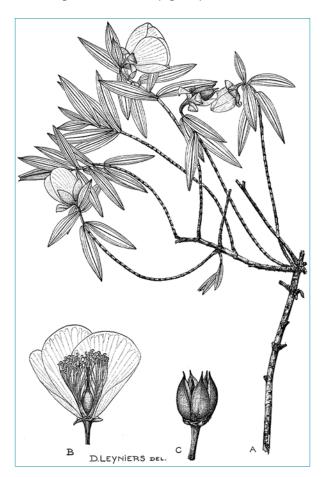
## Hypericum bequaertii De Wild.

Red List category - Least Concern: LC.

**Distribution** – Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO): 7,843 km<sup>2</sup>; Area of occupancy (AOO): 64 km<sup>2</sup>.

**Habitat** – Alpine shrubland, *Senecio-Hypericum-Rapanea* forest, Ericetum; at 2,800–4,350 m.

**Protected areas** – All known occurrences occur within protected areas. These are the Virunga National Park (DRC), the Rwenzori Mountains National Park (Uganda) and the Mount Elgon National Park (Uganda).



Hypericum bequaertii: A, flowering and fruiting twig; B, flower, 2 petals removed; C, fruit. (A: de Witte 10374; B: Humbert 8927; C: Lebrun 4535). Drawing by D. Leyniers, Meise Botanic Garden (©).



**Threats** – There is no threat currently recorded for the species' habitat.

Justification – Hypericum bequaertii is a shrub or small tree to 12 m tall. It is known from 50 herbarium collections made between 1893 and 1997. These represent 19 unique occurrences and two subpopulations found in two mountain areas more than 500 km apart. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The species is not threated by genetic erosion as the seed coat probably helps in long-distance dispersal by birds. Due to the absence of immediate threats, no locations (sensu IUCN) can be distinguished, and the conditions are not met for any threatened category according to IUCN criteria.

**Bibliography** – Bamps (1970), Kalema & Beentje (2012), Milne-Redhead (1953), Robyns (1948b).

Authors – S. Ntore, M. Simo-Droissart & W. Tack

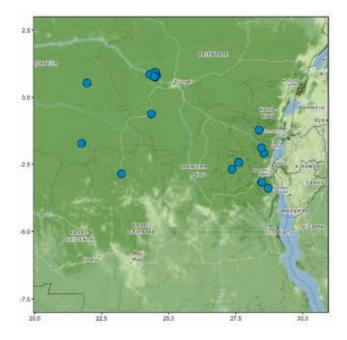
# LAMIACEAE

# \_ **Vitex rubroaurantiaca** De Wild.

Red List category – Near Threatened: NT.

**Distribution** – Endemic to the Democratic Republic of the Congo, where the species is fairly rare and has a scattered occurrence. Extent of occurrence (EOO): 257,514 km²; Area of occupancy (AOO): 76 km².

**Habitat** – Primary forest, secondary forest, shrubby vegetation, riverine forest, coffee plantation, forest with *Scorodophloeus zenkeri*; at 470–1,950 m.





Vitex rubroaurantiaca: Herbarium specimens at BR (J. Louis 2263).

**Protected areas** – The species occurs within four protected areas: the Yangambi Biosphere Reserve, the Salonga National Park, the Sankuru Nature Reserve (fide WDPA 2018), and the Itombwe Nature Reserve. Outside these protected areas, there are no current conservation actions for the species.



Vitex rubroaurantiaca: Fruiting twig. Yangambi, Tshopo, Democratic Republic of the Congo. Photo by Bart Würsten, Meise Botanic Garden (CC-BY-NC).

**Threats** – The main threat to the habitat is forest conversion to agricultural land. The species is also threatened by charcoal production for firewood. The occurrences in the Kivu region are all found in densely populated regions and are therefore susceptible to the aforementioned threats. From Google Earth observations it is likely that in this region some occurrences have already disappeared.

Justification - Vitex rubroaurantiaca is a sub-shrub or small tree to 4(-8) m tall and a bole to 7 cm in diameter. It is known from 53 herbarium specimens collected between 1915 and 1962, with a single recent collection made in 2015 from the distant SE part of its range (not affecting the EOO). Two specimens from Cameroon (Southwest Region) made in 1983 (Thomas 2253) and in 1985 (Gentry and Thomas 52695) have been identified as this species, but as these are sterile their identification is regarded as doubtful and they have not been included in the assessment. The specimens represent 19 unique occurrences and 9 to 14 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 11 to 13 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the species, leading to a decline in its AOO, number of locations/subpopulations and number of mature individuals. However, the number of locations is 11 to 13, close to 10, the upper limit of the Vulnerable category, and some of them could disappear in a near future, rendering the species threatened.

**Bibliography** – Global Forest Watch (2018), Meerts (2018), Texier & Mayaux (2014), World Resources Institute (2016).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

# LAURACEAE

# \_ **Beilschmiedia ambigua** Robyns & R.Wilczek

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo; known from a single specimen in a forest along the Pweto to Moba road on the Marungu Plateau, situated near the western shores of Lake Tanganyika. Extent of occurrence (EOO): inapplicable; Area of occupancy (AOO): 4 km².

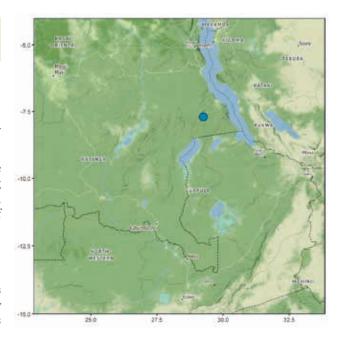
Habitat - Gallery forests; at around 1,050 m.

**Protected areas** – The only known collecting site occurs outside protected areas. This species is not kept in any *ex situ* collection. There are no current conservation actions known for the species.

**Threats** – The major threats to this species are the conversion of gallery forests to agricultural land and plantations, grazing, logging for fuelwood, and the erosion of stream banks caused by cattle.



Beilschmiedia ambigua: Holotype specimen at BR (W. Robyns 2106).



**Justification** – Beilschmiedia ambigua is a tree to 10 m high. The species is only known from the type specimen collected in 1926. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. The region where Beilschmiedia ambigua occurs is severely under-collected. However, the species could also be very rare, possibly even extinct. Research is needed to better determine its distribution, population size and trends and the threats that may be affecting it. Ex-situ populations might need to be established should any further individuals be located in the wild.

Bibliography – BGCI (2019), Robyns & Wilczek (1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

### \_ Beilschmiedia auriculata Robyns & R.Wilczek

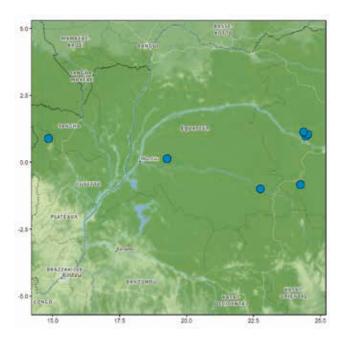
Red List category – Vulnerable: VU B2ab(iii).

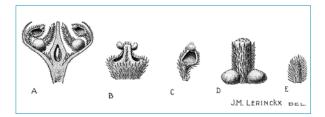
**Distribution** – Republic of the Congo (Bolomba, Ikela, Isangi) and Democratic Republic of Congo. Extent of occurrence (EOO): 142,894 km²; Area of occupancy (AOO): 28 km².

**Habitat** – Understory of lowland forests, swamp forest, gallery forest; at 350–500 m.

**Protected areas** – This species occurs in one protected area, the Odzala Kokoua National Park in the Republic of the Congo. This species is not kept in any *ex situ* collection. There are no conservation measures currently in place for the species.

**Threats** – The major threats to this species are deforestation and habitat destruction through conversion to agricultural land and plantations.





**Beilschmiedia auriculata:** A, flower, longitudinal section; B, C, outer stamen, dorsal and lateral view; D, E, stamens from 3<sup>rd</sup> and 4<sup>th</sup> verticil, dorsal view. (A-E: *Louis* 14234). Drawing by D. Leyniers, Meise Botanic Garden (©).

Justification – Beilschmiedia auriculata is a small tree to 10 m high. It is known from nine herbarium specimens collected between 1938 and 1994. The extent of occurrence (EOO) falls well above the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The nine known herbarium collections represent seven unique occurrences and seven sub-populations. Relative to the scale of the main threat, which is shifting agriculture, six locations (sensu IUCN) have been defined, which falls within the threshold of the Vulnerable category under condition 'a' of sub-criterion B2. Due to its occurrence in swamp forest and gallery forest, a possible decline of area, extent and/or quality of habitat is inferred as a result of logging and agriculture.

Bibliography - BGCI (2019), Robyns & Wilczek (1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

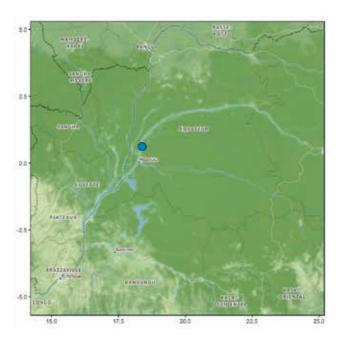
### **Beilschmiedia bracteata** Robyns & R.Wilczek

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo, where it is known only from the Lulonga region



Beilschmiedia bracteata: Holotype specimen at BR (Casteels 2).



along the Congo River. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO):  $4\,\mathrm{km^2}$ .

 $\label{eq:habitat} \textbf{Habitat} - \text{Riverine forest; at around 300 m.}$ 

**Protected areas** – The specimen coordinates map to a point very near to the boundary of the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be a factor in

its conservation. This species is not kept in any ex situ collection.

**Threats** – The main threat to this species is the destruction of its habitat by deforestation and conversion to agricultural land and plantations. In DRC, riverine forest is generally under such threat.

Justification – Beilschmiedia bracteata is a tree of unknown size and is known only from its type specimen, which was collected in 1920. This collection represents one unique occurrence and one subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under the sub-criterion B2. With only one collecting locality, one location (sensu IUCN) can be distinguished, which is the upper limit of the Critically Endangered category under the condition 'a' of sub-criterion B2. Fieldwork is needed to confirm whether the population still exists. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

 $\bf Authors$  – D.U. Ikabanga, M. Simo-Droissart, R. de Kok & W. Tack

# \_ **Beilschmiedia donisii** Robyns & R.Wilczek

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Mayumbe area in western Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat – Forests along rivers; at around 200 m.

**Protected areas** – The species occurs in the Luki Biosphere Reserve. It is not kept in any *ex situ* collection.

**Threats** – The main threat to this species is the destruction of its habitat by deforestation and conversion to agricultural land and plantations. Within the Luki Biosphere Reserve its habitat is under threat, since Reserve is subject to agri-





Beilschmiedia donisii: Type specimen at BR (Donis 1965).

culture and agro-forestry, and there are problems of illegal forest exploitation and charcoal burning.

**Justification** – *Beilschmiedia donisii* is a shrub or tree to 6 m high. It is known from four herbarium specimens collected in 1948 and 1949, representing two unique occurrences and one subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under the sub-criterion B2. Based on the threats, the only known subpopulation represents one location (*sensu* IUCN), which is the upper limit of the Critically Endangered category under the condition 'a' of sub-criterion B2. Fieldwork is needed to confirm whether the population still exists. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species.

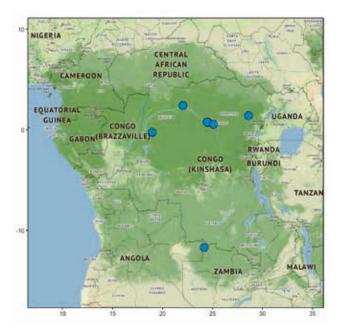
**Bibliography** – BGCI (2019), Muaka (2013), Robyns & Wilczek (1950, 1951).

**Authors** – D.U. Ikabanga, M. Simo-Droissart, R. de Kok & W. Tack

# \_ **Beilschmiedia gilbertii** Robyns & R.Wilczek

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Democratic Republic of the Congo and northern Zambia. Extent of occurrence (EOO): 859,501 km²; Area of occupancy (AOO): 36 km².





Beilschmiedia gilbertii: Type specimen at BR (Gilbert 1265).

**Habitat** – Swamps, *Brachystegia* forests, rainforests with *Celtis* and *Piptadeniastrum*, undergrowth primary forest with *Scorodophloeus zenkeri*, undergrowth of riparian forest, mixed forest; at 470–750 m.

**Protected areas** – Three collecting sites occur within one protected area, the Yangambi Biosphere Reserve. The six

other collecting sites occur in unprotected areas where there are no current conservation actions for the species. The species is not kept in any *ex situ* collection.

**Threats** – The habitat, generally containing valuable wood, is threatened by the conversion of forests to agricultural land and plantations, and by logging activities. Within the Yangambi Biosphere Reserve, the habitat is not well protected and is subject to small-scale agriculture and wood collecting for subsistence and firewood.

Justification – Beilschmiedia gilbertii is a shrub or small tree to 6 m high. The species has two varieties (var. gilbertii and var. glabra). It is known from 10 herbarium specimens collected between 1914 and 1994, representing nine unique occurrences and six subpopulations. The majority of these specimens were collected before 1960. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Given the threats, we infer a decline in the extent and quality of its habitat. Mapping and evaluation of subpopulations is needed.

**Bibliography** – BGCI (2019), Diniz (1997), Robyns & Wilczek (1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

# \_ **Beilschmiedia gilbertii** Robyns & R.Wilczek var. **gilbertii**

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Isangi Territory (Haut-Uele) in the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².



Habitat - Lowland forest; around 470 m.

**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions known for the taxon.

**Threats** – The habitat, where valuable timber species occur, is threatened by the conversion of forests to agricultural land and by logging activities.

**Justification** – Beilschmiedia gilbertii var. gilbertii is a small tree 5 m tall. It is known only from the type locality and has not been recorded since its discovery in 1938. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The taxon is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Due to the threats, we infer a continuing decline in the extent and quality of the taxon's habitat. No specimens of this taxon were collected after 1938, which could mean that the region is under-collected or it could be that the taxon is rare and possibly even extinct. Further collecting of this taxon would give a better understanding of its distribution area, its abundance and the threats it faces. Ex-situ populations might need to be established should any further individuals be located in the wild.

Bibliography - Robyns & Wilczek (1949, 1951).

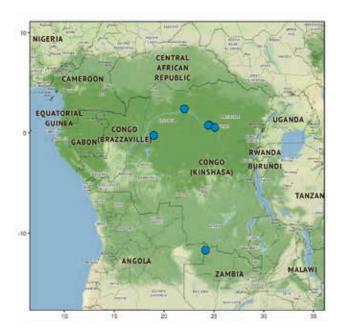
Authors - E. Fischer, M. Simo-Droissart & W. Tack

\_ **Beilschmiedia gilbertii** Robyns & R.Wilczek var. **glabra** Robyns & R.Wilczek

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Democratic Republic of the Congo and Zambia. Extent of occurrence (EOO): 543,125 km²; Area of occupancy (AOO): 24 km².

**Habitat** – Swamps, *Brachystegia* forests, rainforests with *Celtis* and *Piptadeniastrum*, undergrowth of primary forest with *Scorodophloeus zenkeri*; at 470–750 m.





Beilschmiedia gilbertii var. glabra: Herbarium material with drawing of flower details at BR (J. Louis 1081).

**Protected areas** – Two collecting sites occur within one protected area, the Yangambi Biosphere Reserve. The four other collecting sites occur in unprotected areas where there are no current conservation actions for the taxon.

**Threats** – The habitat, where valuable timber species occur, is threatened by the conversion of forests to agricultural land and by logging activities. Within the Yangambi Biosphere Reserve, the habitat is not well protected and is subject to small-scale agriculture and wood collecting for subsistence and firewood.

**Justification** – *Beilschmiedia gilbertii* var. *glabra* is a shrub or small tree to 6 m high. It is known from seven herbarium specimens collected between 1914 and 1979. There is only one specimen from Zambia, collected in 1938. These specimens represent six unique occurrences and five subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, five locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Because of the threats, we infer a decline in the extent and quality of its habitat. Mapping and evaluation of populations is needed.

Bibliography - Robyns & Wilczek (1949, 1951).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

## \_ Beilschmiedia hermanii Robyns & R.Wilczek

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo; known only from Kaniama (Katanga). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

**Habitat** – Wet lowland forests, gallery forest; around 800 m.

**Protected areas** – The only known collecting site occurs outside protected areas. This species is not kept in any *ex situ* collection. There are no current conservation actions known for the species.

**Threats** – The habitat is threatened by the conversion of forests to agricultural land and plantations, and by logging activities.

**Justification** – *Beilschmiedia hermanii* is a tree of unknown size. It is known from two herbarium specimens collected in 1938 and 1958, representing one unique occurrence. The



Beilschmiedia hermanii: Holotype specimen at BR (Herman 2238).



area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The single subpopulation represents one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the threats, we infer a continuing decline in the extent and quality of the species' habitat. No specimens of this species were collected after 1958, which could mean that the region is under-collected or it could be that the species is rare and possibly even extinct. Further collecting of the species would give a better understanding of its distribution area, its abundance and the threats it faces.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

### **Beilschmiedia lebrunii** Robyns & R.Wilczek

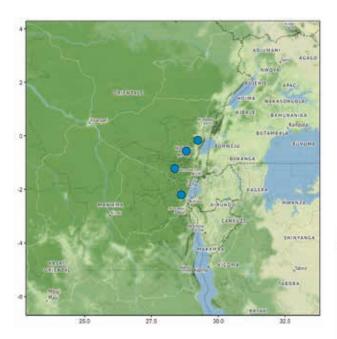
Red List category – Endangered: EN B2ab(iii).

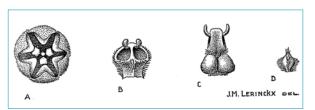
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 7,528 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Border of lowland and montane forest (transitional rainforests); at 1,470–1,950 m.

**Protected areas** – One collecting site occurs within the Kisimba Ikobo Primate Nature Reserve, where its level of protection is uncertain. The other three collecting sites occur outside protected areas. There are no current conservation actions for the species. This species is not kept in any  $ex\ situ$  collection.

**Threats** – The major threats are deforestation and habitat destruction through conversion into agricultural land and plantations. According to herbarium label information this species is also exploited as valuable timber, so it is threatened by illegal logging. At Masisi 95% of forest vegetation





**Beilschmiedia lebrunii**: A, flower, seen from above; B, outer stamen, ventral view; C, stamen from 3<sup>rd</sup> verticil, dorsal view; D, staminode of 4<sup>th</sup> verticil, dorsal view. (A-D: *Lebrun* 5107). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

has been removed for agriculture/cattle herding. The Walikale region also shows massive forest clearance.

Justification – Beilschmiedia lebrunii is a tree to 15 m high. It is known from four herbarium specimens collected between 1932 and 1959, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that the anthropogenic pressure on the habitat will continue to increase in the near future.

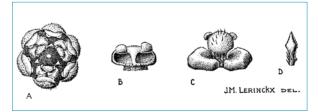
Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951), UNEP-WCMC (2021b).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

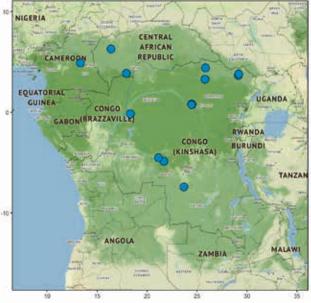
### Beilschmiedia louisii Robyns & R.Wilczek

Red List category - Near Threatened: NT.

**Distribution** – Cameroon, Central African Republic and Democratic Republic of the Congo. Extent of occurrence (EOO): 1,303,534 km²; Area of occupancy (AOO): 72 km².



**Beilschmiedia louisii**: A, flower, seen from above; B, outer stamen, ventral view; C, stamen from 3<sup>rd</sup> verticil, dorsal view, surrounded by kidney-shaped glands; D, staminode of 4<sup>th</sup> verticil, dorsal view. (A-D: *Louis 3086*). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).



**Habitat** – Primary rainforest, rainforest with *Scorodophloeus zenkeri*, forest on sandy soil, swamp forest; at 300–800 m.

**Protected areas** – Ten occurrences are located in four protected areas. These are the Yangambi Biosphere Reserve, the Garamba National Park, the Gangala-na Bodio Hunting Area, and the Bili-Uéré Protected Area. This species is not kept in any *ex situ* collection. There are no conservation measures currently in place for the species.

**Threats** – The major threats are deforestation and habitat destruction through conversion to agriculture and plantations. There is also possibly logging for timber and fuelwood.

**Justification** – *Beilschmiedia louisii* is a large tree to 50 m tall, with a bole to 1 m in diameter. It is known from 41 herbarium specimens collected between 1933 and 2013, representing 18 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the threats, 12 locations (*sensu* IUCN) can be distinguished, which is just above the limit of the Vulnerable category under condition 'a' of sub-criterion B2. We project that the habitat loss will continue in the near future. Mapping and evaluation of subpopulations and habitats are needed in the future.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

Authors – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

# Beilschmiedia mayumbensis Robyns & R.Wilczek

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the western part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 425,098 km²; Area of occupancy (AOO): 12 km².

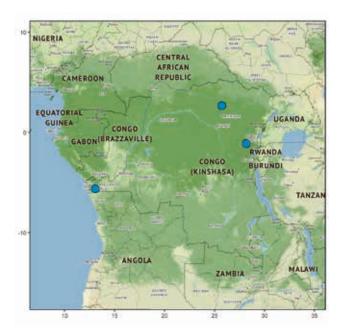
**Habitat** – Old forest relicts, primary forest, forest with *Macrolobium*; at 200–920 m.

**Protected areas** – One of the three unique occurrences is located within a protected area, the Rubi-Tele Hunting Area, which is an IUCN Management Category VI protected area and probably affords some degree of protection. The two other unique occurrences are located outside protected areas. There are no conservation measures currently in place for the species. This species is not kept in any *ex situ* collection.

**Threats** – The region where the species occurs is densely populated and there are heavy demands on the forest for timber and charcoal production and also land for agriculture.



Beilschmiedia mayumbensis: Type specimen at BR (Donis 2144).



Justification – Beilschmiedia mayumbensis is a small tree to 8 m high. The species is known from four herbarium specimens collected between 1948 and 1958, of which one was discarded because of imprecise locality. The three remaining specimens represent three unique occurrences and three subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the main threat, which is shifting agriculture, the three known unique occurrences represent three locations with distinct levels of threat (sensu IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that the degradation of the habitat will continue in the future.

**Bibliography** – BGCI (2019), Robyns & Wilczek (1950, 1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

# \_ Beilschmiedia michelsonii Robyns & R.Wilczek

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic the Congo and Rwanda. Extent of occurrence (EOO): 5313 km²; Area of occupancy (AOO): 80 km².

Habitat - Montane forest; at 1,000-2,200 m.

**Protected areas** – Three out of nine collections are from within protected areas: Nyungwe National Park and Réserve Naturelle d'Itombwe.

**Threats** – All three Rwandan collections are from one protected area; one DRC collecting sites is in Itombwe Reserve, but four arejust outside or relatively close to Kahuzi-Biega National Park, where the forest habitat is under high pressure from the dense human population, converting it to cultivated land and degrading it by collecting firewood and timber.

**Justification** – Beilschmiedia michelsonii is a tree to 20 m high. It is known from nine herbarium specimens collected between 1947 and 1972. The extent of occurrence (EOO) falls within the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given

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**Beilschmiedia michelsonii**: Herbarium specimen at BR (*Pierlot 614*).

the scale of the threat, four or five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Because of the high level of threat confronting the unprotected sites in the DRC, we infer a continuing decline in EOO, AOO, quality and extent of the habitat, number of locations and number of mature individuals.

**Bibliography** – Gereau & al. (2019c), Robyns & Wilczek (1949, 1951), Verdcourt (1962, 1969).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

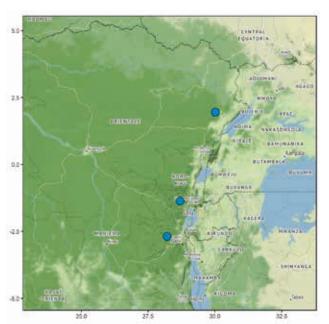
### **Beilschmiedia olivacea** Robyns & R.Wilczek

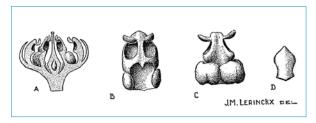
Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 877 km²; Area of occupancy (AOO): 12 km².

**Habitat** – Primary transition between lowland and montane forests, swamp forest; at 1,200–2,000 m. The fruit, a drupe of about 6 cm, is probably distributed by animals.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species. It is not kept in any *ex situ* collection.





**Beilschmiedia olivacea**: A, flower, longitudinal section; B, outer stamen, ventral view; C, stamen from  $3^{\rm rd}$  verticil, dorsal view; D, staminode of  $4^{\rm th}$  verticil, ventral view. (A-D: *Michelson 772*). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

**Threats** – The Rutshuru occurrence is threatened by conversion of forest due to agriculture and village expansion. The collecting sites of Kimbili (Shabunda) and of Djolu (Equateur) are threatened by illegal mining and wood harvesting for construction materials and by village expansion.

Justification – Beilschmiedia olivacea is a tree to 15 m tall. It is known from four herbarium specimens collected between 1931 and 2010, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the limits of the Endangered category under the sub-criteria B1 and B2. Based on the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criteria B1 and B2. We project that forest degradation will continue in the future, further reducing the extent and quality of the species' habitat.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

**Authors** – I. Mwanga Mwanga, M. Simo-Droissart, R. de Kok & W. Tack

### **Beilschmiedia rwandensis** R.Wilczek

Red List category – Least Concern: LC.

**Distribution** – Endemic to Rwanda; its presumed occurrence in Burundi needs confirmation. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat – Montane forest; at 1,950–2,450 m.

**Protected areas** – The species is exclusively found in the Nyungwe National Park (at Uwinka and Rangiro).

**Threats** – Nyungwe National Park is well protected and well managed.

**Justification** – *Beilschmiedia rwandensis* is a tree to 20 m tall. It is known from five herbarium specimens collected between 1969 and 2003, representing two subpopulations.







Beilschmiedia rwandensis: Flowering twig. Flowers. Uwinka, Rwanda. Photos by Eberhard Fischer (©).

Since no threat could be identified, no locations can be distinguished. Although this species has been assessed as Least Concern, it is given the proposed tag 'Protected Area Dependent'. Should any negative change occur in the status of the protected area within which the taxon is found, this would rapidly change the Red List status.

**Bibliography** – Fischer & Killmann (2008), Gereau & al. (2019d), Ntore & al. (2018), Troupin (1978, 1982), Wilczek (1974).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

# \_ Beilschmiedia schmitzii Robyns & R.Wilczek

**Red List category** – Endangered: EN B2ab(i,ii,iii,iv,v).

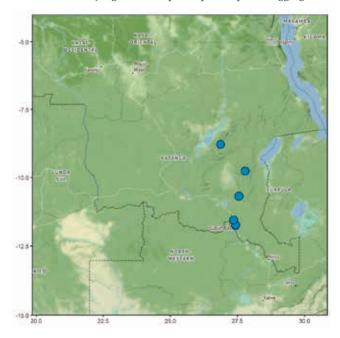
**Distribution** – Endemic to the Haut Katanga region in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 13,925 km²; Area of occupancy (AOO): 24 km².

**Habitat** – Lowland forests, sometimes on limestone, in gallery forests on swampy soil; at 1,320–1,550 m.

**Protected areas** – The species occurs within two protected areas. These are the Kundelungu and the Upemba National Parks. Outside these parks, there are no current conserva-

tion actions for the species. It is not kept in any  $ex\ situ$  collection.

**Threats** – The major threats are deforestation and habitat destruction through conversion of forest to agricultural land and plantations, urbanization (especially around Lubumbashi), agro-industry, and possibly also logging.





**Beilschmiedia schmitzii**: Herbarium specimen at BR (*Schmitz* 7269).

Justification – Beilschmiedia schmitzii is a tree to 20 m high. It is known from seven herbarium specimens collected between 1948 and 1961, representing six unique occurrences and five subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Given the scale of the threats, five locations (sensu IUCN 2019) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a decline in the area, extent and quality of the species' habitat. Two locations in the area of Lubumbashi are suspected to be gone because of these threats, thus resulting in a suspected decline in the EOO, AOO, number of subpopulations/locations and number of mature individuals.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

**Authors** – E. Fischer, M. Simo-Droissart, R. de Kok & W. Tack

## \_ Beilschmiedia troupinii R.Wilczek

Red List category - Least Concern: LC.

**Distribution** – Endemic to Nyungwe Forest, Rwanda. Extent of occurrence (EOO): 11 km²; Area of occupancy (AOO): 30 km².

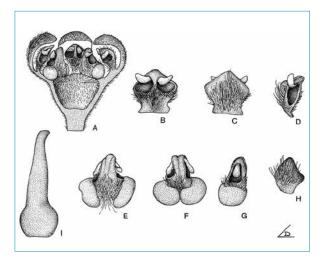
Habitat - Montane forest; at 1,800-2,450 m.

**Protected areas** – All collections are from the well-protected Nyungwe National Park.

**Threats** – This species occurs exclusively in a protected area; no threats are known.

**Justification** – *Beilschmiedia troupinii* is a tree to 24 m tall. It is known from 13 herbarium specimens collected between 1956 and 1980, representing 2 or 3 subpopulations. Since no threat could be identified, no locations can be distinguished. Although this species has been assessed as Least





Beilschmiedia troupinii: A, flower, longitudinal section; B, C, D, outer stamen, ventral, dorsal and lateral view; E, F, G, inner stamen, ventral, dorsal and lateral view; H, staminode, ventral view; I, pistil. (A-I: Troupin 11360). A, Drawing by A. Cleuter, Meise Botanic Garden (©).

Concern, it is given the proposed tag 'Protected Area Dependent'. Should any negative change occur in the status of the protected area within which the taxon is found, this would rapidly change the Red List status.

**Bibliography** – Fischer & Killmann (2008), Gereau & al. (2019e), Troupin (1978, 1982), Wilczek (1974).

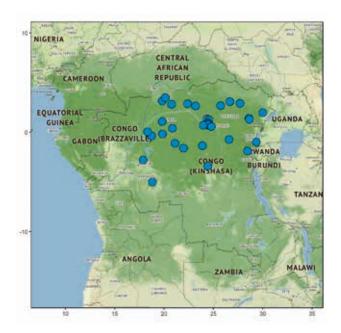
**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

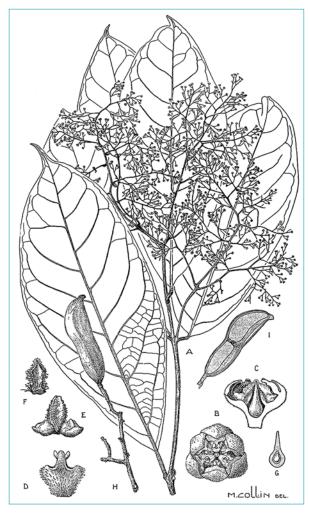
### **Beilschmiedia variabilis** Robyns & R.Wilczek

Red List category – Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 888,968 km²; Area of occupancy (AOO): 160 km².

**Habitat** – Primary and secondary lowland forest, sometimes periodically flooded; at 300–1200 m.





Beilschmiedia variabilis: A, flowering branch; B, flower, seen from above; C, idem, longitudinal section; D, outer stamen, ventral view; E, inner stamen, dorsal view; F, staminode of 4<sup>th</sup> verticil, ventral view; G, ovary, longitudinal section; H, drupe and stipe; I, drupe, longitudinal section. (A-I: Louis 15620 and 13767). Drawing by M. Collin, Meise Botanic Garden (©).

**Protected areas** – This species occurs in six protected areas. These are the Okapi Wildlife Reserve (2 occurrences), the Yangambi Biosphere Reserve (8 occurrences), the Sankuru Nature Reserve (1 occurrence), the Rubi-Tele Hunting Area (1 occurrence), the Virunga National Park (1 occurrence) and the Salonga-Nord National Park (2 occurrences). Outside these protected areas, there are no conservation measures currently in place for the species. This species is not kept in any *ex situ* collection.

**Threats** – The major threats to this species are deforestation and habitat destruction through conversion to agriculture and plantations. There is also selective logging for fuelwood and charcoal production.

**Justification** – *Beilschmiedia variabilis* is a shrub or small tree to 10 m high and a bole to 25 cm in diameter. It is known from 55 herbarium specimens collected between 1905 and 2011, representing 41 unique occurrences and 32 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion

B2. Relative to the main threat, which is shifting agriculture, the 41 unique occurrences represent 33 different locations (sensu IUCN), well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2, and the species thus fails to meet the threshold values for a threatened category under the IUCN Red List criteria.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

**Authors** – E. Fischer, M. Simo-Droissart R. de Kok & W. Tack

## **Beilschmiedia vermoesenii** Robyns & R.Wilczek

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Mayombe region, western Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Forests; at around 200-250 m.

**Protected areas** – This species is not known from any protected areas. This species is not kept in any *ex situ* collection.

**Threats** – The major threats are deforestation and habitat destruction through conversion to agriculture and plantations. There is also logging for fuelwood.



**Beilschmiedia vermoesenii:** Type material at BR (*Vermoesen* 1848).



Justification – Beilschmiedia vermoesenii is a shrub or tree of unknown height. It is only known from one herbarium specimen from Temvo, Mayombe (DRC), collected in 1919. The AOO falls within the limits of the Critically Endangered category under sub-criterion B2. The single collection represents one unique occurrence and one subpopulation. Considering the main threat, which is shifting agriculture, the unique occurrence represents one location (sensu IUCN), the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. The threats are leading to a decline in the habitat quality, but we cannot infer any other decline for the species. Since it has not been observed for over 100 years, it has been given the tag Possibly Extinct.

Bibliography – BGCI (2019), Robyns & Wilczek (1949, 1951).

 $\bf Authors$  – E. Fischer, M. Simo-Droissart R. de Kok & W. Tack

# \_ **Ocotea michelsonii** Robyns & R.Wilczek

**Red List category** – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): 17,400 km²; Area of occupancy (AOO): 150 km².

Habitat – Montane forest; at 1,100–2,500 m.

**Protected areas** – Fourteen out of eighteen collections are from within three protected areas: Nyungwe National Park, Kisimba Ikobo Primate Nature Reserve, Réserve Naturelle de Itombwe.

**Threats** – One Rwandan collection is from outside a protected area: Gikungu, near the part of the former Gishwati N.P., which is now completely destroyed. In DRC, several collections are from outside protected areas; all these have threats of smallholder agriculture conversion. Kisimba-Ikobo is not a safe reserve yet, as the local community is disputing the establishment.

**Justification** – *Ocotea michelsonii* is a tree to 25 m high, with a bole to 70 cm in diameter. It is known from eighteen herbarium specimens collected between 1944 and 1976. Its extent of occurrence (EOO) is within the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category

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Ocotea michelsonii: Holotype specimen at BR (Michelson 726).

under sub-criterion B2. Relative to the main threat, which is land conversion for agriculture, six different locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above and considering the almost certain destruction of the occurrence at Gikungu, we infer a continuing decline in EOO, AOO, habitat extent and quality, number of subpopulations and number of mature individuals.

**Bibliography** – Gereau & al. (2019f), Robyns & Wilczek (1949, 1951).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

# LINACEAE

# \_ **Hugonia planchonii** Hook.f. var. **congolensis** R.Wilczek

Red List category – Vulnerable: VU B2ab(iii)

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 36,437 km<sup>2</sup>; Area of occupancy (AOO): 24 km<sup>2</sup>.

**Habitat** – Primary forest, rainforest, rainforest edge; at 700–1,200 m. Seeds are probably dispersed by forest ruminants.

**Protected areas** – One collecting site occurs within the Kahuzi-Biega National Park. There are no current conservation actions for the other occurrences in unprotected sites.

**Threats** – The habitat is subject to human pressure, especially from mining, fuelwood gathering, grazing (pastures), urbanization (especially near Walikale and Kisangani) and possibly also from oil palm plantations and medicinal bark





Hugonia planchonii var. congolensis: Herbarium specimen at BR (Christiaensen 1848).

use. The collecting site in the Kahuzi-Biega National Park seems not well protected due to civil unrest in the eastern part of the country.

**Justification** – *Hugonia planchonii* var. *congolensis* is a lianescent shrub or small tree. It is known from seven herbarium collections made between 1915 and 1977, representing six unique occurrences and six subpopulations. The extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat of the taxon.

**Bibliography** – Feer (1995), Gautier-Hion & al. (1980), Kone & al. (2011), Quattrocchi (2012), Wilczek (1955, 1958a).

Authors - J. Nkengurutse, M. Simo-Droissart & W. Tack

# MALPIGHIACEAE

# \_ Acridocarpus katangensis De Wild.

Red List category – Least Concern: LC

**Distribution** – South-eastern Democratic Republic of the Congo, south-western Tanzania and northern Zambia. Extent of occurrence (EOO): 155,221 km²; Area of occupancy (AOO): 128 km².

**Habitat** – Rocky areas, steep slopes, rocky hills, woodlands, open forests (sometimes on stony soil), lowland forest on poor and dry soil, woody savannah, grassy savannah, and termite mounds; at 585–1,500 m.

**Protected areas** – Nine of the 33 unique occurrences are located within two protected areas. These are the Kundelungu National Park and the Upemba National Park. There are no conservation measures currently in place for the species outside protected areas.

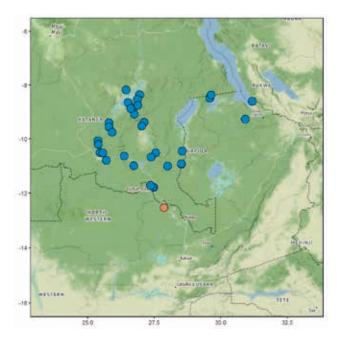
**Threats** – The threats to the species' habitat are shifting agriculture (the main one), followed by urbanization, the collecting of fuelwood and mining.

**Justification** – *Acridocarpus katangensis* is a small tree to 8 m tall. It is known from 40 herbarium specimens collected between 1899 and 2014, two of which were discarded for evaluation because we can assume that the habitat has





Acridocarpus katangensis: Leaves. Flowers. Lubemba, Kasenga Terr., Haut-Katanga, DRCongo. Photos by Michel Hasson, Meise Botanic Garden (©).



disappeared due to mining (Chingola). The 38 remaining specimens represent 33 unique occurrences and 25 to 30 extant subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat (shifting agriculture), 20 to 25 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. While we expect that human pressure will increase the loss of its habitat, we do not predict a significant decline in number of locations in the near future. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under sub-criterion B2 are not met, it cannot be assigned to any threatened category.

Bibliography – Meerts & Hasson (2016), Wilczek (1958b).Authors – A. Nsanzurwimo, M. Simo-Droissart & W. Tack

# MALVACEAE

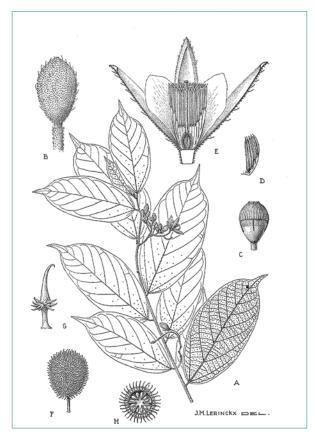
# \_ Ancistrocarpus bequaertii De Wild.

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 361,141 km²; Area of occupancy (AOO): 140 km².

**Habitat** – Rainforest, secondary forest, gallery forest, fallow land; at 430–950 m.

**Protected areas** – The species occurs within the Yangambi Biosphere Reserve and the Okapi Wildlife Reserve. There are no current conservation actions for the collecting sites occurring in unprotected sites.



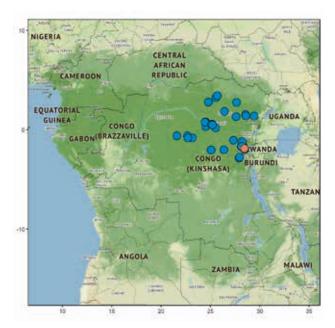
Ancistrocarpus bequaertii: A, flowering branch; B, flower bud; C, idem, sepals and petals removed; D, idem, part of staminal tube with stamens; E, flower, longitudinal section; F, fruit; G, spine; H, fruit, transverse section. (A-H: Gilbert 1236). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).



Ancistrocarpus bequaertii: Fruit. Photo by Quentin Luke (©).

**Threats** – The main threats to the habitat are land degradation due to agriculture and urbanization. The subpopulation at Irangi has been lost due to the complete conversion of all forest to oil palm plantations. The Okapi Wildlife Reserve is subject to civil unrest, military action, logging and mining, but these are no major threats to the forest vegetation outside village lands (C.E.N. Ewango, pers. comm.).

**Justification** – *Ancistrocarpus bequaertii* is a small tree or liana to 12 m tall. It is known from 88 herbarium collections made between 1913 and 2000, of which 27 have been



discarded prior to the assessment because they occur in a region where the natural vegetation has been completely destroyed (Irangi Forest, now a vast oil palm plantation). The remaining 61 specimens represent 36 unique occurrences and 28 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 20 different locations (sensu IUCN) can be distinguished, exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although the habitat of Ancistrocarpus bequaertii is under pressure, the species is not threatened because it does not reach the thresholds of the Vulnerable category. Although we project that the anthropogenic pressure will increase the loss of its habitat, we do not project a significant decline of its EOO, AOO, number of locations/subpopulations or number of mature individuals in the near future.

Bibliography - Wilczek (1963).

Authors – E. Ilunga wa Ilunga, M. Simo-Droissart & W. Tack

### \_ **Cola bruneelii** De Wild.

Red List category - Least Concern: LC.

**Distribution** – Across the Democratic Republic of Congo. Extent of occurrence (EOO): 770,347 km²; Area of occupancy (AOO): 84 km².

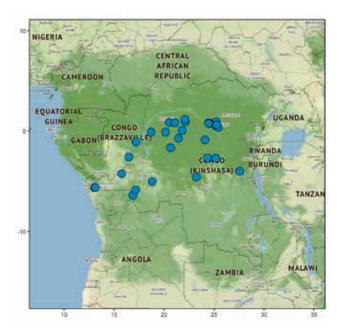
**Habitat** – Dense rainforest, farmland, swamp forest; at 200–850 m.

**Protected areas** – *Cola bruneelii* is not located in any protected areas.

**Threats** – The forest across this species' range are severely threatened by commercial logging, slash-and-burn agriculture, fuelwood collection and clearance for plantations of oil palm, rubber, bananas and cacao. Certain localities are also threatened by urban spread, such as those located near



Cola bruneelii: Herbarium specimen at BR (J. Louis 14205).



Kisangani. The fruits are edible, the leaves are eaten like sorrel and the wood is used for making tool handles.

**Justification** – *Cola bruneelii* is a small tree to 10 m tall. It is known from 69 herbarium specimens collected between 1903 and 2015. These represent 37 unique occurrences and around 30 subpopulations. Its extent of occurrence (EOO)

is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 29 different locations (*sensu* IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2.

**Bibliography** – Germain (1963b), Lawrence & al. (2019), Weber & al. (2001).

Authors - P. Lawrence, I. Baldwin & M. Cheek

# \_ **Cola congolana** De Wild. & T. Durand

Red List category - Least Concern: LC.

**Distribution** – Across the Democratic Republic of Congo and in eastern Uganda. Extent of occurrence (EOO): 1,063,883 km<sup>2</sup>; Area of occupancy (AOO): 184 km<sup>2</sup>.

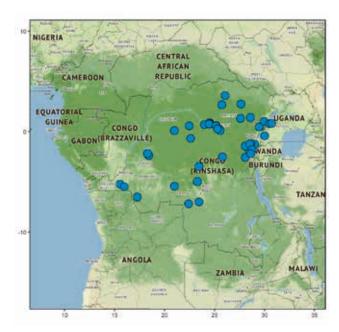
**Habitat** – Submontane forests, moist evergreen, gallery and swamp forests at 850 to 1,900 m.

**Protected areas** – This species occurs in several protected areas, including the Yangambi Biosphere Reserve, the Virunga National Park and the Kahuzi-Biega National Park in the Democratic Republic of the Congo, and the Itwara Central Forest Reserve and the Kibale National Park in Uganda.

**Threats** – The rainforests of the Congo Basin are threatened by clearance for agriculture, plantations, logging, development, mining and fuelwood extraction.



**Justification** – *Cola congolana* is a small evergreen tree to 10 m tall. It is known from 70 herbarium specimens collected between 1896 and 2012, representing 47 unique occurrences and around 40 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area







Cola congolana: Leaves. Female flower. Male flower. Uganda, Itwara Central Forest Reserve. Photos by Rudolphe Lemmens (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.

of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, over 28 locations (sensu IUCN) can be distinguished, far exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Cola congolana was previously assessed under its synonym C. bracteata, which was wrongly thought to be endemic to Uganda.

Bibliography – Cheek & Dorr (2007), Cheek & Lawrence (2019a), Germain (1963b), Weber & al. (2001).

Authors - M. Cheek & P. Lawrence

# Cola diversifolia De Wild. & T.Durand

Red List category - Least Concern: LC.

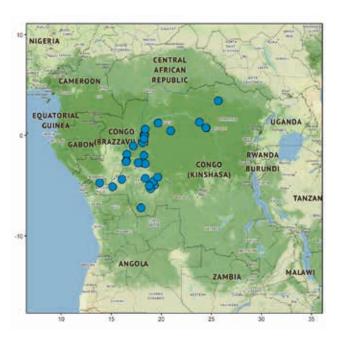
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 604,377 km<sup>2</sup>; Area of occupancy (AOO): 136 km<sup>2</sup>.

**Habitat** – Evergreen rainforest, swamp forest; at 300–850 m.

**Protected areas** – The species is present within the Yangambi Biosphere Reserve and also in the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or not be significant for its conservation. All other collections of the species are located outside protected areas. There are no current conservation actions for the species.

**Threats** – Notably in Yangambi and in the two westernmost occurrences (Luala and Kisantu) the habitat is under severe threat from urbanization and small-scale agriculture. The latter two occurrences may in fact already have been lost. The leaves are eaten as a vegetable

**Justification** – *Cola diversifolia* is a small tree to 5 m tall. It is known from 69 herbarium specimens collected from 1889 to 2012, which renders the species relatively common. The specimens represent 35 unique occurrences and 29 subpopulations. The extent of occurrence (EOO) far exceeds the





Cola diversifolia: Herbarium material at BR (M. Laurent 1130).

upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 24 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Due to the threats, and notably the possibility that at least two collecting sites are already lost, we infer a decline in the species' AOO, EOO, number of subpopulations and locations and extent and quality of its habitat. However, since the species cannot be considered as severely fragmented and there are no extreme fluctuations in its parameters (meaning that at least two (a and c) of the three conditions under sub-criterion B2 are not met), it cannot be assigned to any threatened category.

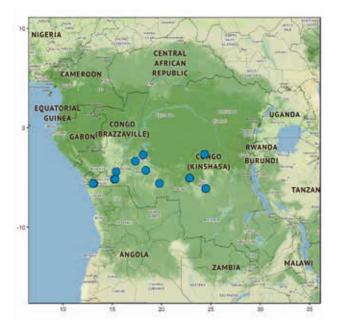
**Bibliography** – Germain (1963), IUCN and UNEP-WCMC (2018), Weber & al. (2001).

Authors – M.S.M. Sosef & W. Tack

# **Cola gilletii** De Wild.

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v)

**Distribution** – Endemic to the western and central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 352,449 km²; Area of occupancy (AOO): 48 km².





Cola gilletii: Type specimen at BR (Gillet 2792).

Habitat – Semi-deciduous rainforest; at 230–850 m.

**Protected areas** – One collecting site occurs within the Sankuru Nature Reserve and another in the Luki Forest Reserve. All others occur in non-protected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the species is conversion of suitable habitat to agricultural land and urbanization. This is notably the case for the occurrences near Kinshasa, which may actually already have been lost. For another collecting site around Ngeba in western DRC hardly any forest habitat is left. Other threats are local harvest of wood for subsistence. The leaves are eaten as a vegetable.

**Justification** – *Cola gilletii* is a small tree to 4 m tall. It is known from 12 herbarium specimens collected between 1900 and 1979, representing 12 unique occurrences and 10 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threats, 10 locations (*sensu* IUCN) can be distinguished, which falls just within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Since at least three of the known occurrences may actually already have been lost, we infer a continuing decline in the extent and quality of the habitat of the species, together with a past decline in its AOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Germain (1963), IUCN and UNEP-WCMC (2018), Weber & al. (2001).

Authors - M.S.M. Sosef & W. Tack

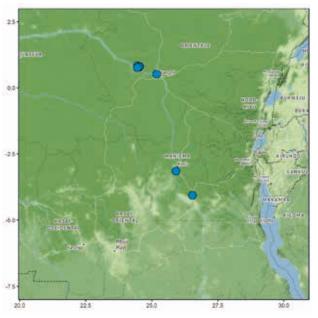
### Cola louisii R.Germ.

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 25,563 km<sup>2</sup>; Area of occupancy (AOO): 32 km<sup>2</sup>.

**Habitat** – Semi-deciduous rainforest, riverine forest; at 410–600 m.

**Protected areas** – The species is present within the Yangambi Biosphere Reserve. All other occurrences are located outside protected areas. There are no current conservation actions for the species.





Cola louisii: Herbarium specimen at BR (Bolema 1045).

**Threats** – The main threat is conversion of suitable habitat to agricultural land and by urbanization. This is notably the case for the Yangambi and Kisangani collecting sites, less so for the occurrence near Kindu. The occurrence in Kisangani may actually already have been lost. Other threats are local harvest of wood for subsistence.

Justification – Cola louisii is a small tree to 5 m tall. It is known from 12 herbarium specimens collected between 1899 and 1976, representing 8 unique occurrences and 4 subpopulations. Its extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Since at least two of the subpopulations will have suffered notably from the identified threats, with the Kisangani occurrence presumably already lost, we infer a continuing decline in the extent and quality of the habitat of the species, together with a past decline in its AOO, EOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Germain (1963), IUCN and UNEP-WCMC (2018), Weber & al. (2001).

Authors - M.S.M. Sosef & W. Tack

#### \_ Cola mosserayana R.Germ.

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Katanga Province (Kaniama village) in south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat - Gallery rainforest; at around 900 m.

**Protected areas** – The species is not known to occur in any protected areas.

**Threats** – According to Global Forest Watch (2019), the single occurrence of this species, Kaniama village, has undergone a 2.8% annual reduction in tree cover since 2001. Satellite imagery reveals that much of this tree cover has been lost to small-scale agriculture, which forms a wide matrix around the village. There is no evidence that *Cola mosserayana* is being targeted for harvest, but rather it seems to be victim of general land clearance to make space for human development. At a wider scale, the forests across this species range are severely threatened by commercial logging, slash and burn agriculture, fuelwood collection and clearance for plantations of oil palm, rubber, bananas and cacao.

**Justification** – *Cola mosserayana* is a small forest tree known from a single herbarium specimen collected in 1936. The area of occupancy (AOO) falls within the limits of the



Cola mosserayana: Type specimen at BR (Herman 2173).



Critically Endangered category under sub-criterion B2. Based on the threats, a single location (*sensu* IUCN) can be defined, which falls within the limits of the Critically Endangered category under condition 'a' of sub-criterion B2. Because of the heavy impact on the habitat around the only known occurrence, the population might actually already be lost, and the species gone extinct.

**Bibliography** – Cheek & Dorr (2007), Fisk & al. (2019a), Germain (1963b), Global Forest Watch (2019), Weber & al. (2001).

Authors – B. Fisk, P. Lawrence & M. Cheek

## \_ **Cola pierlotii** R.Germ.

Red List category - Least Concern: LC.

**Distribution** – Eastern Democratic Republic of the Congo (Kivu Province), western Rwanda and south-western Uganda. Extent of occurrence (EOO): 19,389 km²; Area of occupancy (AOO): 108 km².

Habitat – Submontane evergreen forests; at 1,200–2,550 m.

**Protected areas** – This species occurs within Bwindi Impenetrable National Park (Uganda), Kahuzi-Biega National Park (DRC) and Nyungwe Forest National Park (Rwanda).

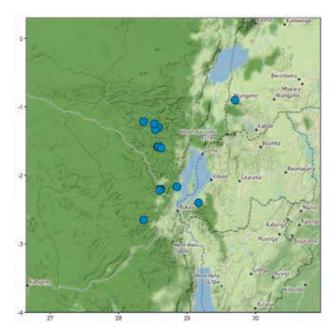
**Threats** – Although many of the recorded sites for this species are within relatively undisturbed forests, some are close to human settlements and are threatened by forest clearance for agricultural purposes.

**Justification** – *Cola pierlotii* is an evergreen tree to 15 m tall. It is known from 36 herbarium specimens collected between 1932 and 2010, representing 27 unique occurrences. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the threats, around 20 locations (*sensu* IUCN) could be defined,





Cola pierlotii: Young shoot. Flowers. Greenhouse at Meise Botanic Garden. Photo by C. Horions, Meise Botanic Garden (©).



exceeding the threshold for Vulnerable under sub-criteria B1 and B2. Despite the threats to the natural habitat, the species cannot therefore be assigned to a threatened category.

**Bibliography** – Cheek & Dorr (2007), Fischer & al. (2019b), Germain (1963b), Karamage & al. (2016).

**Authors** – E. Fischer, S. Nshutiyayesu, S. Ntore, W.R.Q. Luke, J. Kalema, H.J. Beentje, C. Kabuye & C.J. Kayombo

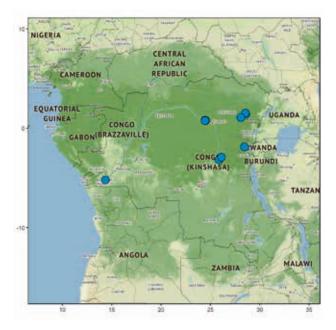
#### \_ Cola sciaphila Louis ex R.Germ.

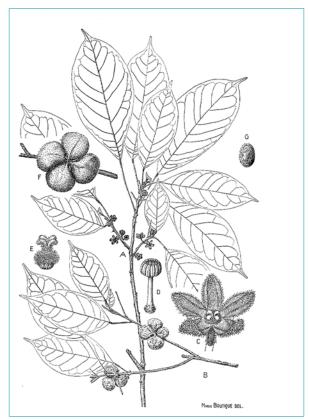
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to central Democratic Republic of the Congo. Extent of occurrence (EOO): 460,687 km<sup>2</sup>; Area of occupancy (AOO): 28 km<sup>2</sup>.

Habitat - Semi-deciduous rainforests; at 470-950 m.

**Protected areas** – Only one occurrence is located within a protected area, in the Yangambi Biosphere Reserve.





Cola sciaphila: A, flowering branch; B, fruiting branch; C, flower; D, androecium; E, pistil; F, fruit; G, seed. (A, C, E: Louis 14662; B, F, G: Louis 12639; D: A. Léonard 1215). Drawing by Marie Boutique, Meise Botanic Garden (©).

**Threats** – The rainforests of the Congo basin are threatened by clearance for agriculture, plantations, logging, development, mining and fuelwood extraction.

**Justification** – *Cola sciaphila* is a slender tree to 20 m tall. It is known from 20 herbarium specimens, collected between 1936 and 2002. Its extent of occurrence (EOO) is well above the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the threats, six locations (*sensu* IUCN) could be defined, which falls within the thresholds of the Vulnerable category of condition 'a' under sub-criterion B2. Based on the above, we infer a continuing decline in extent and quality of the suitable habitat.

**Bibliography** – Cheek & Lawrence (2019b), Germain (1963b), Tanno (1981), Weber & al. (2001).

Authors - M. Cheek & P. Lawrence

## \_ **Cola selengana** R.Germ.

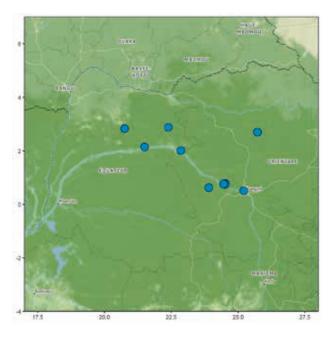
Red List category – Vulnerable: VU B2ab(ii,iii,iv).

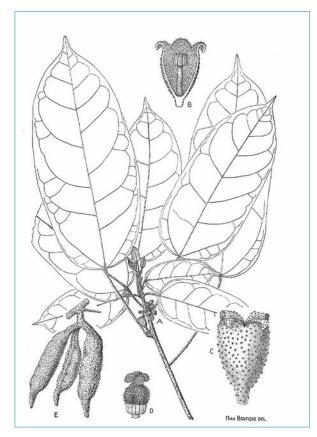
**Distribution** – Endemic to the northern half of the Democratic Republic of the Congo; Extent of occurrence (EOO): 88,433 km<sup>2</sup>; Area of occupancy (AOO): 40 km<sup>2</sup>.

**Habitat** – Semi-deciduous rainforest, secondary forest; at 350–600 m.

**Protected areas** – The species occurs within the Yangambi Biosphere Reserve. There are no current conservation actions for the species.

**Threats** – The main threat to the species is conversion of suitable habitat to agricultural land and urbanization. This is notably the case for the occurrences around Yangambi and Kisangani, one of which may actually already have been lost. The Yangambi Biosphere Reserve is under pressure of the population converting natural vegetation to agricultural land and collecting timber and firewood from the forests. Other threats are local harvest of wood for subsistence.





Cola selengana: A, flowering branch; B, male flower, longitudinal section; C, female flower; D, pistil; E, fruit. (A: Évrard 3382; B: Germain 8679; C, D: Germain 94; E: Germain 666). Drawing by Marie Boutique, Meise Botanic Garden (©).

**Justification** – *Cola selengana* is a small tree to 6 m tall. It is known from 11 herbarium specimens collected between 1913 and 1988, representing 10 unique occurrences and 8 subpopulations. Its extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 8 locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat of the species, together with a past decline in its AOO and number of locations/subpopulations due to the probable loss of collecting sites at Yangambi and/or Kisangani.

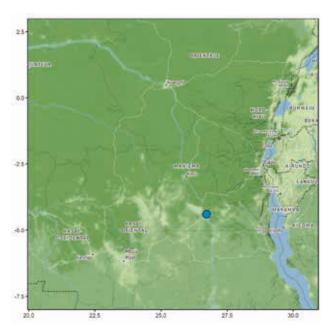
**Bibliography** – Calisesi & Kumfa (2016), Germain (1963), IUCN and UNEP-WCMC (2018), Weber & al. (2001).

Authors - M.S.M. Sosef & W. Tack

## \_ **Cola vandersmisseniana** R.Germ.

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B1ab(iii)+2ab(iii)

**Distribution** – Endemic to eastern Democratic Republic of Congo (Maniema Province). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.





Cola vandersmisseniana: Holotype specimen at BR (A. Léonard 5676).

Habitat – Gallery rainforest; at around 600 m.

**Protected areas** – The species does not occur in any protected areas.

 $\boldsymbol{Threats}$  – The forests surrounding the single occurrence are severely threatened by commercial logging, slash and

burn agriculture, fuelwood collection and clearance for plantations of oil palm, rubber, bananas and cacao. A study of the Congo Basin found that population density, small-scale agriculture, fuelwood collecting and forests' accessibility are closely linked to deforestation. The single occurrence lies close to Kasongo village, an area surrounded by small-scale agriculture with a possible reliance on the harvesting of forest products. Satellite imagery shows not only that the town is surrounded by a matrix of agricultural land, but also that the town has been growing notably in size and density since 1984. The biggest threat to this species appears to be habitat degradation due to human activity. There is no evidence that it is being targeted for harvest, but it is likely a victim of general land clearance to create space for human development.

**Justification** – *Cola vandersmisseniana* is a small tree 8 m tall. It is known from a single specimen collected in 1959. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threats, a single location (*sensu* IUCN) can be defined, which falls within the limits of the Critically Endangered category under condition 'a' of sub-criterion B2. Because of the heavy impact on the habitat near the only known occurrence, the population might actually already be lost, and the species gone extinct.

**Bibliography** – Cheek & Dorr (2007), Ernst & al. (2013), Fisk & al. (2019b), Germain (1963b), Protected Planet (2018), Weber & al. (2001).

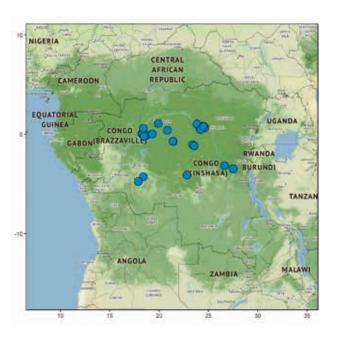
Authors - B. Fisk, P. Lawrence & M. Cheek



Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 505,060 km²; Area of occupancy (AOO): 124 km².

**Habitat** – Primary forest, secondary forest, swamp forest, periodically inundated forest, riverine forest, semi-decidu-









*Grewia louisii*: Young inflorescence. Flower. Fruit. Lobaye tributary of the Lomami River, Tshopo, DRCongo. Photos by Bart Würsten, Meise Botanic Garden (CC-BY-NC).

ous forest, dry forest, forest dominated by *Scorodophloeus*; at 320–700 m.

**Protected areas** – Six of the known occurrences are within the Yangambi Biosphere Reserve, while one falls within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to its protection. For subpopulations not occurring in protected sites, there are no current conservation actions for the species.

**Threats** – The main threat to the suitable habitat is forest conversion to agricultural land. In DRC, forest outside protected areas is threatened because of the pressure of the growing human populations and growing demands to extend their cultivated land. Observations using Google Earth show that such impact is notably apparent in the north-western part of the distribution area of *Grewia louisii*. The species is also threatened by selective logging.

Justification – Grewia louisii is a tree to 25 m tall. It is known from 55 herbarium specimens collected between 1905 and 2013, representing 32 unique occurrences and 19 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, 16 to 20 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. But, since no extreme fluctuations can be assumed, the conditions are not met to assign any threatened category under criterion B.

**Bibliography** – Protected Planet (2019), Texier & Mayaux (2014), Wilczek (1963).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Grewia schmitzii R.Wilczek

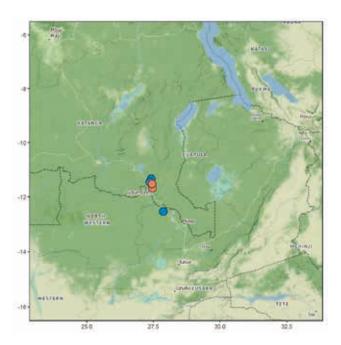
Red List category – Endangered: EN B1ab(ii,iii,iv,v) +2ab(ii,iii,iv,v).

**Distribution** – Endemic to south-eastern Democratic Republic of the Congo and northern Zambia. Extent of occurrence (EOO): 678 km<sup>2</sup>; Area of occupancy (AOO): 12 km<sup>2</sup>.

**Habitat** – Dry low forest, Muhulu forest, on termite mounds; at 1,230–1,375 m. The species is rare on the Lubumbashi plateau.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The suitable habitat is threatened by mining in both the DRC and Zambia. There is also termite hill harvesting for Lubumbashi bricks and fuelwood harvesting that quickly degrade the forest around the city. In two sites, Lubumbashi and Luiswishi, the habitat has completely gone, and the occurrences can be considered lost. The occurrence in St. Hubert has only patches of forest remaining (University unofficial reserve).







Grewia schmitzii: Inflorescence. Fruits. DRCongo, Haut-Katanga, env. 30 km de Lubumbashi, ferme du Lac, dite 'ferme Apokotos'. Photos by Michel Hasson, Meise Botanic Garden (©).

**Justification** – *Grewia schmitzii* is an evergreen treelet, sometimes lianescent. It is known from 10 herbarium specimens collected between 1949 and 2014, five of which were discarded from the evaluation because the habitat has disappeared. The six remaining collections represent three unique occurrences and three extant subpopulations. The extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. Based on the

scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. From the above, it is reasonable to infer a decline in the extent and quality of the habitat, and the complete loss of five collecting sites has already caused a decline in number of mature individuals, number of subpopulations and AOO.

**Bibliography** – Malaisse (1997), Meerts & Hasson (2016), Wilczek (1963).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

## \_ **Grewia trinervia** De Wild.

Red List category - Least Concern: LC.

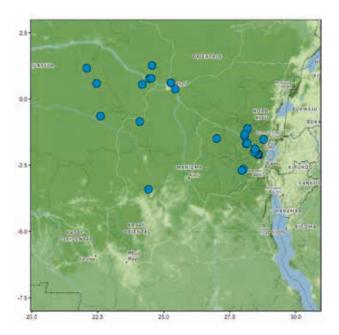
**Distribution** – Endemic to central and eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 230,337 km²; Area of occupancy (AOO): 112 km².

**Habitat** – Primary forest, secondary forest, riverine forest; at 400–1,200 m.

**Protected areas** – The species occurs in the Yangambi Biosphere Reserve and within the Sankuru Nature Reserve. For most collecting sites, there are no current conservation actions for the species' habitat.

**Threats** – The main threat to the habitat is forest conversion to agricultural land. The Yangambi Biosphere Reserve is under pressure from the human population converting natural vegetation to agricultural land and collecting timber and firewood from the forests. The region around and north of the Kahuzi-Biega National Park are heavily populated and much of the original vegetation has been lost due to the same type of human activities. Elsewhere, the species is also threatened by selective logging and charcoal production.

**Justification** – *Grewia trinervia* is a tree to 25 m tall. It is known from 68 herbarium specimens collected between 1913 and 2011, representing 29 unique occurrences and 19 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-crite-





Grewia trinervia: Herbarium specimen at BR (Collaer 24).

rion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, 17 to 20 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. Since no extreme fluctuations can be assumed, the conditions are not met to assign a threatened category under criterion B.

**Bibliography** – Protected Planet (2019), Texier & Mayaux (2014), Wilczek (1963).

Authors – M.S.M. Sosef, M. Simo-Droissart & W. Tack

## \_ Leptonychia mayumbensis R.Germ.

Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Mayombe region in western Democratic Republic of the Congo. Extent of occurrence (EOO): 619 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Dense semi-deciduous rainforest, *Terminalia superba* forest, clearings; at 100–160 m.

 $\begin{array}{ll} \textbf{Protected areas} - \text{One collecting site occurs within the} \\ \text{Luki Biosphere Reserve. For the four other collecting sites} \end{array}$ 





Leptonychia mayumbensis: Herbarium specimen at BR (Wagemans 2200).

that occur in unprotected areas, there are no current conservation actions for the species.

**Threats** – The main threat is habitat destruction through forest clearing for agricultural purposes, followed by charcoal production and urbanization.

**Justification** – *Leptonychia mayumbensis* is a small tree to 7 m tall, with a bole to 8 cm in diameter. It is known from 15 herbarium specimens collected between 1921 and 1966, representing five unique occurrences and four subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Given the scale of these threats and protected area boundaries, five locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat.

Bibliography – Germain (1963b).

Authors – E. Fischer, M. Simo-Droissart & W. Tack

#### \_Leptonychia melanocarpa R.Germ.

**Red List category** – Near Threatened: NT.

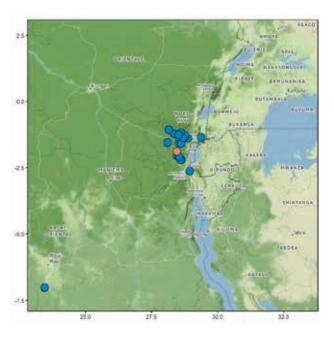
**Distribution** – Eastern Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): 84,557 km<sup>2</sup>; Area of occupancy (AOO): 84 km<sup>2</sup>.

**Habitat** – Dense humid semi-deciduous rainforest, montane rainforest, gallery forest, sclerophyllous forest; at 850–1,950 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by selective logging, habitat destruction for agricultural purposes and charcoal production.

**Justification** – *Leptonychia melanocarpa* is a small tree to 9 m tall, with a bole to 13 cm in diameter. It is known from 36 herbarium specimens collected between 1932 and 1976, seven of which were discarded prior to the assessment because we can assume that the habitat has disappeared (Irangi Forest, now a vast oil palm plantation) and the subpopulation lost. The 29 remaining collections represent 22





**Leptonychia melanocarpa**: Type specimen at BR (A. Léonard 3259).

unique occurrences and 18 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 12 to 15 locations (sensu IUCN) can be distinguished, which is slightly above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. With the destruction of Irangi forest, there has been a past decline in the AOO, number of mature individuals and number of locations/subpopulations of the taxon. However, despite the fact that the habitat of Leptonychia melanocarpa is under pressure, the species does not qualify as threatened under the IUCN Red List criteria. However, we infer that human pressure will further increase the loss of its habitat, and when the number of locations drops to 10, it will enter the Vulnerable category.

Bibliography – Germain (1963b).

Authors – E. Fischer, M. Simo-Droissart & W. Tack

\_Leptonychia melanocarpa R.Germ. var. grandifolia R.Germ.

Red List category – Endangered: EN B2ab(ii,iii,iv,v).





Leptonychia melanocarpa var. grandifolia: Type specimen at BR (*Pierlot 712*).

**Distribution** – Eastern Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): 5,245 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

**Habitat** – Dense humid semi-deciduous rainforest, montane rainforest, sclerophyllous forest; at 850–1,950 m.

**Protected areas** – All collecting sites occur outside protected areas. There are no current conservation actions for this taxon

**Threats** – The main threat to the habitat is habitat destruction for agricultural purposes, followed by selective logging.

**Justification** – Leptonychia melanocarpa var. grandifolia is small tree to 9 m tall, with a bole to 10 cm in diameter. It is known from 14 herbarium specimens collected between 1944 and 1976, seven of which were discarded prior to the assessment because we can assume that the habitat has disappeared (Irangi Forest, now a vast oil palm plantation) and the subpopulation gone. The seven remaining collections represent five unique occurrences and three extant subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that the habitat degradation will continue in the future. With the destruction of Irangi forest, there has already been a past decline in the AOO, number of mature individuals and number of locations/subpopulations of the taxon.

Bibliography – Germain (1963b).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

\_ Leptonychia melanocarpa R.Germ. var. melanocarpa

Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 53,937 km<sup>2</sup>; Area of occupancy (AOO): 64 km<sup>2</sup>.

**Habitat** – Dense, humid semi-deciduous rainforest, montane rainforest, gallery forest; at 1,000–1,800 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

**Threats** – The main threat to the habitat is habitat destruction for agricultural purposes, followed by selective logging and charcoal production.

**Justification** – *Leptonychia melanocarpa* var. *melanocarpa* is a small tree to 7 m tall, with a bole to 13 cm in diameter. It is known from 22 herbarium specimens collected between 1932 and 1959, representing 17 unique occurrences and eight subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, seven to nine locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a continuing decline in the extent and quality of the habitat of the taxon.

Bibliography – Germain (1963b).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

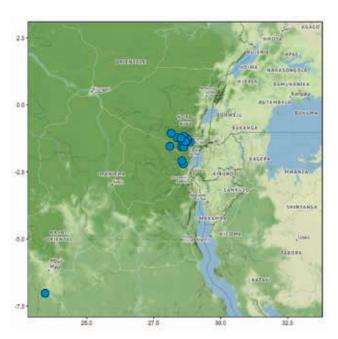
## \_Leptonychia tokana R.Germ.

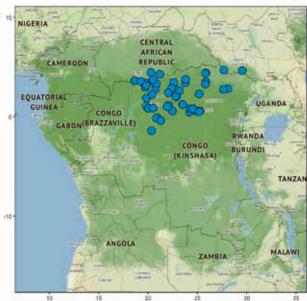
Red List category – Least Concern: LC.

**Distribution** – Endemic to the northern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 485,996 km²; Area of occupancy (AOO): 252 km².

**Habitat** – Dense humid semi-deciduous rainforests, gallery forests, secondary forests; at 350–500 m.

**Protected areas** – Seven collecting sites are located within two protected areas: the Garamba National Park (1), and the Yangambi Biosphere Reserve (6). The 60 other collecting sites occur in areas where there are no current conservation actions for the species.











Leptonychia tokana: Flowering twig. Flower. Fruit. Lobaye river, Tshopo, DRCongo. Photos by Bart Würsten (CC-BY-NC).

**Threats** – The main threat to the suitable habitat is forest clearing for agricultural purposes, followed by selective logging and urbanization.

Justification – Leptonychia tokana is a small tree to 10 m tall, with a bole to 10 cm in diameter. It is known from 96 herbarium specimens collected between 1906 and 2015, representing 67 unique occurrences and 28 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 28 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Despite the fact that the suitable habitat is under pressure, the species therefore does not qualify as threatened under the IUCN Red List criteria.

Bibliography - Germain (1963b).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

## \_ Scaphopetalum dewevrei De Wild. & T.Durand

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo (Bas-Congo, Equateur, Kasai, Kivu, Maniema and Orientale provinces). Extent of occurrence (EOO): 1,007,886 km²; Area of occupancy (AOO): 192 km².

**Habitat** – Moist primary or secondary terra firma forest; at 150–1,200 m.

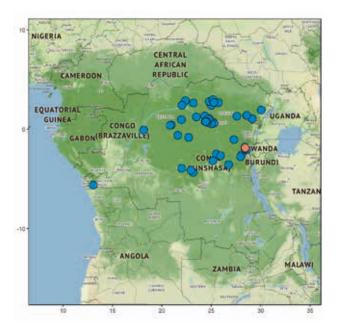
**Protected areas** – The species occurs within the Yangambi Biosphere Reserve, the Okapi Wildlife Reserve and the Kahuzi-Biega National Park. There are no current conservation actions for the other collecting sites occurring outside protected areas.

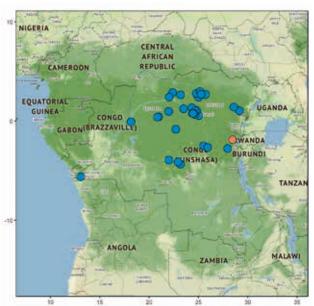
**Threats** – The main threat to the suitable habitat is forest clearing for small-scale agricultural development, visible from satellite imagery of many of the collecting areas.

**Justification** – *Scaphopetalum dewevrei* is a myrmecophytic shrub or small tree to 13 m tall, with a bole to 8 cm in diameter, and has two varieties. It is known from 107 herbarium specimens collected between 1896 and 1991, nine of which



Scaphopetalum dewevrei: Type specimen at BR (Dewèvre 1090)





because the habitat has been destroyed (Irangi Forest, now

a vast oil palm plantation) and the subpopulation assumed

gone. The 66 remaining collections represent 32 unique

occurrences and 30 subpopulations. Its extent of occur-

rence (EOO) far exceeds the upper limit of the Vulnerable

category under sub-criterion B1, whereas its area of occu-

pancy (AOO) falls within the limits of the Endangered

category under sub-criterion B2. Given the scale of the

threats and protected area boundaries, 15 to 20 locations

(sensu IUCN) can be distinguished, which is above the

upper limit of the Vulnerable category under condition 'a'

of sub-criterion B2. Although the suitable habitat is under

pressure, the variety does not qualify as threatened under

were discarded from the evaluation because the habitat has been destroyed (Irangi Forest, now a vast oil palm plantation) and the subpopulation assumed gone. The 98 remaining specimens represent 49 unique occurrences and 41 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, 35 to 40 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although the suitable habitat is under pressure, the species does not qualify as threatened under the IUCN Red List criteria.

Bibliography - Germain (1963b).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

# \_ **Scaphopetalum dewevrei** De Wild. & T. Durand var. **suborophila** R.Germ.

**Authors** – H.J. Beentje, M. Simo-Droissart & W. Tack

**Red List category** – Near Threatened: NT.

the IUCN Red List criteria.

Bibliography – Germain (1963b).

**Distribution** – Endemic to the Democratic Republic of the Congo (Bas-Congo, Equateur, Kivu, Maniema and Orientale provinces). Extent of occurrence (EOO): 592,414 km²; Area of occupancy (AOO): 68 km².

**Habitat** – Moist primary or secondary terra firma forest; at 600–1,200 m.

**Protected areas** – One collecting site occurs within the Kahuzi-Biega National Park and two collecting sites occur within the Okapi Wildlife Reserve. The remaining occurrences are situated outside protected areas. There are no current conservation actions for the taxon.

**Threats** – The two protected areas both appear well managed and are not under threat. Elsewhere, the main threat to the habitat is forest clearing for agricultural development, visible from satellite imagery in many of the collecting areas.

## \_ Scaphopetalum dewevrei De Wild. & T. Durand var. dewevrei

Red List category – Least Concern: LC.

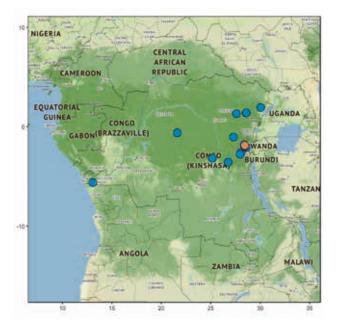
**Distribution** – Endemic to the Democratic Republic of the Congo (Bas Congo, Equateur, Kasai, Kivu, Maniema and Orientale provinces). Extent of occurrence (EOO): 941,873 km²; Area of occupancy (AOO): 128 km².

**Habitat** – Moist forest; at 150–1,000 m.

**Protected areas** – This variety occurs within the Yangambi Biosphere Reserve and the Okapi Wildlife Reserve. There are no current conservation actions for the subpopulations occurring in unprotected areas.

**Threats** – The main threat to the suitable habitat is forest clearing for small-scale agricultural purposes. This is visible from satellite imagery in many of the collecting areas.

**Justification** – Scaphopetalum dewevrei var. dewevrei is a small myrmecophytic tree of up to 5 m tall. It is known from 71 herbarium specimens collected between 1896 and 1991, five of which were discarded prior to the assessment





 $\it Scaphopetalum\ dewevrei\ var.\ suborophila:$  Type specimen at BR ( $\it Gutzwiller\ 2439$ ).

**Justification** – *Scaphopetalum dewevrei* var. *suborophila* is a shrub or small myrmecophytic tree to 13 m tall, with a bole to 8 cm in diameter. It is known from 34 herbarium specimens collected between 1914 and 1985, four of which were discarded for evaluation because the habitat has been destroyed (Irangi Forest, now a vast oil palm plantation)

and the subpopulation assumed gone. The 30 remaining collections represent 18 unique occurrences and 13 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, 11 to 12 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The disappearance of the Irangi subpopulation has resulted in a past decline in quality of the species' habitat, the AOO and the number of mature individuals of the taxon. Moreover, we anticipate that the past and ongoing pressure will continue in the future. Since the conditions for applying condition 'a' under sub-criterion B2 are not met, the variety cannot be regarded as threatened under the IUCN Red List criteria. However, we do project a significant decline of its habitat quality or extent within the near future, and the loss of one or two more locations will render the taxon Vulnerable.

Bibliography - Germain (1963b).

Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

## \_ Sterculia tragacanthoides Engl.

Red List category – Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – eastern Democratic Republic of the Congo; probably locally extinct in Burundi. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Sclerophyllous forest, gallery forest; at 800–1,400 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Near Bujumbura, Burundi, all forest has completely disappeared due to urbanization and the complete logging of any gallery forest nearby. The two sites in DRC



are Idjwi Island, where most of the forest has disappeared, and a site at Kivu, where much logging has taken place as well.

**Justification** – Sterculia tragacanthoides is a medium-sized tree. It is known from three herbarium collections that represent three collecting sites, all of which have undergone severe forest destruction. The Bujumbura site in Burundi has been discarded from the evaluation, since all suitable habitat has been destroyed. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from two subpopulations and two locations (sensu IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The main threats to the species are small-scale timber exploitation and urbanization, which are gradually transforming the area into secondary forest. The projected ongoing loss of the habitat leads us to predict a continuing decline in the number of subpopulations/ locations, AOO and number of mature individuals. There is doubt about the taxonomic status of this species, since the holotype was destroyed at Berlin, and a taxonomic study should be conducted to shed more light on its distinctness as a species.

Bibliography - Germain (1963b).

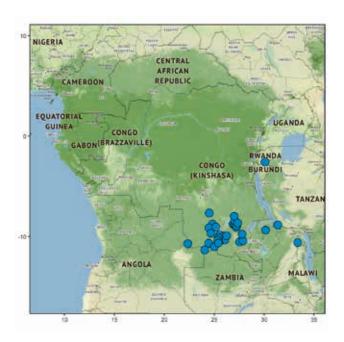
Authors - E. Fischer, M. Simo-Droissart & W. Tack

## **MELASTOMATACEAE**

#### **Dissotis romiana** De Wild.

Red List category – Least Concern: LC.

**Distribution** – Widely distributed in the Katanga Province in southern Democratic Republic of the Congo and also known from northern Zambia (6 specimens), Burundi





Dissotis romiana: Herbarium specimen at BR (Quarré 2574).

(1 specimen) and north-eastern Angola (1 specimen). Extent of occurrence (EOO):  $618,198~\rm km^2$ ; Area of occupancy (AOO):  $140~\rm km^2$ .

**Habitat** – Swamp forests along rivers or in gallery forests; at 700–1,700 m.

**Protected areas** – The species is present in three protected areas: the Lufira Basin Ramsar Site (Wetland of International Importance) and the Upemba and the Kundelungu National Parks in DRC. There are no current conservation actions for collecting sites occurring outside these protected areas.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. Katanga Province (DRC) is densely populated (8 million people in 2003) with most people depending on subsistence farming for their livelihood. Furthermore, southern Katanga and northern Zambia are extremely rich in copper, cobalt, uranium and other minerals and large-scale mining is a serious threat for the natural vegetation (though *Dissotis romiana* does not grow on copper soils).

**Justification** – *Dissotis romiana* is a shrub or small tree to c. 3 m tall. It is known from 44 herbarium specimens collected between 1908 and 2004, the vast majority of which were collected before 1970. These collections represent 35 unique occurrences and 28 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the

Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of threats, 23 locations (sensu IUCN) can be distinguished, which far exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although Dissotis romiana is certainly threatened locally by forest clearing and destruction, its comparatively large distribution area covers many potential sites with more intact forests. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Fernandes & Fernandes (1978), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Sosef & al. (2017), Stropp (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

## Warneckea bequaertii (De Wild.) Jacq.-Fél.

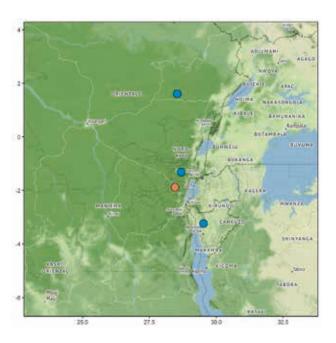
(Synonym: Lijndenia bequaertii (De Wild.) Borhidi)

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic of the Congo and Burundi. Extent of occurrence (EOO): 13,264 km²; Area of occupancy (AOO): 12 km².



Warneckea bequaertii: Type specimen at BR (Bequaert 2666).



**Habitat** – Mid-altitudinal and (sub)montane rainforest, where it may be the dominant understory tree; at 750–2,000 m.

**Protected areas** – The species occurs in the Okapi Wildlife Reserve (DRC). There are no current conservation actions for the species.

Threats – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. The region of the Great Lakes, where *Warneckea bequaertii* occurs, is densely populated with most people depending on subsistence farming for their livelihood. Forests are cleared for agriculture and livestock grazing, and the wood is used for the production of building materials and charcoal. In addition, large-scale poaching and artisanal mining take place. For the Irangi subpopulation, suitable habitat has already disappeared. The two other extant occurrences (near Rugazi in Burundi and near Kashebere in DRC) are close to habitation and show forest fragmentation and clearing for agricultural use.

Justification – Warneckea bequaertii is a tree to 15 m tall. It is known from 11 herbarium specimens collected between 1914 and 1981, of which eight were discarded prior to the assessment because they occur in a region where the habitat has been completely destroyed ("vers km 110 route Kavumu-Walikale, Irangi, réserve I.R.S.A.C.") by a vast oil palm plantation. The remaining three specimens represent three unique occurrences and three subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The destruction of the Irangi subpopulation in the past has led to a decline in the EOO, AOO, extent and quality of habitat, number of locations and mature individuals. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography – Inogwabini & al. (2005), Wickens (1975).

Authors – P. De Block, M. Simo-Droissart & W. Tack

## Warneckea congolensis (A.Fern. & R.Fern.) Jacq.-Fél.

(Synonym: Memecylon congolense A.Fern. & R.Fern.)

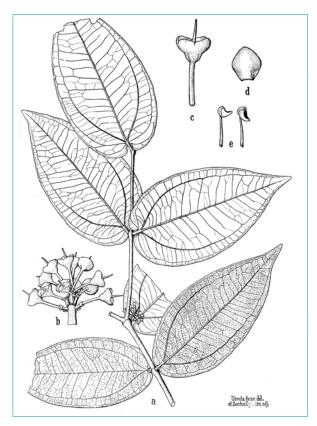
Red List category - Endangered: EN B2ab(iii,v).

**Distribution** – Endemic to the Democratic Republic of the Congo (Equateur Province). Extent of occurrence (EOO): 61,666 km<sup>2</sup>; Area of occupancy (AOO): 16 km<sup>2</sup>.

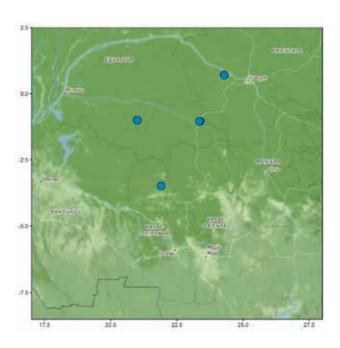
Habitat - Understory of swamp forest; at 350-450 m.

**Protected areas** – No collecting site falls within a protected area but one is very close to the north-western boundary of the Salonga National Park. There is no current conservation action for the species.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. All four occurrences (Botoka-Ndjoku; Lac Yandja; Ikela; between Kole and Dekese) are close to habitation and show forest fragmentation and clearing for agricultural use. However, in all four sites, satellite images show that seemingly more intact forests are relatively close by.



Warneckea congolensis: A, flowering twig; B, inflorescence and young infructescence; C, receptacle, after shedding of petals and stamens; D, petal; E, stamens. (A-E: Germain 4995). Drawing by Ursula Beau & Santos Figueira, Sociedade Broteriana (©), reproduced with permission from Fernandes & Fernandes (1960).



Justification - Warneckea congolensis is a shrub or small tree of a few meters tall with a maximum stem diameter of 10 cm. It is known from five herbarium specimens collected between 1932 and 1958, representing five unique occurrences and four subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The low AOO and number of locations may indicate a serious threat level. Therefore, a decline in the extent and quality of the habitat and a decrease in the number of mature individuals is inferred. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Fernandes & Fernandes (1960), Hepper (1979), Küper & al. (2006), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003), Vliet & al. (2018), World Wildlife Fund (2021).

Authors - P. De Block, M. Simo-Droissart & W. Tack

## \_ *Warneckea superba* (A.Fern. & R.Fern.) Jacq.-Fél.

(Synonym: Memecylon superbum A.Fern. & R.Fern.)

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii,v).

**Distribution** – Endemic to western Democratic Republic of the Congo (Mayombe region). Extent of occurrence (EOO): not applicable; Area of occupacy (AOO): 4 km².

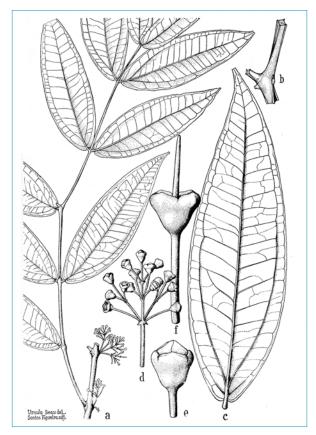
Habitat - Secondary forest; at around 100-160 m.

**Protected areas** – The only known collecting site occurs in a non-protected area, but is very close to the Luki Biosphere Reserve, so it could be that the species is also

represented within this protected area. No conservation measures are known for the species.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. The forests in the Mayombe Region in DRC have undergone decades of logging, clearing for agriculture, and mining as well as other





*Warneckea superba*: A, flowering twig; B, young branching point; C, leaf; D, cyme; E, flower bud; F, receptacle, after shedding of petals and stamens. (A-F: *Donis 2175*). Drawing by Ursula Beau & Santos Figueira, Sociedade Broteriana (©), reproduced with permission from Fernandes & Fernandes (1960).

anthropogenic encroachment. The region is relatively densely populated with most people still depending on subsistence farming for their livelihood, so forest clearing continues to date. The Luki Biopshere Reserve is the only protected part of the Mayombe forest in DRC. However, the reserve is subject to clearing for agriculture, agroforestry, logging for building and firewood, poaching and collecting of raw materials by the people living inside and close to the Reserve.

**Justification** – Warneckea superba is a subdominant tree of c. 23 m tall and a bole to 28 cm in diameter. It is known from a single herbarium specimen, collected in 1948. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. A decline in the extent and quality of the habitat and a decrease in the number of mature individuals is inferred. The level of threat in its single occurrence combined with the fact that it has not been collected for over 70 years suggests the species might in fact already be extinct.

**Bibliography** – Fernandes & Fernandes (1960), Muaka (2013), Ron (2013).

Authors - P. De Block, M. Simo-Droissart & W. Tack

## **\_ Warneckea walikalensis** (A.Fern. & R.Fern.) Jacq.-Fél.

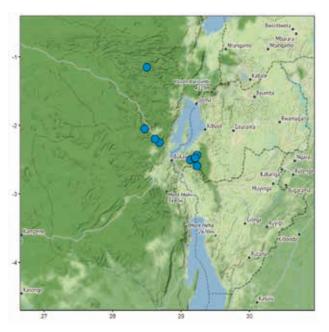
(Synonym: Memecylon walikalense A.Fern. & R.Fern.)

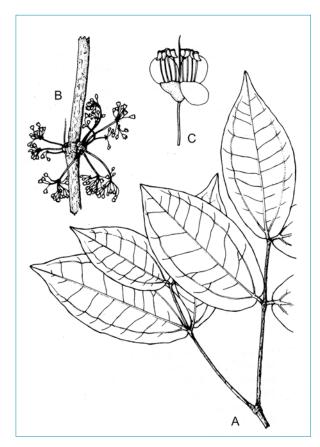
Red List category - Least Concern: LC.

 $\begin{array}{l} \textbf{Distribution} - \textbf{Eastern Democratic Republic of the Congo} \\ \textbf{and Rwanda. Extent of occurrence (EOO): 4005 km²; Area} \\ \textbf{of occupancy (AOO): 50 km².} \end{array}$ 

Habitat – Primary forest; at 1,500–2,150 m.

**Protected areas** – Four out of five occurrences of this species are from within protected areas: the Nyungwe National





Warneckea walikalensis: A, leafy twig; B, inflorescence; C, flower. Drawing by Dominic Troupin (©), reproduced with permission from Troupin (1982a).

Park and the Parc National de Kahuzi-Biega (World Heritage Site).

**Threats** – No threats have been identified. The forest where the species is known to occur are in good condition.

**Justification** – *Warneckea walikalensis* is a tree to 25 m tall, with a bole to 50 cm in diameter. It is known from six herbarium specimens representing five unique occurrences, collected between 1951 and 1999. As no threats are known to this species, no locations could be defined and the species cannot be assigned to a threatened category under criterion B.

**Bibliography** – Fernandes & Fernandes (1960), Gereau & al. (2019g), Jacques-Félix (1956).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

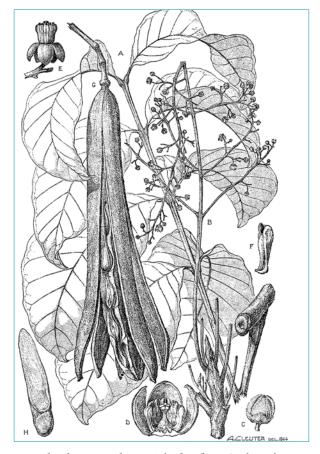
## **MELIACEAE**

## \_ Entandrophragma palustre Staner

Red List category - Near Threatened: NT.

**Distribution** – Central African Republic, the Republic of the Congo and the Democratic Republic of the Congo.





Entandrophragma palustre: A, leaf; B, flowering branch; C, flower bud; D, flower, longitudinal section; E, flower; F, stamen; G, fruit; F, seed. (A-F: Louis 3376). Drawing by A. Cleuter, Meise Botanic Garden (©).

Extent of occurrence (EOO): 876,565 km<sup>2</sup>; Area of occupancy (AOO): 84 km<sup>2</sup>.

**Habitat** – Periodically flooded forests, river banks, swamp forests; at 300–1100 m. The winged seeds are dispersed by wind.

**Protected areas** – The species occurs within the Odzala Kokoua National Park in the Republic of the Congo and the

Yangambi Biosphere Reserve in DRC. There are no current conservation actions for the species outside these protected areas

**Threats** – There are several threats to the habitat: shifting agriculture (main threat), urbanization (Yangambi and Isangi) and logging activities including the construction of forest roads in Boukoko (CAR), and in Djombo, Bokuma region and Ebabaka (DRC).

**Justification** – *Entandrophragma palustre* is a tree to 40 m tall, with a trunk to 1 m in diameter. It is known from 28 herbarium specimens collected between 1909 and 1994, representing 22 unique occurrences and 16 subpopulations. Although more than 80% of these samples are historical collections (collected before 1960), we consider that the corresponding occurrences are not necessarily extirpated because of the presence of the habitat type in the collection areas. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 13 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. We predict a continuing decline in the quality of the species' habitat. This species does not meet the conditions to be classified as threatened, but it is likely to become so in the near future.

**Bibliography** – Oréade-Brèche / FRMi / EGIS-International (2017), Staner & Gilbert (1958).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

## MELIANTHACEAE

## Bersama yangambiensis L.Touss.

Red List category – Vulnerable: VU B2ab(iii).

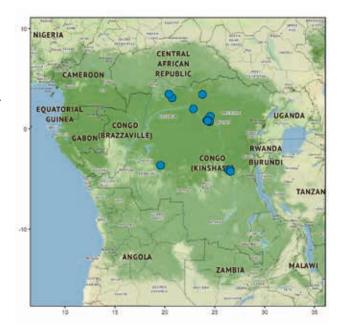
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 471,430 km<sup>2</sup>; Area of occupancy (AOO): 52 km<sup>2</sup>.

**Habitat** – Riparian forest, swamp forest, flooded forest, young secondary forest; at 360–500 m.

**Protected areas** – One collecting site occurs within the Yangambi Biosphere Reserve. There are no current conservation actions for the subpopulations occurring outside protected areas.

**Threats** – The habitat in some of the unprotected sites where the species has been collected is currently subject to human pressure, especially from small-scale shifting agriculture and selective logging for construction of houses and domestic uses.

**Justification** – *Bersamia yangambiensis* is a small tree to 5 m tall. It is known from 18 herbarium specimens collected between 1921 and 2010, representing 13 unique occurrences and 6 to 12 subpopulations. Its extent of occurrence (EOO)





Bersama yangambiensis: Inflorescence. DRCongo, Tshopo Prov. Yaekela. Photo by Bart Würsten, Meise Botanic Garden (CC-BY-NC). Fruits. DRCongo, Kisantu Botanical Garden. Photo by Augustin Konda (©), available from African plants -A Photo Guide. www.africanplants.senckenberg.de.

is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, seven to eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. These activities are gradually transforming the species' habitat into secondary forest. We project that this habitat degradation will continue in the future.

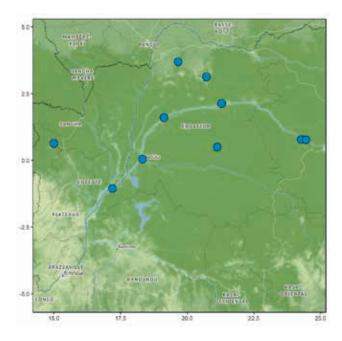
Bibliography – Toussaint (1960).

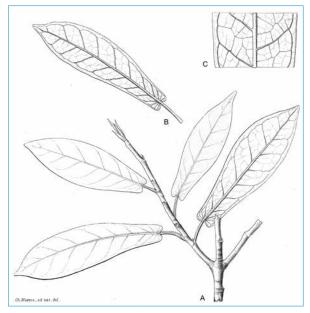
Authors – P. Kamau, M. Simo-Droissart & W. Tack

## MORACEAE

Ficus crassicosta Warb.

Red List category – Vulnerable: VU B2ab(iii).





*Ficus crassicostata*: A, leafy twig; B, leaf, lower surface; C, idem, detail. Drawing by Ch. Manne, Meise Botanic Garden (©).

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 277,599 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Periodically flooded riparian forest, swamp forest, *Raphia* swamp; at 350–450 m.

**Protected areas** – The species occurs within two protected areas: the Odzala National Park in Republic of the Congo and the Yangambi Biosphere Reserve in the Democratic Republic of the Congo. The species also occurs in two localities within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to its conservation. For the collecting sites occurring in unprotected areas, there are no current conservation actions for the species.

**Threats** – Odzala N.P. seems well-protected. For Yangambi and Isangi, satellite images show much forest clearing, and

little left at Lukolela as well. Budjala has some clearing, with a fair amount of forest left. For Mangania (Befale), satellite images show forest remaining in the area, including near rivers; there is forest clearing, too, but most forest seems intact. At Bombura about 80% is cleared. Lisala: much cleared, farther away from the river some good forest left. Mbandaka: much cleared, some forest left. Makanza: cleared along the river, more inland more intact. The habitat of the species is threatened by smallholder agricultural clearing; the secondary threat is charcoal burning.

**Justification** – *Ficus crassicosta* is a strangling fig. It is known from 11 herbarium specimens collected between 1891 and 1995, representing 10 unique occurrences and 9 or 10 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 10 locations (*sensu* IUCN) can be distinguished, which is the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The human activities are gradually transforming the species' suitable habitat into secondary forest. We expect that this habitat degradation will continue in the future.

Bibliography - Hauman & al. (1948).

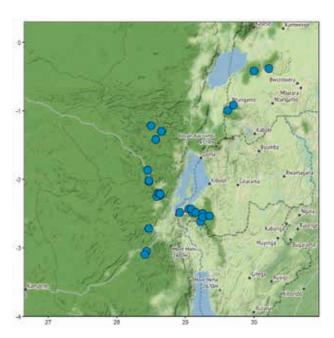
Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

## Musanga leo-errerae Hauman & J.Léonard

Red List category – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda, and western Uganda. The species has been reported from Burundi, but no herbarium specimens have been located to confirm its presence in that country. Extent of occurrence (EOO): 9,646 km²; Area of occupancy (AOO): 117 km².

**Habitat** – Moist montane forest, especially forest gaps/margins; at 850–2000 m.







Musanga leo-errerae: A, Sapling; B, inflorescence. Rwanda, Karamba and Gisakura. Photos by Eberhard Fischer (©).

**Protected areas** – The species is present in the Kahuzi-Biega and the Nyungwe National Park, and in the Itombwe Nature Reserve. For the other collecting sites occurring in unprotected areas, there are no current conservation actions.

**Threats** – While several collecting sites occur within protected areas, some are outside: in Masisi, Tshabunda, and two at the edge of but outside Kahuzi-Biega National Park; all these with the threat of agricultural conversion of the habitat, and one site with the threat of conversion to an oil palm plantation. While the species is a forest edge pioneer, and therefore can withstand a certain amount of distur-

bance, at least one subpopulation (at Masisi) has been completely wiped out, and oil palm plantations are threatening to clear large amounts of suitable habitat in other sites; intensive cultivation threatens forests outside protected areas elsewhere.

Justification – Musanga leo-errerae is a tree to 30 m tall. It is known from 45 herbarium specimens collected between 1936 and 2015, representing 27 unique occurrences. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, while its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criteria B1 and B2. Because at least one and probably more occurrences no longer exist, and the threats continue to exist, we infer a continuing decline in EOO, AOO, number of subpopulations, habitat extent and quality and number of mature individuals.

**Bibliography** – Berg (1989), Fischer & al. (2019a), de Ruiter (1976).

**Authors** – E. Fischer, H.J. Beentje, C. Kabuye, J. Kalema, C.J. Kayombo, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

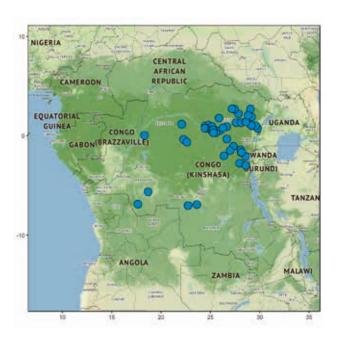
## \_*Myrianthus preussii* Engl. subsp. *seretii* (De Wild.) de Ruiter

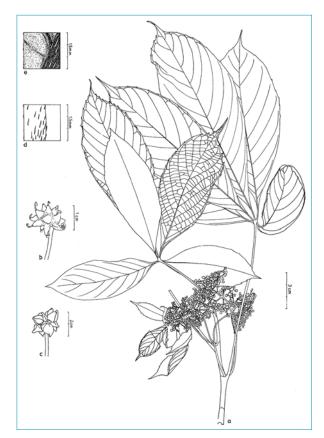
Red List category - Least Concern: LC.

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,033,707 km²; Area of occupancy (AOO): 200 km².

**Habitat** – Primary and secondary forest, forest clearings, riverine thicket remnants, post-cultivation secondary forest, cultivated areas; at 400–1,000 m.

**Protected areas** – This subspecies occurs within the Virunga National Park, the Okapi Wildlife Reserve, the Itombwe Nature Reserve and the Yangambi Biosphere





Myrianthus preussii subsp. seretii: a, leafy twig with male inflorescences; b, pistillate inflorescence; c, infructescence; d, indument of the twig; e, indument of the leaf. (a, d, e: Bequaert 2265; b: Louis 3109; c: Louis 5588). Drawing by H.R. Rypkema, Naturalis Biodiversity Center (©), reproduced with permission from de Ruiter (1976).

Reserve, none of which is completely protected. The other occurrences are located in unprotected areas and there are no current conservation actions for the taxon in these sites.

**Threats** – This subspecies appears to need some shade, so complete conversion of land to agriculture would be a threat; it does grow in secondary forest, so it can tolerate a certain level of disturbance. Therefore, we assume that complete agricultural conversion is the only current threat.

**Justification** – *Myrianthus preussii* subsp. *seretii* is a shrub or small tree to 10 m tall. It is known from 77 herbarium specimens collected between 1905 and 2009, representing 51 unique occurrences and 44 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Th 51 occurrences represent 25 to 30 different locations (sensu IUCN) distinguished by geographic clustering with respect to scale of threats, many more than 10 locations, the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Notwithstanding the human activity within its habitat, Myrianthus preussii subsp. seretii does not qualify as threatened under the IUCN red list criteria because it fails to meet the threshold values for the Vulnerable category. While we project that the human pressure will increase the loss of its habitat, we do not project any significant decline for the taxon in the near future.

Bibliography – Hauman & al. (1948), de Ruiter (1976). Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

## **Myrsinaceae**

#### **\_ Embelia libeniana** Taton

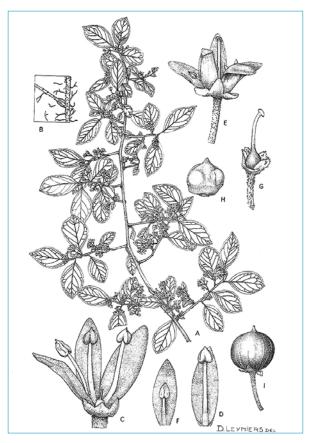
Red List category – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Congo-Nile Ridge in western Burundi, western Rwanda and eastern parts of the Democratic Republic of the Congo. Extent of occurrence (EOO): 8,525 km²; Area of occupancy (AOO): 171 km².

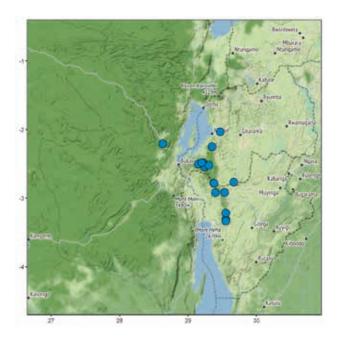
**Habitat** – Upland forests, sometimes in marshes; at 2,000–2,450 m. Seed is dispersed long-distance by birds (endo-ornithochory).

**Protected areas** – Many of the known collecting sites are in protected areas (the Kibira National Park in Burundi and the Nyungwe National Park in Rwanda).

**Threats** – Within the protected areas, the habitat should be safe. The occurrences outside of protected areas suffer from habitat loss due to agriculture and cattle grazing.



Embelia libeniana: A, flowering branch; B, detail of lower leaf surface; C, male flower, 2 petals removed; D, idem, petal and stamen; E, female flower; F, (A) idem, petal and stamen; G, idem, ovary; H, idem, placenta; I, fruit. (A, B: Lewalle 2566; C, D: Lewalle 4364; E, H: Lewalle 2691; I: Lewalle 3617). Drawing by D. Leyniers, Meise Botanic Garden (©).



**Justification** – *Embelia libeniana* is a small tree or liana reaching 10 m tall. It is currently known from 26 herbarium specimens collected between 1959 and 1984, and could be considered as moderately rare. The extent of occurrence (EOO) falls within the Vulnerable range, according to sub-criterion B1, while the area of occupancy (AOO) falls within the Endangered range according to sub-criterion B2. Relative to the scale of the known threats, it is known from seven locations (*sensu* IUCN), which falls within the Vulnerable category under condition 'a' of sub-criterion B2. From the ongoing loss of its habitat, a continuing decline is inferred in AOO, EOO (the southernmost locality is the most threatened), number of subpopulations and number of mature individuals.

Bibliography - Ntore & al. (2017b), Taton (1980a, 1980b).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

## Embelia upembensis Taton

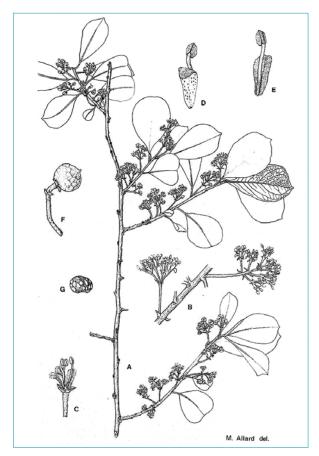
Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

**Distribution** – South-eastern Democratic Republic of the Congo (Katanga Province), western Tanzania and northern Zambia. Extent of occurrence (EOO): 211,938 km²; Area of occupancy (AOO): 36 km².

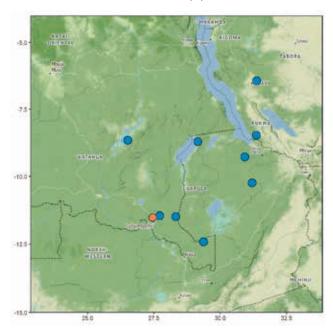
**Habitat** – Riverine woodland, *Brachystegia* woodland, on termite mounds; at 1,075–1,550 m.

**Protected areas** – One collecting site occurs within the Upemba National Park (DRC). There are no current conservation actions for the seven other extant occurrences.

Threats – The threats to the habitat are human induced activities such as agricultural expansion, forest clearing and logging. The species is well protected within Upemba National Park, but near Lubumbashi there has been severe habitat destruction due to copper mining at Luiswishi. A second site here, Kumanua, is also close to mining



Embelia upembensis: A, flowering branch; B, branch with 2 inflorescence types; C, male flower, 2 petals removed; D, E, idem, petal and stamen, inner and outer view; F, fruit; G, seed. (A-E: de Witte 4705; F, G: Fanshawe 8779). Drawing by M. Allard, Meise Botanic Garden (©).



operations; we think these two sites (one location) are disappearing or are already gone.

**Justification** – *Embelia upembensis* is a shrub or small tree to 3 m tall. It is known from 10 herbarium specimens collected between 1948 and 2000, of which two were discarded prior to the assessment because the habitat has been destroyed (Luiswishi and Kumanua). The eight remaining

collections represent eight unique occurrences and eight subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Eight locations (sensu IUCN) can be distinguished by geographic clustering with respect to scale of threats, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We project the habitat degradation will continue in the future, and the loss of several subpopulations, which leads us to predict a continuing decline in the number of locations/subpopulations and mature individuals of the species, as well as a decline of its EOO and AOO.

**Bibliography** – Kupicha (1983), Taton (1980a, 1980b).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

## **Myrtaceae**

## Eugenia dewevrei De Wild. & T.Durand

Red List category - Vulnerable: VU B1ab(iii)+2ab(iii).

**Distribution** – Republic of the Congo, Angola (Cabinda) and Democratic Republic of the Congo. Extent of occurrence (EOO): 17,888 km²; Area of occupancy (AOO): 28 km².



Eugenia dewevrei: Type specimen at BR (Dewevre 322).



**Habitat** – Gallery forest on sandy alluvium, forest near streams; at about 0–200 m.

**Protected areas** – One occurrence is within the Bas-Kouilou-Ramsar Site (Republic of Congo) and one is within the Mangrove Nature Reserve (DRC). All other occurrences are outside protected areas where there are no current conservation actions for the species.

**Threats** – The main threats to the habitat are forest clearing for shifting agriculture and urbanization. In the Republic of the Congo, there is a subpopulation located between two expanding cities, Inga and Pointe Noire. In DRC, there are subpopulations between Muanda and Matadi.

**Justification** – Eugenia dewevrei is a tree 5 m high. It is known from nine herbarium specimens collected between 1895 and 1990, representing seven unique occurrences and four to six subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under sub-criteria B1a and B2a. We expect that the ongoing loss of forest cover directly impacts the area, extent and quality of the species' habitat.

Bibliography - Boutique (1968).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

## **Eugenia yangambensis** Amshoff ex Boutique

Red List category - Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Endemic to a small region in north-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Undergrowth in periodically flooded forests along the Congo River; at about 375–450 m.





Eugenia yangambiensis: Holotype specimen at BR (J. Louis 14786).

**Protected areas** – One of the two unique occurrences is located within the Yangambi Biosphere Reserve. The other unique occurrence is located in an unprotected site where there are no current conservation actions for the species, but with little or no disturbance.

**Threats** – The habitat One occurrence is located in a very devastated part of the Yangambi Biosphere Reserve, where it is threatened by small-scale shifting agriculture and urbanization. The other is located on an uninhabited island in the Congo River with little or no disturbance.

**Justification** – *Eugenia yangambensis* is a small tree to 5 m tall. The species is known from only four herbarium specimens collected in 1939, 1949 and 1958, representing two unique occurrences. Although these specimens are all old, we consider the corresponding subpopulations to be possibly still extant, due to the presence of the habitat type in the vicinity of Yangambi. Its area of occupancy (AOO) is estimated to be 8 km², which falls within the limits of the Critically Endangered category under the sub-criterion B2. Relative to the main threat, the two occurrences represent two locations (sensu IUCN), which falls within the limits of the Endangered category under the condition 'a' of sub-criterion B2. Based on these threats, we expect a future decline in the quality of its habitat. The probable loss of the occurrence at Yangambi town leads us to predict a continuing decline in its AOO, number of locations and number of mature individuals.

Bibliography - Boutique (1968).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

## \_ Syzygium germainii Amshoff

Red List category - Vulnerable: VU D2.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat - Swamp forest; at c. 350 m.

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the species.

**Threats** – We have not recorded any current threat to the species' habitat. However, due to local human population





Syzygium germainii: Type specimen at BR (Germain 8347).

increase and uncertainty about the exact collecting locality of the specimens with relation to plausible threats, the habitat of *Syzygium germainii* could be threatened from small-scale shifting agriculture.

Justification - Syzygium germainii is a tree to 15 m tall. It is only known from two herbarium specimens collected near Boende, Equateur in 1954 and 1958. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under the sub-criterion B2. The two specimens represent one unique occurrence, one subpopulation and one location. The species has not been seen for 63 years. According to satellite imagery on Google Earth, the habitat at the assigned coordinates is not currently threatened, but this point lies some 6-7 km north of Boende town. Boende is the capital of Tshuapa Province and a major river port, so its expansion and related activities present a plausible threat to the surrounding area. Considering these facts, the status of VU D2 was believed to be the most appropriate here. Intensive fieldwork must be performed to search S. germainii, and if found, the species should be at least introduced into cultivation.

Bibliography – Boutique (1968).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

## \_ Syzygium giorgii De Wild.

Red List category - Least Concern: LC.

**Distribution** – Central African Republic, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 850,552 km<sup>2</sup>; Area of occupancy (AOO): 96 km<sup>2</sup>.

**Habitat** – Gallery forests, swampy forests, on forest edges or in forest patches; at 300–450 m.

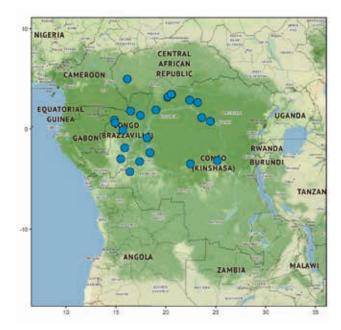
**Protected areas** – Five collecting sites of the species occur within the Odzala-Kokoua National Park, the Lac Télé Community Reserve, and the Léfini Wildlife Reserve in the Republic of the Congo, and in the Yangambi Biosphere Reserve in the Democratic Republic of the Congo. The other 19 collecting sites occur in unprotected areas where there are no current conservation actions for the species.

Threats – The threats to the habitat are shifting agriculture (the main one), urbanization in the Democratic Republic of the Congo in the provinces of Equateur (in the regions of Ubangui, Dundusana, and Bominenge), Tshopo (Yangambi region), Kasai (Kole region), Kinshasa (Bamfunuka region); and in the Republic of the Congo in the department of Plateaux (Gamboma region). The species is also facing a threat of logging for road and bridge construction in the Republic of the Congo, in the departments of Cuvette-Ouest (Makoua region) and Sangha (Ouesso region), and in the Democratic Republic of the Congo (Yangambi and Lokutu regions).





Syzygium giorgii: Inflorescence. Young infructescence. Republic of the Congo, Nsassa Forest, Lac Télé Community Reserve (Moutsamboté 6068). Photos par David Harris (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.



Justification - Syzygium giorgii is a shrub or small tree reaching 3 to 5 m in height. It is known from 31 herbarium specimens collected between 1909 and 2008, representing 24 unique occurrences and 21 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The 24 occurrences represent 19 to 20 locations (sensu IUCN) relative to the scale of the main threat (being agriculture), which falls well above the threshold of the Vulnerable category under sub-criterion B2. The species does not appear severely fragmented. Although we infer a continuing decline in quality of the species' habitat, the condition 'a' under sub-criterion B2 is not met, and Syzygium giorgii cannot be regarded as threatened under the IUCN Red List criteria.

Bibliography - Amshoff (1960), Boutique (1968).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

## **OCTOKNEMACEAE**

## Octoknema hulstaertiana R.Germ.

Red List category - Vulnerable: VU D2.

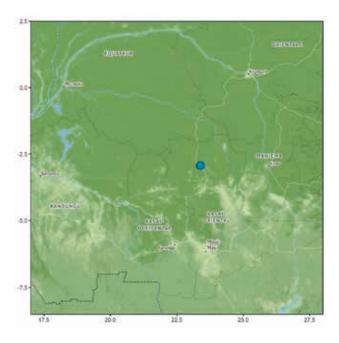
**Distribution** – Endemic to the Democratic Republic of the Congo (Kasai Oriental Province). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – Dry undergrowth of gallery forest; at about 500 m.

**Protected areas** – The only known collecting site occurs in an unprotected area, although it was collected ca. 1.3 km south of the boundary of Sankuru Nature Reserve. There are no current conservation actions for the species.



Octoknema hulstaertiana: Holotype specimen at BR (Germain 7684).



**Threats** – The agricultural activity in the Lodja region along the Mukumari-Lodja road could represent a plausible threat to the species' habitat.

**Justification** – Octoknema hulstaertiana is a small tree 12 m tall, with a bole 12 cm in diameter. It is only known from the

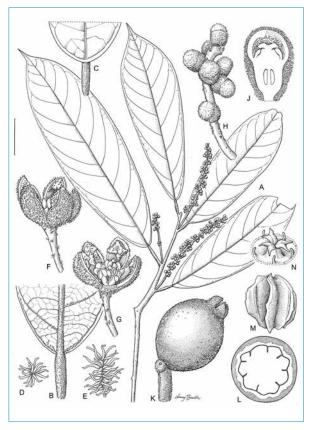
type specimen, which was collected in 1952 near Lodja (Tohanga on the Mukumari-Lodja road). The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Relative to the plausible threat posed by the agricultural activity in the area, the single occurrence represents a single location. Based on the very restricted distribution and a plausible threat that could quickly cause the species' status to become CR or even EX, Octoknema hulstaertiana is therefore assessed as Vulnerable under criterion D2.

Bibliography – Germain (1955), Gosline & Malécot (2011).Authors – D.U. Ikabanga, M. Simo-Droissart & W. Tack

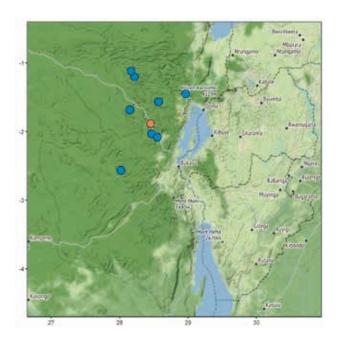
## \_ Octoknema kivuensis Gosline & Malécot

Red List category – Vulnerable: VU B1ab(ii,iii,iv,v) +2ab(ii,iii,iv,v).

**Distribution** – Endemic to the Democratic Republic of the Congo (Kivu Province). Extent of occurrence (EOO): 8,282 km²; Area of occupancy (AOO): 32 km².



Octoknema kivuensis: A, male flowering branch; B, leaf and petiole abaxial surface; C, leaf base, adaxial surface; D, stellate hair; E, semi-dendritic hair; F, male flower; G, idem, one petal removed; H, female inflorescence with buds; J, female flower bud, longitudinal section; K, fruit; L, idem, transverse section; M, dried seed; N, fruit apex, petals removed showing residual staminodes and style. Scale bar: A = 3 cm; B, C = 1 cm; D, E = 0.3 mm, F, G, J, N = 2 mm; H, K, L = 7 mm; M = 3.3 mm. (A, B: Troupin 3437; C, D, E, H, J: Troupin 4419; F, G: Pierlot 869; K, L, M, N: Léonard 1509). Drawn by Lucy Smith (©), reproduced with permission from Gosline & Malécot (2011).



Habitat - Semi-deciduous forest; at 800-1,100 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Between Katale and Gandjo villages, as well as in the southernmost sites, the habitat is threatened by agriculture. Military conflict and selective logging near Bunyakiri may also decrease the species' range. Mining for gold occurs at Shibunda.

**Justification** – Octoknema kivuensis is a small tree to 15 m tall. It is known from 20 herbarium specimens collected between 1949 and 1959, of which 10 have been discarded prior to the assessment because they occur in a region where the natural vegetation has been completely destroyed (Irangi forest, now a vast oil palm plantation). The 10 remaining collections represent eight unique occurrences and six extant subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, six different locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition B1a and B2a. The destruction of the Irangi subpopulation in the past has led to a decline in the AOO, extent and quality of habitat, number of locations and mature individuals. We project that human pressure will continue and intensify within the near future, further reducing the extent and quality of the species' habitat.

Bibliography – Gosline & Malécot (2011).

Authors – E. Ilunga wa Ilunga, M. Simo-Droissart & W. Tack

## PANDACEAE

## Microdesmis kasaiensis J.Léonard

Red List category - Near Threatened: NT.

**Distribution** – Endemic to western and central regions of the Democratic Republic of the Congo. Extent of occurrence (EOO): 148,888 km²; Area of occupancy (AOO): 60 km².

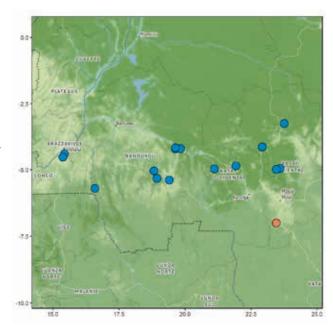
**Habitat** – Evergreen rainforest on dry land, gallery forests; it can be locally abundant; at 500–900 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by charcoal production from south of Kinshasa to Kisantu, by urbanization in Kinshasa and shifting agriculture (the main threat) in Kakenge, Kikwit and Kinshasa. Charcoal production and urbanization could lead to the disappearance of the Kinshasa occurrences.



*Microdesmis kasaiensis*: Isotype specimen at BR (*Dechamps* 229).



Justification - Microdesmis kasaiensis is small dioecious tree to 12.5 m tall, with a bole to 20 cm in diameter. It is known from 29 herbarium specimens collected between 1903 and 1980, representing 15 unique occurrences and 11 subpopulations. Although more than 75% of these samples are historical (collected before 1960), we consider the corresponding occurrences not to be extirpated due to the presence of suitable habitat in the collecting areas. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 11 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Urbanization at Kinshasa will lead to the future disappearance of the subpopulation in that region, and thus to a decline in EOO, AOO, the number of subpopulations and mature individuals of the species. The number of locations being 11, very close to 10, the upper limit of the Vulnerable category, this species could become threatened in the near future.

**Bibliography** – Lubini Ayingweu (2001), Léonard (1961, 1962).

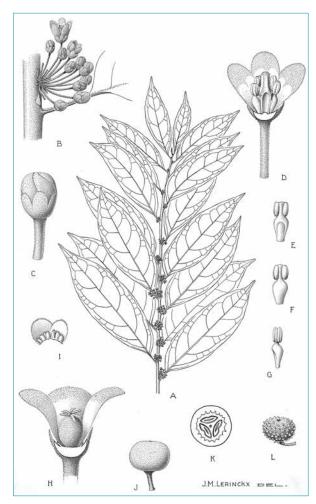
Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

## \_ Microdesmis yafungana J.Léonard

Red List category - Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo (northern and eastern parts of the country). Extent of occurrence (EOO):  $458,315~\rm km^2$ ; Area of occupancy (AOO):  $148~\rm km^2$ .

**Habitat** – Terra firma rainforest, in particular with *Gilbertiodendron dewevrei*, semi-deciduous forest with *Scorodophloeus zenkeri*, gallery forest, dry (plateau) forest; at 320–1,000 m.

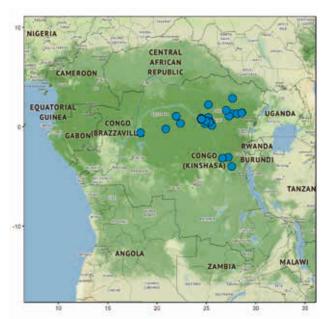


Microdesmis yafungana: A, male flowering branch; B, male supra-axillary inflorescence; C, male flower bud; D, male flower, 1 sepal, 2 petals and 1 stamen removed; E, F, G, stamen, ventral, dorsal and lateral view; H, F, female flower, 1 sepal and 2 petals removed; I, female sepals, inner surface; J, drupe; K, idem, transverse section; L, idem, dry state. A, C-G: J. Léonard 1442; B: Louis 3061; H-I: J. Léonard 1446; J-L: J. Léonard 1520). Drawing by J.M. Lerinkx, Meise Botanic Garden (©).

**Protected areas** – Fifteen collecting sites are located within the Yangambi Biosphere Reserve. There are no current conservation actions for the collecting sites occurring in non-protected areas.

**Threats** – The main threat is the destruction of suitable habitat due to anthropogenic pressures for subsistence farming, urbanization and small-scale logging. These two factors threaten the occurrences of Yangambi, as well as those close to Namoya, Pangi and Kisangani. Gold mining takes place at Namoya.

**Justification** – *Microdesmis yafungana* is a dioecious tree (or shrub) to 20 m tall, with a bole to 60 cm in diameter. It is known from 106 herbarium specimens collected between 1907 and 2013, representing 42 unique occurrences and 20 to 25 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 18 locations (*sensu* IUCN) can be distinguished, which is well above the upper



limit of the Vulnerable category under condition 'a' of sub-criterion B2. While we expect that human pressure will increase the loss of its habitat, we do not predict a significant decline for the species in the near future. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of the species. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under criterion B are not met, it cannot be regarded as threatened despite its low AOO.

Bibliography – Léonard (1962).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

## **PENTAPHYLACACEAE**

\_ Balthasaria schliebenii (Melch.) Verdc. var. intermedia (Boutique & Troupin) Verdc.

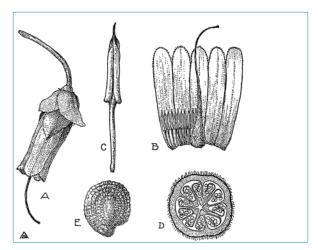
(Synonym: *Melchiora schliebenii* (Melch.) Kobuski var. *intermedia* (Boutique & Troupin) Kobuski)

Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

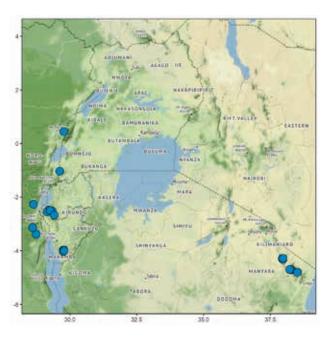
**Distribution** – Eastern Democratic Republic of the Congo, Rwanda, Burundi, south-western Uganda and north-eastern Tanzania (South Pare and West Usambara). Extent of occurrence (EOO): 287,378 km²; Area of occupancy (AOO): 200 km².

Habitat – Montane forest; at 1,760–2,450 m.

**Protected areas** – Ten out of the 22 occurrences are from within protected areas: Nyungwe National Park in Rwanda, Kahuzi-Biega National Park, Rutshuru Hunting Area and Réserve naturelle de Itombwe in DRC, Magamba Nature Reserve and Chome Nature Reserve in Tanzania, and Bururi Forest Nature Reserve in Burundi.



Balthasaria schliebenii var. intermedia: A, flower; B, corolla, spread out, stamens and pistil; C, stamen, ventral; view; D, ovary, transverse section; E, seed. (A-E: Michelson 742). Drawing by A. Cleuter, Meise Botanic Garden (©).



**Threats** – Though this type of forest is being destroyed in many places across East Africa, many of the known collecting sites are from protected areas. However, in all the Burundi sites outside protected areas the forest habitat is totally gone due to conversion into agricultural land and the collecting sites are likely to be lost. Similarly, the Rutshuru hunting area is now 95% cleared for agriculture, while the Bururi Reserve is declining in quality.

**Justification** – Balthasaria schliebenii var. intermedia is a tree to 30 m tall known from 30 herbarium specimens collected between 1932 and 2001. These represent 22 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, we infer continuing decline in the EOO, AOO, extent and quality of the

habitat, number of locations or subpopulations and number of mature individuals.

**Bibliography** – Beentje & al. (2019c), Boutique (1967), Verdcourt (1962, 1969).

**Authors** – H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu, S. Ntore & R. Gereau

## PHYLLANTHACEAE

## \_ Cleistanthus duvipermaniorum J.Léonard

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

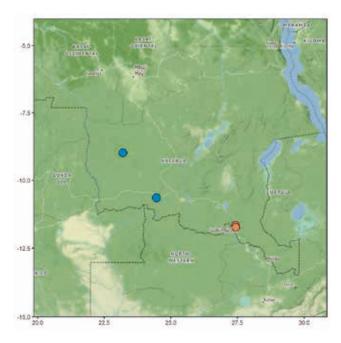
**Distribution** – Endemic to the Democratic Republic of the Congo. The reported presence of the species in Angola (Figueiredo & Smith, 2008) could not be confirmed by any herbarium specimen. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km².

Habitat – Gallery forest; at 1,000–1,200 m.

**Protected areas** – Neither of the two extant collecting sites occurs within a protected area. There are no current conservation actions for the species.



Cleistanthus duvipermaniorum: Isotype specimen at BR (Duvigneaud & Timperman 2301).



**Threats** – One collecting site was localized within the city of Lubumbashi. Urbanization is thus an important past threat. The other two occurrences are under significant threat of forest conversion for grazing, agriculture and charcoal burning.

**Justification** – *Cleistanthus duvipermaniorum* is a small tree to 10 m tall. It is known from five herbarium specimens collected between 1933 and 1957, representing three unique occurrences. One of these occurrences, that of Karavia, represented by two collections made before 1940 in Lubumbashi, is considered to have been extirpated and has been excluded from the AOO calculation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based upon the scale of the main threat, two subpopulations and two locations (sensu IUCN) have been distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The quality of the habitat of Cleistanthus duvipermaniorum (gallery forest) appears to be in decline in the areas where the species is known to occur. The threats have led to the decline in AOO, EOO, number of locations/ subpopulations and mature individuals of the species in the past, while the habitat loss will continue in the future. Despite recent botanical surveys within its former extent of occurrence, this species has not been recorded since 1957.

**Bibliography** – Figueiredo & Smith (2008), Léonard (1962).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

## \_ Cleistanthus evrardii J.Léonard

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Restricted to a single locality in the Maringa valley, in central Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.



Cleistanthus evrardii: Type specimen at BR (Évrard 4897).



**Habitat** – Dense swamp forest, often associated with *Gilbertiodendron dewevrei*; at around 300–400 m.

**Protected areas** – The only known collecting site occurs in a non-protected area. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by logging and agriculture. The species is only known from one occurrence where remote sensing data have recorded approximately 25% to 50% of forest cover loss to e.g. urbanization, forest degradation forests and agricultural conversion.

Justification – Cleistanthus evrardii is a small tree 7 m tall. It is only known from the type specimen collected in 1958. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Its habitat, flooded forest, is not expected to be highly threatened, but the only known occurrence is surrounded by areas subject to high human pressure. We project that this human pressure will continue and further intensify within the near future. Because it has not been observed for 63 years, it has been given the tag Possibly Extinct.

Bibliography - Léonard (1962), Ndjele (1988, 1997).

Authors - G. Dauby, M. Simo-Droissart & W. Tack

## \_ **Maesobotrya pierlotii** J.Léonard

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo (Kivu Province, Mwenga Territory). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – An obligate forest species, occurring in high-mountain forest of *Ficalhoa* and *Cassipourea*; at 2,200 m.

**Protected areas** – The only known collecting site occurs within the Itombwe Nature Reserve. There are no current conservation actions explicitly for this species.





Maesobotrya pierlotii: Holotype specimen at BR (Pierlot 2492).

Threats – The species is threatened by mining activity and widespread cultivation, although the type locality is within the Itombwe Nature Reserve, which may afford partial protection. However, its boundaries and management have not been not clearly defined, leading to different interpretations and even conflicts between the various stakeholders, and local communities want to see part of it classified as a community forest. Within the general area, forest clearing takes place to expand agriculture, and trees are felled for timber and charcoal production. Lack of effective protection allows illegal tree felling. These activities continue to date. Coltan and cassiterite are the most important minerals that are extracted, along with gold. The mining activities of individuals and groups have also led to severe environmental degradation.

Justification – Maesobotrya pierlotii is a small tree 14 m tall. The species is only known from the type specimen collected in 1958. Its area of occupancy (AOO) falls within the limits for Critically Endangered category under sub-criterion B2. The species is known from one subpopulation and one location (sensu IUCN), which is the upper limit for Critically Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the species' habitat. The species has not been collected in more than 60 years, and might already have gone extinct. Targeted fieldwork should be undertaken to look for the

species and, if found, its survival must be guaranteed through *ex-situ* conservation.

**Bibliography** – Armstrong (2007), Burnley (2011), Chemonics International Inc. (2015), Country of Origin Research and Information (2013), Huggins (2010), Kok & al. (2009), Léonard (1995), World Wildlife Fund (2020).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

## \_ Maesobotrya purseglovei Verdc.

Red List category – Near Threatened: NT.

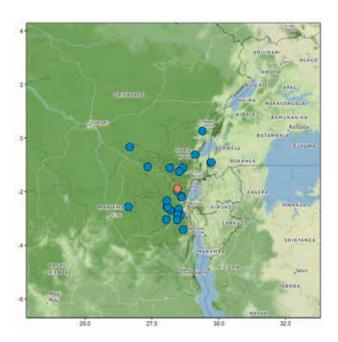
**Distribution** – Eastern part of the Democratic Republic of the Congo and south-western Uganda. Extent of occurrence (EOO): 100,057 km²; Area of occupancy (AOO): 112 km².

**Habitat** – An obligate forest species growing in dense humid forest, mature, moist evergreen forest, primary *Cynometra- Gilbertiodendron* forest with *Uapaca guineensis*; *Cynometra-Khaya* forest, *Ocotea michelsonii* forest, transition forest, secondary forest, gallery forest, low montane forest, medium elevation forest; at 700–1,950 m.

**Protected areas** – The species occurs within three protected areas: the Kahuzi-Biega National Park and the Itombwe Nature Reserve in the Democratic Republic of



**Maesobotrya purseglovei**: Herbarium material at BR (Gutzwiller 3071).



the Congo and the Bwindi Impenetrable National Park in Uganda. There are no current conservation actions for the collecting sites occurring outside protected areas.

**Threats** – In many parts of eastern DRC, particularly in the Walikale area, there is mining of minerals and tree felling for timber and charcoal, as well as forest clearance for agriculture. Some occurrences are within Kahuzi-Biega National Park, some just outside; the latter ones have most likely been extirpated due to the high human population pressure and resulting forest clearing in the area. North of the Kahuzi-Biega N.P. there is also heavy cattle grazing. North Kivu is subject to heavy logging outside protected areas. The Irangi forest has now completely disappeared; it has been converted to a vast oil palm plantation (Fischer, pers. comm.) and these occurrences are considered lost. At Lubutu, heavy deforestation for charcoal and timber production has been reported. Walikale is popular for cassiterite mining. Gold and cassiterite mining activities of individuals and groups have led to severe environmental degradation, and Walikale has been specifically reported.

**Justification** – Maesobotrya purseglovei is a shrub or small tree to 18 m tall. It is known from 69 herbarium specimens collected between 1915 and 1997, of which 35 have been discarded prior to the assessment because they occur in a region where the natural vegetation has been completely destroyed. The 34 remaining specimens represent 28 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 12 to 13 locations (sensu IUCN) can be distinguished, which falls just beyond the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We anticipate that human pressure will intensify in the near future, further degrading the species' habitat. Since the conditions for applying condition (a) under criterion B2 are not met, Maesobotrya purseglovei cannot be assigned to a threatened category under the IUCN red list criteria. Based on the threats mentioned, we do project a significant decline for the species within the near future, leading to a threatened status.

Bibliography – Armstrong (2007), Garrett (2008), Internal Displacement Monitoring Centre (2007), International Alert (2010), Kok & al. (2009), Léonard (1995), Radcliffe-Smith (1978, 1987), UNEP-MONUSCO OSESG (2015).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

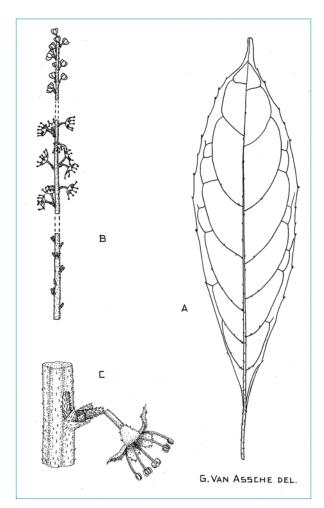
## \_ Maesobotrya pynaertii (De Wild.) Pax

**Red List category** – Near Threatened: NT.

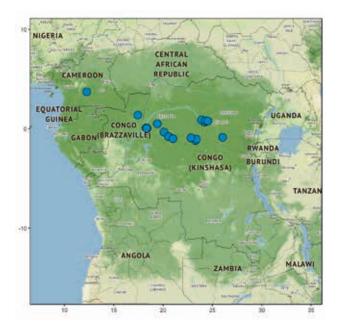
**Distribution** – Democratic Republic of the Congo, Republic of the Congo and Cameroon. Extent of occurrence (EOO): 281,877 km²; Area of occupancy (AOO): 76 km².

**Habitat** – Strictly localized in periodically flooded riverbanks of rainforests along large rivers, forest with *Baphia dewevrei*, *Hymenocardia ripicola*, *Uapaca heudelotii* and *Irvingia smithii*, swamp forest with *Guibourtia demeusei*; at 300–700 m.

**Protected areas** – Four unique occurrences are located within three protected areas: the Lac Télé Community Reserve in the Republic of the Congo and the Salonga National Park and the Yangambi Biosphere Reserve in DRC. The other occurrences are located outside protected areas. There are no current conservation actions for the species.



*Maesobotrya pynaertii*: A, leaf, lower surface; B, part of male inflorescence; C, male flower just before shedding. (A-C: *Pynaert 330*). Drawing by G. Van Assche, Meise Botanic Garden (©).



**Threats** – The main threat is the destruction of suitable habitat due to anthropogenic pressure for subsistence farming, urbanization and timber exploitation. The Yangambi Reserve is no longer fully protected and there is a significant amount of habitat degradation. Urbanization and subsistence logging also occur around the town of Mbandaka.

Justification – Maesobotrya pynaertii is a tree to 20 m high, with a bole to 8 m high and 50 cm in diameter. It is known from 31 herbarium specimens collected between 1906 and 2009, representing 19 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 14 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The subpopulation of Yangambi is likely to disappear in the near future. Given that the number of locations is close to the threshold value of 10 and is likely to decrease in the near future, the species has been assessed as Near Threatened.

Bibliography - Léonard (1994, 1995).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

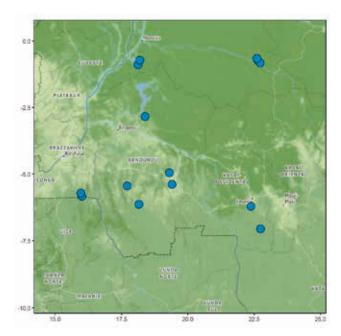
#### \_ Maesobotrya villosa (J.Léonard) J.Léonard

Red List category – Near Threatened: NT.

**Distribution** – Endemic to the southern and central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 408,959 km²; Area of occupancy (AOO): 56 km².

**Habitat** – Gallery forests, swamp forests, riverine forests, semi-deciduous forests, and savannah with *Hyparrhenia*; at 300–800 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.



**Threats** – The main threats are the destruction of its natural habitat due to anthropogenic pressures for subsistence farming and urbanization. The southern part of the species' distribution is very degraded; it is very likely that in that region at least two subpopulations are no longer viable.

**Justification** – Maesobotrya villosa is shrub or small tree to 5 m tall. It is known from 18 herbarium specimens collected between 1907 and 1982, representing 14 unique occurrences and 14 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 11 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in quality of the species' habitat and that at least one of the subpopulations has been lost. The areas where Maesobotrya villosa occurs are severely under-collected. A more thorough collecting would provide a better understanding of the range of this species, its abundance and the threats that it faces.

Bibliography - Léonard (1994, 1995).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

## \_Maesobotrya villosa (J.Léonard) J.Léonard var. lenifolia J.Léonard

Red List category - Endangered: EN B1ab(iii)+2ab(iii).

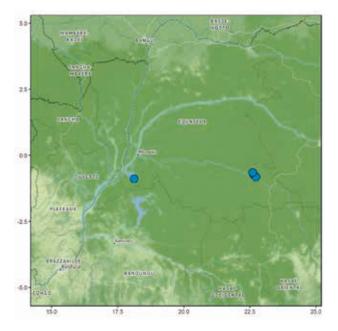
**Distribution** – Endemic to the central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 4,770 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Swamp forests, riverine forests, semi-deciduous forests; at 320–450 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.



Maesobotrya villosa var. lenifolia: Herbarium specimen at BR (Évrard 5523).



**Threats** – One of the four unique occurrences of this taxon is found in an area slightly degraded by slash-and-burn agriculture. The taxon is also threatened by logging.

**Justification** – *Maesobotrya villosa* var. *lenifolia* is a shrub or small tree to 5 m tall. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits of

the Endangered category under sub-criterion B1 and B2. Relative to the scale of the main threat, these four occurrences represent 2 or 3 locations (sensu IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We anticipate that the loss of its habitat will continue in the near future. A more thorough collecting effort would provide a better understanding of its range, its abundance and the threats it faces.

Bibliography - Léonard (1994, 1995).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

# \_ Maesobotrya villosa (J.Léonard) J.Léonard var. villosa

(Synonym: Maesobotrya floribunda Benth. var. villosa J.Léonard)

Red List category - Vulnerable: VU B2ab(iii).

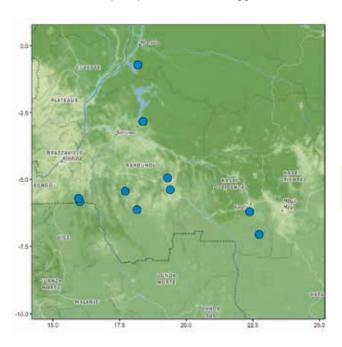
**Distribution** – Endemic to the central and southern regions of the Democratic Republic of the Congo. Extent of occurrence (EOO): 240,095 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Gallery forests, regrowth, savannah with *Hyparrhenia*; at 300–800 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

**Threats** – The main threats are the destruction of its natural habitat due to anthropogenic pressure for subsistence farming, urbanization and timber exploitation. The southern area of the taxon's habitat is much degraded; it is very likely that in that region at least two subpopulations are no longer viable.

**Justification** – *Maesobotrya villosa* var. *villosa* is a shrub or small tree to 5 m tall. It is known from 14 herbarium specimens collected between 1907 and 1982, representing 10 unique occurrences and four subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the





*Maesobotrya villosa* var. *villosa*: Herbarium specimen at BR (*Liben 3458*).

Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat (i.e., slash-and-burn agriculture), nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in quality of the taxon's habitat. The area where Maesobotrya villosa var. villosa occurs is severely under-collected. A more thorough collecting would provide a better understanding of its range, its abundance and the threats it faces.

Bibliography - Léonard (1994, 1995).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

# **PICRODENDRACEAE**

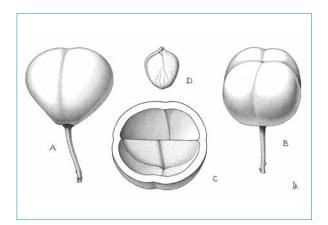
#### Oldfieldia macrocarpa J.Léonard

Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 175,834 km²; Area of occupancy (AOO): 32 km².



Oldfieldia macrocarpa: Herbarium specimen at BR (Devred 2670).



Oldfieldia macrocarpa: A, B, fruit; C, idem, transverse section (seeds removed); D, seed. (A-D: Michelson 920). Drawing by J. Leyniers, Meise Botanic Garden (©).

**Habitat** – Rainforest (mixed and *Gilbertiodendron dewevrei* forest), on sandy soil in a wide strip parallel to the river; at 440–550 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.



**Threats** – The collecting sites are liable to be impacted by a range of human activities including forest conversion to agricultural land and pasture for livestock and forest clearing and wood harvesting, contributing to a decline in habitat quality.

**Justification** – Oldfieldia macrocarpa is a large tree to 40 m tall. It is known from 11 herbarium collections made between 1942 and 1959, representing eight unique occurrences and five subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the main threat, which is shifting agriculture, the five subpopulations represent six locations (sensu IUCN), which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in quality of the species' habitat in the near future. This species has not been recollected in the last 62 years. Effort to find new occurrences in the newly created Lomami National Park is needed as three of the eight unique occurrences are located in the immediately surrounding forests of the Maniema region.

Bibliography - Byng (2015).

**Authors** – C. Ewango, M. Simo-Droissart & W. Tack

# **PITTOSPORACEAE**

#### \_ Pittosporum mildbraedii Engl.

Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 1,532 km²; Area of occupancy (AOO): 60 km².

**Habitat** – Montane forest edges; at 1,980–3,300 m. The seed is distributed by birds (endozoochory).

**Protected areas** – Seven out of eight occurrences are from within four protected areas: Parc national des Volcans (UNESCO-MAB Biosphere Reserve) and Gishwati-Mukura National Park in Rwanda, Kibira National Park in Burundi, and Virunga National Park (World Heritage Site) in DRC.





*Pittosporum mildbraedii*: Mount Sabyinyo, Rwanda. Photos by Eberhard Fischer (©).



**Threats** – The occurrence at Nshili-Munini is just outside the Nyungwe National Park (Rwanda); this area is not densely inhabited but has tea plantations. Negotiations for oil drilling are being conducted for the southern part of Virunga National Park, with the threat of disturbance and habitat destruction.

**Justification** – *Pittosporum mildbraedii* is a shrub or small tree to 8 m tall. It is known from eight herbarium specimens collected between 1907 and 1999, constituting eight unique occurrences. The extent of occurrence (EOO) and area of occupancy (AOO) both fall within the limits of the Endangered category under sub-criterion B1 and B2. Based on the scale of the threats and protected area boundaries, we distinguish five locations, which falls within the Endangered category under condition 'a' of sub-criterion B2. A future decline in habitat extent and quality is inferred.

**Bibliography** – Gereau & al. (2019h), Léonard (1951), Ntore & al. (2018).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

# **PROTEACEAE**

#### \_ Faurea lucida De Wild.

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to western Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat – At around 700 m.

**Protected areas** – The only known unique occurrence is in an unprotected area. There are no current conservation actions for the species.



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Faurea lucida: Holotype specimen at BR (Vanderyst 5712).

**Threats** – The main threats are habitat destruction by forest clearance for agriculture and urbanization.

**Justification** – Faurea lucida is a small tree known only from the type specimen (Vanderyst 5712) collected in 1915 at Malele (Bambata region) in the Democratic Republic of the Congo. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under the sub-

criterion B2. The species is known from one unique occurrence representing one subpopulation. According to the main threat, small-holder shifting agriculture, the subpopulation represents one location (*sensu* IUCN), which is the upper limit of the Critically Endangered category under the condition 'a' of sub-criterion B2. Considering that the species has not been re-collected for 106 years, since 1915, in a fairly densely populated region, there is a high probability that it is already extinct. We infer a continuing decline in extent and quality of the habitat. Intensive fieldwork in Malele must be performed to search for *Faurea lucida*, and if found, the species should be at least introduced into cultivation. Morphologically, the species is only partly known; fruits have never been observed.

**Bibliography** – Chisumpa & al. (2006), De Wildeman (1929), Hauman (1948).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

#### \_ **Protea argyrea** Hauman

Red List category - Endangered: EN B2ab(iii).

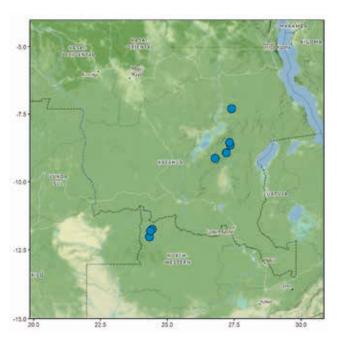
**Distribution** – Democratic Republic of the Congo and northern Zambia. Extent of occurrence (EOO): 28,700 km²; Area of occupancy (AOO): 32 km².

**Habitat** – Grassland on steppe plateau, grass savannah; at 1,200–1,800 m.

**Protected areas** – The species occurs in the Upemba National Park (DRC) and Nkunyi National Park (Zambia). There are no current conservation actions for the species.

**Threats** – The threats to the habitat are urbanization (the main threat), both in Zambia (particularly in Mwinilunga) and in DRC (Mitwaba and Manono), mining activities (Katanga, DRC) and collecting of firewood.

**Justification** – *Protea argyrea* is a suffrutex, large shrub or small tree to 3 m tall. It is known from 12 herbarium specimens collected between 1945 and 1988, representing eight





Protea argyrea: Type specimen at BR (Mortelmans 71).

unique occurrences and six subpopulations. The extent of occurrence (EOO) is above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer at least a decline in area, extent and quality of the species' habitat. Field work is recommended given that the taxon seems to be undercollected.

**Bibliography** – Chisumpa & Brummitt (1987), Hauman (1948).

 ${\bf Authors}$  – C. Amani, M. Simo-Droissart, X. van der Burgt & W. Tack

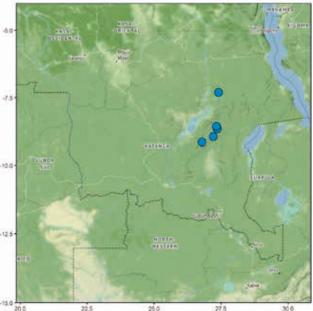
#### \_ **Protea argyrea** Hauman subsp. **argyrea**

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Endemic to the southeast of the Democratic Republic of the Congo (Mitwaba and Kundelungu Plateaux). Extent of occurrence (EOO): 5,037 km²; Area of occupancy (AOO): 20 km².

Habitat – Grassland on steppe plateau; at 1,200–1,800 m.

**Protected areas** – Two of the five collecting sites occur within the Upemba National Park (DRC). There are no



current conservation actions for the taxon in the other collecting sites.

**Threats** – The threats are habitat destruction due to urbanization and mining activities.

Justification – Protea argyrea subsp. argyrea is a shrub or small tree. It is known from 10 herbarium specimens collected between 1945 and 1986, representing five unique occurrences and four subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer at least a decline in the extent and quality of the taxon's habitat. Field data are required to assess clearly the current state of the subpopulations.

**Bibliography** – Chisumpa & Brummitt (1987), Hauman (1948).

Authors - C. Amani, M. Simo-Droissart & W. Tack

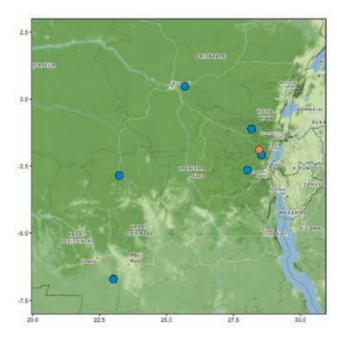
# **PUTRANJIVACEAE**

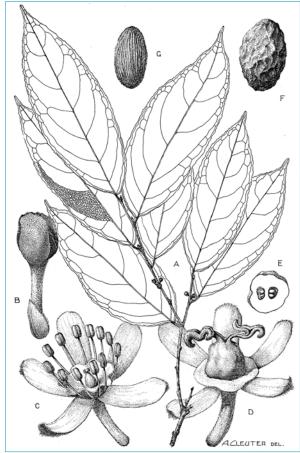
#### \_ Drypetes darimontiana J.Léonard

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the central and eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 237,648 km²; Area of occupancy (AOO): 24 km².

**Habitat** – Gallery and semi-deciduous rainforest with Staudtia gabonensis, Cynometra alexandri, Grossera multinervis, Julbernardia seretii, Gilbertiodendron dewevrei and





Drypetes darimontiana: A, male flowering twig; B, male flower bud and bract; C, male flower; D, female flower; E, ovary, transverse section; F, fruit in dry condition; G, seed. (A-B: Troupin 3923; C: Gutzwiller 2183; D, E: Germain 7995; F, G: Liben 2451). Drawing by A. Cleuter, Meise Botanic Garden (©).

Khaya anthoteca; at around 850-1,000 m. The fruits are likely dispersed by mammals.

**Protected areas** – All known collection sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Three occurrences have been completely destroyed: one at Namoya by gold mining and two at Irangi by oil palm plantations. Furthermore, throughout the distribution range the habitat is being destroyed by subsistence agriculture, agro-forestry, artisanal and industrial mining and tree felling for firewood and charcoal. Areas around Irangi to Kigogo and Mwenga have been deforested through clearance for agriculture and some have been settled by Lega and Nyindu ethnic groups. As a result, there is now a systematic deforestation that is new in this area because the indigenous Bambuti did not traditionally practice agriculture. Kalehe Territory is a densely populated region with political instability causing severe threat of habitat destruction by local people, refugees and armed militias, who cut trees for timber and charcoal. Just c. 5 km N of the Irangi site is the fairly large town of Hombo, which contributes to forest habitat quality decline owing to the demand for fuelwood and charcoal. There is also artisanal mining. Kisangani is in a region that is rich in diamonds and timber as well as gold. In Mukumari (Lomela), the species is threatened by agriculture (rice, maize and coffee), In Bunyakiri, the threats are oil palm plantations and artisanal gold mining (the Kamole mine is only 2 km from Bunyakiri). The whole region supplies agricultural and forest products to the markets in Bukavu, e.g. construction wood, charcoal and palm oil. There are mining sites in Kigulube for gold, tin, tantalum and tungsten. Diamonds are mined at Lubi. At Kembe, the species is threatened by coltan and copper exploitation, as well as agriculture causing deforestation.

**Justification** – *Drypetes darimontiana* is a dioecious shrub or tree of up to 19 m tall, with a trunk up to 10 m high and up to 20-25 cm in diameter. It is known from nine herbarium specimens collected between 1921 and 2008, three of which were discarded for evaluation because the habitat has been destroyed (Irangi Forest, now a vast oil palm plantation and Namoya, destroyed due to gold mining). The remaining six specimens represent six unique occurrences and six extant subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Because of all the above-mentioned facts, we infer a continuing decline in the quality and extent of the habitat. The region where this species occurs is severely under-collected. Further collecting of Drypetes darimontiana would give us better information about its distribution area, its rarity and the threats it faces.

Bibliography – Atyi & Bayol (2008), Campos-Arceiz & Blake (2011), Chifundera (2007), Cuvelier (2010), De Block (2018), Ferf & al. (2016), Gauthier (2016), International Alert (2010), Lohese & Jelinski (2016), Léonard (1965), Novosseloff & al. (2019), Otshudi & al. (2000), Romkema (2007), Ulloa & al. (2009), UNESCO (2017a, 2017b), United Nations Human Rights (2010), United Nations Security Council (2018), Yager (2014).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

## RHAMNACEAE

#### \_ Lasiodiscus gillardinii Staner

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 59,404 km²; Area of occupancy (AOO): 16 km².

**Habitat** – *Michelsonia* evergreen rainforest, drier types of Guineo-Congolian rainforest; at 700 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The main threat to the habitat is forest clearing for agricultural expansion and forest disturbance by selective logging.

**Justification** – Lasiodiscus gillardinii is a tree to 20 m tall. It is known from four herbarium specimens collected between 1938 and 1959, representing four unique occurrences and three subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy



Lasiodiscus gillardinii: Type specimen at BR (Gillardin 351).



(AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, three locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We project that this habitat degradation will continue in the future and infer a decline in its extent and quality.

Bibliography – Évrard (1960), Figueiredo (1995).

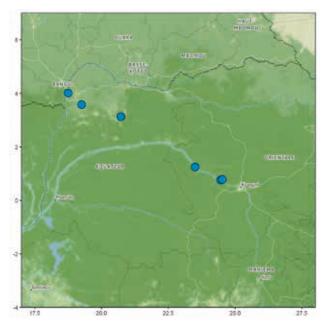
Authors - P. Kamau, M. Simo-Droissart & W. Tack

#### \_ Lasiodiscus lebrunii Figueiredo

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the northern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 15,865 km²; Area of occupancy (AOO): 24 km².

Habitat – Gallery forests; at 350–450 m.





Lasiodiscus lebrunii: A, flowering branch; B, flower bud; C, flower. (A-C: Lebrun 1687). Drawing by Mark Fothergill (©), reproduced with permission from Figueiredo (1995).

**Protected areas** – Two collecting sites are located within the Yangambi Biosphere Reserve. The others occur in unprotected sites.

**Threats** – The habitat is threatened by small-scale shifting agriculture, timber exploitation and charcoal production. At Popolo, there is industrial logging. Small trees are cut to construct the road. Fuelwood is also used to supply several growing cities such as Popolo, Gemena, Libenge and Zongo. The Yangambi Biosphere Reserve is under pressure by the human population; there is an initiative to limit the access of the public to the Reserve to enhance its protection, as well as an *Acacia* plantation project to supply wood for domestic uses to the population, thus taking pressure off the natural forest.

Justification – Lasiodiscus lebrunii is a small tree to 8 m tall. It is known from eight herbarium specimens collected between 1921 and 1955. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We infer a continuing decline in habitat quality.

Bibliography – Évrard (1960), Figueiredo (1995). Authors – S. Ntore, M. Simo-Droissart & W. Tack

# RHIZOPHORACEAE

#### \_ Cassipourea evrardii Floret

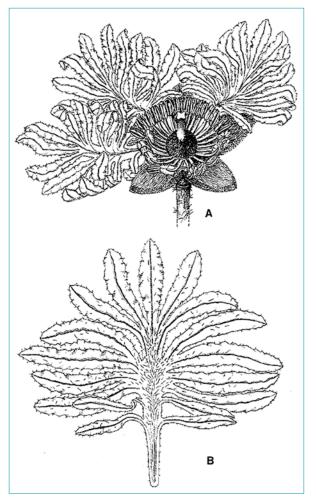
Red List category – Vulnerable: VU D2.

**Distribution** – Endemic to the central part of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

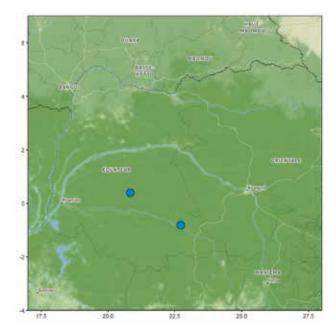
Habitat - Gallery forest, riverine forest; at 370-430 m.

**Protected areas** – Both known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – Befale is a small town (pop. less than 4,000) and satellite imagery shows forest clearing, but most forest seems intact, including that near rivers. Yalisenga seems to be a small village with several clearings nearby, but much forest left (including near rivers). With expanding populations and an increasing oil palm price, oil palm plantation establishment is a plausible threat (more so than forest removal for subsistence agriculture). In conclusion: there is a threat of deteriorating habitat, but it is minor. However,



Cassipourea evrardii: A, flower, 2 petals removed; B, petal. (A, B: Évrard 3482). Drawing by Marie Boutique, Meise Botanic Garden (©).



there is a plausible threat to the species' habitat, namely destruction of forest to establish oil palm plantations or through logging.

Justification - Cassipourea evrardii is a small tree to 4 m tall. It is known from two herbarium specimens collected in 1958, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under subcriterion B2. Relative to the scale of the threats, the two occurrences represent two locations (sensu IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The area is under-collected with much suitable habitat remaining, according to satellite imagery. Intensive fieldwork must be performed to search for Cassipourea evrardii, and if found, the species should be at least introduced into cultivation. The inferred loss of the habitat will not lead us to predict any continuing decline for the species. The very restricted occurrence, with a plausible future threat, complies best with criterion D.

Bibliography - Liben (1987).

Authors – H.J. Beentje, M. Simo-Droissart & W. Tack

### \_ Cassipourea leptoneura Floret

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the eastern and north-eastern regions of the Democratic Republic of the Congo. Extent of occurrence (EOO): 10,814 km²; Area of occupancy (AOO): 24 km².

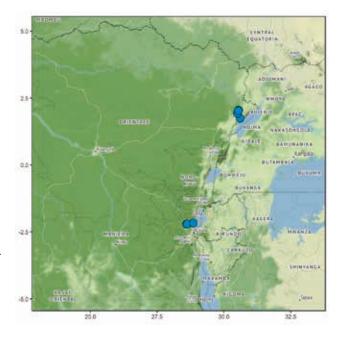
**Habitat** – Medium- elevation montane forest, either primary or occasionally disturbed or secondary; at 1,600–2,000 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – This species has been collected in the Djugu area (Ituri, 8 specimens), in Lusheni (Kivu, 2 specimens), and



Cassipourea leptoneura: Herbarium specimen at BR (Smeyers 207).



around km 41–48 on the Kavumu-Walikale road (3 specimens). Around Djugu there has been civil unrest resulting in large numbers of refugees, and satellite imagery shows only a small amount of forest left; most land is under agriculture or mining (for gold, mostly alluvial panning, but also pits some of which are very large). We have not been able

to find Lusheni on a map, but it is in the Kalehe Territory, on the shores of Lake Kivu, where most natural habitat seems to be gone and population density is very high. There is insecurity and there are armed groups and refugees. In this area there is also mining for gold, coltan and cassiterite. The area between km 41–48 on the Kavumu-Walikale road (E of Kahuzi-Biega) has dense population and land use, but some forest in the area seems to remain in more inaccessible places. Hence the habitat is under threat from forest clearing for agriculture, mining, wood collecting for subsistence and charcoal production, urbanization and refugees.

Justification – Cassipourea leptoneura is a medium-sized tree to 25 m tall, with a bole to 40 cm in diameter. It is known from 13 herbarium specimens collected between 1937 and 1959, representing seven unique occurrences and five subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under subcriterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have it is reasonable to infer a continuous decline in the extent and quality of the species' habitat.

Bibliography – Liben (1987).

Authors - H.J. Beentje, M. Simo-Droissart & W. Tack

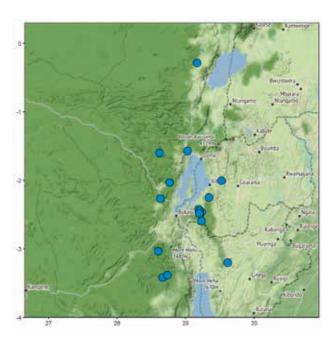
#### Cassipourea ndando J.Léonard ex Floret

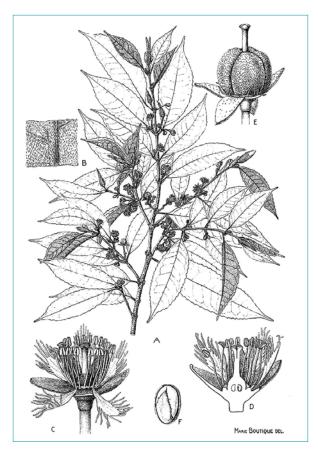
Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 26,218 km²; Area of occupancy (AOO): 160 km².

**Habitat** – Dense montane forest; at 1,670–2,500 m.

**Protected areas** – Nine out of the 17 collection sites of the species are from within three protected areas: Nyungwe





Cassipourea ndando: A, flowering and fruiting branch; B, part of leaf, lower surface; C, flower; D, idem, longitudinal section; E, fruit; F, seed. (A-F: Louis 4638). Drawing by Marie Boutique, Meise Botanic Garden (©).

National Park and Mukura Forest Reserve in Rwanda, and Réserve naturelle d'Itombwe in DRC. The one occurrence in Burundi (*Lewalle 3537*, "Teza to Nyabigondo") is not precisely located, but maps to within 1 km of Kibira National Park and may have been collected inside the park. There are no current conservation actions for the species.

Threats – All Rwandan occurrences (and perhaps the one Burundian occurrence) are within protected areas, but this contrasts with the sites in the Democratic Republic of the Congo, where there is only one protected site: Itombwe N.R. This is a fairly new protected area, and its protection status is not known. Elsewhere in the Albertine Rift of the eastern Democratic Republic of the Congo the habitat is under threat of intense cultivation and deforestation due to population pressure. As this species seems restricted to dense montane forest, this will be having an impact as the habitat is diminishing rapidly in both extent and quality there.

**Justification** – Cassipourea ndando is a medium-sized tree to 25 m tall, with a bole to 45 cm in diameter. It is known from 17 herbarium specimens collected between 1905 and 2000, representing 17 unique occurrences. The extent of occurrence (EOO) exceeds the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the Endangered category under sub-criterion B2. Based on the scale of the threat, seven or eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. From the above and due to the very high probability of loss of many or all of the unprotected

sites in the DRC, we infer a decline in quality of the habitat as well as in AOO, number of locations and number of mature individuals.

Bibliography - Gereau & al. (2019i), Liben (1987).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

# ROSACEAE

#### Prunus crassifolia (Hauman) Kalkman

(Synonym: Pygeum crassifolium Hauman)

Red List category - Least Concern: LC

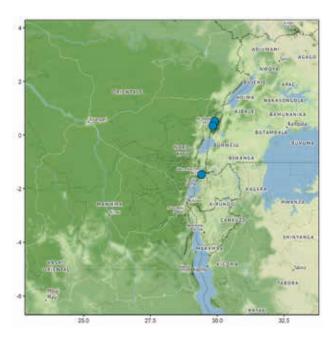
**Distribution** – Endemic to eastern Democratic Republic of the Congo (Kivu Province). Extent of occurrence (EOO): 318 km²; Area of occupancy (AOO): 12 km².

**Habitat** – An obligate forest species, montane forest; at 2,800–3,250 m.

**Protected areas** – All known collecting points occur within the Virunga National Park.



Prunus crassifolia: Herbarium specimen at BR (de Witte 9304).



**Threats** – Mikeno is part of the Virunga National Park which is now under potential threat from oil and gas exploration and mining activity – though not likely at the elevation where this species occurs. The second site, Mahungu, occurs at an elevation of over 3,000 m in a well-protected part of the park. There might be a few occasional threats to the habitat such as illegal extraction of a tree, but these would be insignificant, unless targeting the species in question. In conclusion, there are no current threats.

Justification – Prunus crassifolia is a small tree to 18 m tall. It is known from five herbarium specimens collected between 1914 and 1953, representing three unique occurrences and three subpopulations. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits of the Endangered category under the sub-criteria B1 and B2. The collections are very old, with no records of it for the last 66 years. Although the EOO, the AOO and the number of locations could potentially qualify the species to be categorized as Endangered (EN), in the absence of a threat no locations can be defined. The species is therefore listed as Least Concern, but is Protected Area dependent.

Bibliography – Hauman (1952).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

# RUBIACEAE

\_ **Aulacocalyx jasminiflora** Hook.f. subsp. **kivuensis** Figueiredo

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii,v).

**Distribution** – Endemic to eastern Democratic Republic of the Congo (Kivu Province). Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².



Aulacocalyx jasminiflora subsp. kivuensis: Herbarium material at BR (*Troupin* 4568).

**Habitat** – Primary forest; at 850–900 m. The seeds are dispersed by birds that consume their fleshy fruits (endozoochory).

**Protected areas** – The only known collecting site occurs in an unprotected area. There are no current conservation actions for the taxon.

**Threats** – The only known collecting site used to be the Irangi Forest Reserve but it has been completely destroyed. The land is now covered by houses and oil palms (Fischer, pers. comm.; Google Earth evidence). The very few remaining patches of forest nearby all occur at higher elevations (over 1,200 m).

**Justification** – *Aulacocalyx jasminiflora* subsp. *kivuensis* is a shrub or small tree to 6 m tall. It is known from nine herbarium specimens collected between 1957 and 1960, all from the same site. These represent a single unique occurrence and a single subpopulation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threat, a single location (*sensu* IUCN) was defined, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the habitat of this taxon, as well as in number of mature individuals. Intensive fieldwork in Irangi must be performed



to search for *Aulacocalyx jasminiflora* subsp. *kivuensis* and, if found, it should be at least introduced into cultivation. The taxon has not been collected in almost 60 years, and since the habitat seems lost it may already be extinct.

Bibliography - Figueiredo (1997).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

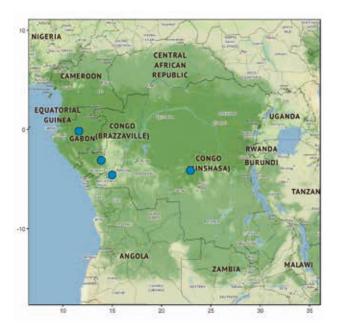
#### \_Aulacocalyx lujae De Wild.

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Gabon, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 225,370 km²; Area of occupancy (AOO): 16 km².

Habitat - Rainforest; at 350-600 m.

**Protected areas** – One collecting site occurs within the Lopé National Park in Gabon. The other occurrences are located outside of any protected areas. There are no conservation actions for the species in these three countries.





Aulacocalyx lujae: Holotype specimen at BR (Luja s.n.).

**Threats** – The habitat is threatened by human activities such as shifting agriculture and selective logging (Fulakari and Sankuru).

**Justification** – *Aulacocalyx lujae* is a shrub or small tree to 6 m tall. It is known from five herbarium specimens collected between 1906 and 1968, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of the known threats, these subpopulations also represent four locations (*sensu* IUCN), which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the species' habitat.

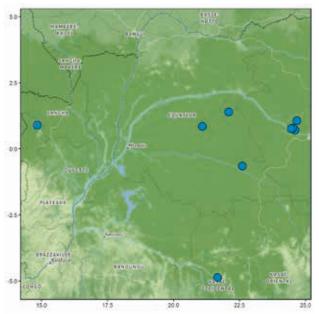
Bibliography - Figueiredo (1997).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### Brenania rhomboideifolia E.M.A.Petit

Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Subendemic to the Democratic Republic of the Congo, with a single specimen known from the Republic of the Congo. Within DRC, most specimens occur in the





Brenania rhomboideifolia: Herbarium specimen at BR (Germain 4772).

Central Forest phytogeographical district with a single southern outlier in the Kasai phytoregion. Extent of occurrence (EOO): 383,465 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Primary humid forest (e.g. *Gilbertiodendron dewevrei* forest, *Cynometra alexandri* forest); at 350–550 m.

**Protected areas** – There are five collecting sites within three protected areas: the Odzala National Park in the Republic of the Congo and the Yangambi Biosphere Reserve and the Lomako-Yokokala Nature Reserve in DRC.

**Threats** – The main threat is the destruction of the natural habitat (forest clearance) as a result of anthropogenic pressure for subsistence farming and agriculture. Of the seven known subpopulations, only three remain undisturbed (Odzala N.P., Yalikunga-Yalomboka) or relatively undisturbed (near Bokoli), whereas the other four are close to habitation and show forest clearing and fragmentation. The fact that *Brenania rhomboideifolia* is a large tree used for furniture making is also a threatening factor.

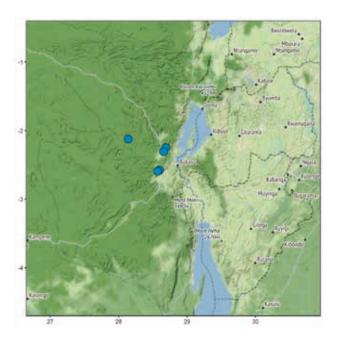
**Justification** – Brenania rhomboideifolia is a tree 40 m tall. Its relatively hard wood is used for making furniture; the fruits are used as fish poison. It is known from 12 herbarium specimens collected between 1934 and 1994, which represent nine unique occurrences and seven subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit for the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. With respect to the scale of the known threats and protected area boundaries, seven locations (sensu IUCN) have been defined, which complies with the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline of the extent and quality of the species' habitat. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – African Conservation Foundation (2013), Inogwabini & al. (2005), Petit (1961), Vliet & al. (2018).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Coffea kivuensis Lebrun

Red List category – Endangered: EN B1ab(i,ii,iii) +2ab(i,ii,iii).







Coffea kivuensis: Inflorescence. Fruit. DRCongo, Kahuzi-Biega National Park, sector Madiriri. Photos from Piet Stoffelen, Meise Botanic Garden (©).

**Distribution** – Endemic to eastern Democratic Republic of Congo, Lake Kivu region of the Kahuzi-Biega National Park, near the border with Rwanda. Extent of occurrence (EOO): 130 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Understorey of humid, evergreen forest; at 1,900–2,100 m. Its branches and leaves are often covered with bryophytes and lichens.

**Protected areas** – This species has been recorded from within the Kahuzi-Biega National Park, which was designated a World Heritage Site in 1980. The species is not known to be conserved *ex situ*.

**Threats** – The Kahuzi-Biega National Park is known to have a lack of resources and capacity, limiting the effectiveness of the protection. As such, a number of threats are present, including logging, agriculture, mining, human intrusions

and disturbance and fire. During the Rwandan genocide between 1990 and 1994, a large number of refugees settled in and around the park. Following this, the first and second Congo wars, between 1996 and 1997 and 1998 and 2003 respectively, placed additional strains on the area. As a result of these pressures the park has been on the List of World Heritage Sites in Danger since 1997. Insecurity remains a major concern and three park guards were killed in 2016. Although most of the artisanal mines inside the park have been closed down, information indicates that there are still operational mines on the periphery. Illegal occupation and deterioration of the ecological corridor between the lowlands and the highlands is suspected.

Justification – Coffea kivuensis is a small tree to 10 m tall. It is known from 41 herbarium specimens collected between 1932 and 2014, representing only 6 unique occurrences. The extent of occurrence (EOO) and area of occupancy (AOO) both fall within the limits of the Endangered category under sub-criteria B1 and B2. Based on the scale of threats, the number of locations (sensu IUCN) is four, which complies with the Endangered category under condition 'a' of sub-criterion B1 and B2. Based on the above threats, we infer an ongoing and continuing decline in the area, extent and quality of habitat, EOO and AOO. Surveys and further research are needed to confirm the current distribution, population and habitat status, to enumerate declines and to identify the specific threats and conservation measures needed.

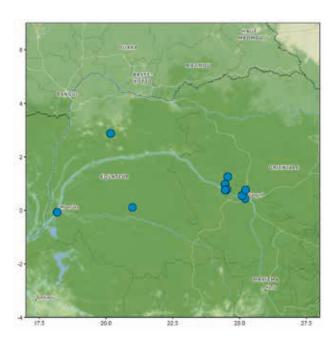
Bibliography – BirdLife International (2015), Chadburn & al. (2017), Davis & al. (2006, 2011), GRIN (2017), Hamon & al. (2017), Maurin & al. (2007), Maxted & al. (2006), Stoffelen (1998), UNESCO (2017a), Vincent & al. (2013).

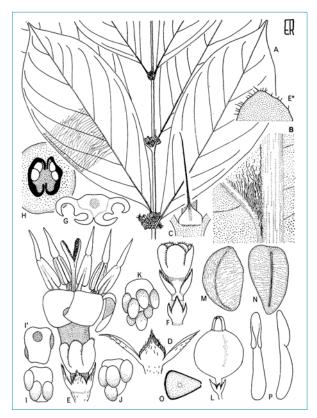
Authors - H. Chadburn, A.P. Davis & R.J. O'Sullivan

#### **Empogona aequatoria** (Robbr.) Tosh & Robbr.

(Synonym: Tricalysia aeguatoria Robbr.)

Red List category – Vulnerable: VU B2ab(iii).





Empogona aequatoria: A, flowering twig; B, domatium; C, stipule; D, calyculus; E, flower, E\*, tip of corolla lobe; F, base of flower with 2 pairs of bracteoles; G, anther, cross-section; H, ovary, cross section; I-K, placentas; L, fruit; M, seed, lateral view; N, idem, adaxial view; O, idem, cross section; P, embryos. (A-C: Louis 13620; D, E, G-K: Louis 10913; E\*, F: Louis 6687; L-P: Louis 13900). Drawing by Elmar Robbrecht, Meise Botanic Garden (©).

**Distribution** – Endemic to the northern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 139,319 km²; Area of occupancy (AOO): 48 km².

**Habitat** – Understorey of primary and secondary rainforest; at 300–500 m.

**Protected areas** – Four occurrences fall inside the Yangambi Biosphere Reserve, and one occurrence falls within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to its conservation. There are no current conservation actions for the species outside the protected area.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. Most collection sites in which the species grows, especially near Kisangani and Yangambi, are close to habitation and show forest fragmentation and clearing for agricultural use.

**Justification** – *Empogona aequatoria* is a shrub or small tree to 6 m tall. It is known from 28 herbarium specimens, collected between 1906 and 1976, which represent 13 unique occurrences and eight subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. With respect to the scale of the known threats and protected area boundaries, eight locations (*sensu* IUCN) are recognized, which complies

with the Vulnerable category under condition 'a' of sub-criterion B2. While the species is under threat in most of the known localities, it is probably still present in some of the more undisturbed forests of the Congo Basin. However, it has not been collected since 1976 and since most of the known collecting sites show deforestation, we infer a decline in the extent and quality of its habitat. The region where *Empogona aequatoria* occurs is severely undercollected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Robbrecht (1979), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003), Vliet & al. (2018).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### Empogona glabra (K.Schum.) Tosh & Robbr.

(Synonym: Tricalysia glabra K.Schum.)

Red List category - Least Concern: LC.

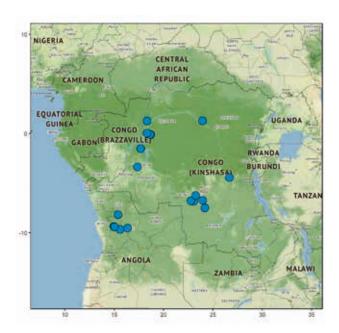
**Distribution** – Democratic Republic of the Congo and northern Angola. Extent of occurrence (EOO): 1,035,344 km²; Area of occupancy (AOO): 72 km².

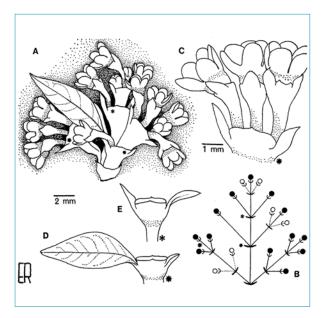
**Habitat** – Gallery forests, semi-deciduous forests, secondary shrubby vegetation; at 300–1,200 m.

**Protected areas** – None of the occurrences are located inside an effectively protected area, although two collection points fall within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to its conservation. There are no current conservation actions for the species.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure.

**Justification** – *Empogona glabra* is a shrub or small tree to 7 m tall. It is known from 28 herbarium specimens collected





Empogona glabra: A, inflorescence; B, idem, schematic representation; C, triplet of flowers; D, E, calyculi. (A-E: Goossens 3229). Drawing by Elmar Robbrecht, Meise Botanic Garden (©).

between 1896 and 1974, representing 18 unique occurrences and 16 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The 16 subpopulations represent 16 locations relative to the scale of known threats, which exceeds the 10 locations upper limit for the Vulnerable category under condition 'a' of sub-criterion B2. The region where Empogona glabra occurs is severely under-collected. This may be the reason why the species has not been collected after 1980. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper (2006), Robbrecht (1979), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors – P. De Block, M. Simo-Droissart & W. Tack

### \_ Gaertnera leucothyrsa (K.Krause) E.M.A.Petit

Red List category – Least Concern: LC.

**Distribution** – Gabon and throughout most of the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,078,177 km²; Area of occupancy (AOO): 104 km².

Habitat - Humid forest; at 470-1,150 m.

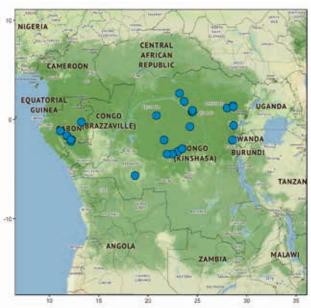
**Protected areas** – There are six collecting sites within four protected areas: the Salonga National Park, the Okapi Wildlife Reserve, the Kisimba Ikobo Primate Nature Reserve and the Yangambi Biosphere reserve, all in DRC. The other collecting sites are in unprotected areas. There are no current conservation actions for the species.







Gaertnera leucothyrsa: Flower. Fruiting branch. Fruits. Gabon, 80 km N.E. of Lastoursville and N. of Malinga. Photos by Ehoarn Bidault (CC-BY-NC-ND), Missouri Botanical Garden.



**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure, notably for shifting agriculture.

**Justification** – *Gaertnera leucothyrsa* is a shrub or small tree to 2.5 m tall. It is known from 34 herbarium specimens, most of which were collected before 1960. However, nine specimens were collected after the year 2000 (eight in Gabon and one in DRC). These herbarium specimens represent 27 unique occurrences and 22 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of the known threats and protected area boundaries, 19 locations (sensu IUCN) were defined, which exceeds the upper limit for the Vulnerable category under condition 'a' of sub-criterion B2. The Congo Basin is severely undercollected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper (2006), Malcomber & Taylor (2009), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Ixora burundiensis Bridson

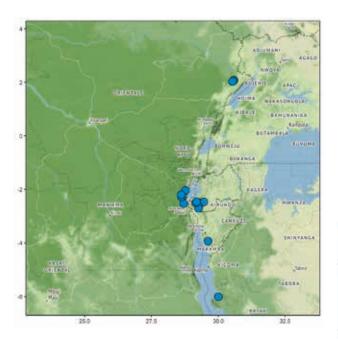
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the Albertine Rift in the eastern part of the Democratic Republic of the Congo, western Burundi, western Rwanda and western Tanzania. Extent of occurrence (EOO): 102,244 km²; Area of occupancy (AOO): 153 km².

**Habitat** – Montane rainforest, forest ridges, dry woodland; at 1,950–2,350 m. The seed is probably dispersed by animals (endozoochory).



*Ixora burundiensis*: Inflorescence. Kamiranzovu swamp, Rwanda. Photo by Eberhard Fischer (©).



**Protected areas** – Six of the occurrences are situated inside protected areas (one within the Nyungwe National Park in Rwanda, three within the Kahuzi-Biega National Park in DRC, one within the Mahale Mountains National Park in Tanzania and one within the Bururi Forestry Nature Reserve in Burundi).

**Threats** – For collection sites outside of protected areas the habitat is declining. At Malumi (DRC) the habitat is threatened by conversion for agriculture and cattle herding. At Mabayi (Burundi) the habitat is under threat from conversion for agriculture and gold mining.

**Justification** – *Ixora burundiensis* is a shrub or small tree to 16(–20) m tall, rarely a liana. It is known from 28 herbarium specimens, and the species might be considered relatively abundant. The specimens correspond to 17 unique occurrences. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, seven locations (*sensu* IUCN) have been defined, which is within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, we infer a continuing decline in extent and quality of the habitat.

**Bibliography** – Bridson & al. (1985), Bridson & Verdcourt (1988), De Block (1998, 2020), Fischer & Killmann (2008), Ntore & al. (2017c, 2018).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### **Ixora kalehensis** De Block

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(ii,iii,iv,v).

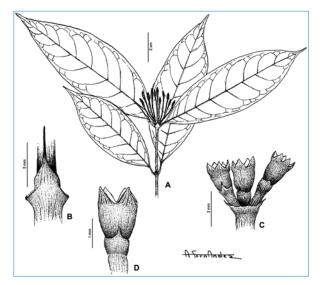
**Distribution** – Endemic to the Kivu Province, eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Humid forest; at 850-1,000 m.

**Protected areas** – The only collecting sites known are northwest of the eastern part of Kahuzi-Biega National Park, which is an unprotected area. There are no current conservation actions for the species.

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure. The Kivu Province is densely populated with most people depending on subsistence farming for their livelihood. As a result,





Ixora kalehensis: A, flowering branch; B, stipule; C, triad of flowers (corollas removed); D, bracteole, ovary and calyx. (A-D: Troupin 4662). Drawing by A. Fernandez, Meise Botanic Garden (©).

forest is cleared for agriculture and grazing of livestock, and wood is logged for building material and charcoal production. Additionally, large-scale poaching and artisanal mining take place. The vegetation in the region of Bunyakiri is strongly fragmented and only small forest patches remain in between agricultural and degraded terrains. The forest near Irangi has now completely disappeared (replaced by a vast oil palm plantation).

Justification – Ixora kalehensis is a tree to 15 m tall. It is known from two herbarium specimens collected in 1957 and 1958, one of which was discarded for evaluation because we can assume the habitat has disappeared (Irangi Forest, now an oil palm plantation). The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is currently known from a single location (sensu IUCN), which complies with the Critically Endangered category under condition 'a' of sub-criterion B2. We infer a continuing decline in the extent and quality of the habitat, and the disappearance of the occurrence in the former Irangi Forest has already caused a decline in the number of mature individuals, number of locations/subpopulations and the AOO. The region where Ixora kalehensis occurs is severely under-collected. Further collecting may reveal additional subpopulation of this possibly extinct species, as well as information about its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

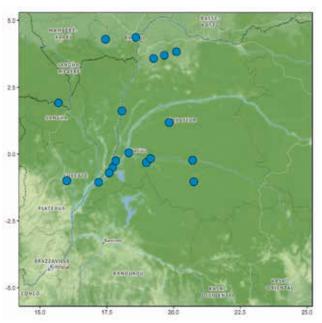
**Bibliography** – Aveling (2010), De Block (2018, 2020), Kirkby & al. (2015), UNESCO (2017a).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Ixora laurentii De Wild.

Red List category – Least Concern: LC.

**Distribution** – Centered in the Democratic Republic of the Congo but the north-western extremes of the distribution area penetrate the Republic of the Congo and the Central



African Republic. Extent of occurrence (EOO): 277,003 km²; Area of occupancy (AOO): 72 km².

**Habitat** – Marshy, riparian, riverine or inundated forest; at 300–550 m.

**Protected areas** – The species is present near the western edge of the northern part of Salonga National Park and in the Ngiri-Tumba-Maindombe Ramsar Site in DRC and in the Triangle de la Ngiri Nature Reserve and the Tchiapika-Owando Ramsar Site in the Republic of the Congo. There are no current conservation actions for the species outside these protected areas.



Ixora laurentii: A, flowering branch; B, fruiting branche; C, terminal triad of flowers, corollas removed; D, idem, atypical; E, bracteole, ovary and calyx; F, corolla, stamens and stigmas. (A, B: É. & M. Laurent s.n.; C: Évrard 3907; D, F: M. Laurent 508; E: Thollon s.n.). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

**Threats** – The main threat is the destruction of its natural habitat as a result of anthropogenic pressure from selective logging and shifting agriculture.

**Justification** – *Ixora laurentii* is a shrub or small tree to 6 m tall. It is known from 21 herbarium specimens, all collected before 1960, representing 18 unique occurrences and 18 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of known threats and protected area boundaries, 15 to 18 locations (sensu IUCN) can be distinguished, which exceeds the upper limit for the Vulnerable category under condition 'a' of sub-criterion B2. While Ixora laurentii is certainly threatened locally in some localities by forest clearing and destruction, its vast distribution area covers many potential localities with more intact forest. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Campbell & Hammond (1989), De Block (1998, 2020), Hepper (1979), Inogwabini & al. (2005), Küper (2006), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

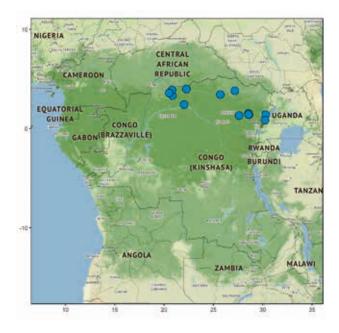
### \_ Ixora seretii De Wild.

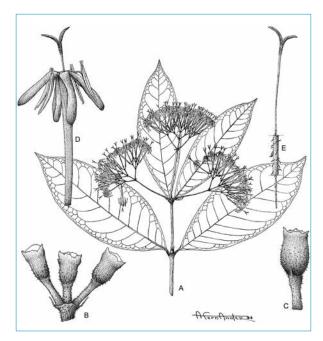
Red List category - Near Threatened: NT.

**Distribution** – Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO): 199,924 km<sup>2</sup>; Area of occupancy (AOO): 52 km<sup>2</sup>.

**Habitat** – Lowland to mid-elevation primary or secondary rainforest (often near rivers), gallery forest; at 400–1,200 m.

**Protected areas** – There are three collecting sites in the Okapi Wildlife Reserve. For the collecting sites occurring





Ixora seretii: A, flowering branch; B, terminal triad of flowers; C, bracteole, ovary and calyx; D, corolla, stamens and stigmas; E, style and stigmas, and detail of style. (A-C, E: Seret 381; D: Bequaert 4949). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

outside protected areas, there are no current conservation actions.

**Threats** – The main threat is the destruction of its natural habitat as a result of agricultural activities. The Okapi Wildlife Reserve is classified as a World Heritage Site in Danger.

**Justification** – *Ixora seretii* is a shrub or small tree to 7 m tall. It is known from 16 herbarium specimens, most of which were collected before 1965, though five recent specimens are available from Ituri (collected from 1987 to 2000). These specimens represent 13 unique occurrences and 12 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of known threats and protected area boundaries, 11 locations (sensu IUCN) can be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. We infer an ongoing loss of the quality and extent of the habitat in the near future. Since the species approaches the threshold of the Vulnerable category (10 locations), it is assessed it as Near Threatened. The region where Ixora seretii occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography – Bridson & Verdcourt (1988), Campbell & Hammond (1989), De Block (1998, 2020), Hepper (1979), Inogwabini & al. (2005), Küper (2006), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003), UNESCO & World Heritage Convention (2019).

Authors – P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Keetia angustifolia** Bridson

Red List category - Least Concern: LC.

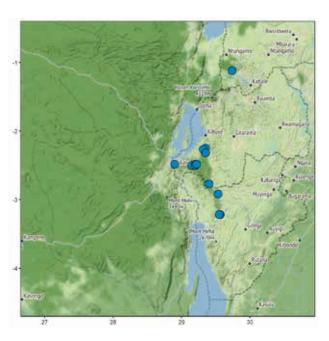
**Distribution** – Rwanda, Burundi and south-western Uganda. Extent of occurrence (EOO): 9,500 km²; Area of occupancy (AOO): 108 km².

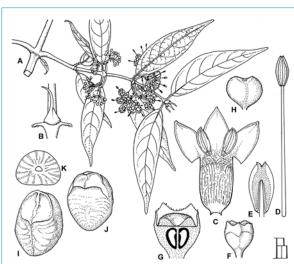
**Habitat** – Moist forest; at 1800–2450 m. The fruits are eaten by birds, who distribute the seeds.

**Protected areas** – This species is present in the Kibira National Park in Burundi, in the Nyungwe National Park in Rwanda and in the Bwindi National Park, Uganda.

**Threats** – All known sites are within protected areas.

Justification – Keetia angustifolia is a treelet, liana or climbing shrub to 20 m tall. It is known from 23 herbarium





Keetia angustifolia: A, flowering branch; B, stipule; C, corolla, longitudinal section; D, style; E, stigma, longitudinal section; F, calyx and hypanthium; G, idem, longitudinal section; H, fruit (H); J, pyrene; K, seed; L, idem, transverse section. (A-G: Bridson 398; H-L: Bridson 164). Drawing by Diane M. Bridson, Royal Botanic Gardens, Kew (©), reproduced with permission from Bridson (1986).

specimens collected between 1956 and 1999, representing 13 unique occurrences. The extent of occurrence (EOO) falls within the limits for the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the thresholds for the Endangered category under sub-criterion B2. In the absence of a threat, no locations could be defined. Thus, since the conditions required under sub-criterion B2 are not met, the species cannot be assessed in any threatened category. However, should any negative change occur in the status of the protected areas, this would rapidly change the Red List status.

**Bibliography** – Bridson (1986), Ntore & al. (2018, 2019b), Verdcourt & Bridson (1991).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, C.J. Kayombo, W.R.Q. Luke & S. Nshutiyayesu

#### \_ Oxyanthus letouzeyanus Sonké

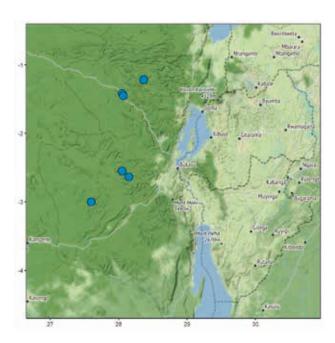
Red List category - Endangered: EN B2ab(iii)

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 6,833 km²; Area of occupancy (AOO): 24 km².

**Habitat** – Swamp forest; at 600–1,400 m. The seeds are likely dispersed by birds which consume their fleshy fruits (endozoochory).

**Protected areas** – One occurrence is situated at the edge of Kahuzi-Biega National Park. There are no current conservation actions for the subpopulations occurring in unprotected sites.

**Threats** – The species occurs in the Walikale Territory, which is located in tropical forest and is home to the largest tin deposits in DRC and to some very large gold mines, as well. Sadly, both official/industrial and unofficial/artisanal mining is rapidly destroying suitable habitats. Walikale is also a booming city for which the demand of charcoal and fuelwood for cooking is increasing, creating an ever-larger ring of degraded or destroyed forests around the city. The





Oxyanthus letouzeyanus: A, flowering twig; B, domatium; C, stipule; D, apical part of lower bud; E, pedicel and calyx; F, ovary, transversal section; G, stamens, frontal and dorsal view; H, apical part of style; I, fruiting twig; J, fruit; K, seed. (A, E, F, I-K: Michelson 893; B: Léonard 1628; C: Gutzwiller 1977; D, G, H: Lebrun 5135). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

edge of Kahuzi-Biega National Park, where the plant was collected, is not effectively protected.

Justification – Oxyanthus letouzeyanus is a shrub or small tree to 5 m tall. The species is known from six herbarium specimens representing six unique occurrences and five subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under subcriterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under subcriterion B2. Four locations (sensu IUCN) can be distinguished by geographic clustering with respect to scale of the main threat, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the habitat.

Bibliography – Réseau CREF (2015), Sonké (1999).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ Oxyanthus troupinii Bridson

**Red List category** – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – North-western Burundi, western Rwanda, eastern parts of The Democratic Republic of the Congo and



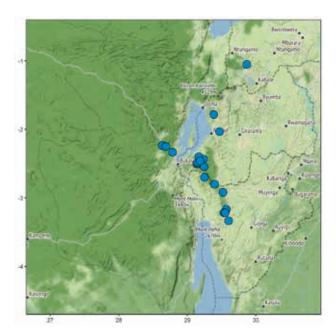


Oxyanthus troupinii: Stipules. Fruits. Mount Bigugu, Rwanda. Photos by Eberhard Fischer (©).

south-western Uganda. Extent of occurrence of  $8,295~\rm km^2$ ; Area of occupancy of  $171~\rm km^2$ .

**Habitat** – Montane forest; at 1,650–2,450 m. The seed is dispersed by animals (endozoochory).

**Protected areas** – Many specimens have been collected inside protected areas (the Kahuzi-Biega National Park in DRC, the Kibira National Park in Burundi, the Nyungwe National Park in Rwanda) and the Mafuga Forest Station in Uganda.



**Threats** – Within the Mafuga Forest Station the habitat is not protected very effectively. Six occurrences lie outside protected areas in small relictual forest patches where they are severely affected by the ever-increasing demands for land of the fast-growing human population. Important stretches of natural habitat are converted due to activities such as agriculture, livestock farming, firewood harvesting and mining.

Justification – Oxyanthus troupinii is a shrub or small tree to 12 m high. It is known from 21 herbarium specimens constituting 19 unique occurrences, collected between 1935 and 2008, and can be considered as moderately rare. The extent of occurrence (EOO) falls within the Vulnerable category under sub-criterion B1, while the area of occupancy falls within the Endangered category under sub-criterion B2. Based on the threats, nine locations (sensu IUCN) could be distinguished, which falls within the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, including the probable disappearance of the northernmost occurrence at the Mafuga Forest Station, we infer a continuing decline in EOO, AOO, extent and quality of the habitat, number of locations and number of mature individuals.

**Bibliography** – Bridson (1979), Fischer & Killmann (2008), Ntore & al. (2017c, 2018), Sonké (1999).

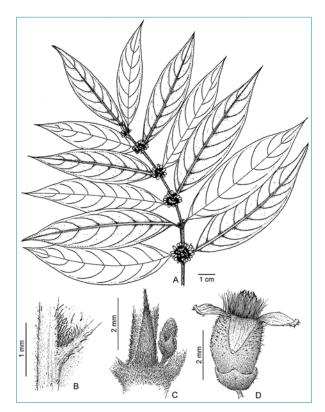
**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### Pauridiantha bequaertii (De Wild.) Bremek.

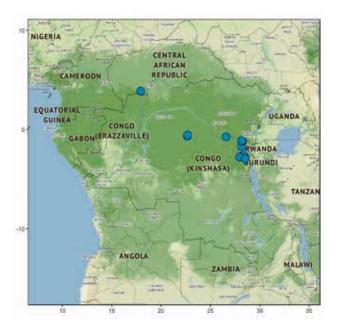
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – The Central African Republic and the Democratic Republic of the Congo. Extent of occurrence (EOO): 206,231 km²; Area of occupancy (AOO): 52 km².

**Habitat** – Rainforest; at 700–1,350 m. The seeds are dispersed by birds that consume their fleshy fruits (endozoochory).



Pauridiantha bequaertii: A, flowering branch; B, domatie; C, node and stipule; D, short-styled flower. (A: Bequaert 6758; B: A. Léonard 1672; C: A. Léonard 5843; D: Bytebier & Luke 2915). Drawing by Anja Vandeperre (A) and Antonio Fernandez (B, C, D), Meise Botanic Garden (©).



**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The species is facing forest conversion into cropland, logging (Bukoko, Matale, Lubimbe) and urban expansion (Lubutu), resulting in deforestation for charcoal production. In the territory of Walikale, which is considered to contain some of the biggest untapped reserves of mineral resources in the world, the habitat is potentially threatened by mining.

**Justification** – *Pauridiantha bequaertii* is a small tree, sometimes lianescent, to 7 m tall. It is known from 15 herbarium specimens collected between 1915 and 1959, representing 13 unique occurrences and 11 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on geographic clustering with respect to scale of the main threat ,7 to 10 locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information above, it is reasonable to infer a decline in the extent and quality of the habitat.

Bibliography – Ntore (2007), Ntore & Lachenaud (2020).

Authors – S. Ntore, M. Simo-Droissart & W. Tack

#### Pauridiantha kahuziensis Ntore

Red List category - Least Concern: LC.

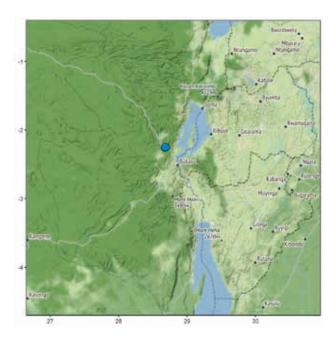
**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 4 km<sup>2</sup>; Area of occupancy (AOO): 4 km<sup>2</sup>.

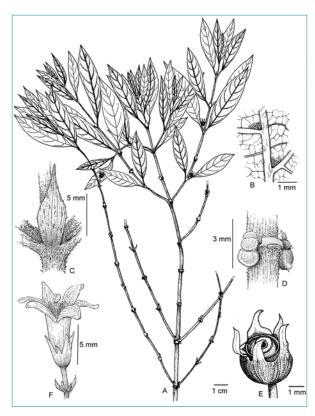
**Habitat** – Montane forest; at 2,970–3,000 m. The seeds are likely dispersed by birds that consume their fleshy fruits (endozoochory).

**Protected areas** – All known occurrences are situated in a well-managed part of a protected area, the Kahuzi-Biega National Park.

**Threats** – Since all occurrences are situated in a well-managed part of the protected area where it is not under threat from human activities, no threats can be identified.

**Justification** – *Pauridiantha kahuziensis* is a shrub or small tree to 5.5 m tall. It is known from four herbarium collections collected at the top of Mount Kahuzi, where it grows in abundance. These four specimens represent three unique





Pauridiantha kahuziensis: A, fruiting branch; B, domaties; C, stipule; D, node of old branch; E, fruit; F, flower. (A-E: Léonard 4802; F: Ithe 512). Drawing by Anja Vandeperre (A, B, E) et Antonio Fernandez (C, D, F), Meise Botanic Garden (©).

occurrences and one subpopulation. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits of the Critically Endangered category under sub-criterion B1 and B2. Since no threat can be identified, no locations could be defined. Though as a consequence the species is listed as Least Concern, it may quickly become Critically Endangered if the local situation within the protected area changes, and thus it is dependent of the management of this protected area.

Bibliography – Ntore (2007), Ntore & Lachenaud (2020).

Authors – S. Ntore, M. Simo-Droissart & W. Tack

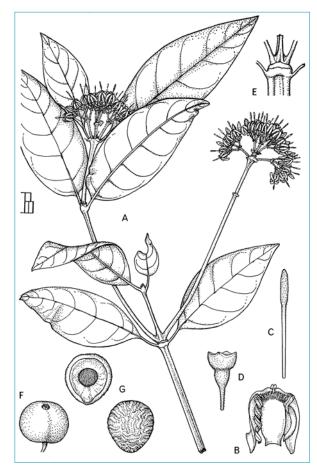
#### Pavetta ankolensis Bridson

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – North-eastern part of the Democratic Republic of the Congo and south-western Uganda. It is endemic to the Kivu-Ruwenzori Domain of the Afromontane region and occurs only in the Albertine Rift in the region of Lake Kivu and Lake Edward (Uganda). Extent of occurrence (EOO): 3,341 km²; Area of occupancy (AOO): 20 km².

Habitat – Montane forest close to rivers; at 1,000–2,200 m.

**Protected areas** – Two of the five collecting sites occur within protected areas: the Queen Elizabeth National Park and the Kalinzu Forest Reserve in Uganda. The other three

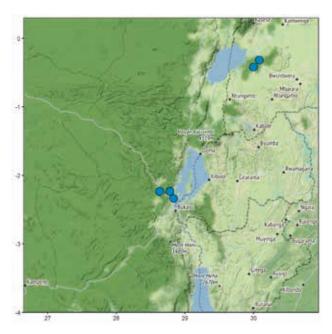


Pavetta ankolensis: A, flowering branch; B, half corolla; C, stigma and style; D, calyx; E, stipule; F, fruit; G, seed (2 views). (A-E: Eggeling 3709; F, G: Pierlot 3225). Drawing by Diana Bridson, reproduced with permission from Bridson (1978).

collecting sites are close to but not inside the eastern montane part of the Kahuzi-Biega National Park in DRC. There are no current conservation actions for the species outside protected areas.

Threats – The main threat is the destruction of the habitat as a result of anthropogenic pressure. The region of the Great Lakes in eastern DRC and western Uganda, where Pavetta ankolensis occurs, is densely populated with most people depending on subsistence farming for their livelihood. As a result, forest is cleared for agriculture and grazing of livestock, wood is logged for building material and firewood, and large-scale poaching and artisanal mining take place. The DRC collecting sites are close to habitation with the surrounding forests cleared and highly fragmented. However, except for the southernmost locality (Lwamisole), they have more intact forests within a reasonable distance. In Uganda, the collecting site at Kasunju Hill is within the well protected Queen Elizabeth National Park. The second Ugandan locality (Kalinzu) is within a forest reserve with ongoing community-based conservation schemes.

**Justification** – *Pavetta ankolensis* is a shrub or small tree to 4 m tall. It is known from five herbarium specimens, all collected before 1971, which represent five unique occurrences and three subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the



thresholds of the Endangered category under the sub-criteria B1 and B2. Relative to the scale of known threats and protected area boundaries, four or five locations (sensu IUCN) can be defined, which complies with the Endangered category under condition B1a and B2a. With the three unprotected southern occurrences subject to degradation and potential disappearance in the near future, a decline in the extent and quality of the habitat, AOO, EOO, and the number of mature individuals and subpopulations is inferred. The region where Pavetta ankolensis occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Aine-omucunguzi (2009), Aceling (2010), Bridson (1978), Kirkby & al. (2015), Papaco (2015), Plumptre (2002), UNESCO (2017a).

Authors - P. De Block, M. Simo-Droissart & W. Tack

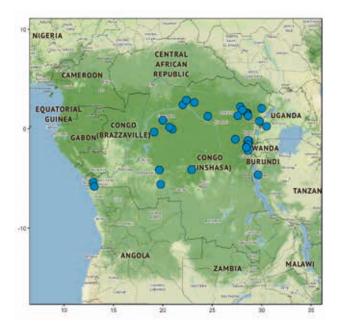
#### \_ Pavetta intermedia Bremek.

Red List category - Least Concern: LC.

**Distribution** – Widely distributed across the Congo Basin in the Democratic Republic of the Congo, also known from south-western Uganda (two specimens) and western Tanzania (one specimen). Extent of occurrence (EOO): 1,225,954 km²; Area of occupancy (AOO): 136 km².

**Habitat** – Rainforest, *Gilbertiodendron dewevrei* forest, gallery forest, montane forest, more rarely in semi-deciduous forest; at 575–1,950 m.

**Protected areas** – One collecting site occurs in the Virunga National Park (DRC) and one in Gombe National Park (Tanzania), five more in the Okapi Wildlife Reserve (DRC), and one in the Mangai Nature Reserve (DRC). For the collecting sites occurring outside protected areas, there are no current conservation actions for the species or its habitat.





Pavetta intermedia: Holotype specimen at BR (Bequaert 3136).

**Threats** – The main threat is the destruction of the habitat for shifting agriculture, charcoal production and mining.

**Justification** – *Pavetta intermedia* is a shrub or small tree to 6 m tall. It is known from 51 herbarium specimens, of which 41 were collected before 1960 and six after 1999, representing 34 unique occurrences and 26 subpopulations. The

extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. With respect to the scale of known threats and protected area boundaries, 26 locations (sensu IUCN) can be distinguished, which far exceeds the upper limit for the Vulnerable category under condition 'a' of sub-criterion B2. While Pavetta intermedia is certainly threatened in some localities by forest clearing and destruction, the species is not threatened because it does not meet the thresholds for any threatened category. The Congo Basin is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Bridson & Verdcourt (1988), Campbell & Hammond (1989), Hepper (1979), Inogwabini & al. (2005), Küper & al. (2006), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Pavetta rwandensis Bridson

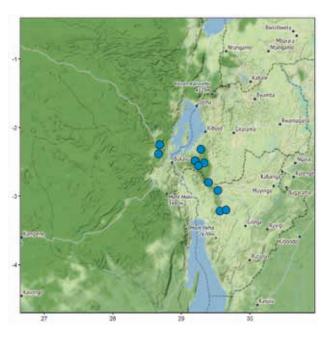
Red List category – Least Concern: LC.

**Distribution** – Endemic to the Congo-Nile Ridge in western Burundi and western Rwanda, as well as the eastern parts of The Democratic Republic of the Congo. Extent of occurrence (EOO): 4,397 km²; Area of occupancy (AOO): 90 km².

**Habitat** – Montane thickets; at 2,000–2,750 m. The seed is dispersed by animals (endozoochory).

**Protected areas** – All known occurrences are situated within protected areas: the Kahuzi-Biega National Park in DRC, the Kibira National Park in Burundi and the Nyungwe National Park in Rwanda.

**Threats** – All known sites are within effectively protected areas, and thus its habitat should be safe.





**Pavetta rwandensis**: Inflorescence. Uwinka, Rwanda. Photo by Eberhard Fischer (©).

**Justification** – *Pavetta rwandensis* is a shrub or a small tree to 5 m tall, sometimes a liana to 7 m tall. It is known from 11 herbarium specimens, collected between 1959 and 1999, representing nine unique occurrences; the species could be considered as rare. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits of the Endangered category under sub-criteria B1 and B2. Due to the absence of threats, no locations could be distinguished. The species is thus considered as Least Concern, but its status is entirely dependent on the effective conservation and management of the habitat within the protected areas.

**Bibliography** – Bridson (1978), Bridson & al. (1985), Fischer & Killmann (2008), Ntore & al. (2017d, 2018).

**Authors** – S. Ntore, S. Nshutiyayesu, M. Mwangoka, M. Maunder, W.R.Q. Luke, J. Kalema, C. Kabuye, R. Gereau & H.J. Beentje

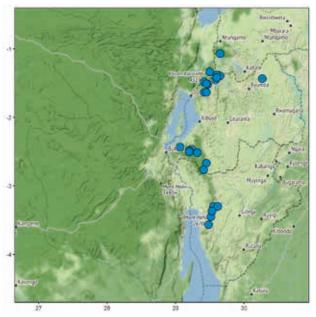
### \_ **Pavetta urundensis** Bremek.

Red List category – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Near-endemic to the Albertine Rift, in western Burundi, western Rwanda, the Democratic Republic of the Congo and south-western Uganda. Extent of occurrence (EOO): 18,720 km²; Area of occupancy (AOO): 207 km².

**Habitat** – Montane forests; at 1,850–2,600 m. The seed is dispersed by animals (endozoochory).

**Protected areas** – Most of the specimens were collected within protected areas: the Kibira National Park in Burundi, the Nyungwe National Park and the Volcanoes National Park in Rwanda, the Virunga National Park in DRC, and the Bwindi Impenetrable National Park in Uganda.







Pavetta urundensis: Top of twig with stipule. Inflorescence. Mount Sabyinyo. Photos by Eberhard Fischer (©).

**Threats** – For the occurrences outside the protected areas, the main threats are forest loss due to conversion for agriculture and pasturage, plus wood harvesting for firewood and construction. The DRC sites included a mine for bastnasite, but that is now closed. The southernmost sites just outside Kibira in Burundi are threatened as they are being systematically converted to agricultural smallholdings.

**Justification** – Pavetta urundensis is a shrub or small tree to 5(-7) m tall. It is known from 32 herbarium specimens representing 23 unique occurrences, of which the most recent was collected in 1999, and might be considered as moderately common. The type specimen (Meyer 1037) destroyed in B and without a detailed locality in the protologue, has not been taken into account in the calculation of EOO and AOO. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under subcriterion B1, and the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the threats, nine locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, we infer a continuing decline of the quality of the habitat, and in the number of locations, EOO, AOO and the number of mature individuals due to the probable loss of the southernmost sites outside Kibira.

Bibliography – Ntore (2017e, 2018), Troupin (1985).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### \_ **Pavetta yambatensis** Bremek.

Red List category - Data Deficient: DD.

**Distribution** – Endemic to the north-central part of the Congo Basin in the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat – Plateau forest; at c. 400 m.





Pavetta yambatensis: Holotype specimen at BR (De Giorgi 1718).

**Protected areas** – The only known collecting site occurs in an unprotected area. No conservation measures are known for this species.

**Threats** – The main threat is the destruction of suitable habitat as a result of anthropogenic pressure. The single occurrence (Yambata) is close to habitation with the surrounding forests cleared and strongly fragmented.

**Justification** – Pavetta yambatensis is a tree of unknown height. The species is only known from the type collection made in 1914 near Yambata, representing a single unique occurrence and a single subpopulation. Its area of occupancy (AOO) complies with the Critically Endangered category under sub-criterion B2. Based on the threat, one location (sensu IUCN) can be defined, which is the upper limit for Critically Endangered status under condition 'a' of sub-criterion B2. However, the species-level taxonomy of the genus Pavetta is weak, notably that of the subgenus Baconia, to which Pavetta yambatensis belongs. It has no morphological characteristics that make it stand out among the other species. In fact, Pavetta yambatensis shows a close similarity to the widespread and variable Pavetta intermedia. Furthermore, large numbers of unidentified Central African specimens of species belonging to subgenus Baconia are present in the herbarium of Meise Botanical Garden (BR). The Congo Basin is severely under-collected. Further collecting is especially important for Pavetta yambatensis since this species is only known from a single specimen. More material would give a better understanding of the taxonomic status and distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography – Bremekamp (1934), Manning (1996).

Authors - P. De Block, M. Simo-Droissart & W. Tack

# \_ **Psychotria chalconeura** (K.Schum.) E.M.A.Petit subsp. **duboisii** O.Lachenaud

Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 612 km²; Area of occupancy (AOO): 12 km².

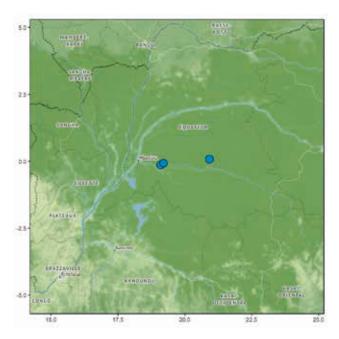
**Habitat** – Lowland swamp forest; at 300–400 m. Pollination is presumably by insects, and seed dispersal is presumably by birds.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

**Threats** – The habitat is threatened by small-scale shifting agriculture.



**Psychotria chalconeura** subsp. *duboisii*: Herbarium specimen at BR (*Dubois 727*).



**Justification** – *Psychotria chalconeura* subsp. *duboisii* is a shrub or small tree to 4 m tall. It is known from four herbarium specimens collected between 1934 and 1959, of which only three could be georeferenced (the locality of the fourth being too imprecise). These three collections represent unique occurrences and three subpopulations. Its extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. The three georeferenced occurrences represent two locations (*sensu* IUCN) with regards to the most serious plausible threat (shifting agriculture). We infer a continuing decline in area, extent and quality of its habitat.

Bibliography - Lachenaud (2019).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

#### \_ Psychotria parvistipulata E.M.A.Petit

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

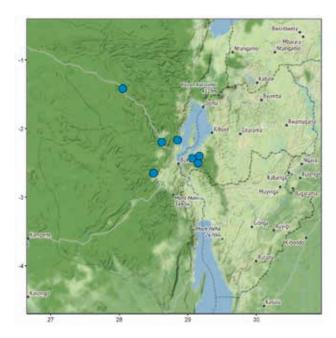
**Distribution** – Eastern Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): 5,971 km²; Area of occupancy (AOO): 63 km².

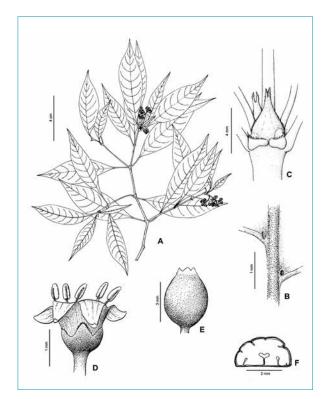
Habitat – Montane forest; at 1,700–2,100 m.

**Protected areas** – The species occurs in the Nyungwe and Kahuzi-Biega National Parks.

**Threats** – The occurrences outside of the protected areas, such as at Masisi and near Lake Kivu, are threatened by agriculture and are probably completely gone, as these areas are very densely populated.

**Justification** – *Psychtoria parvistipulata* is a shrub or small tree to 3.5 m tall. It is known from 12 herbarium specimens, collected between 1956 and 1980, constituting seven unique occurrences. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, while the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based





Psychotria parvistipulata: A, flowering branch; B, detail of lower leaf surface with domatia; C, node with stipules; D, flower; E, fruit; F, fruit, transversal section. (B, E, F: A. Léonard 5140; D: Van Der Veken 10943). Drawing by Dominic Troupin (A, C; ©) and Antonio Fernandez (B, D-F), Meise Botanic Garden (©), reproduced with permission from Troupin (1985) and Lachenaud (2019).

on the scale of the threats, the number of locations (sensu IUCN) is four or five, which complies with the Endangered category under condition 'a' of sub-criterion B2. Based on regional environmental degradation and the very probable disappearance of the northernmost occurrence at Masisi, we infer a continuing decline in all key measurements (AOO, EOO, habitat extension, number of locations and number of mature individuals).

**Bibliography** – Lachenaud (2019), Ntore & al. (2019d), Petit (1964).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, C.J. Kayombo, W.R.Q. Luke & S. Nshutiyayesu

#### \_ Psychotria sublyrata O.Lachenaud

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

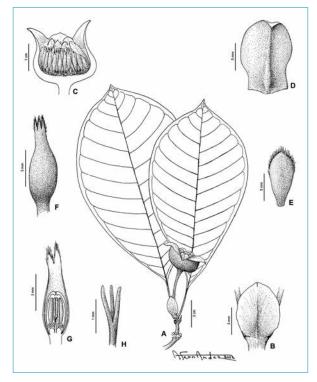
**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 583 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Montane and submontane evergreen forest; at 1,500–2,150 m.

**Protected areas** – Two occurrences are situated within the Kibira National Park (Burundi). The two other collecting sites are located in unprotected areas. There are no current conservation actions for the species in those areas.

**Threats** – In Rwanda, the main threat is the conversion of suitable habitat for agricultural purposes (both traditional and industrial such as tea plantations). In the DRC, the threat is the same and there are still shreds of forest left, but the occurrence has probably disappeared.

**Justification** – *Psychotria sublyrata* is a shrub or small tree to 6 m tall. It is known from five herbarium specimens collected between 1959 and 2012, one of which could not be georeferenced (locality data too imprecise). These repre-



Psychotria sublyrata: A, flowering branch; B, stipules; C, inflorescence in bud, longitudinal section; D, median bract; E, internal bract; F, flower bud surrounded by calyx; G, flower bud, longitudinal section; H, style. (A-H: A. Léonard 3929). Drawing by Antonio Fernandez, Meise Botanic Garden (©).



sent four unique occurrences and three subpopulations. The extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. The three subpopulations represent three locations (sensu IUCN), which falls within the limits of the Endangered category under condition B1a and B2a. A decline in habitat extent and quality is observed, and a decline in number of individuals, number of subpopulations, AOO and EOO is suspected due to the probable disappearance of the occurrence in the DRC. Efforts should be made to relocate known collecting sites and find additional sites, especially in nearby protected areas (Kahuzi-Biega National Park in DRC, Nyungwe National Park in Rwanda). Effective measures should be taken to protect the locality in Kibira National Park. Ex situ conservation actions are also recommended.

Bibliography - Lachenaud (2019).

Authors – O. Lachenaud, M. Simo-Droissart & W. Tack

## \_ **Psydrax parviflora** (Afzel.) Bridson subsp. **melanophengos** (Bullock) Bridson

Red List category – Least Concern: LC.

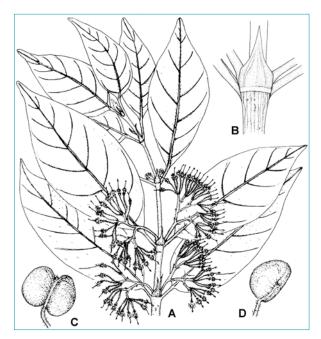
**Distribution** – South-western Rwanda, western Burundi and south-western Uganda. Extent of occurrence (EOO): 872 km²; Area of occupancy (AOO): 45 km².

**Habitat** – Presumably lower montane forest; at 1,500–1,850 m.

**Protected areas** – All occurrences are from within protected areas: the Kibira National Park, Nyungwe N.P. and Bwindi Impenetrable N.P.

**Threats** – Since all known subpopulations are within effectively protected areas, no threat could be defined.

**Justification** – *Psydrax parviflora* subsp. *melanophengos* is a medium-sized tree to 20 m tall. It is known from seven herbarium specimens representing five unique occurrences



**Psydrax parviflora** subsp. **melanophengos**: A, flowering branch; B, stipule; C, flower; D, infrutescence; E, fruit. Drawing by D. Troupin (©), reproduced with permission from Troupin (1982).



collected between 1955 and 1980. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits for the Endangered category under sub-criteria B1 and B2. As it is found exclusively within effectively protected areas, no locations could be defined and it has therefore been classified as Least Concern. However, should any negative change occur in the status of the protected areas within which the taxon is found, this would rapidly change its Red List status to a threatened category, and thus the taxon is Protected Area Dependent.

**Bibliography** – Ntore & al. (2018, 2019e), Protected Planet (2019), Verdcourt & Bridson (1991).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, C.J. Kayombo, W.R.Q. Luke & S. Nshutiyayesu

**\_Rytigynia acuminatissima** (K.Schum.) Robyns subsp. **pedunculata** Verdc.

Red List category – Critically Endangered: CR B2ab(iii,v).

**Distribution** – Endemic to the Congo-Nile divide in western Burundi; Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 9 km<sup>2</sup>.

**Habitat** – The subspecies occurs in undergrowth of montane forests; at 1,950 m. Long-distance seed dispersal is likely by birds (endo-ornithochory).

**Protected areas** – The subspecies is not known to occur in any protected areas.

**Threats** – The single occurrence is under serious threat of habitat loss caused by agriculture and deforestation.

Justification – Rytigynia acuminatissima subsp. pedunculata is a shrub or small tree to 4 m tall. It is known from two herbarium specimens, collected in 1981, and it should be considered as rare. These specimens represent one unique occurrence and one subpopulation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threat, a single locality (sensu IUCN) is distinguished, which complies with the Critically Endangered category according to condition 'a' under sub-criterion B2. It is inferred that this ongoing threat to the habitat will result in a continuing decline in the extent and quality of habitat and number of mature individuals.



Rytigynia acuminatissima subsp. pedunculata: Holotype specimen at K (Reekmans 9816).



Bibliography – Ntore (2017f, 2018), Verdcourt (1987).

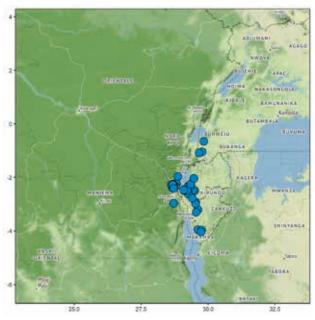
**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### \_ Rytigynia bridsoniae Verdc.

**Red List category** – Near Threatened: NT.

**Distribution** – Endemic to the Congo-Nile Divide, occurring in western Burundi, western Rwanda, eastern Democratic Republic of the Congo and south-western Uganda. Extent of occurrence (EOO): 25,921 km²; Area of occupancy (AOO): 324 km².

**Habitat** – Understorey of evergreen montane forest; at 1650–3000 m.



**Protected areas** – Sixteen collecting sites lie within five protected areas: the Nyungwe National Park and the Gishwati-Mukura National Park in Rwanda, the Kahuzi-Biega National Park in the Democratic Republic of the Congo, the Bwindi Impenetrable National Park in Uganda and the Kibira National Park in Burundi. The 14 other sites lie outside protected areas.

**Threats** – Outside the protected areas, the remnant forest patches are under threat related to human population growth. The increased human activities, including deforestation for agriculture, cattle grazing and wood harvesting, play a huge role in the degradation of the suitable habitat for the species.

Justification – Rytigynia bridsoniae is a shrub or small tree to 5 m tall. It is known from 57 herbarium specimens collected between 1947 and 1980, which represent 30 unique occurrences and might be considered as moderately common. The extent of occurrence (EOO) exceeds the upper limits of the Vulnerable category under sub-criterion B1, while the area of occupancy (AOO) falls within the limits for the Endangered category under sub-criterion B2. Based on the scale of the threats, 14 locations (sensu IUCN) can be defined, which falls outside of the Vulnerable category according to condition 'a' under sub-criterion B2. The threats also lead us to infer a continuing decline of habitat quality, of the number of populations, of mature individuals and of AOO. Since the number of locations might decrease as a result of the threats, the species could enter the Vulnerable category in the near future.

**Bibliography** – Ntore & al. (2018, 2019f), Troupin (1985), Verdcourt (1985, 1987).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, W.R.Q. Luke & S. Nshutiyayesu

### \_ **Rytigynia bridsoniae** Verdc. subsp. **bridsoniae**

Red List category – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

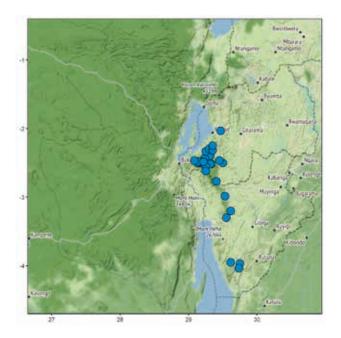
**Distribution** – Rwanda, Burundi and south-western Uganda; Extent of occurrence (EOO): 6,866 km²; Area of occupancy (AOO): 225 km².

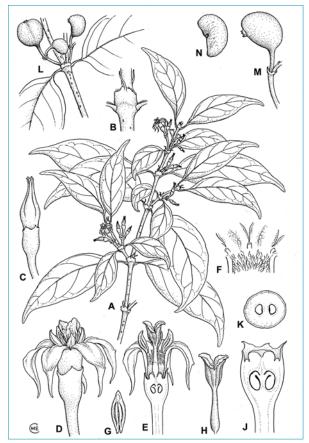
**Habitat** – Bamboo forest, mixed montane forest; at 1650–2350 m.

**Protected areas** – Most of the collecting sites are situated within three protected areas: the Nyungwe National Park in Rwanda, the Kibira National Park in Burundi, Bwindi Impenetrable N.P. in Uganda, and one is close to the Gishwati- Mukura National Park wherein it is likely present.

**Threats** – The occurrences situated outside of protected areas are exposed to severe threats. The Kumuyange habitat is severely damaged by slash and burn agriculture and the population is considered extirpated. In Bugarama there is planting of alien timber species, livestock farming and forest clearing. At Mabayi, northern Burundi, gold mining is a threat.

**Justification** – *Rytigynia bridsoniae* subsp. *bridsoniae* is a shrub or small tree. The subspecies is represented in herbaria by 46 specimens collected between 1947 and 1980,





Rytigynia bridsoniae subsp. bridsoniae: A, flowering branch; B, stipules; C, flower bud; D, flower; E, idem, longitudinal section; F, inside upper part of corolla tube; G, anther; H, style and stigma; J, ovary, longitudinal section; K, idem, transverse section; L, fruiting twig; M, fruit; N, seed. Drawing by Maureen Church (©), reproduced with permission from Verdcourt (1987).

representing 27 unique occurrences, and might be considered as moderately common. The extent of occurrence (EOO) falls within the limits for the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits for the Endangered category

under sub-criterion B2. Based on the scale of the threats, ten locations (*sensu* IUCN) can be defined, which falls within the Vulnerable category according to condition 'a' under sub-criterion B2. Due to the threats mentioned and the loss of the Kumuyange occurrence, we infer a decline in habitat quality, mature individuals, number of locations, as well as in EOO and AOO.

**Bibliography** – Ntore & al. (2018, 2019g), Verdcourt (1985, 1987).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, W.R.Q. Luke & S. Nshutiyayesu

### \_**Rytigynia bridsoniae** Verdc. subsp. **kahuzica** Verdc.

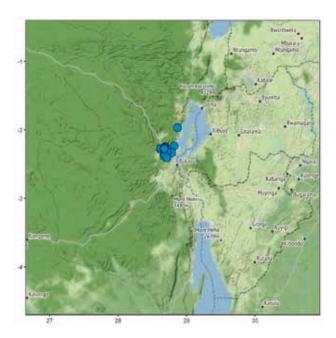
Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Known only from the Kivu Province in eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 540 km²; Area of occupancy (AOO): 48 km².

Habitat – Montane forest; at 2,050–3,200 m.

**Protected areas** – Twelve out of the 17 collecting sites of the taxon occur within the Kahuzi-Biega National Park, at higher elevations. There are no current conservation actions for the subpopulations occurring in unprotected sites.

Threats – In the lower-lying part of Kahuzi-Biega National Park, threats include forest clearing for cropland, livestock farming, wood harvesting and mining. At the higher elevations, where the gorillas occur, there are no severe threats because the area is well-protected to ensure income from gorilla tourism. A few threats that occur at this elevation are illegal logging and livestock farming. Deforestation for agricultural expansion and wood harvesting for fuelwood and charcoal production takes place at Nyawarongo, foothills W of Katuna and Musisi valley. Another threat is mining for cassiterite, coltan, gold and wolframite in the foothills of Katuna.





Rytigynia bridsoniae subsp. kahuzica: Holotype specimen at BR (A. Léonard 4772).

**Justification** – *Rytigynia bridsoniae* subsp. *kahuzica* is a small tree. It is known from 28 herbarium specimens collected between 1945 and 2010, representing 18 unique occurrences and three subpopulations. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Based on geographic clustering with respect to the scale of the main threat, four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. Based on the information we have, it is reasonable to infer a decline in extent and quality of its habitat.

Bibliography – Verdcourt (1987).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### **Rytigynia dewevrei** (De Wild. & T.Durand) Robyns

Red List category - Near Threatened: NT.

**Distribution** – Republic of the Congo, Angola (Cabinda), and Democratic Republic of the Congo. Extent of occurrence (EOO): 23,372 km²; Area of occupancy (AOO): 76 km².

**Habitat** – Understorey of rainforest; at 10–470 m. The seeds are dispersed by birds which consume the fleshy fruits (endo-ornithochory).





Rytigynia dewevrei: Herbarium specimen at BR (Donis 1461).

**Protected areas** – Two collecting sites occur within two protected areas, the Luki Biosphere Reserve and the Mangrove Nature Reserve. There are no current conservation actions for the subpopulations occurring outside protected areas.

**Threats** – The main threat to the habitat is forest conversion for agriculture, followed by cattle farming and selective logging for charcoal production and firewood.

**Justification** – *Rytigynia dewevrei* is a shrub or sometimes a small tree to 4 m tall, with a trunk to 10 cm in diameter. It is known from 28 herbarium specimens collected between 1890 and 2011, representing 19 unique occurrences and 15 subpopulations. The extent of occurrence (EOO) just exceeds the limits of the Vulnerable category under subcriterion B1, and its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 12 locations (sensu IUCN) have been defined, which is just above the limit for the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, we infer an ongoing decline in the extent and quality of the habitat. Despite its restricted AOO and ongoing habitat degradation, Rytigynia dewevrei cannot be regarded as threatened under the IUCN Red List criteria since the conditions for applying a threatened category are not met, but the number of locations is close to such a threshold.

Bibliography – Robyns (1928).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

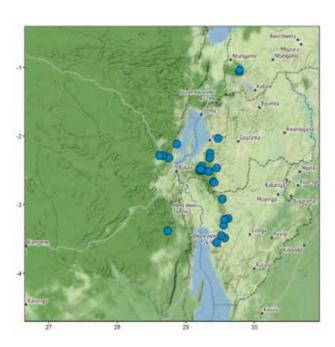
#### \_ Rytigynia kigeziensis Verdc.

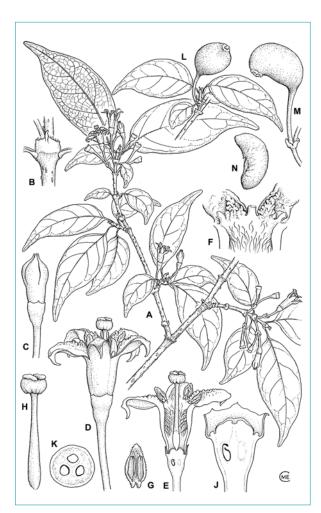
Red List category – Vulnerable: VU B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Congo-Nile Ridge, in western Rwanda, western Burundi and south-western Uganda. Extent of occurrence of 8,902 km²; Area of occupancy of 207 km².

**Habitat** – Evergreen forest of *Prunus*, *Polyscias*, *Albizia*, *Maesa*, *Xymalos*, etc.; at 1,800–2,700 m. The seed is probably dispersed by animals (endozoochory).

**Protected areas** – Many specimens were collected within three protected areas: the Kibira National Park in Burundi, the Nyungwe National Park in Rwanda and the Bwindi Impenetrable National Park in Uganda, where their habitat should be secure.





Rytigynia kigeziensis: A, flowering twig; B, stipules; C, flower bud; D, flower; E, idem, longitudinal section; F, inside upper part of corolla tube; G, anther; H, style and stigma; J, ovary, cross section; K, idem, transverse section; L, fruiting twig; M, fruit; N, pyrene. Drawing by Maureen Church (©), reproduced with permission from Verdcourt (1987).

**Threats** – The main threats to the occurrences situated outside protected areas are deforestation for agriculture and wood harvesting.

**Justification** – *Rytigynia kigeziensis* is a shrub or small tree to 8 m tall. It is known from 44 herbarium specimens collected between 1949 and 1999, representing 26 unique occurrences, and might be considered as moderately common. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threat, seven locations (*sensu* IUCN) have been defined, which falls within the limits for the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, we infer a continuing decline of the quality of habitat.

**Bibliography** – Ntore & al. (2017g, 2018), Troupin (1985), Verdcourt (1987).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

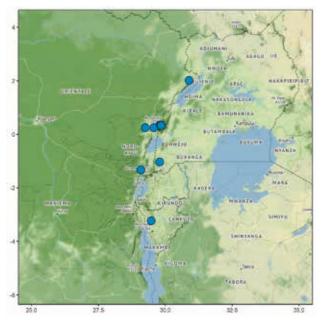
#### \_ **Rytigynia ruwenzoriensis** (De Wild.) Robyns

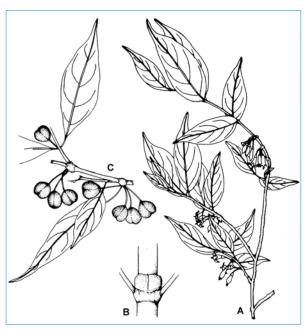
Red List category – Vulnerable: VU B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Albertine Rift, where it occurs in north-eastern Democratic Republic of the Congo, Rwanda, western Burundi and south-western Uganda. Extent of occurrence of 13,876 km²; Area of occupancy of 99 km².

**Habitat** – Understorey of evergreen forest; at 1,400–2,400 m. The seed is probably dispersed by animals (endozoochory).

**Protected areas** – Most of the specimens were collected within three protected areas: the Kibira National Park in Burundi, the Virunga National Park in DRC, and the Bwindi Impenetrable National Park in Uganda.





Rytigynia ruwenzoriensis: A, flowering twig; B, stipule; C, fruiting twig. Drawing by D. Troupin (©), reproduced with permission from Bridson & al. (1985).

**Threats** – The Burundi sites at Rugazi and Bugaramaare are under great threat of complete habitat loss due to rapid human population growth, involving complete deforestation for agricultural land.

Justification – Rytigynia ruwenzoriensis is a shrub or small tree, known from 17 herbarium specimens collected between 1914 and 1981, representing 10 unique occurrences, and might be considered as moderately scarce. The extent of occurrence (EOO) far exceeds the upper limit for the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits for the Endangered category under sub-criterion B2. Based on the scale of the threats, six locations (sensu IUCN) have been defined, which falls within the limits for the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, and the likely disappearance of one or maybe two of its southernmost occurrences, we infer a continuing decline in the AOO, EOO, extent and quality of the habitat, number of subpopulations and number of mature individuals.

**Bibliography** – Ntore & al. (2018, 2020), Robyns (1928), Verdcourt & Bridson (1991).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### \_ **Rytigynia squamata** (De Wild.) Robyns

Red List category - Critically Endangered: CR B2ab(iii).

**Distribution** – Endemic to eastern Democratic Republic of the Congo, near Kisangani. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - Rainforest; at around 400 m.

**Protected areas** – The only known collecting site occurs in unprotected area. There are no current conservation actions for the species.

**Threats** – The species is threatened by small-scale shifting agriculture.





Rytigynia squamata: Type specimen at BR (Claessens248).

**Justification** – *Rytigynia squamata* is a small tree. It is only known from the type collection made in 1921, representing one unique occurrence and one subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threat, one location (*sensu* IUCN) can be defined, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Forest clearing for agricultural purposes is leading to a continuing decline in area, extent and quality of the species' habitat.

Bibliography – De Wildeman (1922).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ Sericanthe burundensis Robbr.

Red List category - Endangered: EN B1ab(iii)+2ab(iii)

**Distribution** – Endemic to the Congo-Nile Ridge in western Burundi. Extent of occurrence (EOO): 644 km²; Area of occupancy (AOO): 63 km².

**Habitat** – Montane rainforest undergrowth; at 1,900–2,500 m. Short-distance seed dispersal by animals seems likely (endozoochory).

**Protected areas** – Most of the occurrences lie within two protected areas: the Kibira National Park and the Bururi Forest Nature Reserve.

**Threats** – The occurrences within protected areas seem reasonably safe. Four collecting sites are near to but outside of the Bururi Forest and are subject to threats of agricultural conversion and wood harvesting.

**Justification** – *Sericanthe burundensis* is a shrub or small tree to 6 m tall, often climbing and reaching 12 m tall. This





Sericanthe burundensis: Herbarium specimen at BR (Reekmans 10621).

species is known from 13 herbarium specimens collected between 1970 and 2014, representing eight unique occurrences, and might be considered as moderately rare. The extent of occurrence (EOO) and the area of occupancy (AOO) both comply with the criteria for the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, three locations (sensu IUCN) could be defined, which falls within the Endangered category under condition 'a' of sub-criterion B2. Based on the above, we infer a continuing decline of the quality of the habitat.

**Bibliography** – Ntore & al. (2017h, 2018), Robbrecht (1978).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

#### \_ Sericanthe halleana Robbr.

Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Kivu Province, eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,357 km<sup>2</sup>; Area of occupancy (AOO): 12 km<sup>2</sup>.

Habitat - Rainforest; at 1,250-1,400 m.

**Protected areas** – The three known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – All three collecting sites occur in densely populated areas with threats of forest clearing for cropland and livestock farming, fuelwood collecting and charcoal production (for Goma, esp. Bunyakiri); at Kirambi Masisi the forest is almost completely gone (replaced by potato fields). At Hunga (Walikale Terr.), although the exact locality is not very precisely indicated, the region of Walikale has mining (tin, gold, cassiterite) and Walikale town has a very high demand for charcoal and wood.

**Justification** – *Sericanthe halleana* is a small tree to 10 m tall. It is known from three herbarium specimens collected between 1957 and 1959, representing three unique occur-





Sericanthe halleana: Holotype specimen at BR (A. Léonard 3189).

rences and three subpopulations. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the thresholds of the Endangered category under subcriteria B1 and B2. The three subpopulations represent three locations (sensu IUCN) distinguished by geographic clustering with respect to the scale of the main threat, which falls within the limits of the Endangered category under condition B1a an B2a. Based on the information we have, it is reasonable to infer a decline in extent and quality of the species' habitat.

Bibliography – Robbrecht (1978).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

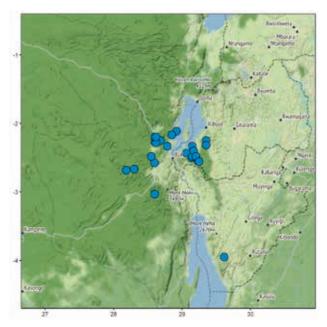
#### \_ **Sericanthe leonardii** (N.Hallé) Robbr.

Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 621,120 km²; Area of occupancy (AOO): 207 km².

**Habitat** – Montane forest, rainforest, semi-deciduous forest; at 1,350–2,500 m.

**Protected areas** – The species is present in the following protected areas: Nyungwe National Park (Rwanda), Bururi



Forest Nature Reserve (Burundi), Kahuzi-Biega N.P. (DRC) and Itombwe N.R. (DRC). There are no current conservation actions for the species.

**Threats** – While many collections are from protected areas, the three located outside them are in places under threat. The Mushwere (DRC) site shows high levels of deforestation for agriculture. The Karehe and Ihembe sites are probably similar, but we do not know if the populations are completely gone.

**Justification** – *Sericanthe leonardii* is a shrub or small tree to 20 m tall. It is known from 48 herbarium specimens, collected between 1932 and 2004, representing 27 unique occurrences. The extent of occurrence (EOO) far exceeds the upper limit for the Vulnerable category under subcriterion B1, whereas the area of occupancy (AOO) falls within the limits for the Endangered category under subcriterion B2. Based on the scale of the threats, seven to eight locations (*sensu* IUCN) can be defined, which falls within the limits of the Vulnerable category under condition 'a' of criterion B2. From the above, we infer a continuing decline in extent and quality of the habitat.

Bibliography – Beentje & al. (2019a), Robbrecht (1978).

**Authors** – H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

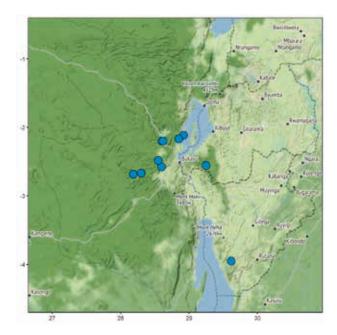
# \_ **Sericanthe leonardii** (N.Hallé) Robbr. subsp. **leonardii**

Red List category – Vulnerable: VU B1ab(iii)+2ab(iii).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 13,287 km²; Area of occupancy (AOO): 44 km².

**Habitat** – An obligate forest subspecies found in rainforest and semi-deciduous forest; at 1,350–2,170 m. Seed dispersal is by birds (endo-ornithochory).

**Protected areas** – This subspecies occurs within or on the boundaries of three protected areas: the Kahuzi-Biega





Sericanthe leonardii subsp. leonardii: 1, flowering branch; 2, 3, stamen and style from young bud; 4, placenta, dorsal and ventral view; 5, fruiting branch; 6, fruit; 7, seed, dorsal and ventral view. (1-7: A. Léonard 3319). Drawing by N. Hallé, Muséum national d'Histoire naturelle, Paris (©), reproduced with permission from Hallé (1972).

National Park (DRC), the Nyungwe National Park (Rwanda) and the Bururi Forest Nature Reserve (Burundi). There are no current conservation actions for subpopulations occurring in unprotected sites.

Threats – The lower parts of Kahuzi-Biega National Park are disturbed and not safe: all our collecting sites are just outside the park, and definitely subject to intense pressure of agriculture and logging. The Nyungwe National Park is well protected. Threats mainly occur near Lake Kivu where forest habitat at the collecting sites of Bitale, Ihembe, Lisheni, and Mushwere is strongly reduced by urbanization and crop production. Here, there is also production of bricks for Bukavu, using large amounts of firewood (Mwanga-Mwanga, pers. comm.). The Tshiganda forest is very degraded and converted into a crop area. In Burundi, the Bururi Forest Nature Reserve is well protected except for the periphery, and we are not sure where in the protected area the taxon was collected.

**Justification** – *Sericanthe leonardii* subsp. *leonardii* is a shrub or small tree to 10 m tall. It is known from 14 herbarium specimens, collected between 1932 and 2004, representing 11 unique occurrences and eight subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on geographic clustering with respect to scale of the main threat, seven locations (*sensu* IUCN) can be defined, which falls within the limits of the Vulnerable category under condition B1a and B2a. Based on the information we have, it is reasonable to infer a continuing decline in extent and quality of its habitat.

Bibliography – Robbrecht (1978).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

## \_ Sericanthe leonardii (N.Hallé) Robbr. subsp. venosa Robbr.

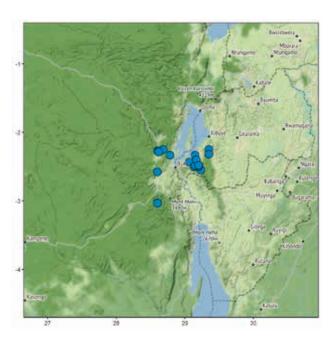
Red List category – Vulnerable: VU Bıab(ii,iii,iv,v) +2ab (ii,iii,iv,v).

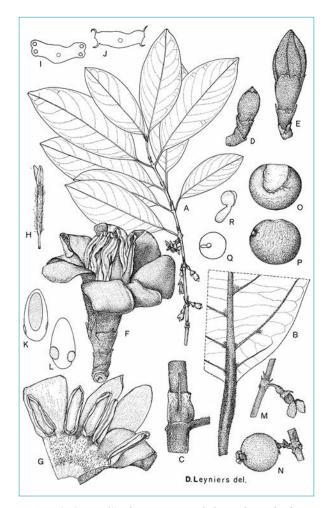
**Distribution** – Eastern Democratic Republic of the Congo and western Rwanda. Extent of occurrence (EOO): 5,722 km²; Area of occupancy (AOO): 126 km².

Habitat – Montane forest; at 2,000–2,500 m.

**Protected areas** – The subspecies is present in the Nyungwe National Park (Rwanda) and in the, the Kahuzi-Biega N.P. and the Itombwe N.P. (both DRC).

**Threats** – Threats are known to affect this subspecies at the occurrences outside protected areas. The Rwandan site near Lake Kivu has been completely deforested for agriculture as it is densely populated. The same is true for the DRC site near the same Lake. A second DRC site (west of the Kahuzi-Biega National Park) is now covered by oil palm plantations.





Sericanthe leonardii subsp. venosa: A, habit; B, lower leaf surface; C, stipule; D, E, flower; F, flower buds; G, part of corolla spread open; H, style; I, J, cross section of young and mature anther; K, L, placenta, ad- and abaxial view; M, young fruit; N, ripe fruit; O, adaxial side of seed showing hilar scar; idem, showing lateral position of embryonal radicle; Q, schematic representation showing embryo position; R, embryo. (A: Troupin 12264; B: Bouxin 117; C: Bouxin & Radoux 753; D-L: Troupin 10432; M: Bouxin 83; N-R: Bouxin & Radoux 828). Drawing by D. Leyniers, Meise Botanic Garden (©).

**Justification** – *Sericanthe leonardii* subsp. *venosa* is a tree to 20 m tall. It is known from 34 herbarium specimens, collected between 1932 and 1999, representing 18 unique occurrences. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the threats, we can define seven locations (*sensu* IUCN), which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. The observed threats provoke a continuing decline in the AOO, habitat extent and quality, number of locations and number of mature individuals.

Bibliography - Ntore & al. (2019h), Robbrecht (1978).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, W.R.Q. Luke & S. Nshutiyayesu

#### \_ Sericanthe roseoides (De Wild. & T.Durand) Robbr.

Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

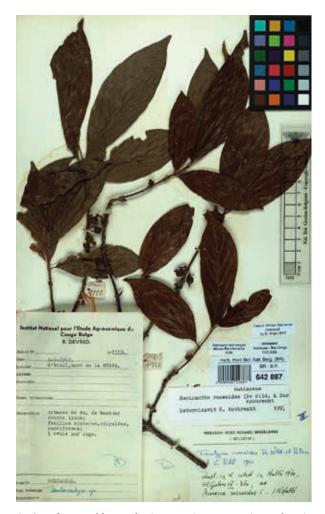
**Distribution** – Endemic to western Democratic Republic of the Congo. Extent of occurrence (EOO): 5,997 km<sup>2</sup>; Area of occupancy (AOO): 36 km<sup>2</sup>.

**Habitat** – Undergrowth of mature and secondary forest; at 300–540 m. Seed dispersal is likely to occur by birds (endo-ornithochory).

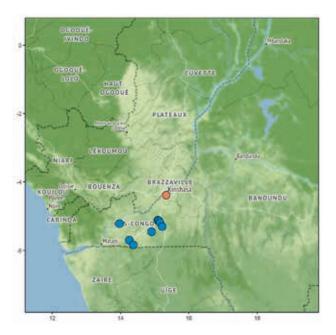
**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – The habitat is threatened by human activities such as charcoal production, shifting agriculture for small-scale subsistence and urbanization. The collecting site at Kinshasa (Matete forest) is already gone because the forest no longer exists. The growing human population and urbanization of Kinshasa, Kisantu, Boma and Matadi have caused an increase in deforestation for charcoal production. The collecting sites in Kisantu are threatened by urbanization while the collecting site in Mvuazi is under pressure by agriculture.

**Justification** – *Sericanthe roseoides* is a shrub or small tree of up to 15 m tall. It is known from 16 herbarium specimens, collected between 1900 and 1979, one of which was discarded for evaluation because we can assume that the



Sericanthe roseoides: Herbarium specimen at BR (Devred 1110).



habitat has disappeared due to urbanisation (near Kinshasa). The 15 remaining specimens represent nine unique occurrences and six extant subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, four or five locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Those threats and the loss of the Kinshasa site lead us to infer a continuing decline in quality and extent of suitable habitat, as well as a decline in the EOO, AOO, number of mature individuals and number of locations/subpopulations.

Bibliography - Robbrecht (1978).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ **Tarenna inops** Degreef

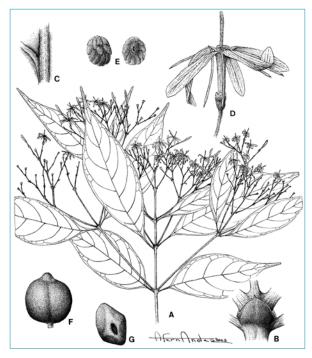
**Red List category** – Endangered: EN Bıab(ii,iii,v) +2ab(ii,iii,v).

**Distribution** – Endemic to eastern Democratic Republic of the Congo; restricted to the Kivu-Ruwenzori Domain of the Afromontane region, only to the north and east of Kahuzi-Biega National Park. Extent of occurrence (EOO): 3,580 km²; Area of occupancy (AOO): 36 km².

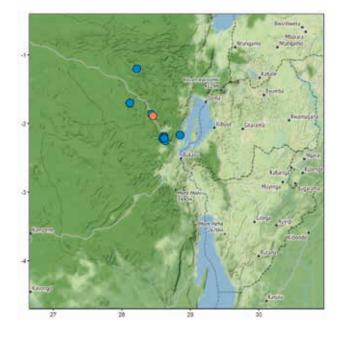
**Habitat** – Understorey of dense montane forests; at 750–2,100 m.

**Protected areas** – There are no occurrences inside protected areas. However, two of the ten occurrences are within 1.3 km of the Kahuzi-Biega National Park, the margin of error for points geo-referenced to the nearest minute of latitude and longitude, so the species is possibly present within this protected area.

**Threats** – The main threat is the destruction of the natural habitat as a result of anthropogenic pressure. The Kivu Province is densely populated with most people depending



Tarenna inops: A, flowering branch; B, stipule; C, nerve axil showing absence of domatia; D, flower; E, ovules; F, fruit; G, seed. (A, C-E: Troupin 9192; B: Troupin 4374; F, G: Pierlot 1035). Drawing by Antonio Fernandez, Meise Botanic Garden (©).



on subsistence farming for their livelihood. The forest habitat is converted to pastures and agricultural land, degraded by logging and hunting and destroyed for artisanal mining. The forest cover remains relatively intact in the two northernmost occurrences (near Kembe and Itebero) but in others, closer to Lake Kivu (near Lusheni and Bitale), the forest is highly fragmented and only small patches remain between degraded and agricultural areas. A third site here, Irangi, has been completely destroyed and is now a vast oil palm plantation, and the site has been disregarded for EOO and AOO calculations. The Kahuzi-Biega N.P. is listed as a UNESCO natural world heritage site in danger. After the 1994 Rwandan

Civil War, the park was overrun by refugees and armed militias, resulting in strongly increased anthropogenic pressure and large-scale destruction of primary habitat. Furthermore, the Kahuzi-Biega National Park is subject to traditional mining for gold, diamonds, coltan and tin, e.g. in the region of Bunyakiri.

**Justification** – *Tarenna inops* is a shrub or small tree to 6 m tall. It is known from 21 herbarium specimens, collected between 1950 and 1960. They represent 11 unique occurrences and five subpopulations. The extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. y Based on geographic clustering with respect to the scale of threats, five locations (sensu IUCN) can be distinguished, which falls within the thresholds of the Endangered category under condition 'a' of sub-criterion B1 and B2. From the above, we infer a decline in the extent and quality of the habitat and a decrease in number of mature individuals and of its AOO. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Aveling (2010), Degreef (2006), Kirkby & al. (2015), Papaco (2015), UNESCO (2017a).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Tarenna kivuensis** Degreef

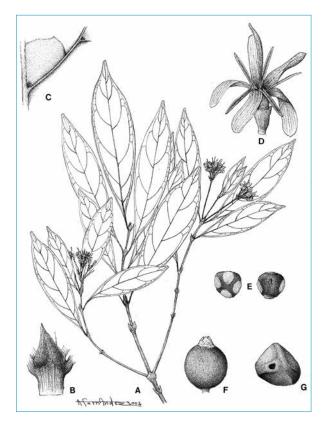
Red List category – Endangered: EN B1ab(iii,v)+2ab(iii,v).

**Distribution** – Endemic to eastern Democratic Republic of the Congo; restricted to the Kivu-Ruwenzori Domain of the Afromontane region. Extent of occurrence (EOO): 1,333 km²; Area of occupancy (AOO): 20 km².

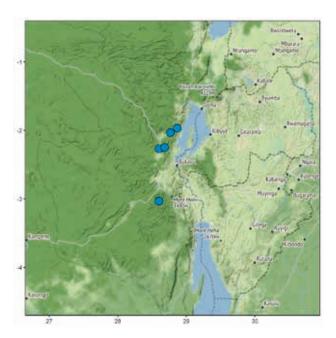
Habitat - Dense montane forest; at 2,050-2,300 m.

**Protected areas** – The species occurs in the eastern mountainous part of the Kahuzi-Biega National Park and in the northern part of the Itombwe Nature Reserve. There are no current conservation actions for the subpopulations occurring in unprotected sites.

Threats – The main threat is the destruction of the natural habitat as a result of anthropogenic pressure. The Kivu Province is densely populated with most people depending on subsistence farming for their livelihood. The forest habitat is converted to pastures and agricultural land, degraded from logging and hunting and destroyed for artisanal mining. With the exception of the southernmost occurrence (Kigogo-Ngalya, Est Mwenga, within the Itombwe N.R., where there is a significant amount of mining recently), the forest in the sites where the species occurs (Kahusi, Nyawarongo, forêt de la Musisi) is highly fragmented and only small patches remain between agricultural and degraded terrain. The Kahuzi-Biega N.P. is listed as a UNE-SCO natural world heritage site in danger. After the 1994 Rwandan Civil War, the park was overrun by refugees and armed militias, resulting in strongly increased anthropogenic pressure and large-scale destruction of primary habitat. Furthermore, the Kahuzi-Biega National Park is subject to traditional mining for gold, diamonds, coltan and tin, e.g. in the region of Bunyakiri. However, at an elevation of



Tarenna kivuensis: A, flowering branch; B, stipule; C, domatia; D, flower; E, ovules; F, fruit; G, seed. (A-E: Pierlot 2499; F, G: Léonard 4515). Drawing by Antonio Fernandez, Meise Botanic Garden (©).



2,000 m (or higher) this collecting site is probably relatively safe.

**Justification** – *Tarenna kivuensis* is a shrub or small tree to 14 m tall. It is known from six herbarium specimens collected in 1958–1959, which represent five unique occurrences and four subpopulations. The extent of occurrence (EOO) and area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. Based on geographic clustering with respect

to scale of threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criteria B1 and B2. From the above, we infer a decline in the extent and quality of the habitat as well as a decrease in the number of mature individuals.

**Bibliography** – Aveling (2010), Degreef (2006), Doumenge (1990), Kirkby & al. (2015), Papaco (2015), UNESCO (2017a).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ Tarenna rwandensis Bridson

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

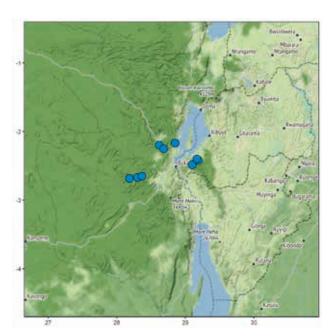
**Distribution** – Eastern Democratic Republic of the Congo and south-western Rwanda. Extent of occurrence (EOO): 3,426 km²; Area of occupancy (AOO): 72 km².

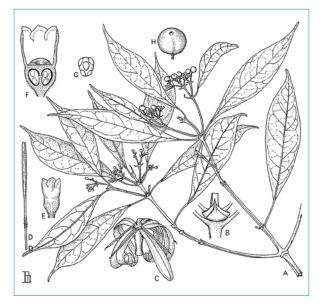
Habitat – Montane rainforest; at 2,000–2,400 m.

**Protected areas** – The species is present in the Nyungwe N.P. (Rwanda) and the Kahuzi-Biega N.P. (DRC).

**Threats** – Unprotected localities are all in DRC. The Lake Kivu site has almost all native vegetation removed for agriculture due to the dense human population. Three other sites on the edge of the Kahuzi-Biega N.P. are all most very probably completely deforested, because of the intense population pressure. Near Bitale, deforestation for agriculture takes place. For two southernmost sites agricultural deforestation presumably also takes place.

**Justification** – *Tarenna rwandensis* is a small to medium-sized tree to 19 m tall. It is known from 10 herbarium specimens collected between 1956 and 1980, representing nine unique occurrences. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits of the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, we can define four or five





Tarenna rwandensis: A, habit; B, stipule; C, corolla; D, stigma & style; E, calyx; F, idem, longitudinal section; G, placenta with ovules; H, fruit. (A, B, H: Reynders 42; C-G: Bouxin 1264). Drawing by Diana Bridson (©), reproduced with permission from Bridson (1980).

locations (sensu IUCN), which complies with the Endangered category according to condition 'a' of sub-criteria B1 and B2. Based on the above information indicating that some collecting sites, including some on the periphery of the EOO polygon, have already been completely destroyed, we infer a continuing decline in AOO, EOO, extent and quality of the habitat, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Bridson (1980), Degreef (2006), Ntore & al. (2019i).

**Authors** – S. Ntore, H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, W.R.Q. Luke & S. Nshutiyayesu

#### \_ Tricalysia kivuensis Robbr.

**Red List category** – Vulnerable: VU B2ab(ii,iii,iv,v).

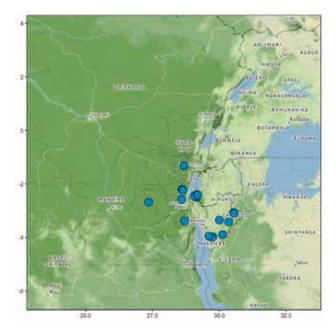
**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 52,540 km²; Area of occupancy (AOO): 210 km².

**Habitat** – Understorey of montane forest, primary forest, forest with *Strombosia* and *Newtonia*; at 1,450–2,115 m.

**Protected areas** – Six out of the 22 collections of this species are from within protected areas: Nyungwe N.P. (Rwanda), Itombwe N.R. (DRC) and Bururi F.R. (Burundi).

**Threats** – Over much of the distribution area the human population is dense outside the protected areas, and threats are mostly cultivation and illegal logging. In Central Burundi, all of the natural vegetation, and certainly all montane forest, is now gone.

**Justification** – *Tricalysia kivuensis* is a shrub or small tree to 12 m tall. It is known from 22 herbarium specimens collected between 1937 and 2004, which represent 22 unique



monthly sufficient and the control of the control o

Tricalysia kivuensis: Holotype specimen at BR (Bridson 365).

occurrences and 13 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category, while the area of occupancy (AOO) falls within the Endangered category under sub-criterion B2. Based on the scale of the threats, ten locations (sensu IUCN) can be defined, which falls within the Vulnerable category follow-

ing condition 'a' under sub-condition B2. From the above, we infer a decline in AOO, extent and quality of the habitat, number of locations/subpopulations and number of mature individuals.

Bibliography - Gereau (2019j), Robbrecht (1987).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

#### \_ Tricalysia longituba De Wild.

Red List category - Least Concern: LC.

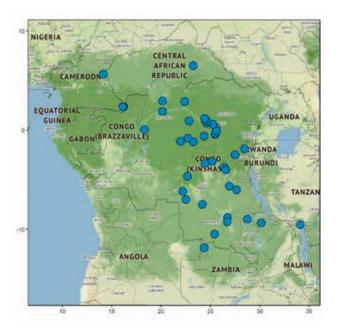
**Distribution** – Cameroon, Central African Republic, Democratic Republic of the Congo, Tanzania and Zambia. Extent of occurrence (EOO): 2,155,461 km²; Area of occupancy (AOO): 176 km².

**Habitat** – Rainforest (often marshy), semi-deciduous forest or thicket, gallery forest; at 370–980 m. The seed dispersal is by animals (endozoochory).

**Protected areas** – Some 20% of the collecting sites occur within four protected areas: the Dzanga-Ndoki National Park in the Central African Republic; and the Upemba National Park, the Sankuru Nature Reserve and the Yangambi Biosphere Reserve in DRC. For collecting sites occurring outside protected areas, there are no current conservation actions for the species.

**Threats** – The main threat to the habitat is shifting agriculture for subsistence and selective logging for domestic uses.

**Justification** – *Tricalysia longituba* is a shrub or small tree to 9 m tall. It is known from 61 herbarium specimens, collected between 1904 and 1998, representing 45 unique occurrences and 34 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 30 to 33 locations (*sensu* IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category





Tricalysia longituba var. longituba: A, twig; B, inflorescence (simplified); C, brevistylous flower (one corolla-lobe cut away); D, idem, corolla removed; E, base of flower, longitudinal section; F, calyculus; G, stamen, lateral view; H, anther, cross-section; I, J, placenta, adaxial and abaxial view; K, fruit; L, M, seed, adaxial and abaxial view. (A: Corbisier-Baland 703; B-J: Robyns 941; K-M: E. & M. Laurent s.n.). Drawing by Milleville, Meise Botanic Garden (©).

under condition 'a' of sub-criterion B2. The species cannot be assessed in any threatened category as it does not meet the IUCN Red List criteria for a threatened.

Bibliography - De Wildeman (1925), Robbrecht (1982).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

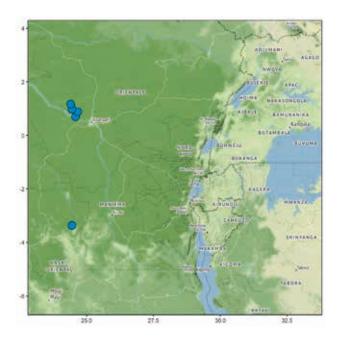
### \_ **Tricalysia longituba** De Wild. var. **velutina** Robbr.

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 7,355 km²; Area of occupancy (AOO): 20 km².

Habitat - Understory of rainforest; at ca. 470 m.

**Protected areas** – Two of the five collecting sites occur within protected areas. These are the Yangambi Biosphere Reserve and the Sankuru Nature Reserve. There are no current conservation actions for the three other occurrences.



**Threats** – The variety is threatened by human activities such as small-holder agriculture for subsistence, selective logging and charcoal production.

Justification – Tricalysia longituba var. velutina is a small tree. It is known from six herbarium specimens, collected between 1937 and 1957, representing five unique occurrences and five subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, five locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a decline in extent and quality of the taxon's habitat.

Bibliography - Robbrecht (1982).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ **Tricalysia pynaertii** De Wild.

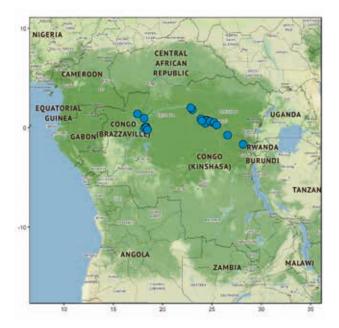
Red List category - Near Threatened: NT.

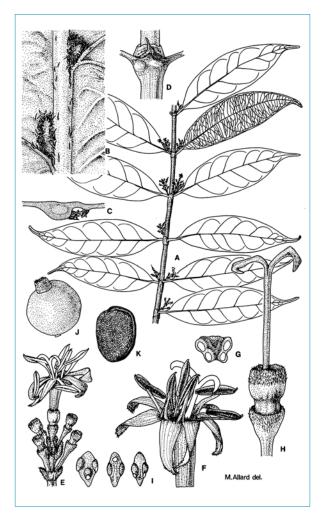
**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 236,727 km²; Area of occupancy (AOO): 84 km².

**Habitat** – Rainforest; at 330–470 m.

**Protected areas** – The species occurs within two protected areas: the Lac Télé Community Reserve in the Republic of the Congo and the Yangambi Biosphere Reserve in the Democratic Republic of the Congo. Three collecting sites also occur in the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to their conservation status. For the other known collecting sites, there are no current conservation actions for the species.

**Threats** – *Tricalysia pynaertii* is threatened by logging for charcoal production, to meet the growing demand of the





Tricalysia pynaertii: A, flowering twig; B, domatia; C, idem, cross section; D, node showing stipule; E, inflorescence; F, corolla, androecium and style; G, anther, cross section; H, style and flower-base, I, placentas; J, fruit; K, seed. (A-E, G, I: Louis 1252; F, H: Louis 13754; J: Louis 14771; K: Louis 15154. Drawing by M. Allard, Meise Botanic Garden (©).

booming Kisangani town, and conversion of forest for agriculture. However, according to specimen labels, the plant is found in fallow fields, and may be adapted to modified landscapes such as oil palm plantations.

**Justification** – *Tricalysia pynaertii* is a shrub or small tree to 6 m tall. It is known from 37 herbarium specimens collected between 1891 and 2008, which represent 21 unique occurrences and 15 subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, while the area of occupancy (AOO) falls within the limits for Endangered category under sub-criterion B2. Relative to the scale of known threats and protected area boundaries, 12 to 15 locations (sensu IUCN) can be defined, which is slightly above the upper limit for the Vulnerable category under condition 'a' of sub-criterion B2. However, considering that the species is currently known from 12 to 15 locations, a number close to 10, and that the occurrences of Mbandaka and Kisangani are highly threatened and will probably disappear in a near future, Tricalysia pynaertii is assigned a status of Near Threatened.

Bibliography - Robbrecht (1987).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### \_ Tricalysia yangambiensis (N.Hallé) Robbr.

**Red List category** – Endangered: EN B2ab(i,ii,iii,iv,v).

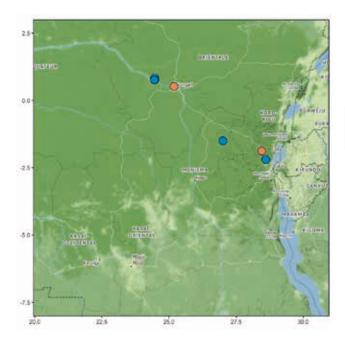
**Distribution** – Endemic to central and eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 13,321 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

Habitat – Rainforest; at 470–1,700 m.

**Protected areas** – The species occurs within the Yangambi Biosphere Reserve. For the two other extant occurrences in unprotected areas, there are no current conservation actions for the species.

**Threats** – The species is threatened by human activities such as shifting agriculture for subsistence (the main threat) and logging for charcoal production. It is found in a protected area that is poorly managed. Bitale in Kalehe Territory is under great pressure resulting from logging for charcoal production The collecting site of Kisangani has been destroyed by urbanization, and the one in Irangi has been completely transformed into oil palm plantations.

Justification – Tricalysia yangambiensis is a shrub or small tree to 6 m tall, with a trunk to 10 cm in diameter. It is known from ten herbarium specimens collected between 1921 and 1957, of which two (Kisangani and Irangi) were discarded prior to EOO and AOO computation because the habitat is gone and the occurrences assumed lost. The remaining eight specimens represent six unique occurrences and three subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. With respect to the scale of known threats and protected area boundaries, three locations (sensu IUCN) can be defined, which falls within the limits for the Endangered category under condition 'a' of sub-



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*Tricalysia yangambiensis*: Holotype specimen at BR (*Louis* 12656).

criterion B2. From the past decline in area and quality of the species' habitat, especially in the Irangi region and at Kisangani, we infer a continuing decline in EOO, AOO, number of locations and number of mature individuals of the species.

Bibliography - Robbrecht (1987).

Authors – S. Ntore, M. Simo-Droissart & W. Tack

### RUTACEAE

#### \_ Citropsis gilletiana Swingle & M.Kellerm.

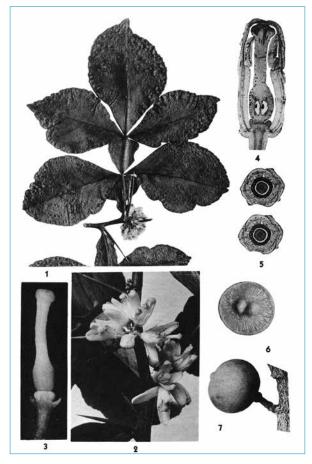
Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to western and central Democratic Republic of the Congo. Extent of occurrence (EOO): 6,882 km²; Area of occupancy (AOO): 12 km².

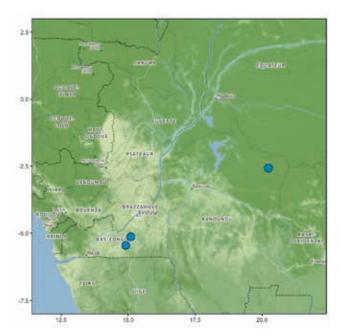
**Habitat** – Rainforest; at 400–800 m. Flowers are insect-pollinated; seeds are animal-dispersed.

**Protected areas** – The three collecting sites occur outside protected areas. There are no current conservation actions for the species.

**Threats** – In Bas-Congo, there is increased deforestation for shifting agriculture (the main threat) and urbanization, particularly around Mbanza-Ngungu. Logging activities are also taking place.



Citropsis gilletiana: 1, flowering twig; 2, flowers and buds; 3, pedicel, calyx, disk and pistil; 4. flower bud, longitudinal section; 5, idem, transverse sections showing cup-shaped disk between stamens and ovary base; 6, fruit with seeds, transverse section; 7, fruit. Reproduced from Swingle (1940).



Justification – Citropsis gilletiana is a small tree 10 m tall. It is known from three herbarium specimens, collected in 1906, 1953 and 2005, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the threats, three locations (sensu IUCN) were defined, which falls within the Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline of the AOO, EOO, number of subpopulations, mature individuals as well as a disruption of the quality of the species' habitat. The species seems rare, but may simply be under-collected; therefore, it is important to perform additional fieldwork.

Bibliography - Gilbert (1958).

Authors - C. Amani, M. Simo-Droissart & W. Tack

#### **Teclea engleriana** De Wild.

Red List category - Least Concern: LC.

**Distribution** – Endemic to south-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

Habitat - No vegetation specified; at around 940 m.

**Protected areas** – The only known subpopulation occurs within an effectively protected area, the Kundelungu National Park.

**Threats** – The species occurs in a protected area with no known threats; outside the protected area, the eastern DRC west of Lake Tanganyika is a region with widespread cultivation. Many of the natural habitats are facing forest clearing and conversion to agriculture, tree felling for timber and charcoal burning. These activities continue to reduce habitat quality. There is also mining of gold going on; but all these are relevant only outside the protected area.



Teclea engleriana: Holotype specimen at BR (Verdick 365).



**Justification** – *Teclea engleriana* is a tree, only known from the type collection dating from 1900. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. In the absence of a known threat, no location can be defined and hence no threatened category assigned. Its continued survival, however, depends on conservation efforts in and around the protected area. If

this were to change, the species may soon become Critically Endangered. The fact that the species has not been collected for nearly 120 years is a cause of concern to its continued existence at the site though. There is need to verify whether or not the species still exists. There is some doubt about its taxonomic status, and this needs to be checked as well.

Bibliography - Gilbert (1958).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

#### \_ Vepris mandangoana Lisowski

Red List category - Critically Endangered: CR B2ab(iii,v).

**Distribution** – Endemic to the Tshopo Province, Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Riverine forest at the foot of steep cliffs; at around 500 m.

**Protected areas** – The two collecting sites occur in a non-protected area. There are no current conservation actions for the species.

**Threats** – Its habitat is under threat from selective logging and agricultural encroachment.



**Vepris mandangoana**: Herbarium specimen at BR (Mandango 2755).



**Justification** – *Vepris mandangoana* is a small tree to 8 m tall. The species is known from two herbarium specimens collected in 1980, representing two unique occurrences only 2 kms apart, and one subpopulation. The area of occupancy (AOO) falls within the limits for Critically Endangered category under sub-criterion B2. Based on the known threats, one location (*sensu* IUCN) can be defined, which is the upper limit for Critically Endangered category under condition 'a' of sub-criterion B2. We project that the ongoing loss of the habitat will lead to a continuing decline in the number of locations/subpopulations and of mature individuals.

Bibliography - Lisowski (1985), Ndjele (1988, 1997).

Authors - P. Kamau, M. Simo-Droissart & W. Tack

#### \_ Vepris renieri (G.C.C.Gilbert) Mziray

(Synonym: Oricia renieri G.C.C.Gilbert)

Red List category – Endangered: EN B1ab(i,ii,iii,iv,v) +2ab(i,ii,iii,iv,v).

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda and Burundi. Extent of occurrence (EOO): 3,692 km²; Area of occupancy (AOO): 54 km².

**Habitat** – Understorey of rainforests, often near streams; at 1,600–2,300 m. It requires deep well drained soil with high rainfall.

**Protected areas** – Three occurrences are situated within the Nyungwe National Park (Rwanda), the Kibira National Park (Burundi) and the Kahuzi-Biega National Park (DRC).

**Threats** – Occurrences outside protected areas are under threat due to increasing human activities such as mining, cattle grazing, clearing and crop cultivation. This is notably the case around Bugarama; at the northernmost occurrence near Masisi all suitable habitat has disappeared.

**Justification** – *Vepris renieri* is a shrub or tree to 10 m high. It is known from 7 herbarium specimens, collected between

1950 and 1980, and can be considered as rare. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the limits for the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, four locations (*sensu* IUCN) could be defined, which falls within the Endangered category under condition 'a' of sub-criteria

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Vepris renieri: Kamiranzovu Swamp (flowers) and Cyamudongo (fruits), Rwanda. Photos by Eberhard Fischer (©).

B1 and B2. From the above, we infer a decline in EOO, AOO, number of locations, habitat quality and number of mature individuals.

**Bibliography** – Fischer & Killmann, Ntore & al. (2018, 2019j), Troupin (1982, 1983).

**Authors** – S. Ntore, S. Nshutiyayesu, W.R.Q. Luke, C.J. Kayombo, J. Kalema, C. Kabuye, E. Fischer & H.J. Beentje

#### **Zanthoxylum laurentii** (De Wild.) P.G.Waterman

(Synonym: Fagara laurentii De Wild.)

Red List category – Near Threatened: NT.

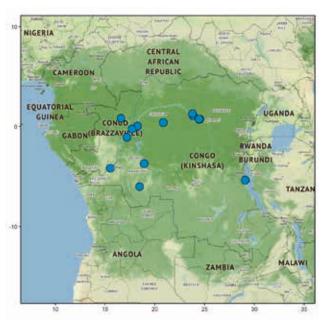
**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 880,659 km²; Area of occupancy (AOO): 56 km².

**Habitat** – Riverine and seasonally inundated forests, gallery forests, savannas; at 300–1,800 m.

**Protected areas** – The species occurs within the Yangambi Biosphere Reserve. There are no current conservation actions for the species.

**Threats** – The conservation measures currently in place in the Yangambi Biosphere Reserve are not very effective and may not safeguard the species from threats posed by local human populations. Outside of this protected area, the main threat to the habitat is small-scale agriculture, followed by urbanization. The subpopulation at Kinshasa is probably already lost.

**Justification** – *Zanthoxylum laurentii* is a tree to 18 m tall, with a bole to 40 cm in diameter. It is known from 22 herbarium specimens collected between 1892 and 2010, representing 14 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat, 12 or 13 locations (*sensu* IUCN) can





Zanthoxylum laurentii: A, flowering branch; B, part of leaflet, lower surface; C, male flower; D, idem, longitudinal section; E, pistil, longitudinal section; F, part of infructescence; G, dehisced follicle; H, seed. (A-D: Louis 10098; E: Louis 13007; F-H: Louis 11020). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).

be distinguished, which is just above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The species' population does not appear severely fragmented. We project a significant decline of its habitat quality or extent, its AOO, EOO, its number of subpopulations and mature individuals within the near future. Since the condition 'a' under sub-criterion B2 is not met, *Zanthoxy-lum laurentii* cannot be assigned to any threatened category. However, considering the fact that the species is currently known from 12 or 13 locations, a number close to 10, and that the subpopulation at Kinshasa is lost or likely to disappear in the near future, *Zanthoxylum laurentii* has been assigned the IUCN status of Near Threatened.

Bibliography – Gilbert (1958).

Authors - C. Amani, M. Simo-Droissart & W. Tack

#### Zanthoxylum renieri (G.C.C.Gilbert) P.G.Waterman

(Synonym: Fagara renieri G.C.C.Gilbert)

Red List category - Endangered: EN B2ab(iii).

**Distribution** – Eastern Democratic Republic of the Congo and Rwanda. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 20 km².





 ${\it Zanthoxylum\ renieri} : {\it Holotype\ specimen\ at\ BR\ (\it Renier\ 323)}.$ 

Habitat – Forest, on sandy clay; at 2,000 m.

**Protected areas** – One of the two collecting sites is within a protected area: the Nyungwe National Park in Rwanda.

**Threats** – The species is used for timber (constructing canoes) and the habitat in Sambili has declined slightly in

quality and extent since 1938 due to agricultural activities and small-scale logging.

**Justification** – *Zanthoxylum renieri* is a tree of unknown size. It is known from two herbarium specimens, collected in 1938 and 1951, representing two unique occurrences and two subpopulations. The area of occupancy (AOO) falls within the limits for the Endangered category under sub-criterion B2. Based on the scale of the threat, two locations (*sensu* IUCN) can be defined, which complies with the Endangered category under condition 'a' of sub-criterion B2. We infer a decline in extent and quality of the habitat.

**Bibliography** – Gereau & al. (2019k), Gilbert (1958), Waterman (1975).

**Authors** – R. Gereau, H.J. Beentje, C. Kabuye, W.R.Q. Luke, S. Nshutiyayesu & S. Ntore

**Zanthoxylum rubescens** Planch ex Hook.f. var. **disperma** (G.C.C.Gilbert) P. G.Waterman

Red List category - Critically Endangered: CR B2ab(iii).

**Distribution** – Endemic to the Kivu Province in the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – Understorey of dense and humid forests; at around 1,280 m.

**Protected areas** – The only known collecting site occurs in a non-protected area. There are no current conservation actions for the taxon.

**Threats** – This variety occurs at Kimbili, Shabunda Territory, a few kms outside the Kahuzi-Biega National Park – an area where there is cultivation, logging, cattle grazing and mining (for cassiterite). Many of the natural habitats here are threatened by conversion of land for agriculture and by tree felling for timber and fuelwood. South Kivu, as a whole, is described as the DRC's second-richest gold deposit and





 ${\it Zanthoxylum\ rubescens}$  var.  ${\it disperma}$ : Holotype specimen at BR ( ${\it Michelson\ 780bis}$ ).

there are many artisanal miners causing high levels of deforestation. Shabunda is one of the areas in South Kivu where mining activities are most intensive.

Justification – Zanthoxylum rubescens var. dispermum is a shrub or small tree. The taxon is only known from the type collection dating from 1948, representing a single unique occurrence and subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. A single location (sensu IUCN) was defined, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer only a decline in the extent and quality of the habitat of the taxon.

**Bibliography** – Chemonics International Inc. (2015), Gilbert (1958), Global Witness (2016), Huggins (2010), Kusakana (2016), UNEP-MONUSCO OSESG (2015).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

### SALICACEAE

#### \_ Casearia michelsonii Breteler

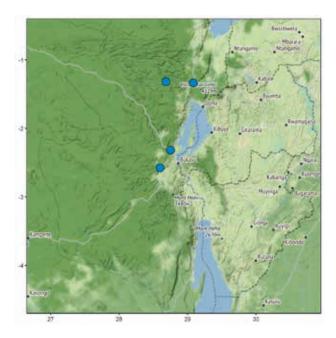
Red List category - Endangered: EN B1ab(iii)+2ab(iii)

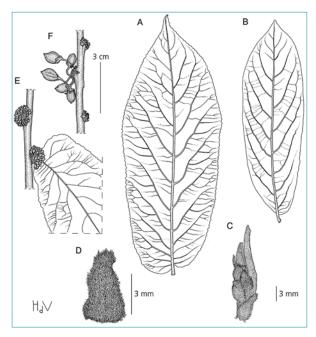
**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 3,497 km²; Area of occupancy (AOO): 16 km².

**Habitat** – Mountain slopes, humid montane forest up to the bamboo zone; at 1,700–2,300 m.

**Protected areas** – Two of the four known occurrences are located within protected areas: the Kahuzi-Biega National Park and the Virunga National Park. The two other occurrences are located in unprotected sites where there is no current conservation actions for the species.

Threats - The two parks in which the species occurs are under severe threat and are now designated as UNESCO natural world heritage sites in danger. The Kivu Region in the eastern part of the Democratic Republic of the Congo is densely populated. Most people depend on subsistence farming for their livelihood. They also depend on forests and other natural vegetations for additional subsistence and raw materials. As a result, forest is cleared for agriculture and grazing of livestock, wood is logged for building material and charcoal production. Also, large-scale poaching and artisanal mining take place. Forest cover in three of the four known occurrences is highly fragmented and only small patches remain between agricultural and degraded terrain (Kashebere, Walungu, and Mushari near Rutshuru). The fourth locality, Mont Bukulumiza, remains undisturbed. Growing human populations will certainly lead to the conversion of more primary vegetation throughout the distribution range of Casearia michelsonii, e.g. to agricultural land. Anthropogenic pressure has increased strongly since the 1990-1994 Rwandan Civil War and the 1994 Rwandan Genocide when the parks were overrun by refugees and armed militias, resulting in large-scale destruction of primary habitat.





Casearia michelsonii: A, B, leaves, lower surface; C, top of branchlet; D, stipule, outside; E, part of branch with inflorescences; F, part of fruiting branch. (A, E: Pierlot 341; B-D, F: Michelson 530). Drawing by Hans de Vries, Meise Botanic Garden (©).

Justification – Casearia michelsonii is a medium-sized to large tree. It is known from four georeferenced herbarium specimens collected between 1943 and 1952, representing four unique occurrences and four subpopulations. The extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under the sub-criteria B1 and B2. Given the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. Three of the four known localities are strongly disturbed, resulting in habitat loss for the species. Further collecting would give a better understanding of the distribution area of this species, its abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

**Bibliography** – Aveling (2010), Breteler (2008b), Inogwabini & al. (2005), Robyns (1948), UNESCO (2017a, 2017b).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### \_ **Dissomeria glanduligera** Sleumer

Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the Isangi Territory of Orientale Province within the Democratic Republic of the Congo. Extent of occurrence (EOO): 349 km²; Area of occupancy (AOO): 12 km².

**Habitat** – Lowland forest, swamp forest, *Chrysobalanus-Albizia* forest; at 385–470 m.

**Protected areas** – One of the three collection sites occurs within the Yangambi Biosphere Reserve. There are no current conservation actions for the two other occurrences.





*Dissomeria glanduligera*: A, flowering branch; B, leaf margin; C, flower; D, sepal, outer surface; E, flower, sepals and petals removed. (A, B, D, E: *Évrard* 2194; C: *Germain* 987). Drawing by D. Leyniers, Meise Botanic Garden (©).

**Threats** – The threats to this obligate forest species are forest clearing for cultivation and possibly settlement. Indeed, satellite imagery shows very large numbers of patches of cleared forest around all sites. For the Yangambi Biosphere Reserve, forest disturbance has been reported. There is widespread occupation and use of the Reserve by local communities through hunting, fishing, slash-and-burn agriculture, logging, charcoal production, making canoes and mining (e.g. gold extraction).

**Justification** – Dissomeria glanduligera is a tree to 18 m tall, with a bole to 55 cm in diameter. It is known from four herbarium specimens collected in the period 1939–1957, representing three unique occurrences. The extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. The species is known from three subpopulations representing two locations (sensu IUCN), which falls within the limits of the Endangered category under condition B1a and B2a. Based on the information we have, it is reasonable to infer a decline in extent and quality of the habitat. The species has not been encountered after 1957, partly because of restricted access but presumably also because of the species' rarity.

**Bibliography** – Blom & al. (2004), Calisesi & al. (2016), Kamalebo & al. (2018), Koy & al. (2019), Sleumer (1976).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

#### \_ **Oncoba kivuensis** (Bamps) Hul & Breteler

(Synonym: Camptostylus kivuensis Bamps)

Red List category – Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 3,099 km<sup>2</sup>; Area of occupancy (AOO): 20 km<sup>2</sup>.

**Habitat** – Dense rainforest, forest with *Pentadesma* and *Staudtia*, forest with *Cynometra*, transitional montane forest with *Aphanocalyx cynometroides*; at 1,000–1,400 m.

**Protected areas** – The species occurs in the Kahuzi-Biega National Park. There are no current conservation actions for the subpopulations occurring in unprotected sites.

**Threats** – One collecting site occurs in the Kahuzi-Biega National Park. However, at this low elevation and at 8-9 km from the park boundary, this site is subject to agriculture, logging and mining. The Walikale area is heavily disturbed, with large scale habitat destruction due to illegal logging.





Oncoba kivuensis: Type specimen at BR (A. Léonard 4053).

**Justification** – Oncoba kivuensis is a shrub or small tree to 13 m tall. It is known from five herbarium specimens collected between 1958 and 1959, representing five unique occurrences and three subpopulations. The extent of occurrence (EOO) and the area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Based on the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. Based on the information we have, it is reasonable to infer a decline in the extent and quality of the species' habitat.

Bibliography - Bamps (1968), Hul & Breteler (1997).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

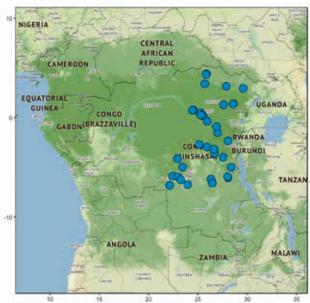
#### \_ **Oncoba subtomentosa** (Gilg) Hul & Breteler

(Synonym: Caloncoba subtomentosa Gilg)

Red List category - Least Concern: LC.

**Distribution** – Endemic to the eastern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 647,077 km²; Area of occupancy (AOO): 148 km².

**Habitat** – Dense rainforest with *Scorodophloeus zenkeri*, secondary forests, gallery forests, dry forest, savanna, clearings, coffee plantations; at 385–900 m.





*Oncoba subtomentosa*: Herbarium specimen at BR (*J. Louis 5664*).

**Protected areas** – The species occurs within the Yoko Forest Reserve, the Yangambi Biosphere Reserve, the Kahuzi-Biega National Park, the Lomami National Park, and the Okapi Wildlife Reserve. Several collecting sites occur outside protected areas, and there are no current conservation actions for these occurrences.

**Threats** – The principal threat to the habitat is conversion of forest into agricultural land. However, this species can clearly withstand some disturbance and partial clearing of forest, as it is able to survive in plantations.

**Justification** – Oncoba subtomentosa is a shrub or small tree up to 15 m tall. It is known from 70 herbarium specimens collected between 1904 and 2015, representing 39 unique occurrences and 32 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 18 to 25 different locations (sensu IUCN) can be distinguished, which exceeds the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Although we project that human pressure will increase the loss of forest habitat, we do not predict any significant decline for the species in the near future since it seems to survive in other, more degraded habitats as well. Since the species cannot be considered as severely fragmented and the conditions for applying condition 'a' under criterion B2 are not met, it cannot be assigned to a threatened category.

Bibliography - Bamps (1968), Hul & Breteler (1997).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

### SANTALACEAE

#### \_ **Okoubaka michelsonii** J.Léonard & Troupin

Red List category – Vulnerable: VU B1ab(iii)+2ab(iii); D2.

**Distribution** – Endemic to the Kivu Province, Democratic Republic of Congo. Extent of occurrence (EOO): 8,000–16,700 km²; Area of occupancy (AOO): 12 km².

**Habitat** – Scattered solitary trees at the edge of the Guineo-Congolian Forests, in the transitional forest zone sharing boundary with the East African Rift valley; at 1,100–1,500 m.

**Protected areas** – All known collecting sites occur in non-protected areas. There are no conservation actions for this tree.

**Threats** – Current threats are not well known as recent information on the species is unavailable. Natural rarity and the extremely small area of occupancy should be considered as extinction risks for the tree. In addition, satellite data from 2000 to 2007 show that deforestation and forest degradation in eastern areas of the Democratic Republic of Congo (DRC) continues. The extinction risk is further accentuated by debarking pressure for local medicinal use. For the related species *O. aubrevillei* heavy debarking due to the economic gains has led to traditional prohibitions surrounding the tree no longer being respected.

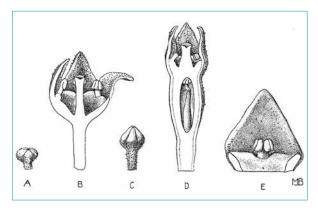
**Justification** – *Okoubaka michelsonii* is a medium-sized tree to 18 m tall, with a bole to 55 cm in diameter. Only three collections are known from the 1940s, representing three





Okoubaka michelsonii: Holotype specimen at BR (Michelson 774).

unique occurrences and three subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. The species is thought to occur at three locations (*sensu* IUCN), and there is a plausible threat that could drive the taxon into a Critically



Okoubaka michelsonii: A, male flower bud; B, male flower, longitudinal section; C, female flower bud; D, female flower, longitudinal section; E, staminode. (A, B: Michelson 934; C-E: Michelson 774). Drawing by M. Boutique, Meise Botanic Garden (©).

Endangered category in the very near future, due to logging and the use of the medicinal properties of the bark. The tree has not been collected in the wild in recent times. It is therefore uncertain if the taxon is still extant in its reported distribution range. From the above, we infer a continuing decline in the extent and quality of the habitat. Further research is needed into the current population size, extent and trends. *Ex situ* collections should be established, if possible.

**Bibliography** – Borokini (2015), Borokini & al. (2015), Ladipo & al. (2008), Léonard & Troupin (1950), Neuwinger (2000), SarVision (2008).

Authors - T. Israel Borokini, Malin C. Rivers & L. Wheeler

## SAPINDACEAE

#### \_ **Allophylus agbala** Hauman

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to Ubangi-Uele in the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

**Habitat** – Gallery forest; at around 730 m. Primates and birds have been reported to be seed dispersers of other *Allophylus* species.

**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions for the species.

**Threats** – The species is known from Dungu Territory, a region of human populations affected by conflict in South Sudan and seeking refuge in north-eastern Democratic Republic of the Congo. The heavy refugee influx from South Sudan causes clearance of natural vegetation for settlement and firewood. Much of the natural habitat is converted to small-scale agricultural land.





Allophylus agbala: Holotype specimen at BR (De Graer 449).

**Justification** – *Allophylus agbala* is a shrub or small tree to 5 m tall. It is known only from the type locality in Dungu Territory, in the Haut-Uele (formerly Orientale) Province, and has not been recorded since its discovery in 1936. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one unique occurrence, one

subpopulation and one location (*sensu* IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the above, we infer a present and project a further future decline in the quality and extent of the species' habitat. Further collecting is needed to confirm whether it is extinct or not, and to gain a better understanding of its distribution area, its abundance and the threats it faces.

**Bibliography** – Arief & Coen (2013), Cakaj (2010), Chavan & Gaikwad (2016), Chaves & al. (2018), David & al. (2015), Giessen (2005), Hauman (1958b, 1960), Leeper (2017), Ndjele (1988, 1997, 1998), UNHCR (2017), USAID (2017).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

#### \_ Allophylus amplissimus Hauman

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

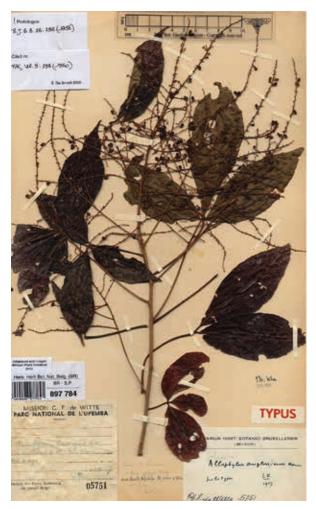
**Distribution** – Endemic to the Democratic Republic of the Congo, Katanga Province, Bukama Territory. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

Habitat – Gallery forest; at 1,050 m.

**Protected areas** – The only known collecting site occurs in Upemba National Park, where the existing conservation measures comprise some law enforcement by Rangers.

**Threats** – Low population pressure and agriculture have been reported for the periphery of Upemba National Park, with the general vegetation of the park being largely intact. However, industrial mining of gold and artisanal mining of coltan and cassiterite in the southern sector of the park have caused loss of forest cover and a decline in habitat quality. Other human activities reported from the park are slash-and-burn agriculture, fuelwood collection, fire and charcoal production, especially in the northwest part of the park. Finally, extensive uncontrolled burning of grassland takes place in the park.





Allophylus amplissimus: Type specimen at BR (Van Meel in de Witte 5751).

Justification - Allophylus amplissimus is a medium-sized tree to 20 m tall. It is only known from the type specimen, which was collected in 1949 along the banks of the Bowa river at the edge of Upemba National Park. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one unique occurrence, one subpopulation and one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Despite being a National Park, the species' habitat is facing threats from human activities such as mining, charcoal burning, and cultivation. Based on the threats, we infer a continuous decline in the species' habitat quality. Applied research and future actions, notably strengthening of the park's capacity to enforce the law to stop activities such as charcoal production, but also the control of burning and restoration of damaged habitats are needed to avoid this species from becoming extinct. As the only known subpopulation is threatened by mining activities in the southern sector of the park and the species has not been found for a period of over 70 years, it has been given the tag Possibly Extinct.

**Bibliography** – Dewaele & al. (2006), Hauman (1958b, 1960), Kusakana (2016), Matthysen & Mantejano (2013), Meerts (2016), Muir (2008), UNEP (2011b), Verweijen (2016), WCS (2003, 2008).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

#### \_ Allophylus katangensis Hauman

Red List category - Endangered: EN B2ab(iii,v).

**Distribution** – Endemic to the Democratic Republic of the Congo, Katanga Province. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.

**Habitat** – Spring heads, top of rocks; the southern occurrence at 2,000 m, the northern one probably at a slightly lower elevation.

**Protected areas** – Both collecting sites occur in non-protected areas. There are no current conservation actions for the species.

Threats – The species occurs in a region with widespread cultivation. The natural habitat is likely to be forested, as water springs generally do not occur in bare areas. Many of these habitats are facing clearance of land for agriculture. In addition, large quantities of wood are collected for drying/smoking fish. The town of Moba (between the two sites) is large, and is one of the areas identified as Priority Assessment Areas by USAID for food production. There are many villages in the area and charcoal production and fuelwood collecting are intense, for which the species has the right size and so will highly likely suffer from these activities. There is also local artisal gold mining and mining for coltan and cassiterite, having an important impact on the habitat.



Allophylus katangensis: Type specimen at BR (Dubois 1297).



**Justification** – *Allophylus katangensis* is a shrub or small tree to 6 m tall. It is only known from two herbarium specimens collected in 1944 and 1954, representing two unique occurrences some 50 kms apart, and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threats, two locations (*sensu* IUCN) have been defined, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. We expect that the urbanization of Moba and Kirungu and the expansion of agriculture will lead to a continuous decline in the extent and quality of the habitat as well as in the number of mature individuals. Field survey to search for the species should be performed and, if found, *ex-situ* conservation actions should be considered.

**Bibliography** – Armstrong (2007), Chemonics International Inc. (2015), Hauman (1960), Meerts (2016).

**Authors** – J. Kalema, M. Simo-Droissart & W. Tack

#### Allophylus persicifolius Hauman

Red List category – Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo, Katanga Province, Mitwaba Territory. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².

**Habitat** – Gallery forest; at 1,760 m.

**Protected areas** – The only known occurrence is situated within a well-managed part of Upemba National Park.

**Threats** – The species occurs within an effectively protected part of Upemba National Park, around the Lusinga area, which is the main ranger operation station in the North-East area. In some parts of this National Park artisanal mining for gold takes place by local communities and also mining for coltan and cassiterite, but the Lusinga area seems to enjoy better protection, and the species does not have obvious threats to its survival there.

**Justification** – *Allophylus persicifolius* is a small tree, known only from the type collection, made in 1948, representing a single unique occurrence and subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. In the absence of a known threat, no location (*sensu* IUCN) can be defined. Its continued survival depends on the effective protection

7.5 THE TIME



Allophylus persicifolius: A, flowering branch; B, male flower bud; C, petal of male flower, inner side; D, disk and androecium of male flower. (A-D: de Witte 3549). Drawing by M. Boutique, Meise Botanic Garden (©).

of the site. Any change in this protection status would immediately put the species at a very high risk of extinction.

**Bibliography** – Hauman (1960), Matthysen & Montejano (2013), Muir (2008).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

#### \_ **Allophylus sapinii** Vermoesen ex Hauman

Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to southern Democratic Republic of the Congo. Extent of occurrence (EOO):  $6,440 \text{ km}^2$ ; Area of occupancy (AOO):  $12 \text{ km}^2$ .

Habitat - Rainforest, savanna; at 600-1,000 m.

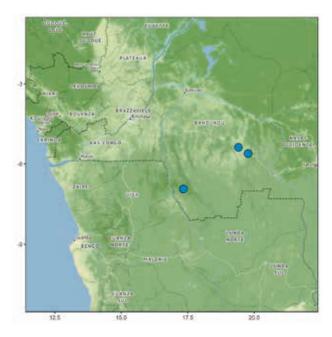
**Protected areas** – Two of the known occurrences are outside protected areas, while the third is within Mangai Nature Reserve. There are no current conservation actions for the species.

**Threats** – The species is threatened by forest clearance for timber exploitation, oil palm plantations and small-scale shifting agriculture. Forest clearance is particularly pronounced around Idiofa and Kikwit.

**Justification** – *Allophylus sapinii* is a large tree known from three herbarium specimens collected between 1907 and



Allophylus sapinii: Type specimen at BR (Sapin s.n.).



1953, representing three unique occurrences and three subpopulations. Its extent of occurrence (EOO) falls within the
limits of the Vulnerable category under sub-criterion B1,
whereas its area of occupancy (AOO) falls within the limits
of the Endangered category under sub-criterion B2. Given
the scale of the main threat, three locations (sensu IUCN)
can be distinguished, which falls within the limits of the
Endangered category under condition 'a' of sub-criterion
B2. We project that this environmental degradation will
continue in the future and hence provoke a continuing
decline in the extent and quality of its habitat.

Bibliography – Hauman (1960).

Authors - C. Amani, M. Simo-Droissart & W. Tack

#### \_ **Blighiopsis pseudostipularis** Van der Veken

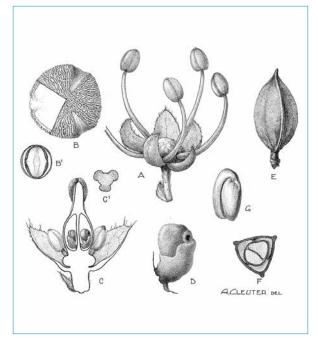
Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the eastern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 146,611 km²; Area of occupancy (AOO): 48 km².

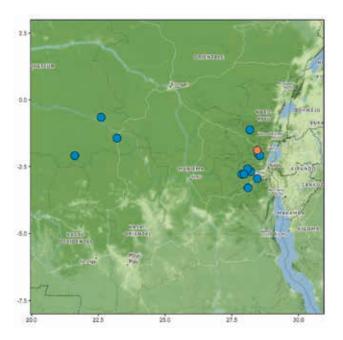
Habitat - Humid forest; at 850-1,150 m.

**Protected areas** – Two collecting sites occur within protected areas: the Salonga National Park and the Kahuzi-Biega National Park. The ten other collecting sites occur in unprotected sites, where there are no current conservation actions for the species.

**Threats** – After the 1990–1994 Rwandan Civil War and the 1994 Rwandan Genocide, the Kahuzi-Biega National Park was overrun by refugees and armed militias, resulting in greatly increased anthropogenic pressure and large-scale destruction of primary habitat. Furthermore, the park is subject to traditional mining for gold, diamonds, coltan and tin, e.g. in the region of Bunyakiri. In Salonga National Park there is localized deforestation for slash-and-burn agriculture. Logistical problems for both parks include understaffing and insufficient funding to guarantee effective protection of the remaining natural vegetation. One occurrence



Blighiopsis pseudostipularis: A, male flower, one anther removed; B, pollen grain, polar view; B', idem, equatorial view; C, female flower, longitudinal section; C', style, transverse section; D, ovule on its geniculate placenta; E, capsule; F, idem, transverse section; G, seed, testa removed. (A: Troupin 7717; B, B': Troupin 3850, 3872; C, C', D: Troupin 3887; E-G: Pierlot 839). Drawing by A. Cleuter, Meise Botanic Garden (©).



(Irangi Forest) has been completely deforested and replaced by an oil palm plantation. Most people in the Democratic Republic of the Congo depend on subsistence farming for their livelihood. They depend on forest and other natural vegetations for additional subsistence and raw materials. As a result, several known occurrences of *Blighiopsis pseudostipularis* show considerable forest fragmentation and destruction, such as Mingazi, Bunyakiri, Niangoma and Mwenga in the eastern part of the distribution area and Iwama and Yalikungu in the western part of the distribution area.

**Justification** – *Blighiopsis pseudostipularis* is a tree to 30 m tall, with a bole to 80 cm in diameter. It has potential commercial use similar to some other Sapindaceae tree species. It is known from 21 herbarium specimens collected between 1919 and 1960, nine of which were discarded for evaluation because their collecting site ("vers km 110 route Kavumu-Walikale, Irangi, réserve I.R.S.A.C") has been completely destroyed and the forest replaced by a vast oil palm plantation. The 12 remaining collections represent 12 unique occurrences and 10 extant subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of these threats, 10 locations (sensu IUCN) can be distinguished, which is the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in the extent and quality of suitable habitat, while from the loss of at least the Irangi site we infer a decline in AOO, number of subpopulations and number of mature individuals.

Bibliography – Aveling (2010), Campbell & Hammond (1989), Ferf & al. (2016), Hepper (1979), Inogwabini & al. (2005), Kirkby & al. (2015), Küper & al. (2006), Papaco (2015), Sosef & al. (2017), Stropp & al. (2016), Taplin & Lovett (2003), UNESCA (2017a), Van der Veken (1960b).

Authors - P. De Block, M. Simo-Droissart & W. Tack

#### **Deinbollia acuminata** Exell

Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

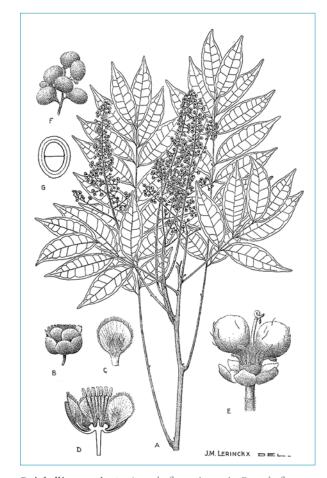
**Distribution** – South-western Gabon, Angola (Cabinda) and western Democratic Republic of the Congo. Extent of occurrence (EOO): 122,342 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Evergreen and semi-deciduous rainforest (both primary and secondary) on drained soils; at 100–370 m. The flowers are probably pollinated by insects and seeds are presumably dispersed by animals.

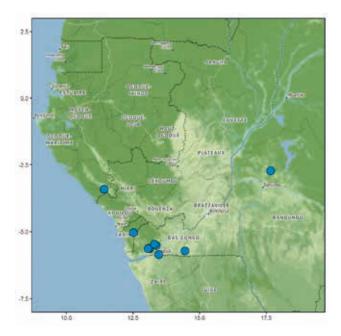
**Protected areas** – The species occurs within the Luki Biosphere Reserve in the Democratic Republic of the Congo. There are no current conservation actions for the species outside protected areas.

**Threats** – Deforestation for agriculture and/or charcoal production represent the main threats; urbanization is another since two collecting sites are close to the cities Nioki and Matadi.

Justification – Deinbollia acuminata is a tree to 25 m tall, with a bole to 60 cm in diameter. It is known from 21 herbarium specimens collected between 1932 and 2012, representing 10 unique occurrences and seven subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, eight locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Moreover, two collecting sites



Deinbollia acuminata: A, male flowering twig; B, male flower; C, petal of male flower, inside view; D, male flower, longitudinal section; E, female flower, after shedding of petals; F, fruits; G, fruit, transverse section. (A-E: Toussaint 2306; F, G: Toussaint 3). Drawing by J.M. Lerinckx, Meise Botanic Garden (©).



occur near towns (Nioki, Matadi) and whether they still exist is not clear. From the above, we infer a continuing decline in habitat extent and quality, in number of mature individuals, in number of locations or subpopulations, in EOO and in AOO.

Bibliography - Hauman (1960).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

#### \_ **Deinbollia cauliflora** Hauman

Red List category - Vulnerable: VU B2ab(iii)

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 377,663 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Evergreen rainforest on drained soils, riverine forest; at 360–800 m. The flowers are probably pollinated by insects, and seeds are presumably dispersed by animals.

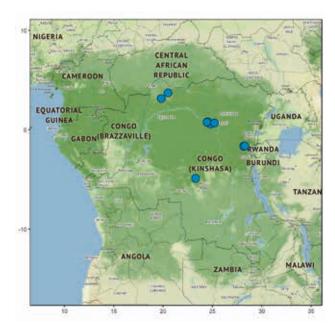
**Protected areas** – The species occurs within one protected area: the Yangambi Biosphere Reserve. For the subpopulations located outside the Reserve, there are no current conservation actions for the species.

**Threats** – Deforestation for small-scale agriculture represents the main threat to the habitat.

**Justification** – *Deinbollia cauliflora* is a small tree to (4(-6) m tall, with a bole to 12 cm in diameter. It is known from 14 herbarium specimens collected between 1903 and 1972, representing nine unique occurrences and eight



**Deinbollia cauliflora**: Herbarium specimen at BR (Évrard 1183).



subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under subcriterion B1, while the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threat and protected area boundaries, seven locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. A continuing decline in habitat extent and quality is inferred due to shifting agriculture around Yangambi.

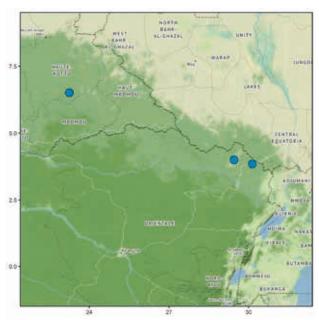
Bibliography - Hauman (1960).

Authors – O. Lachenaud, M. Simo-Droissart & W. Tack

#### \_ **Deinbollia crassipes** Hauman

Red List category - Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Gentral African Republic and north-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 5,009 km²; Area of occupancy (AOO): 12 km².





Deinbollia crassipes: Type specimen at BR (Troupin 676).

Habitat – Gallery forest; at 700–800 m.

**Protected areas** – One collecting site occurs within the Garamba National Park. There are no current conservation actions for the collecting sites occurring in non-protected areas.

**Threats** – Deforestation for agriculture represents the main threat to the habitat.

**Justification** – *Deinbollia crassipes* is a small tree of 4 m tall. The species is known from four herbarium specimens collected between 1923 and 1957, representing three unique occurrences and three subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threat, three locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. From the above, a continuing decline in habitat extent and quality may be inferred, and a decline in number of mature individuals, number of subpopulations, AOO and EOO suspected.

Bibliography - Hauman (1960).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

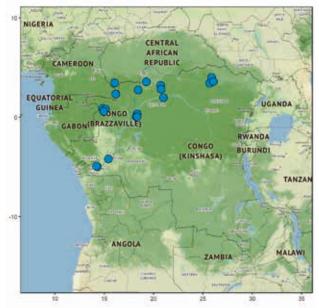
#### \_ Deinbollia laurentii De Wild.

Red List category – Near Threatened: NT.

**Distribution** – Cameroon, Central African Republic, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 588,071 km²; Area of occupancy (AOO): 80 km².

Habitat – Seasonally flooded riparian forest; at 350–650 m.

**Protected areas** – The species occurs in two protected areas: the Odzala National Park in the Republic of the Congo and the Dzangha-Sangha Reserve in the Central







**Deinbollia laurentii**: Sangha River, Central African Republic; photos by David Harris (©), available from African plants - A Photo Guide. www.africanplants.senckenberg.de.

African Republic. There are no current conservation actions for occurrences of the species in unprotected sites.

**Threats** – Deforestation for agriculture represents the main threat; urbanization (around Mbandaka) is a more localized one.

**Justification** – Deinbollia laurentii is a small tree to 12 m tall, with a bole to 15 cm in diameter. It is known from 27 herbarium specimens collected between 1895 and 1996, representing 20 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 15 locations (sensu IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The ongoing loss of the species' habitat leads us to predict the loss of one or two locations, a situation that will reduce the number of locations to 13 or 14, approaching the threshold (10) of the Vulnerable category, giving us reason to assign the Near Threatened status.

Bibliography – Hauman (1960).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

#### \_ **Deinbollia longiacuminata** Hauman

Red List category – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii).

**Distribution** – Endemic to the region of Ofala, Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

**Habitat** – Undergrowth of primary rainforest, on well-drained soils; at around 470 m. Flowers are probably pollinated by insects and seed dispersal is presumably by birds.

**Protected areas** – The only known collecting site occurs in a non-protected area. There are no current conservation actions in-place for this species.





Deinbollia longiacuminata: Type specimen at BR (Louis 14216).

**Threats** – The species is threatened by deforestation for shifting agriculture and by the domestic needs of the human population of a nearby riverine settlement.

Justification – Deinbollia longiacuminata is a small tree known from a single herbarium specimen collected in 1939, representing one unique occurrence and subpopulation. The area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Based on the threat, one location (sensu IUCN) can be defined, which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in habitat extent and quality. Because of the threats and the fact that the species has not been observed for over 80 years, is has been given the tag Possibly Extinct.

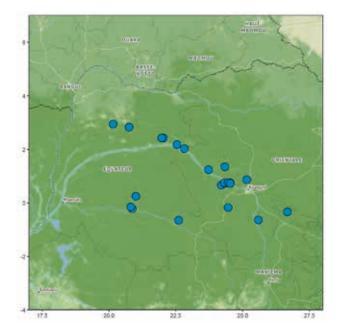
Bibliography - Hauman (1960), Ndjele (1988, 1997).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

#### **Deinbollia pynaertii** De Wild.

Red List category – Least Concern: LC.

**Distribution** – Endemic to the northern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): 160,489 km²; Area of occupancy (AOO): 92 km².





**Deinbollia pynaertii**: Herbarium specimen at BR (De Giorgi 1600).

**Habitat** – Periodically flooded riparian forest; at 350–470 m.

**Protected areas** – One occurrence is within a protected area: the Yangambi Biosphere Reserve. There are no current conservation actions for the other occurrences.

**Threats** – Deforestation for agriculture and selective logging for domestic uses represent the main threats to the natural habitat. However, since agriculture does not normally strongly affect riparian forest, it may have a limited impact on the habitat.

**Justification** – *Deinbollia pynaertii* is a small tree to 4 m tall, with a bole to 12 cm in diameter. It is known from 34 herbarium specimens collected between 1905 and 2010, representing 24 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the main threat and protected area boundaries, 16 to 18 locations (*sensu* IUCN) can be distinguished, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Since no extreme fluctuations are apparent, the species can not be assigned to any threatened category under criterion B.

Bibliography - Hauman (1960), Ndjele (1988, 1997).

Authors – O. Lachenaud, M. Simo-Droissart & W. Tack

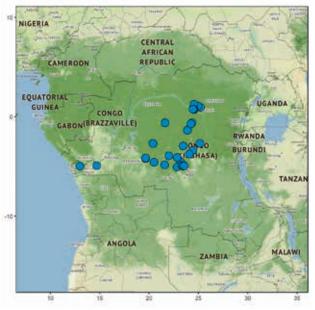
#### Haplocoelum acuminatum Radlk. ex Engl.

Red List category – Least Concern: LC.

**Distribution** – Endemic to the Democratic Republic of the Congo. Extent of occurrence (EOO): 473,558 km²; Area of occupancy (AOO): 120 km².

**Habitat** – Evergreen forest, secondary forest, *Gilbertiondendron* monodominant forest, riparian forest, forest on hillsides; at 380–500 m.

**Protected areas** – Six unique occurrences are located within three protected areas: the Sankuru Nature Reserve [1], Lomami National Park [1], and the Yangambi Biosphere Reserve [4]. There are no current conservation actions for the species in the remaining collecting sites.





Haplocoelum acuminatum: A, male flowering branch; B, fruiting branch; C, young male inflorescence, spread out; D, male flower; E, receptacle. (A, C-E: Gillar-Din 514; B: Vanderyst 302). Drawing by M. Boutique, Meise Botanic Garden (©).

**Threats** – The threats to the species include urbanization and small-scale shifting agriculture. The main threat is small-scale agriculture, which affects up to 24 collecting sites. Based on images from Google Earth, we assume the eradication of unique occurrences in the southern part of the Yangambi Biosphere Reserve.

**Justification** – Haplocoelum acuminatum is a shrub or a tree, with a bole to 50 cm in diameter. It is known from 78 herbarium specimens collected between 1903 and 2015, representing 30 unique occurrences and 15 to 20 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the main threat, the number of locations (sensu IUCN) is estimated to be 18 to 20, which is above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the above, we project a decline in the AOO and the extent and quality of the habitat, and suspect a decline in the number of mature individuals. The species' population is not severely fragmented. Since the conditions 'a' and 'b' of criterion B are not met, the species cannot be considered as threatened under that criterion.

Bibliography – Engler & Drude (1921), Hauman (1960).Authors – S.T. Ndolo Ebika, M. Simo-Droissart & W. Tack

#### \_ Lychnodiscus cerospermus Radlk.

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo, Democratic Republic of the Congo, South Sudan, a very restricted part of north-western Tanzania (Minziro) and Uganda. Extent of occurrence (EOO): 1,709,362 km²; Area of occupancy (AOO): 256 km².

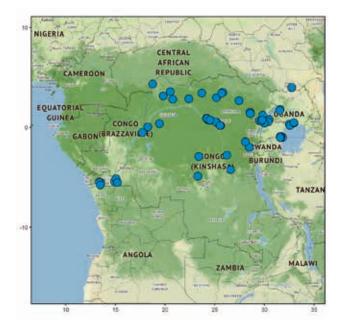
**Habitat** – Rainforest, forest with *Terminalia* and *Gilbertio-dendron*, seasonally flooded forests, relict and secondary forest, semi-deciduous forest of *Afzelia bipindensis*, riverine forest; at 400–1,650 m. The population density is said to be low.

**Protected areas** – The species occurs within 12 protected areas. These are the Mabira, Budongo, Malabigambo, Namala, Sango Bay and North Rwenzori Central Forest Reserves and the Kibale National Park in Uganda; the Minziro Nature Forest Reserve in Tanzania; and the Virunga and Lomami National Parks, the Yangambi Biosphere Reserve and the Okapi Wildlife Reserve in the Democratic Republic of the Congo. For the collecting sites occurring in unprotected areas, there are no current conservation actions for the species.

**Threats** – In the eastern part of the Democratic Republic of the Congo, the 1990–1994 Rwandan Civil War and the 1994 Rwandan Genocide resulted in large-scale destruction



Lychnodiscus cerospermus: Herbarium specimen at BR (Luja 58).



of primary habitat, and the species is threatened by uncontrolled tree felling for timber and fuel for local use and for commercial purposes by armed groups. The protected areas Mabira, Minziro, Sango Bay and Okapi (Epulu) are faced with such illegal felling. Deforestation due to the cutting of trees for smoking fish is also reported. Unsustainable extraction of non-timber forest products is reported as well as grazing. Encroachment for slash-and-burn agriculture and for settlement has been reported, occasionally even in protected areas such as the Yangambi Forest Reserve and the Virunga National Park. The encroachers also engage in logging, the making of canoes, and charcoal production, as well as some mining, e.g. gold extraction. The invasive Broussonetia papyrifera, covering very large tracts in some sites such as Mabira and Budongo, has reduced habitat quality. At Virunga National Park, there were recent discoveries of oil and gas reserves and geothermal energy potential. The DRC government cleared TOTAL E&P to take a sizeable interest in concession blocks and Soco was granted a permit to exploit oil and start drilling inside the Park. Mining of minerals such as gold and coltan by individual miners and groups has led to severe environmental degradation. In the Okapi Wildlife Reserve, there is mining of gold and cassiterite by the local communities. Artisanal mining causes direct dumping of waste, tailings, effluents, river damage in alluvial areas, mercury pollution, land degradation and soil erosion and deforestation. Urbanization, e.g. around Bambesa, contributes to the threats to the species since urban areas put heavy pressure on surrounding areas for supply of fuelwood. Baboons are known to eat the leaves (but not the flowers and fruits) and uproot seedlings for the edible root-bark, which may hamper regeneration.

**Justification** – *Lychnodiscus cerospermus* is a slender tree to 20 m tall, often partly scandent, with a trunk to 30 cm in diameter. It is known from 198 herbarium specimens collected between 1903 and 2000, representing 65 unique occurrences and 51 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 53 locations (*sensu* IUCN) can be distinguished, which far

exceeds the upper limit of any threatened category under condition 'a' of sub-criterion B2. A continuing growth of the human populations is expected, which will increase the pressure on natural vegetations in the future. From the above, we infer a continuing reduction in the quality and extent of the suitable habitat. The wide range of threats notwithstanding, this species does not meet the requirements for a threatened status. Additionally, the species may not necessarily need primary forest for its survival as it also occurs in secondary forest and has a fairly wide elevational range.

Bibliography - Armstrong (2007), Atyi & Bayol (2008), Avebare & al. (2018), Bizawu & Gomes (2016), Burnley (2011), COMESA Regional Investment Agency (2012), Calisesi & al. (2016), Crawford & Bernstein (2008), Darbyshire & al. (2015), De Block (2018), De Wasseige & al. (2014), Debroux & al. (2007), Giessen (2005), Global Witness (2015), Gosline & al. (2019), GVTC (2015), Hauman (1960), Huggins (2010), Internal Displacement Monitoring Centre (2007), Onternational Alert (2014), Javelle & Veit (2012), Kalema & Beentje (2012), Kamalebo & al. (2018), Kok & al. (2009), Koy & al. (2019), Lemmens & al. (2012), Likoko & al. (2019), Mattheysen & Montejano (2013), Mbala (2010), Ministry of Water and Environment (2016, 2017), Muhumuza & al. (2007), Novosseloff & al. (2019), Plumptre & Williamson (2001), Seyler & al. (2010), Tetra Tech ARD (2016), Tufaikide Wote (2015), UNEP (2011b), UNEP-MONUSCO-OSESG (2015), UNESCO (2017a, 2017b), UNICEF (2017), United Nations (2001), United Nations Security Council (2011), Wolfire & al. (1998).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

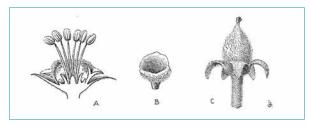
#### **\_ Lychnodiscus cerospermus** Radlk. var. **cerospermus**

Red List category - Least Concern: LC.

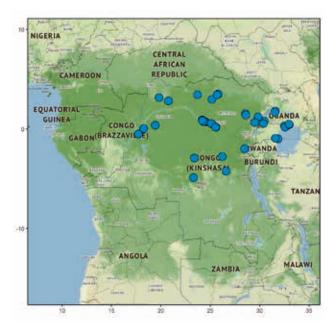
**Distribution** – Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO): 1,037,664 km²; Area of occupancy (AOO): 160 km².

**Habitat** – Rainforest, forest with *Terminalia* and *Gilbertiodendron*, wet, seasonally flooded forests; at 470–1,400 m. The population density is said to be low.

**Protected areas** – This variety occurs within seven protected areas: the Okapi Wildlife Reserve (DRC), the Yangambi Biosphere Reserve (DRC), the Budongo Central Forest Reserve (Uganda), the Mabira Central Forest Reserve (Uganda), the Kibale Forest Reserve (Uganda), the Sango



Lychnodiscus cerospermus var. cerospermus: A, male flower, longitudinal section; B, male patel, inside view; C, young fruit and calyx. (A: Louis 13863; B: Louis 13863; C: Évrard 355). Drawing by J. Lerinckx, Meise Botanic Garden (©).



Bay Forest Reserve (Uganda) and the Toro (Itwara) Central Forest Reserve (Uganda). For the collecting sites occurring in unprotected areas, there are no current conservation actions for the taxon.

Threats - Budongo Forest Reserve is faced with illegal tree felling for timber. It is awash with the invasive species Broussonetia papyrifera covering large tracts, which reduces habitat quality. Sango Bay F.R. suffers from burning and tree felling (Afrocarpus dawei). The Okapi Wildlife Reserve is threatened with tree felling because of insecurity from insurgents and armed rebellion, while there are also gold mining activities and artisanal mining of cassiterite, although forested areas outside village lands are relatively secure (C.E.N. Ewango, pers. comm.). Artisanal mining causes direct dumping of waste, tailings, effluents, river damage in alluvial areas, mercury pollution, land degradation, soil erosion and deforestation. Isangi is confronted with the threat of diamond mining with the town of Kisangani being a major diamond trading center since the late 1980s, following the discovery of alluvial diamonds in Orientale. In Irumu, there are several artisanal diamond and gold mining sites as well as industrial mining with rising deforestation. Within the Yangambi Biosphere Reserve, forest disturbance owing to widespread settlement by local communities, logging, slash and burn agriculture, making of canoes as well as some mining of gold are reported. At Mukumari (Lomela), the population lives mainly from the income of agriculture (rice, maize, coffee) and this has caused habitat loss and degradation through forest clearance. In Mabira Forest, the taxon is threatened with unsustainable forest harvesting, especially for timber and charcoal. There is also agricultural encroachment and illegal acquisition of land titles in the reserve. The forest is also threatened with infrastructural development, particularly of new roads and power lines. Baboons are known to eat the leaves (but not the flowers and fruits) and uproot seedlings for the edible root-bark, which may hamper regeneration.

**Justification** – *Lychnodiscus cerospermus* var. *cerospermus* is a slender tree to 20 m tall, often partly scandent, with a trunk to 30 cm in diameter. It is known from 55 herbarium specimens collected between 1903 and 1998, representing

40 unique occurrences and 34 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threats, 35 locations (sensu IUCN) could be identified, which is well above the limit of any threatened category under condition 'a' of sub-criterion B2. Throughout its distribution area, a decline in the quality and the extent of the habitat is inferred and, with growing human populations, a further decline is projected for the future.

Bibliography – Armstrong (2007), Burnley (2011), Calisesi & al. (2016), Darbyshire & al. (2015), Fahey (2010), Gosline & al. (2019), Hauman (1960), Internal Displacement Monitoring Centre (2007), Kalema & Beentje (2012), Kamalebo & al. (2018), Kipalu & al. (2016), Koy & al. (2019), Lemmens & al. (2012), Lezhney (2016), Lohese & Jelinski (2016), Mattheysen & Montejano (2013), Matthysen & al. (2019), Ministry of Water and Environment (2017), Muhumuza & al. (2007), Nature Uganda (2011), Otshudi & al. (2000), Plumptre & Williamson (2001), UNEP (2011a, 2011b), UNICEF (2017), United Nations (2001), WCS (2003), Weyns & al. (2016), Wolfire & al. (1998), Yager (2012).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

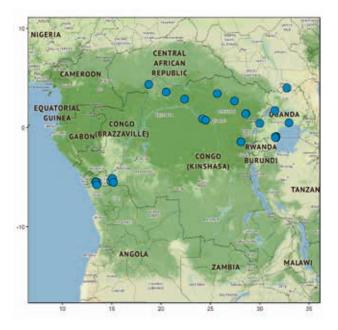
## \_ *Lychnodiscus cerospermus* Radlk. var. *mortehanii* (De Wild.) Hauman

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo, Democratic Republic of the Congo, South Sudan, a very restricted part of Tanzania (Minziro) and Uganda. Extent of occurrence (EOO): 1,496,408 km²; Area of occupancy (AOO): 108 km².

**Habitat** – Primary forest, relict and secondary forest, semi-deciduous forest of *Afzelia bipindensis*, riverine forest; at 400–1,650 m. The population density is said to be low.

**Protected areas** – This variety occurs within eight protected areas: the Mabira, Budongo, Malabigambo, Namala





Lychnodiscus cerospermus var. mortehanii: Type specimen at BR (Mortehan 42).

and North Rwenzori Central Forest Reserves in Uganda, the Minziro Nature Forest Reserve in Tanzania, and the Okapi Wildlife Reserve and Yangambi Biosphere Reserve in the Democratic Republic of the Congo. For the collection sites occurring in unprotected areas, there are no current conservation actions for the taxon.

**Threats** – In the Yangambi region, the human population increased nearly 10-fold from 8,500 in 1955 to 80,000 in 2017, increasing agricultural needs and pressure for extraction of resources such as firewood. Yangambi is also one of the suppliers of charcoal for the large city of Kisangani. Shifting cultivation in the area threatens the forest habitat, even though the variety might survive in secondary forest. The Yangambi Biosphere Reserve suffers from forest disturbance owing to widespread settlement and use by local communities for logging for construction timber and for making canoes as well as for slash-and-burn agriculture. Artisanal mining of diamond and gold has contributed to small-scale deforestation in the reserve. The area around Yangambi is also subject to continuing urbanisation. There is encroachment and conversion to agricultural land in areas around Budongo Forest Reserve. The reserve is faced with both legal and illegal tree felling reducing habitat quality. The reserve has also been invaded by Broussonetia papyrifera, further reducing habitat quality. In Malabigambo (Sango Bay) and Minziro there is overexploitation of forest products, especially firewood, timber, construction material

and medicinal plants. Natural habitats are converted for farming. In Minziro, loss of forest cover due to encroachment and settlement, conversion to agriculture and burning has been reported. Small-scale logging continues in the area. Fire at the forest edges is reported to destroy many shrubs and small trees and will, over time, force a retreat of the forest boundary. In Mabira Central Forest Reserve, the major threats include unsustainable forest harvesting, including tree felling for timber and firewood, while there is also agricultural encroachment and illegal acquisition of land titles. The forest is also threatened with infrastructural development, particularly of newly proposed roads and power lines, causing permanent deforestation. The forest has also been invaded by Broussonetia papyrifera (paper mulberry), further reducing habitat quality. Baboons are known to eat the leaves (but not the flowers and fruits) and uproot seedlings for the edible root-bark, which may hamper regeneration.

**Justification** – Lychnodiscus cerospermus var. mortehanii is a slender tree to 20 m tall, often partly scandent, with a trunk to 30 cm in diameter. It is known from 40 herbarium specimens collected between 1913 and 2000, representing 28 unique occurrences and 21 subpopulations. Its extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of these threats, 23 locations (sensu IUCN) can be distinguished, which far exceeds the upper limit of any threatened category under condition 'a' of sub-criterion B2. From the above, we infer a decline in the extent and quality of the habitat. With growing populations, pressure on natural vegetations will only increase, with a further decline in the habitat projected for the future.

Bibliography – Ayebare & al. (2018), Calisesi & al. (2016), Conservation Development Centre (2007), Cooleman & al. (2015), Darbyshire & al. (2015), Gosline & al. (2019), Hauman (1960), Kamalebo & al. (2018), Koy & al. (2019), Lemmens & al. (2012), Likoko & al. (2019), Ministry of Water and Environment (2016, 2017), Muhumuza & al. (2007), Perkin & Bearder (2004), Plumptre & al. (2003), Stanley & Foley (2008), Tetra Tech ARD (2016).

Authors – J. Kalema, M. Simo-Droissart & W. Tack

# \_ *Lychnodiscus cerospermus* Radlk. var. *pedicellaris* (Radlk.) Hauman

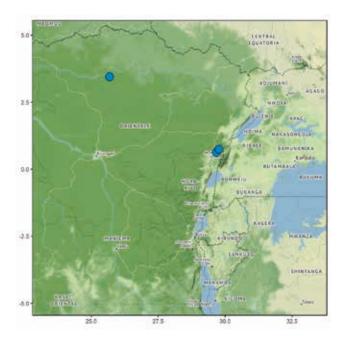
Red List category - Endangered: EN B1ab(iii)+2ab(iii).

**Distribution** – Endemic to the eastern region of the Democratic Republic of the Congo (Kivu Province). Extent of occurrence (EOO): 4,595 km²; Area of occupancy (AOO): 12 km².

**Habitat** – Humid forests, especially along river banks; at 600–750 m. The population density is said to be low.

**Protected areas** – One collecting site of the taxon occurs within the Virunga National Park. There are no current conservation actions for the other occurrences.

**Threats** – Around Lesse in the Kivu Province, uncontrolled tree felling for timber and fuel takes place. There is also





*Lychnodiscus cerospermus* var. *pedicellaris*: Herbarium specimen at BR (*Gérard 2954*).

reported encroachment for agriculture by the Mbuba and Nande farmers. Mining of gold and coltan by individual miners and groups has led to severe environmental degradation. The continuing urbanization of Bambesa and surrounding areas is a threat to the suitable habitat. Agriculture is another threat because cotton growing is one of the investment opportunities being promoted at Bambesa.

Virunga is threatened with forest loss and degradation due to encroachment for agriculture, burning, and logging for timber and charcoal for neighbouring cities. Tree felling is done by refugees and for commercial purposes by armed groups. There is also deforestation due to cutting of trees for smoking fish. Non-timber forest products are also extracted and grazing is conducted. Pressure increased tremendously after the 1990–1994 Rwandan Civil War and the 1994 Rwandan Genocide when the park was invaded by refugees and armed militias, resulting in large-scale destruction of primary habitat. Recently, oil, gas reserves and geothermal energy potential were discovered in Virunga N.P. The DRC government cleared TOTAL E&P to take a sizeable interest in concession blocks and Soco was granted a permit to exploit oil and start drilling inside the park. Baboons are known to eat the leaves (but not the flowers and fruits) and uproot seedlings for the edible root-bark, which may hamper regeneration.

**Justification** – *Lychnodiscus cerospermus* var. *pedicellaris* is a slender tree to 20 m tall, often partly scandent, with a trunk to 30 cm in diameter. It is known from four herbarium specimens collected between 1908 and 1957, representing three unique occurrences and two subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the limits of the Endangered category under the sub-criteria B1 and B2. Given the scale of threats, two locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. In the future, with growing human populations, the pressure on the natural vegetation will only increase so a further decline in the extent and the quality of the suitable habitat is projected.

Bibliography – Atyi & Bayol (2008), Bizawu & Gomes (2016), Burnley (2011), COMESA Regional Investment Agency (2012), Crawford & Bernstein (2008), Darbyshire & al. (2015), De Block (2018), De Wasseige & al. (2014), Debroux & al. (2007), Giessen (2005), Global Witness (2015), GVTC (2015), Hauman (1960), Huggins (2010), International Alert (2014), Javelle & Veit (2012), Kok & al. (2009), Lemmens & al. (2012), Mbala (2010), Novosseloff & al. (2019), Plumptre & Williamson (2001), Seyler & al. (2010), Tufaikide Wote (2015), UNEP-MONUSCO-OSESG (2015), UNESCO (2017a, 2017b), United Nations Security Council (2011),

**Authors** – J. Kalema, M. Simo-Droissart & W. Tack

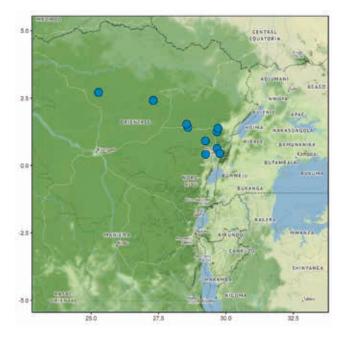
#### **Lychnodiscus multinervis** Radlk.

Red List category – Vulnerable: VU B2ab(iii).

**Distribution** – Endemic to the north-eastern region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 41,499 km<sup>2</sup>; Area of occupancy (AOO): 40 km<sup>2</sup>.

**Habitat** – An obligate forest species found in dense forest, mixed semi-deciduous forest and secondary *Markhamia* forest; at 700–1,100 m.

**Protected areas** – The species occurs within the Virunga National Park and the Okapi Wildlife Reserve. The other collecting sites occur in unprotected areas where there are no current conservation actions for the species.



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**Lychnodiscus multinervis**: Herbarium specimen at BR (*Claessens* 577).

Threats – The habitat is threatened by tree felling, charcoal production, mining and oil exploration within the Virunga National Park, and by shifting agriculture at Dedekomba in Rungu (on satellite imagery). The unprotected sites such as Mambasa are faced with mining, tree felling and encroachment, reducing the habitat quality.

**Justification** – *Lychnodiscus multinervis* is a large shrub or small tree. It is known from 10 herbarium specimens collected between 1908 and 1994, representing 10 unique occurrences and eight subpopulations. Its extent of occurrence (EOO) exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on geographic clustering with respect to scale of threats, the occurrences represent seven locations (*sensu* IUCN), which falls within the limits of the Vulnerable category under the condition 'a' of sub-criterion B2. Based on the limited information we have, it is reasonable to infer a continuing decline in extent and quality of the habitat.

**Bibliography** – Hauman (1960), Matthysen & Montejano, Tetra Tech ARD (2001).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

#### \_ **Placodiscus paniculatus** Hauman

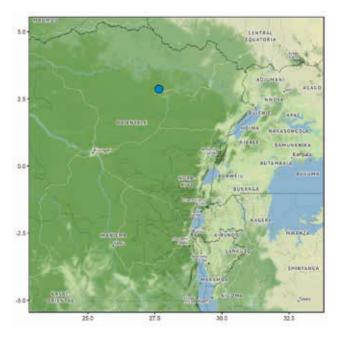
Red List category - Critically Endangered: CR B2ab(iii).

**Distribution** – Endemic to the north-east of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.

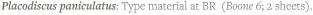
**Habitat** – Humid forest; at ca. 750 m. The fruits are dispersed by bonobos.

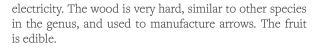
**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions known for the species.

Threats – There are human settlements around Nala, especially along the road, and forest is converted to agricultural land for subsistence farming. Habitat degradation takes place as a result of tree felling for manufacturing and building wood or for the production of charcoal to supply the nearby city of Isiro. This takes place around all large towns in the DRC, as only c. 31% of the population has access to









**Justification** – *Placodiscus paniculatus* is a tree to 25 m tall, with a trunk reaching a diameter of 40 cm. The species is only known from the type specimen collected in 1912. No specimens of the species were collected since but Beaune (2012) and Beaune & al. (2015) cited consumption of its fruits by bonobos, which would indicate that the species is still present in the type locality, but voucher material is needed to confirm its presence. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one unique occurrence and one subpopulation in the Bas-Uele (formerly Orientale) Province and represents one location (sensu IUCN), which concurs with the Critically Endangered category under condition 'a' of sub-criterion B2. From the above, we infer a current decline in the extent and quality of the habitat of the species, and a further reduction of the habitat is projected for the future. Further collecting of this species would give a better understanding of its distribution area, its abundance and the threats it faces. Ex-situ populations might need to be established should any further individuals be located in the wild.

**Bibliography** – Asylum Research Centre (2019), Beaune (2012), Beaune & al. (2013, 2015), Climate Investment Funds (2017), Debroux & al. (2007), Hauman (1960),



Kipalu & al. (2016), Kusakana (2016), Ndjele (1988, 1997), Novosseloff & al. (2019).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

### **SAPOTACEAE**

#### \_ Afrosersalisia rwandensis (Troupin) Liben

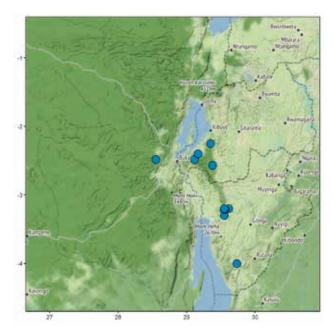
(Synonyms: Chrysophyllum rwandense Troupin, Zeyherella rwandensis (Troupin) Liben)

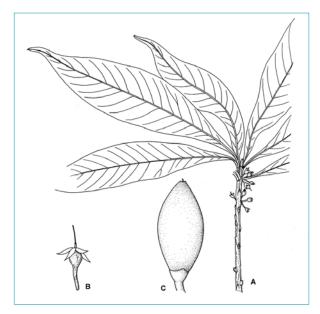
Red List category – Endangered: EN B2ab(i,ii,iii,iv,v).

**Distribution** – Endemic to the Congo-Nile divide, known from eastern Democratic Republic of the Congo, south-western Rwanda and western Burundi. Extent of occurrence (EOO): 9,907 km²; Area of occupancy (AOO): 99 km².

**Habitat** – Montane forests; at 1,900–2,400 m. Seed dispersal is primarily dependent on animal vectors, so is constrained by this factor.

**Protected areas** – Most collecting sites lie inside protected areas (the Kibira National Park and Bururi Forest Nature





Afrosersalisia rwandensis: A, flowering branch; B, flower; C, fruit). Drawing by D. Troupin (©), reproduced with permission from Troupin (1985).

Reserve in Burundi, the Nyungwe National Park in Rwanda, and the Kahuzi-Biega National Park in DRC). Two other occurrences are situated just outside of the Bururi Forest Nature Reserve.

**Threats** – The two occurrences outside Bururi are subject to deforestation for agricultural conversion and wood harvesting. The forest in this area has been completely cleared.

**Justification** – *Afrosersalisia rwandensis* is a climbing shrub or small tree to 20 m tall. It is known from 16 herbarium specimens representing 11 unique occurrences, collected between 1959 and 1984, and seems to be moderately rare. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, and the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Based on the scale of the threat and protected area boundaries, four locations (*sensu* IUCN) can be distinguished, which complies with

the Endangered category under condition 'a' of sub-criterion B2. Due to the severe threats confronting at least the unprotected, southernmost occurrences just outside Bururi Forest Nature Reserve, we infer continuing decline in EOO, AOO, area, extent and/or quality of habitat, number of locations, and number of mature individuals.

**Bibliography** – Liben (1989, 1991), Ntore & al. (2017i, 2018), Troupin (1982b, 1985).

**Authors** – S. Ntore, H.J. Beentje, R. Gereau, C. Kabuye, J. Kalema, W.R.Q. Luke, M. Maunder, M. Mwangoka & S. Nshutiyayesu

# **\_ Englerophytum congolense** (De Wild.) Aubrév. & Pellegr.

Red List category - Least Concern: LC.

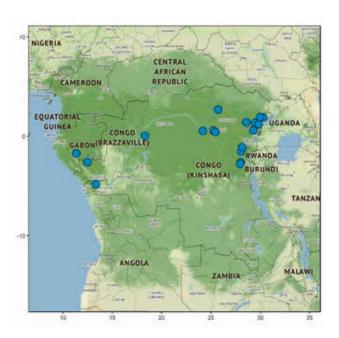
**Distribution** – Gabon, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 997,387 km²; Area of occupancy (AOO): 80 km².

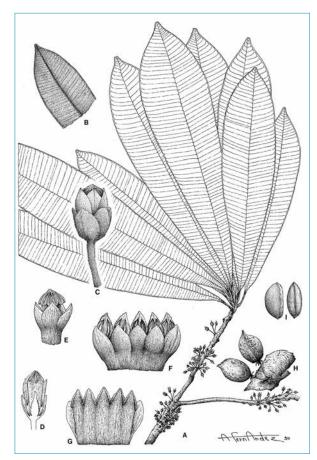
**Habitat** – Riparian forests, swamp forests, dry land forests, fallows; up to 1,350 m.

**Protected areas** – Two collecting sites occur within protected areas: the Rubi-Tele Hunting Area and the Okapi Wildlife Reserve, both in DRG. The 18 other collecting sites occur in unprotected sites where there are no current conservation actions for the species.

**Threats** – Outside protected areas some occurrences are under human pressure of forest conversion for plantations, agriculture and pasture for cattle. In Bas Congo, in Kisangani, in Ngène Ngène and Kisangani-Bengamisa, woody vegetation is subject to intensive harvesting for fuelwood to meet the high demand of urban populations. The main threat is small-scale shifting agriculture.

**Justification** – Englerophytum congolense is a small tree to 10 m tall. It is known from 25 herbarium specimens collected between 1933 and 2010, representing 20 unique occurrences and 19 subpopulations. Its extent of occur-





Englerophytum congolense: A, flowering branch; B, detail of lower leaf surface; C, flower; D, idem, longitudinal section; E, corolla and stamens; F, idem, opened, from outside; G, idem, from inside; H, young fruits; I, seeds, frontal and side view. (A-C: Christiaensen 1851; D, E: Pierlot 2095; F, G: T. Hart 262; H: Germain 7381; I: Germain 5291). Drawing by Antonio Fernandez, Meise Botanic Garden (©).

rence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of the main threat, the number of locations (sensu IUCN) is 17, exceeding the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. The species' population does not appear to be severely fragmented. Since the condition 'a' under sub-criterion B2 is not met, Englerophytum congolense cannot be regarded as threatened under the IUCN red list criterion B. There is a decline of its habitat quality and in its mature individuals, and we project further decline in the near future.

Bibliography – De Wildeman (1919).

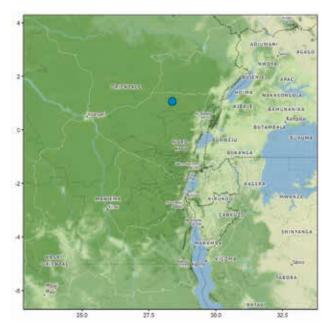
Authors - S. Ntore, M. Simo-Droissart & W. Tack

#### **Englerophytum iturense** (Engl.) L.Gaut.

(Synonym: Chrysophyllum iturense Engl.)

Red List category – Data Deficient: DD.

**Distribution** – Endemic to the eastern region of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km<sup>2</sup>.





Englerophytum iturense: Isotype specimen at PRE (Mildbraed 2972). © South African National Biodiversity Institute. Reproduced with the consent of the South African National Biodiversity Institute.

Habitat – Probably rainforest; at around 700 m.

**Protected areas** – The only occurrence is located within the Okapi Wildlife Reserve. There are no current conservation actions for the species.

**Threats** – In 1997, the Okapi Wildlife Reserve was added to the list of World Heritage Sites in danger. The habitat still

seems largely intact. However, the pressure on the reserve's natural resources from forest clearance for agriculture in the village enclaves and illegal mining and logging in the buffer zones is likely to continue as immigrants continue to move into the Ituri forest from the overpopulated highlands to the east. Due to this demographic situation, the habitat is likely to be threatened by small-scale shifting agriculture.

**Justification** – *Englerophytum iturense* is a small tree, only known from the type collection made in April 1908 at Mawambi, Irumu. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under the sub-criterion B2. The species is known from one unique occurrence and one subpopulation. No details about the ecology/preferred habitat of Englerophytum iturense are available in its protologue, but we infer that it was collected in lowland rainforest at around 700 m elevation. A taxonomic revision of the genus Englerophytum is currently underway by Olivier Lachenaud and Laurent Gautier, which should clarify its taxonomic status. Englerophytum iturense is only known with certainty from an isotype deposited at PRE (holotype destroyed at B): a specimen in young fruit of which the two specialists have only seen scans. While awaiting a more solid revision, it is best to treat it as Data Deficient.

**Bibliography** – Bouuaert & Zarkeyvan (2018), Engler (1908), Lebrun & Stork (1997).

Authors - S. Ntore, M. Simo-Droissart & W. Tack

## \_ Englerophytum longepedicellatum (De Wild.) L.Gaut.

(Synonym: Zeyherella longepedicellatum (De Wild.) Aubrév. & Pellegr.)

Red List category - Near Threatened: NT.

**Distribution** – Endemic to the central part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 223,362 km²; Area of occupancy (AOO): 48 km².

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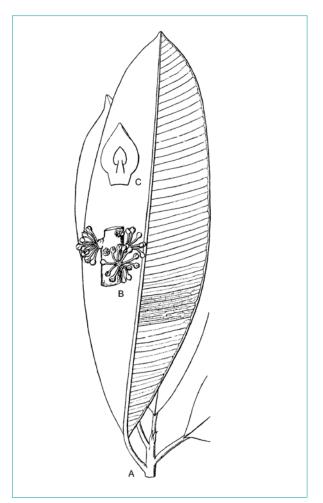
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**Habitat** – Periodically flooded swamp forest; at 330–380 m. Pollination is probably by insects; the fleshy fruits are dispersed by animals.

**Protected areas** – One collecting site occurs within a protected area, the Salonga National Park, and two collecting sites occur within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to its conservation. The 10 other collecting sites occur in unprotected localities where there are no current conservation actions for the species.

**Threats** – Urbanization appears to be the main threat to the species' habitat since three of the sites are close to cities. Deforestation for agriculture is also ongoing in its range, but the pressure on swamp forests is limited. Three collecting sites, including an outlying one, occur close to cities and are at risk from urban expansion (maybe already lost).

**Justification** – Englerophytum longepedicellatum is a tree to 35 m tall, with a bole to 90 cm in diameter. It is known from 15 herbarium specimens collected between 1928 and 2007, representing 12 unique occurrences and 12 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the



Englerophytum longepedicellata: A, leafy branch; B, inflorescences; C, part of corolla. Drawing by Aubréville, Muséum national d'Histoire naturelle, Paris (©), reproduced with permission from Aubréville (1960).

scale of the threats, 11 locations (sensu IUCN) can be distinguished, which is just slightly above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. A decline in habitat extent and quality is inferred, while a decline in number of individuals, number of subpopulations, AOO and EOO may be suspected because of the occurrences near cities. Because the number of locations is close to the threshold of the Vulnerable category, without the certainty that any of them has been completely lost, it seems most appropriate to treat the species as Near Threatened.

Bibliography - Borg & al. (2019), Liben (1989b).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

# \_ **Englerophytum vermoesenii** (De Wild.) Aubrév. & Pellegr.

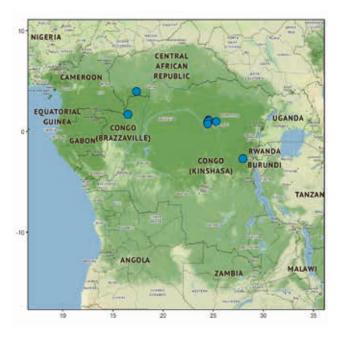
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Central African Republic, Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 316,841 km<sup>2</sup>; Area of occupancy (AOO): 40 km<sup>2</sup>.

**Habitat** – Evergreen and semi-deciduous rainforest on drained soils; at 470–780 m.

**Protected areas** – Three of the ten occurrences are situated within protected areas: two occurrences in the Yangambi Biosphere Reserve in DRC and one in the Ngotto Extension Classified Forest in the Central African Republic. The other occurrences are located in unprotected sites where there are no current conservation actions for the species.

**Threats** – At least one occurrence is in a logging concession, and most of the remaining ones occur in areas with significant deforestation for agriculture. Therefore, deforestation for agriculture represents the main threat to the species' habitat, while habitat degradation by logging is another threat.





Englerophytum vermoesenii: Herbarium specimen at BR (A. Léonard 3761).

**Justification** – Englerophytum vermoesenii is a shrub or small tree to 12 m tall, with a bole to 45 cm in diameter. It is known from 11 herbarium specimens collected between 1937 and 2006, representing 10 unique occurrences and six subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, seven locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. A continuing decline in habitat extent and quality is inferred.

Bibliography – Liben (1989b).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

#### \_ Gambeya lungi (De Wild.) Aubrév. & Pellegr.

(Synonym: Chrysophyllum lungi De Wild.)

Red List category – Endangered: EN B1ab(iii)+2ab(iii)

**Distribution** – Endemic to western Democratic Republic of the Congo. Extent of occurrence (EOO): 2,261 km²; Area of occupancy (AOO): 20 km².

Habitat - Dense lowland forest; at 70-390 m.

**Protected areas** – None of the five occurrences is situated within a protected area. There is no current conservation action for the species.

**Threats** – The habitat is threatened by high levels of urbanization, forest clearance for shifting agriculture and selective logging for carpentry and fuelwood.





Gambeya lungi: Herbarium specimen at BR (Mahieu 247).

**Justification** – *Gambeya lungi* is a medium-sized tree to 30 m tall, with a trunk to 1 m in diameter. It is known from nine herbarium specimens collected between 1919 and 1959, representing five unique occurrences and three subpopulations. Its extent of occurrence (EOO) and its area of occupancy (AOO) both fall within the thresholds of the Endangered category under sub-criteria B1 and B2. Given the scale of the threats, four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition B1a and B2a. We project that this pressure will continue in the future. The ongoing and projected loss of its habitat does not lead us to predict any other kind of continuous decline for the species.

Bibliography - De Wildeman (1926).

Authors - D.U.G. Bouka, M. Simo-Droissart & W. Tack

#### \_ *Manilkara adolfi-friederici* (Engl. & K.Krause) H.J. Lam

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

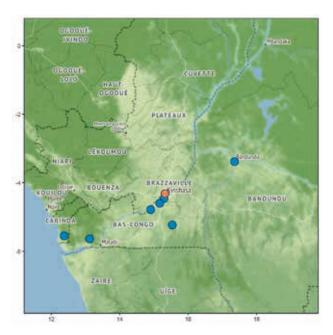
**Distribution** – Western Democratic Republic of the Congo and Angola (Cabinda). Extent of occurrence (EOO): 35,291 km²; Area of occupancy (AOO): 28 km².

Habitat - Dry forest, old secondary forest; at 300-565 m.

**Protected areas** – One collecting site occurs within the Luki Biosphere Reserve. There are no current conservation actions for the six other occurrences.

**Threats** – Most of the occurrences are located in areas that are under human pressure. The main threat to the habitat is forest clearing for agriculture, followed by selective logging, urbanization and charcoal production.

**Justification** – *Manilkara adolfi-friederici* is a tree to 18 m tall, with a bole to 50 cm in diameter. It is known from 12 herbarium specimens of which two were collected between 2005 and 2014, and 10 between 1902 and 1965, with the majority collected around 1950. Two collections recorded from the University of Lovanium (Kinshasa) were discarded





Manilkara adolfi-friederici: Herbarium specimen at BR (Toussaint 54).

for evaluation because satellite images show that the suitable habitat has disappeared. The 10 remaining collections represent seven unique occurrences and seven subpopulations. The extent of occurrence (EOO) exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in quality and extent of the habitat. The past loss of the occurrences in Kinshasa has led to a decline in the number of locations/subpopulations and mature individuals of the species, as well as a decline of its AOO.

Bibliography - Lam (1941).

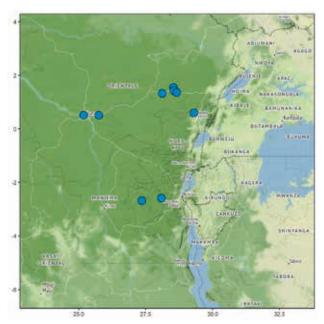
Authors – E. Fischer, M. Simo-Droissart & W. Tack

### \_ **Manilkara bequaertii** (De Wild.) H.J.Lam

Red List category – Vulnerable: VU B2ab(iii)

**Distribution** – Endemic to the eastern part of the Democratic Republic of the Congo. Extent of occurrence (EOO): 120,291 km²; Area of occupancy (AOO): 40 km².

**Habitat** – Dry forests, *Michelsonia* forests, rainforests, gallery forests, degraded forests; at 300–880 m.





Manilkara bequaertii: Herbarium specimen at BR (T. Hart 463).

**Protected areas** – Five occurrences are situated within the Okapi Wildlife Reserve, and one is in the south-western part of the Kahuzi-Biega National Park. There are no current conservation actions for the four other collecting sites.

**Threats** – The main threat to the species is destruction of its habitat for agriculture, followed by uncontrolled logging and urbanization around Kisangani.

**Justification** – *Manilkara bequaertii* is a tree to 40 m tall, with a bole to 150 cm in diameter. It is known from 12 herbarium specimens collected between 1914 and 2003, representing 10 unique occurrences and eight subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats and protected area boundaries, six locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a continuing decline in the extent and quality of the habitat.

Bibliography – Lam (1941).

Authors - E. Fischer, M. Simo-Droissart & W. Tack

#### \_ Mimusops giorgii De Wild.

**Red List category** – Critically Endangered, Possibly Extinct: CR (PE) B2ab(iii,v).

**Distribution** – Endemic to the Democratic Republic of the Congo, only known from Moba (Moba territory), in the Tanganyika Province. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 4 km².



Mimusops giorgii: Holotype specimen at BR (De Giorgi 36).



**Habitat** – Probably gallery forest; at around 500 m. The seeds are likely to be dispersed by birds and mammals (primates) (endozoochory).

**Protected areas** – The only known collecting site occurs outside protected areas. There are no current conservation actions known for the species.

**Threats** – The single occurrence is from a densely populated zone where there is a high demand for land for subsistence agriculture and only remnants of forests and gallery forests remain between agricultural lands. There are also intensive artisanal mining activities (gold) and logging for construction wood and maybe firewood, which contribute heavily to land conversion and habitat destruction.

**Justification** – *Mimusops giorgii* is a tree of unknown size. It is known only from the type locality and has not been recorded since its discovery in 1922, hence it has a single unique occurrence and one subpopulation. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. The species is known from one location (sensu IUCN), which is the upper limit of the Critically Endangered category under condition 'a' of sub-criterion B2. Based on the threats, we infer a past and ongoing decline in the extent and quality of the species' habitat. The pressure on the remaining forest patches will only increase with growing populations so a further reduction in habitat is projected for the future. Furthermore, a past decline in the number of mature individuals can be suspected as the tree was targeted for making canoes (type specimen label at BR). The region where Mimusops giorgii occurs is severely under-collected. Research is needed to establish whether or not it is extinct, and if not to obtain additional data on its distribution, population size and the threats that may be affecting it. Ex-situ populations might need to be established should any further individuals be located in the wild.

**Bibliography** – De Wildeman (1926), Janick & Paull (2008).

Authors - C. Ewango, M. Simo-Droissart & W. Tack

#### Pradosia spinosa Ewango & Breteler

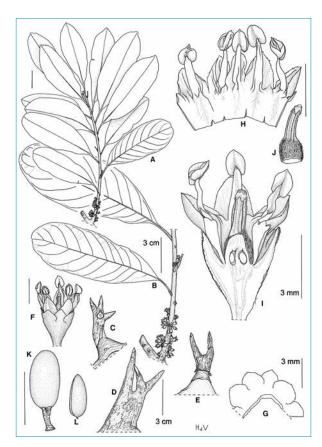
Red List category - Vulnerable: VU B2ab(iii).

**Distribution** – Cameroon and the Democratic Republic of the Congo. There is a dubious record from Gabon, without locality information, and only represented by a photo. Therefore, we have not included that record in the assessment. Extent of occurrence (EOO): 706,311 km²; Area of occupancy (AOO): 40 km².

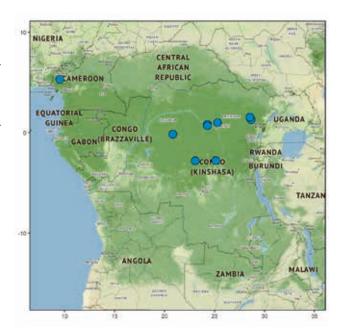
**Habitat** – Primary forest, swamps/gallery forest, lowland rainforest; at 280–800 m.

**Protected areas** – Five occurrences are in the Okapi Wildlife Reserve and the Lomami National Park in DRC, and in the Banyang-Mbo Wildlife Sanctuary in Cameroon. For the other five collecting sites, there are no current conservation actions for the species.

**Threats** – Agricultural expansion is the only threat in the Itombwe area. The collecting sites within the Okapi Wildlife Reserve and Lomami National Park seem secure. The area outside of the Okapi Reserve has been impacted by human activities. The species' conservation situation in the Banyang-Mbo Wildlife Sanctuary is unknown. Although known to grow in primary forest, this species' preferred habitat is along streams and swampy areas, where the human agricultural and logging activities that extensively destroy large tracts of forest are limited. Mature fruits are eaten by primates increasing destruction of seeds, resulting in a poor germination rate.



Pradosia spinosa: A, B, flowering branch; C-E, spines of trunk; F, flower; G, calyx; H, corolla and stamens; J, flower, longitudinal section; K, pistil; L, fruit; M, seed. (A-C, F-J: Ewango 631; D: Ewango 628; E, K, L: Ewango 673). Drawing by Hans de Vries, Meise Botanic Garden (©).



Justification – Pradosia spinosa is a large tree. It is known from 15 herbarium specimens collected between 1938 and 2018, representing ten unique occurrences and six subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Relative to the scale of the main threat, seven locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. We infer a continuing decline in extent and quality of habitat. Sylvicultural studies are needed to introduce the species to botanical gardens and arboreta as the only African representative species of this large genus otherwise confined to Latin America.

Bibliography – Ewango & Breteler (2001).

**Authors** – C. Ewango, M. Simo-Droissart & W. Tack

#### \_ Synsepalum bequaertii De Wild.

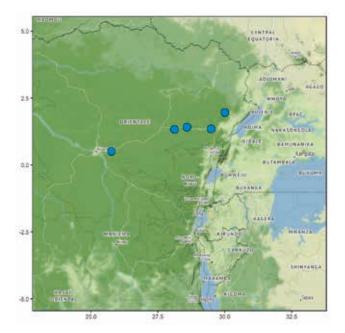
Red List category – Endangered: EN B2ab(iii).

**Distribution** – Endemic to north-eastern Democratic Republic of the Congo. Extent of occurrence (EOO): 11,749 km²; Area of occupancy (AOO): 20 km².

**Habitat** – Primary forest, occasionally along rivers in the forest; at 750–1,245 m.

**Protected areas** – Two collecting sites, representing one location, are situated within a protected area: the Okapi Wildlife Reserve. For the other three collecting sites, there are no current conservation actions.

**Threats** – The species is known to grow in primary forest where there are agricultural and logging activities that extensively destroy large areas of forest. Mature fruits are eaten by primates increasing destruction of seeds, resulting in a poor regeneration in the forests. The easternmost location is in a mining area, which threatens the occurrence there.





Synsepalum bequaertii: Type specimen at BR (Bequaert 2464).

**Justification** – *Synsepalum bequaertii* is a tree with a bole to 25 cm in diameter. It is known from six herbarium specimens collected between 1914 and 2010, representing five unique occurrences and five subpopulations. Its extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered

category under sub-criterion B2. Given the scale of the threats, four locations (*sensu* IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. The ongoing loss of the species' habitat led us to infer a continuing decline in its extent and quality in a near future.

Bibliography – De Wildeman (1926).

Authors – C. Ewango, M. Simo-Droissart & W. Tack

#### \_ Synsepalum laurentii (De Wild.) D.J.Harris

(Synonym: Pachystela laurentii (De Wild.) C.M.Évrard, Pouteria laurentii (De Wild.) Baehni)

Red List category – Vulnerable: VU B2ab(i,iii,iv).

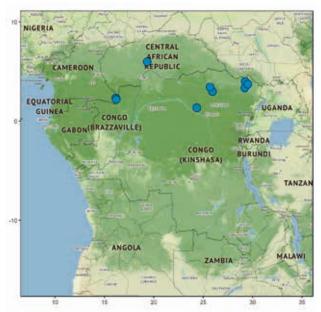
**Distribution** – Cameroon, Central African Republic and Democratic Republic of the Congo. Extent of occurrence (EOO): 452,616 km²; Area of occupancy (AOO): 36 km².

**Habitat** – Along rivers, gallery forest, forest edges; at 350–800 m.

**Protected areas** – Two collecting sites occur within the Garamba National Park and one in the transboundary protected areas (Tri-National Sanga) between Cameroon and the Republic of the Congo. At the other collecting sites, there are no current conservation actions for the species.

**Threats** – The species is known to grow in gallery forests where there is some protection from habitat conversion by agricultural and logging activities, although in savannah areas it may be collected from forest edges as shelter and fuelwood. The main threat to the species' habitat is small-scale agriculture.

**Justification** – *Synsepalum laurentii* is a shrub or small tree to 4 m tall. It is known from 11 herbarium specimens collected between 1892 and 2013, representing nine unique occurrences and five subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered





Synsepalum laurentii: Type specimen at BR (M. Laurent 951).

category under sub-criterion B2. Based on the main threat, the five subpopulations represent eight locations (sensu IUCN), which falls within the limits of the Vulnerable category under the condition 'a' of sub-criterion B2. We expect that this human pressure will continue and intensify within the near future, leading to a further decline in quality of the species' habitat. There is need of efforts to introduce the species to botanical gardens and arboreta in order to increase the opportunity for gene pool protection.

**Bibliography** – Aubréville (1950, 1961), Baehni (1942), Chevalier (1943), Dubard (1911), Evrard (1967), Govaerts & al. (2001), Harris (1999), WCSP (2013).

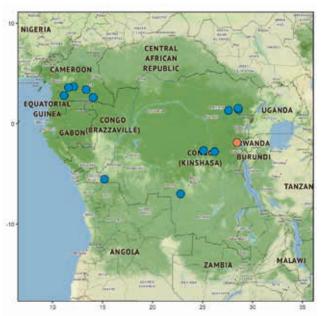
Authors - C. Ewango, M. Simo-Droissart & W. Tack

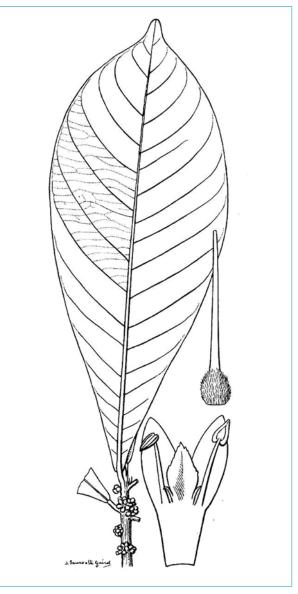
#### \_ **Synsepalum letouzeyi** Aubrév.

**Red List category** – Near Threatened: NT.

**Distribution** – Cameroon and the Democratic Republic of the Congo. Extent of occurrence (EOO): 1,459,601 km²; Area of occupancy (AOO): 48 km².

**Habitat** – Undergrowth of evergreen rainforest on well-drained soils, seasonally flooded riverine forest with *Manilkara multinervis*, *Uapaca heudelotii* and *Cathormion altissimum*; at 450–860 m. Pollination is probably by insects. The fleshy fruits are dispersed by animals.





*Synsepalum letouzeyi*: A, flowering branch; B, part of corolla with stamens; C, pistil. Drawing by J. Saussotte Guérez, Muséum national d'Histoire naturelle, Paris (©), reproduced with permission from Aubréville (1963).

**Protected areas** – Three collecting sites occur within protected areas: there are two in the Okapi Wildlife Reserve and one in the Lomami National Park, both in DRC. There are no current conservation actions for the collecting sites occurring outside protected areas.

**Threats** – Most of the collecting sites, especially in the south and east parts of the range, occur in areas where deforestation for agriculture is ongoing, as can be observed from satellite images. Deforestation for agriculture represents the main threat; habitat degradation by selective logging and charcoal production are others threats to the species' habitat. One collecting site, Irangi Forest, does not have any suitable habitat left, since it has been replaced by an oil palm plantation.

**Justification** – *Synsepalum letouzeyi* is a shrub or small tree. It is known from 20 herbarium specimens collected between 1914 and 2015, one of which (Irangi Forest) has been discarded from the evaluation because the species is presumed locally extinct there. The 19 remaining specimens represent 12 unique occurrences and 11 extant subpopulations. The extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale the main threat, 11 locations (sensu IUCN) can be distinguished, which falls just outside the limits of the Vulnerable category under condition 'a' of sub-criterion B2. A decline in habitat extent and quality is observed and one subpopulation has already disappeared. We infer a past and a future decline in the number of individuals, number of subpopulations, AOO and EOO within a near future.

Bibliography - Aubréville (1963), Onana & Cheek (2011).

Authors - O. Lachenaud, M. Simo-Droissart & W. Tack

## **SCYTOPETALACEAE**

#### \_ **Rhaptopetalum evrardii** R.Germ.

Red List category - Endangered: EN B2ab(iii).

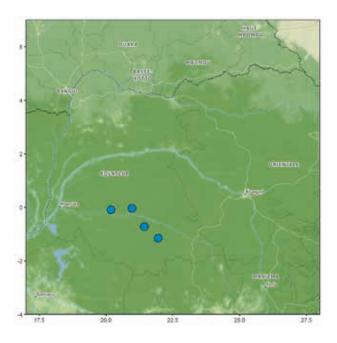
**Distribution** – Endemic to the central region of the Democratic Republic of the Congo. Extent of occurrence (EOO): 5,687 km²; Area of occupancy (AOO): 16 km².

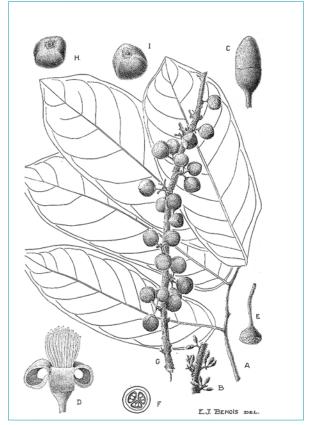
**Habitat** – Understory of swamp forests and inundated forests; at around 500 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no conservation actions for the species.

**Threats** – The species is threatened by road construction for timber exploitation.

**Justification** – *Rhaptopetalum evrardii* is a shrub or small tree to 6 m tall, with a bole to 15 cm in diameter. It is known from four herbarium specimens collected between 1936 and 1991, representing four unique occurrences and four subpopulations. Its extent of occurrence (EOO) falls within the





Rhaptopetalum evrardii: A, leafy twig; B, flowering twig; C, flower bud; D, flower; E, pistil; F, ovary, transverse section; G, fruiting twig; H, fruit with 4 valves; I, idem, with 3 valves. (A, G-I: De Wanckel 146; B-F: Évrard 3251). Drawing by E.J. Benois, Meise Botanic Garden (©).

limits of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, four locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. Based on the information we have, it is reasonable to infer a continuing decline in the extent and quality of the habitat.

Bibliography - Germain (1963).

Authors - D.U. Ikabanga, M. Simo-Droissart & W. Tack

#### \_ Rhaptopetalum roseum (Gürke) Engl.

Red List category – Vulnerable: VU B2ab(ii,iii,iv,v).

**Distribution** – Endemic to eastern Democratic Republic of the Congo (Kivu and Ituri Provinces). Extent of occurrence (EOO): 85,395 km<sup>2</sup>; Area of occupancy (AOO): 36 km<sup>2</sup>.

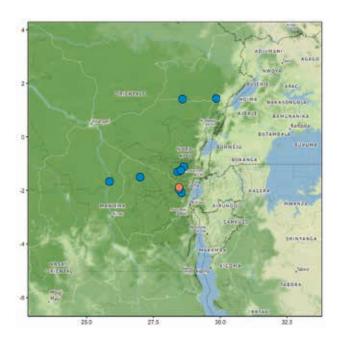
**Habitat** – Submontane forests, e.g. *Cynometra* and *Khaya* forest, *Julbernardia* and *Staudtia* forest, mixed forest; at 750–1,500 m.

**Protected areas** – All known collecting sites occur outside protected areas. There are no current conservation actions for the species.

Threats – In one location, Irangi, the habitat has been completely destroyed; the forest is replaced by oil palm plantations. The areas from Irangi to Kigogo and Mwenga have been cleared and inhabited by people of the Lega and Nyindu ethnic groups. Kalehe Territory is a densely populated region highly perturbed by political instability causing severe threat of habitat destruction by local people, refugees and armed militias, tree cutting for timber and charcoal, as well as artisanal mining. In the village of Kaseke, high-quality tin ore deposits were discovered in 2009,



Rhaptopetalum roseum: 1, flowering branch; 2, flower, longitudinal section; 3, infructescence. (1: Troupin 4442; 2, 3: Léonard 4941). Drawing by D. Molez, Muséum national d'Histoire naturelle, Paris (©), reproduced with permission from Aubréville (1963).



which attracted Alliance des Patriotes pour un Congo Libre et Souverain (APCLS) who now control the mining. The armed groups were also reported to be involved in timber and charcoal production. Urega is c. 19 km NW of Kasese where cassiterite and coltan as well as gold are mined. The Chinese firm Kun Hou Mining mines alluvial gold with dredges in the Ulindi and Lulingu rivers of Shabunda, South Kivu. A new gold boom along the Ulindi River in Shabunda territory began in 2013, enticing thousands of miners from as far away as Angola and Tanzania. About 1.6 km from the Ulindi River site, there is a big settlement stretching right to the river bank. Here, as well as around Makwe, satellite imagery shows forest clearings, presumably as a result of tree cutting to supply fuelwood, as well as to install plantations. At Kitchanga, North Kivu, the threat reported is urbanization of the area. There are already settlements less than a kilometer from the Kitchanga collecting site. In Epulu, Ituri Province, the species is threatened by tree felling because of insecurity from armed rebellion leading to deforestation. Gold mining was also reported.

**Justification** – *Rhaptopetalum roseum* is a shrub or small tree to 13 m tall. It is known from 16 herbarium specimens collected between 1908 and 1991, four of which were discarded from the evaluation because the habitat has been destroyed (Irangi Forest, now a vast oil palm plantation). The 12 remaining collections represent nine unique occurrences and six subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, six locations (sensu IUCN) can be distinguished, which falls within the limits of the Vulnerable category under condition 'a' of sub-criterion B2. The loss of the Irangi subpopulation resulted in a decline in the AOO, number of locations/ subpopulations and number of mature individuals. We also infer a continuing decline in the extent and quality of the habitat of the species for all other locations. The region where Rhaptopetalum roseum occurs is severely under-collected. Further collecting would give a better understanding of the distribution area of this species, its

abundance and the threats it faces. Observations on pollination and seed dispersal would also be useful.

Bibliography – Asylum Research Centre (2019), Atyi & Bayol (2008), Chifundera (2007), CORI (2013), De Block (2018), Gauthier (2016), Germain (1963), Global Witness (2016), International Alert (2010), Lezhney (2016), Neumann & al. (2019), Novosseloff & al. (2019), Prance & Jongkind (2015), UNESCO (2017a, 2017b), UNEP (2011b), United Nations Human Rights (2010), United Nations Security Council (2011, 2018), Wolfire & al. (1998).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

### **THYMELAEACEAE**

#### \_ Dicranolepis pyramidalis Gilg

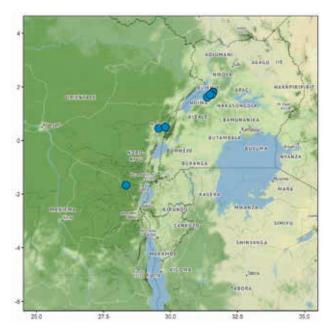
Red List category – Endangered: EN B2ab(ii,iii,v).

**Distribution** – Eastern Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO): 17,190 km²; Area of occupancy (AOO): 36 km².

**Habitat** – An obligate forest species, occurring in *Khaya* and *Julbernardia* forest, mixed and dense forest sometimes with *Cynometra*; at 850–1,300 m.

**Protected areas** – The species occurs within two protected areas: the Budongo Central Forest Reserve in Uganda and the Virunga National Park in DRC. There are no current conservation actions for the collection sites occurring in unprotected localities.

**Threats** – While Budongo C.F.R. is a gazetted protected area, there is no effective protection on site. Illegal tree felling and pole cutting for timber and charcoal production continues, particularly in blocks far away from the





Dicranolepis pyramidalis: Herbarium specimen at BR (A. Léonard 1856).

research centre, resulting in a deterioration in the quality of the habitat. The invasive *Broussonetia papyrifera* and *Senna spectabilis* further reduce habitat quality. In DRC, both Beni and Walikale face some forest disturbance from tree felling for timber and charcoal, reducing habitat quality. Urbanization around Fort Beni is causing heavy fuelwood demand. Mining activities by individuals and companies have also led to severe habitat degradation. Mining for gold and coltan coupled with insecurity have caused uncontrolled tree felling.

**Justification** – Dicranolepis pyramidalis is a small tree to 6 m tall. It is known from 10 herbarium specimens collected between 1906 and 1998, representing nine unique occurrences and three subpopulations. The extent of occurrence (EOO) falls within the limits of the Vulnerable category under sub-criterion B1. The area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. Using geographic clustering with respect to scale of threats, three locations (sensu IUCN) can be distinguished, which falls within the threshold values for Endangered under condition 'a' of sub-criterion B2. Around Beni it is assumed that urbanization has reduced the AOO and the number of mature individuals. Tree felling continues to degrade the quality of the habitat.

**Bibliography** – Burnley (2011), Gloval Witness (2015), Kalema & Beentje (2012), Kok & al. (2009), Mildbraed

(1913), Robyns (1975), Staner (1935), UNEP-MONUSCO OSESG (2015), WCS (2003), Wolfire & al. (1998).

Authors - J. Kalema, M. Simo-Droissart & W. Tack

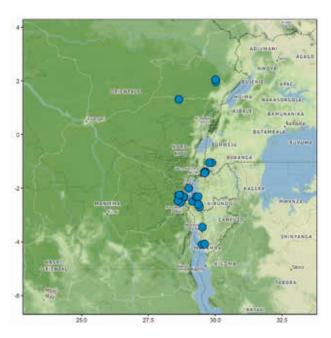
#### \_ **Peddiea rapaneoides** Gilg ex Engl.

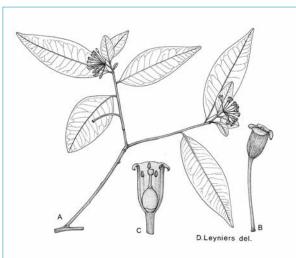
Red List category - Near Threatened: NT.

**Distribution** – Eastern Democratic Republic of the Congo, Rwanda, Burundi and Uganda. Extent of occurrence (EOO): 99,784 km²; Area of occupancy (AOO): 99 km².

**Habitat** – Upland rainforest, swamp forest, gallery forest, *Cyperus* wetland; at 860–3,000 m.

**Protected areas** – The species is present in several protected areas: Muramvya is within Kibira National Park, Rugege and Gikongoro are within Nyungwe N.P., Gisovu is just on the edge of Volcanoes N.P. but within Nyungwe N.P., and Luhizha is in Bwindi N.P. It is also found in Mafuga Forest Reserve.





Peddiea rapaneoides: A, flowering twig; B, flower; C, idem, longitudinal section. (A-C: *Troupin* 11308). Drawing by D. Leyniers, Meise Botanic Garden (©).





**Peddiea rapaneoides**: Inflorescence, infructescence. Photos by Quentin Luke (©).

**Threats** – Several threats affect this species at the different localities. The Mafuga Forest Reserve is badly degraded and now planted with exotics. The site at Vyanda is not protected and has been converted to a *Pinus* plantation and farming. The site at Kabare is not protected and under threat of small-holder agriculture and logging. Ruhengeri is just at edge of Volcanoes N.P., and the habitat is possibly destroyed.

**Justification** – *Peddiea rapaneoides* is a shrub or tree to 15 m tall. It is represented in herbaria by 37 specimens, collected between 1907 and 2010, representing 29 unique occurrences. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, while the area of occupancy (AOO) complies with the Endangered category under sub-criterion B2. Based on the threats, this number of locations (*sensu* IUCN) is estimated to be 11 or 12, which is just above the Vulnerable category under condition 'a' of sub-criterion B2. Since the species has a small area of occupancy, and as threats are serious in several of the sites, it is likely that the number of locations will be fewer than 10 within a decade. The species is thus assessed as Near Threatened.

**Bibliography** – Beentje & al. (2019b), Bloesch & al. (2009), Fischer & Killmann (2008), Ntore & al. (2018), Peterson (1978), Robyns (1975).

**Authors** – H.J. Beentje, E. Fischer, C. Kabuye, J. Kalema, C.J. Kayombo, W.R.Q. Luke, S. Ntore & S. Nshutiyayesu

### VIOLACEAE

#### Rinorea laurentii De Wild.

Red List category - Least Concern: LC.

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 756,684 km²; Area of occupancy (AOO): 84 km².

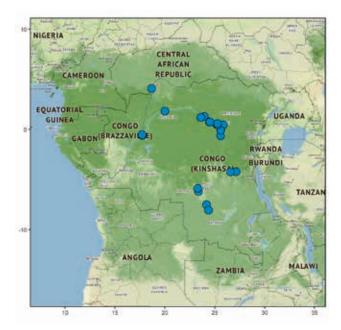
**Habitat** – Dry land and swamp forests, secondary forest, gallery forest; at 470–1,000 m.

**Protected areas** – Of the 21 known collecting sites, only one occurs within a protected area, the Yangambi Biosphere Reserve. One other collecting site occurs within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to the species' conservation. There are no current conservation actions for the species in these locations.

**Threats** – The main threats to the habitat are logging and conversion of forest to agricultural land. In DRC, large surfaces of forest outside protected areas are threatened because of the pressure of the growing human populations and growing demands to extend their cultivated land.



**Rinorea laurentii**: Herbarium specimen at BR (Mullenders 2336).



**Justification** – *Rinorea laurentii* is a shrub or small tree to 5 m tall, with a trunk to 5 cm in diameter. It is known from 35 herbarium specimens collected between 1896 and 2013, representing 21 unique occurrences and 18 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 15 to 17 locations (*sensu* IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in the extent and quality of the habitat. However, the number of locations is too high and the criteria for a threatened status under criterion B are not met.

**Bibliography** – Global Forest Watch (2018), Taton (1969), Texier & Mayaux (2014).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Rinorea laurentii De Wild. var. laurentii

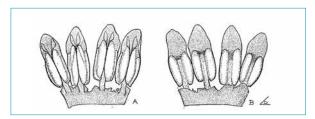
Red List category – Least Concern: LC.

**Distribution** – Republic of the Congo and Democratic Republic of the Congo. Extent of occurrence (EOO): 736,083 km²; Area of occupancy (AOO): 76 km².

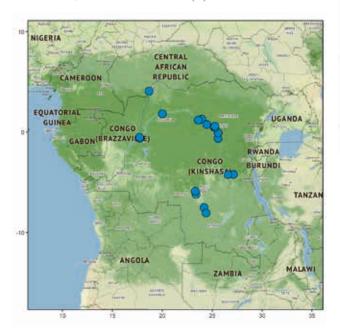
**Habitat** – Dry land and swamp forests, secondary forest, gallery forest; at 470–1,000 m.

**Protected areas** – Of the 19 known collecting sites of the species, only one occurs within a protected area, the Yangambi Biosphere Reserve. One other collecting site occurs within the Ngiri-Tumba-Maï Ndombe Ramsar Site, which may or may not be relevant to the species' conservation. There are no current conservation actions for the species in these locations.

**Threats** – The main threats to the habitat are logging and conversion of forest to agricultural land. In DRC, large surfaces of forest outside protected areas are threatened



Rinorea laurentii var. laurentii: A, B, part of staminal tube, inner and outer view. (A, B: Robyns 1390). Drawing by A. Cleuter, Meise Botanic Garden (⊚).



because of the pressure of the growing human populations and growing demands to extend their cultivated land.

Justification – Rinorea laurentii var. laurentii is a shrub or small tree to 5 m tall, with a trunk to 5 cm in diameter. It is known from 32 herbarium specimens collected between 1896 and 1986, representing 19 unique occurrences and 17 subpopulations. Its extent of occurrence (EOO) far exceeds the upper limit of the Vulnerable category under sub-criterion B1, whereas its area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of threats, 15 or 16 locations (sensu IUCN) can be distinguished, which is well above the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a decline in the extent and quality of the habitat as well as in the number of mature individuals. However, the number of locations is too high and other criteria for a threatened status under criterion B are not met.

**Bibliography** – Global Forest Watch (2018), Taton (1969), Texier & Mayaux (2014).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### **Rinorea laurentii** De Wild. var. **velutina** Taton

Red List category - Endangered: EN B2ab(ii,iii,iv,v).

**Distribution** – Endemic to the eastern half of the Democratic Republic of the Congo. Extent of occurrence (EOO): not applicable; Area of occupancy (AOO): 8 km<sup>2</sup>.



Habitat - Open forest; at 375-475 m.

**Protected areas** – The two collecting sites occur outside protected areas. There are no current conservation actions for the taxon.

Threats – The main threats to the taxon are logging and conversion of forest to agricultural land. In DRC, large surfaces of forest outside protected areas are threatened because of the pressure of the growing human populations and growing demands to extend their cultivated land. The location on an island in the Congo River near Yangambi has shown medium forest loss, the location in Kasai is in a region with intensive agriculture and the subpopulation may no longer exist or will disappear in a near future.

**Justification** – Rinorea laurentii var. velutina is a shrub or small tree. It is known from two herbarium specimens collected in 1930 and 1963, representing two unique occurrences and two subpopulations. Its area of occupancy (AOO) falls within the limits of the Critically Endangered category under sub-criterion B2. Given the scale of the threats, two locations (sensu IUCN) can be distinguished, which falls within the limits of the Endangered category under condition 'a' of sub-criterion B2. From the above, it is reasonable to infer a continuing decline in the extent and quality of the species' habitat. Due to the future disappearance of the subpopulation from Kasai, we infer a decline in AOO, the number of locations, subpopulations, and mature individuals of the species. In addition, the two known subpopulations are ca. 750 km apart, which would seem to render the global population severely fragmented.

**Bibliography** – Global Forest Watch (2018), Taton (1969), Texier & Mayaux (2014).

Authors - M.S.M. Sosef, M. Simo-Droissart & W. Tack

#### \_ Rinorea tshingandaensis Taton

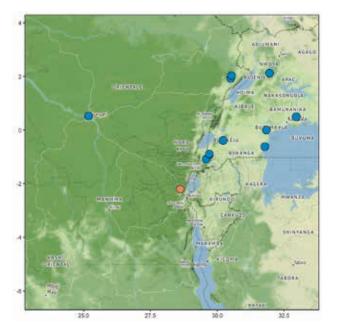
Red List category – Vulnerable: VU B2ab(i,ii,iii,iv,v).

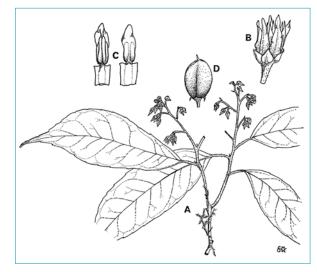
**Distribution** – Democratic Republic of the Congo and Uganda. Extent of occurrence (EOO):  $177,216 \text{ km}^2$ ; Area of occupancy (AOO):  $48 \text{ km}^2$ .

**Habitat** – Primary forest, montane forest, on rocks near waterfall; at 900–1,900 m.

Protected areas – The species occurs within six protected areas: the Bwindi Impenetrable National Park, the Kasyoha-Kitomi Forest Reserve, the Murchison Falls National Park, the Mabira Central Forest Reserve and the Kigezi Wildlife Reserve, all in Uganda, and the foothills of Mont Kahuzi in the Kahuzi-Biega National Park in DRC. For the collecting sites occurring outside protected areas, there are no current conservation actions for the species. One specimen was collected in Kisangani, likely in the Tshopo Falls Forest Reserve belonging to the Jardin Zoologique de Kisangani (±84 hectares), a small artificial forest dominated by planted *Terminalia superba*.

**Threats** – The main threat is habitat destruction resulting from forest conversion to agricultural land. One of the occurrences (at Forêt de la Tshinganda, km 42 route Kavumu-Walikale) shows no suitable habitat left and the subpopulation is considered gone. In other sites, deforestation and forest degradation are clearly visible on satellite imagery, in particular the Djugu and Tshinganda forests in DRC are heavily impacted.





Rinorea tshingandaensis: A, flowering twig; B, flower; C, stamens, dorsal and ventral view; D, fruit. (A-C: Purseglove 3057; D: Purseglove 2671). Drawing by Christine Grey-Wilson (©), reproduced with permission from Grey-Wilson (1981).

**Justification** – *Rinorea tshingandaensis* is a shrub or small tree to 15 m tall. Kalema & Beentje (2012) assessed the species as LC because no immediate threats were identified. The species is known from 15 herbarium specimens collected between 1931 and 1997, one of which was discarded for evaluation because the habitat is heavily degraded and the subpopulation is considered gone. The 14 remaining collections represent 13 unique occurrences and 10 subpopulations. The extent of occurrence (EOO) is well above the upper limit of the Vulnerable category under sub-criterion B1, whereas the area of occupancy (AOO) falls within the limits of the Endangered category under sub-criterion B2. Given the scale of the threats, 10 locations (sensu IUCN) can be distinguished, which is the upper limit of the Vulnerable category under condition 'a' of sub-criterion B2. From the above, we infer a continuing decline in the extent and quality of the habitat, and the loss of the Tshinganda occurrence has already led to a decline in its EOO, AOO, number of locations/subpopulations and number of mature individuals.

**Bibliography** – Grey-Wilson 1981, 1986, Kalema & Beentje (2012), Taton (1969).

Authors – S. Ntore, M. Simo-Droissart & W. Tack

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This book presents the results of the IUCN Red List evaluation of all 347 tree taxa with a distribution confined to, or almost confined to, Central Africa (Democratic Republic of the Congo – Rwanda – Burundi). As such, it is part of a global endeavour involving over 60 organisations coordinated by Botanic Gardens Conservation International (BGCI), and culminating in the Global Tree Assessment

Endangered animals generally attract lots of attention, but trees are far more vulnerable. There are nearly 60,000 tree species recognised worldwide, and we now know that 30% (17,500 species) are threatened with extinction. This is higher than the number of all threatened mammals, birds, amphibians, and reptiles combined!

The data on the 347 Central African trees presented here shows that 221 (64%) of them are at risk of extinction. Of these, 34 (10%) are critically endangered, of which 25 may already be extinct.

Agriculture, livestock farming, and logging are the main global threats. Climate change impacts are emerging, and in Central Africa, charcoal production and mining also provide major pressures.

Further, this volume provides a useful overview of all Protected Areas (PAs) in the region, with the (sub)endemic tree taxa they contain. Management plans can now be adjusted and improved taking this information into account. Several other recommendations are listed. Focussed action is needed to ensure the survival of threatened tree species, and all organisms (including humans) that depend on them.

