

New combinations in Cyperaceae for continental Africa

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Abstract

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The generic concept adopted in our forthcoming volume of the family *Cyperaceae* for the *Tropical African Flowering Plants* series requires some new combinations in *Cyperaceae*. Our compilation of *Cyperaceae* is a compromise between traditional and the most recent treatments as regards *Cyperus*. We therefore propose 18 new combinations and a replacement name for taxa first described in *Cyperus* L. transferred to the genera *Kyllinga* Vahl, *Mariscus* Rottb. and *Pycnus* P. Beauv.: *Kyllinga brunneofibrosa* (Lye) J.-P. Lebrun & Stork, *Kyllinga inselbergensis* (Lye) J.-P. Lebrun & Stork, *Kyllinga microcristata* (Lye) J.-P. Lebrun & Stork, *Kyllinga rheophytica* (Lye) J.-P. Lebrun & Stork, *Mariscus absconditicoronatus* (Bauters, Reynders & Goetgh.) J.-P. Lebrun & Stork, *Mariscus baobab* (Lye) J.-P. Lebrun & Stork, *Mariscus baoulensis* (Kük.) Hutch. ex J.-P. Lebrun & Stork, *Mariscus boreochrysocephalus* (Lye) J.-P. Lebrun & Stork, *Mariscus cundudoensis* (Chiov.) J.-P. Lebrun & Stork, *Mariscus gypsophilus* (Lye) J.-P. Lebrun & Stork, *Mariscus kitaleensis* J.-P. Lebrun & Stork, *Mariscus micromedusaeus* (Lye) J.-P. Lebrun & Stork, *Mariscus ossicaulis* (Lye) J.-P. Lebrun & Stork, *Mariscus pluricephalus* (Lye) J.-P. Lebrun & Stork, *Mariscus recurvispicatus* (Lye) J.-P. Lebrun & Stork, *Mariscus somalidunensis* (Lye) J.-P. Lebrun & Stork, *Mariscus soyauxii* subsp. *pallens* (Lye) J.-P. Lebrun & Stork, *Mariscus unispicatus* (Bauters, Reynders & Goetgh.) J.-P. Lebrun & Stork, and *Pycnus micropelophilus* (Lye) J.-P. Lebrun & Stork.

Keywords

CYPERACEAE – *Cyperus* – *Kyllinga* – *Mariscus* – *Pycnus* – Africa – Nomenclature

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Introduction

Cyperus L. (Cyperaceae) is a large genus of c. 950 species (s.l.) or 550 (s.str.) distributed in temperate and tropical regions worldwide. Until recently the circumscription of the genus was problematic. Early molecular studies resolved a well-supported clade that included *Cyperus* s.str., but also inferred a paraphyletic genus containing about 13 segregated genera, thus rendering *Cyperus* monophyletic. But most of the *Cyperus* species have not been included in phylogenetic studies. “Due to the massive size of the genus, a comprehensive phylogeny of *Cyperus* is not imminent” (REID et al., 2017: 434–344).

The generic concept adopted in our forthcoming volume of the family Cyperaceae for the *Tropical African Flowering Plants* series (LEBRUN & STORK, in press) is the same as that used in several traditional floras, and in our *Énumération* (LEBRUN & STORK, 1995). In its main lines it corresponds to the classification proposed by GOETGHEBEUR (1998). This system differs from the one adopted by, for instance, the *World Checklist of Selected Plant Families* (WCSP, 2019). The differences of opinion mainly concern the genus *Cyperus* where Goetghebeur recognizes several segregate genera. These plants “are difficult to classify due to the complex structure of their inflorescences, which leads to different interpretations and to establishing uncertain hypotheses of homology” (REUTEMANN et al., 2012: 184).

Our compilation of Cyperaceae is a compromise between traditional and the most recent treatments as regards *Cyperus*. We think that a more narrowly defined genus is preferable to a broad generic concept with subgeneric divisions. These segregate genera are often morphologically distinct and the species easily recognized in the field. Examples can be found in the genera such as *Courtoisina* Soják with deciduous intact spikelets, *Kyllingiella* R.W. Haines & Lye with spirally arranged glumes, and *Oxycaryum* Nees with spirally arranged glumes and dorsiventrally flattened dimerous gynoecea.

There is also the question of a “very complex generic and subdivisional nomenclature with approximately 350 generic and subdivisional names to accommodate the roughly 950 species present in the group” (LARRIDON et al., 2011: 868). When BODARD (1952) described a new species of *Cyperus* as “*C. (Mariscus) plurinervosus*” from Chad he followed the trend of his time, i.e. to merge *Mariscus* Vahl into *Cyperus*, and he noticed on the large number of new combinations that would be necessary but not called for this taxonomic concept.

It is true that the distinction between *Cyperus* and *Mariscus* is sometimes doubtful, e.g. in *Cyperus distans* L. f. Certain specimens have some spikelets falling off as intact units (*Mariscus* character), whereas other spikelets on the same plant have glumes breaking off from a persistent rachilla (*Cyperus* character) (HAINES & LYE, 1983).

Mariscus was included in *Cyperus* by GOETGHEBEUR (1998). He wrote: “*Mariscus* is kept separate by several authors, is

rarely maintained at subgeneric level when included in *Cyperus*, and is often divided into sections of widely scattered affinities” (GOETGHEBEUR, 1998: 170). For the latter author the polyphyletic nature of *Mariscus* has convincingly been demonstrated by LYE (1992) and is recognized as a separate genus by some authors (e.g. RAYNAL, 1973).

A historical review of the treatment of *Mariscus* is given by REYNDERS et al. (2011), with the names of subdivisions cited. In older floras, such as *Flora of West Tropical Africa* (HUTCHINSON & DALZIEL, 1972), *Mariscus* is maintained as separate. However, the recent *Flora of Tropical East Africa* on Cyperaceae (BEENTJE, 2010) includes *Mariscus* in *Cyperus*, although other segregate genera are maintained. On writing up our compilation we checked more recent treatments. It seems that authors of local floras or checklists keep *Mariscus* as a distinct genus (e.g. LISOWSKI, 2009; MALAISSE, 2010; CHATELAIN et al., 2011; THIOMBIANO et al., 2012). Even BROWNING & GOETGHEBEUR (2017: 61) present *Mariscus* as a separate entity.

We can also cite GORDON-GRAY (1995: 125) who made a pragmatic decision for Cyperaceae in Natal. This latter author wrote: “From anatomy, physiology, karyology and phytochemistry, information is steadily accumulating that *Mariscus* species are more naturally positioned within *Cyperus* and *Pycnostachys* than collectively in a taxon *Mariscus* at either generic or subgeneric rank [...] Nevertheless, in the present work *Mariscus* is maintained as Natal species are well known under that genus and *Cyperus* is already cumbersome with the greatest number of species in Natal for Cyperaceae as a whole”.

LOWE & STANFIELD (1974: 93, 95) described *Mariscus* as “a large and difficult genus [c. 200 species]; in characters of habit and inflorescence the species are variable, and no clear feature links them. They resemble *Cyperus* in having 3 stigmas, and *Kyllinga* in that the spikelets fall entire when mature. [...] Some species are much like *Torulinium* in that the rachis of the inflorescence bears persistent scales after the spikelets have fallen.”

BROWNING & GOETGHEBEUR (2017) give a summary of characters previously used to differentiate *Mariscus* from *Cyperus*: 1. spikelets disarticulating as a unit; 2. leaf blades usually well developed; 3. less than 5 nutlets per spikelet; 4. winged rachilla.

Our main list (LEBRUN & STORK, in press) comprises 65 species of *Mariscus*, and 9 species of *Cyperus* are added as probably belonging to that genus.

For MUASYA et al. (2010: 65–66) the diagnostic characters for *Kyllinga* include “capitate inflorescences; spikelets with distichous glume arrangement which are shed intact; bifid style and lenticular nutlets; and laterally flattened nutlets”. For these authors, *Kyllinga* is either recognized as a distinct genus or ranked as a subgenus of *Cyperus*.

Although *Kyllinga* is now often treated under *Cyperus* (e.g., WCSP, 2019), some authors maintain *Kyllinga* as a separate genus. This is the case in our treatment, and we follow GOVAERTS & SIMPSON (2007), GOETGHEBEUR (1998), *Flora of China* (WU et al., 2010), BEENTJE (2010), and BROWNING & GOETGHEBEUR (2017). We therefore propose four new combinations in *Kyllinga*. This in spite of LYE & CHEEK (2006: 276) arguing that “[a]lthough the genus *Kyllinga* Rottb. was incorporated in *Cyperus* more than 100 years ago [...] it was not until 100 years later [...] that it was proven beyond doubt that this is actually correct”.

Pycrus is a rather large pantropical genus (c. 120 species), so also in tropical Africa (63 species). Recent molecular phylogenetic studies indicate that it is included in *Cyperus* s.l., and also in culm and leaf anatomy *Pycrus* species have a high resemblance to the *Cyperus* C₄ taxa. However, “*Pycrus* is characterized by a combination of bicarpellate ovaries, bifid styles, laterally flattened achenes, and multi-flowered spikelets” (PEREIRA-SILVA et al., 2018: 741). It can be added that the achenes are arranged in a single row down the two opposite sides, like small discs set on edge, the rachilla is 4-sided (in *Cyperus* flattened). The achenes and their bracts are shed gradually from the bottom up, exposing the scarred rachilla (REYNDERS et al., 2011).

Pycrus is recognised as a segregate genus by several recent authors and floras, e.g. GOETGHEBEUR (1998), GOVAERTS & SIMPSON (2007), BEENTJE (2010), *Flora de Guinea Ecuatorial* (VELAYOS et al., 2014), and BROWNING & GOETGHEBEUR (2017). We follow this genus concept.

Taxonomy

***Kyllinga brunneofibrosa* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus brunneofibrosus* Lye in Candollea 51: 423. 1996.

Holotypus: SOMALIA. Reg. Bakool: 17 km E of Wojid (Uegit) on road to Oddur, 22.V.1983, *Gillett & Hemming* 24356 (K [K000321403] image seen).

Notes. – *Cyperus brunneofibrosus* was first introduced by Lye in THULIN (1995) but lacking a Latin diagnosis. LYE (1996a) validated the name in his revision of *Cyperus* subg. *Kyllinga* (Roth) J.V. Suringar in Somalia.

The species is illustrated in THULIN (1995: 141) and LYE (1996a: 427). A distribution map is also provided by LYE (1996a: 431).

***Kyllinga inselbergensis* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus inselbergensis* Lye in Nord. J. Bot. 31: 574. 2013.

Holotypus: CAMEROON: Ako-akas Rock, 23 km on the road from N’Koemvone to Ambam (old road), 29.IX.1974, *de Wilde* 7771 (WAG; iso-: BR, K).

Notes. – This taxon is mentioned under *Cyperus* in Cameroon (ONANA, 2013), in Equatorial Guinea (VELAYOS, 2014: 116–117) and Gabon (LYE & THERY, 2012: 84, who also provide a photograph of the nutlet on p. 85).

***Kyllinga microcristata* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus microcristatus* Lye in Nord. J. Bot. 24: 269. 2005.

Holotypus: CAMEROON. Reg. Sud Ouest: Kupe village, 11.VII.1995, *Patterson* 11 (K; iso-: BR, MO, NAG, NLH, YA).

Notes. – *Cyperus microcristatus* was first introduced by Lye in CHEEK et al. (2004: 190) but lacking a Latin diagnosis, and then validated by LYE & POLLARD (2005: 269) with iconography. Other citations figure under *Cyperus* in ONANA (2011: 365, 2013: 223).

***Kyllinga rheophytica* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus rheophyticus* Lye in Nord. J. Bot. 24: 273. 2006.

Holotypus: CAMEROON. Reg. Sud Ouest: Kupe-Muanenguba, Muambong, bank of River Chide, 8.II.1998, *Onana* 585 (K; iso-: O, YA).

Notes. – *Cyperus rheophyticus* was first introduced by Lye under the name “*Cyperus rheophytorum*” in CHEEK et al. (2004: 190) but lacking a Latin diagnosis, and then validated as *C. rheophyticus* by LYE & CHEEK (2006). It is mentioned under *Cyperus* in ONANA (2011: 161; 2013) and ONANA & CHEEK (2011: 365).

A map is provided by KUETEGUE et al. (2019: 88) and an illustration by LYE & CHEEK (2006: 274–275).

***Mariscus absconditocoronatus* (Bauters, Reynders & Goetgh.) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus absconditocoronatus* Bauters, Reynders & Goetgh. in Novon 20: 133. 2010.

Holotypus: ANGOLA. Prov. Bié: falls of Cutato River, S of [Kuvango], Cuchi Rd., 15.IX.1952, *H. & E. Hess* 52/262 (GENT image seen).

Note. – An illustration is available in BAUTERS et al. (2010: 134).

***Mariscus baobab* (Lye) J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus baobab* Lye in Nord. J. Bot. 16: 371. 1996.

Holotypus: SOMALIA: Shabeelaha Dhexe, 1.VIII.1959, Moggi & Bavazzano 344 (FT [FT000610] image seen).

Note. – Iconography is available in THULIN (1995: 131) and LYE (1996b: 368–372).

***Mariscus baoulensis* (Kük.) Hutch. ex J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus baoulensis* Kük. in Engl., Pflanzenr. 38: 467. 1936.

Holotypus: IVORY COAST: Cercle de Baoulé Nord, entre Tiégouakro et Kodiokoffi, 8.VIII.1909, Chevalier 22336 (P [P00568889] image seen).

– *Mariscus baoulensis* Hutch. in Hutchinson & Dalziel, Fl. W. Trop. Afr. 2: 486. 1936 [nom. inval.]. = *Cyperus baoulensis* (A. Chev.) Kük. in Repert. Spec. Nov. Regni Veg. 29: 199. 1931 [nom. nud.]. = *Pycnus baoulensis* A. Chev., Explor. Bot. Afrique Occ. Franç. 1: 695. 1920 [nom. nud.].

Note. – The taxon is mentioned under *Cyperus* as such by Hooper in HUTCHINSON & DALZIEL (1972: 287), BRUNEL et al. (1984: 537) and CHATELAIN et al. (2011: 220).

***Mariscus boreochrysocephalus* (Lye) J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus boreochrysocephalus* Lye in Nord. J. Bot. 3: 216. 1983.

Holotypus: UGANDA. Distr. Karamoja: 5–6 km N of Lothaa, 1180 m, 10.IV.1970, Lye 5462 (MTTU; iso-: C, EA [EA000002703] image seen, K, P, UPS).

Notes. – *Cyperus boreochrysocephalus* is illustrated in LYE (1983: 216) and HAINES & LYE (1983: 219).

This taxon is mentioned under *Cyperus* by BEENTJE (2010: 149) and DARBYSHIRE et al. (2015: 104).

***Mariscus cundudoensis* (Chiov.) J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus cundudoensis* Chiov. in Malpighia 35: 65. 1939.

Holotypus: ETHIOPIA: Harar, cima del Gara Cundudo, 2800 m, 5.XII.1937, Gortani & Jaboli n. I. 18 (FT [FT000630] image seen).

Notes. – The spelling of the species epithet varies. It was described by Chiovenda in *Malpighia* (vol. 35: 65. 1939) as *C. cundudoensis*. This issue of *Malpighia* is present in the

K library, and we have seen a copy of the species description. However, the usual citation is *C. cundudoensis*, following *Index Kewensis* (Suppl. X (1936–1940: 68, 1947) with reference to *Atti della Reale Accademia d'Italia. Memorie delle classe di scienze fisiche, matematiche e naturali* (vol. 11: 60, 1940). A copy of this article, *Plantae novae aut minus notae ex Aethiopia* (pp. 17–67), is present at the G Library, dated on cover page “1940–XVIII”, but at the end of the article “Roma, 1941–XIX”. The article arrived at the Academy on 22 August 1939, and was presented on 18 November 1939.

An illustration is available in THULIN (1995: 135) and the taxon is cited under *Cyperus* in EDWARDS et al. (1997: 465).

***Mariscus gypsophilus* (Lye) J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus gypsophilus* Lye in Nord. J. Bot. 16: 374. 1996.

Holotypus: SOMALIA. Reg. Nugal: 3 km E of Anod, 30.VI.1979, Hansen & Heemstra 6323 (K [K000321405] image seen; iso-: C, EA, WAG).

Notes. – *Cyperus gypsophilus* was first introduced by Lye in THULIN (1995: 137) but lacking a Latin diagnosis and validated the following year by LYE (1996b).

The taxon is illustrated in THULIN (1995: 137) and cited under *Cyperus* by DAVIES (1998: 15) and LYE (2001: 204).

***Mariscus kitaleensis* J.-P. Lebrun & Stork, nom. nov.**

= *Cyperus kyllingiiformis* Lye in Nord. J. Bot. 3: 218. 1983.

Holotypus: KENYA: Kitale, 1400 m, 12.V.1953, Bogdan 3726 (K; iso-: EA).

Notes. – The name *Mariscus kyllingiiformis* Boeckeler (in Flora 42: 443. 1859) was given to a plant the name of which is now considered a synonym of *Cyperus dubius* Rottb. The compound of the species epithet is based on an orthographic variant of *Kyllinga* Rottb. 1773, nom. cons. The replacement name refers to the collecting site of the type, i.e. Kitale (Kenya).

The taxon is illustrated in LYE (1983: 218) and HAINES & LYE (1983: 224) and cited under *Cyperus* by LYE (2001) and BEENTJE (2010: 185).

***Mariscus micromedusaeus* (Lye) J.-P. Lebrun & Stork, comb. nova.**

= *Cyperus micromedusaeus* Lye in Nord. J. Bot. 16: 373. 1996.

Holotypus: SOMALIA. Reg. Nugal: gorge of Wadi Nugal, 5 km from Eil, 4.I.1973, Bally & Melville 15547 (K [K000321406] image seen).

Notes. – *Cyperus micromedusaeus* was first introduced by Lye in THULIN (1995: 134) but lacking a Latin diagnosis and

validated the following year by LYE (1996b). The taxon is cited under *Cyperus* by LYE (2001: 204).

***Mariscus ossicaulis* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus ossicaulis* Lye in Kew Bull. 51: 205. 1996.

Holotypus: SOMALIA: 20 km W of Xarardheere, 10.VI.1979, Beckett 202 (K [K000321408] image seen).

Notes. – *Cyperus ossicaulis* was first introduced by Lye in THULIN (1995: 135) but lacking a Latin diagnosis and validated and illustrated the following year by LYE (1996c: 206–208). The taxon is cited under *Cyperus* by LYE (2001: 204).

***Mariscus pluricephalus* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus pluricephalus* Lye in Nord. J. Bot. 16: 133. 1996.

Holotypus: SOMALIA. **Reg. Hiran:** Jalalaqsi distr., ± 12 km NE of Ceel Baraf, 14.XII.1987, Kuchar 17635 (UPS).

Notes. – *Cyperus pluricephalus* was first introduced by Lye in THULIN (1995: 131) with an illustration but lacking a Latin diagnosis and validated the following year by LYE (1996b). The taxon is cited under *Cyperus* by LYE (2001: 204).

***Mariscus recurvispicatus* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus recurvispicatus* Lye in Nord. J. Bot. 16: 376. 1996.

Holotypus: SOMALIA. **Reg. Mudug:** 28 km S of Jeriban, 27.V.1979, Gillett *et al.* 22100 (K [K000321409] image seen).

Notes. – *Cyperus recurvispicatus* was first introduced by Lye in THULIN (1995: 137) with an illustration but lacking a Latin diagnosis and validated the following year by LYE (1996b). The taxon is cited under *Cyperus* by LYE (2001: 204).

***Mariscus somalidunensis* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus somalidunensis* Lye in Nord. J. Bot. 16: 374. 1996.

Holotypus: SOMALIA: Shabeelaha Dhexe, 1.VIII.1959, Moggi & Bavazzano 377 (FT [FT000653] image seen).

Notes. – *Cyperus somalidunensis* was first introduced by Lye in THULIN (1995: 137) with an illustration but lacking a Latin diagnosis and validated the following year by LYE (1996b). The taxon is cited under *Cyperus* by LYE (2001: 204).

***Mariscus soyauxii* subsp. *pallescens* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus soyauxii* subsp. *pallescens* Lye in Nord. J. Bot. 3: 227. 1983.

Holotypus: KENYA: Garissa, 300 m, 14.XII.1977, Stannard & Gilbert 1061 (EA; iso-: K [K000321463] image seen).

Notes. – *Mariscus soyauxii* (Boeckeler) C.B. Clarke is mentioned by SIMPSON & INGLIS (2001: 308), BEENTJE (2010: 217) and CHATELAIN *et al.* (2011: 226) under *Cyperus*.

The taxon is illustrated by HAINES & LYE (1983: 207–208), BERHAUT (1988: 278), HEDBERG *et al.* (2009: 265) and LYE & THERY (2012: 21).

***Mariscus unispicatus* (Bauters, Reynders & Goetgh.) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus unispicatus* Bauters, Reynders & Goetgh. in Novon 20: 137. 2010.

Holotypus: ANGOLA. **Prov. Huíla:** near Mupa Catholic Mission in Cuanhama, 1250 m, 9.IX.1952, H. & E. Hess 52/34 (GENT).

Note. – BAUTERS *et al.* (2010: 135) propose a comparative table of morphologically similar species, all cited under *Cyperus* (*C. absconditicoronatus*, *C. rhynchosporoides*, *C. stramineoferrugineus*).

***Pycnus micropelophilus* (Lye) J.-P. Lebrun & Stork, *comb. nova*.**

= *Cyperus micropelophilus* Lye in Willdenowia 26: 233. 1996.

Holotypus: SOMALIA. **Reg. Bay:** Bur Akaba inselberg, 20.VI.1983, Gillett & Hemming 24892 (K [K000321407] image seen).

Notes. – *Cyperus micropelophilus* was first introduced by Lye in THULIN (1995: 144) but lacking a Latin diagnosis, and then validated by LYE (1996d: 233). The species is mentioned by LYE (2001: 204) under *Cyperus*.

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