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RESEARCH ARTICLE

An assessment of *Coutaportla* (Chiococceae, Rubiaceae) with the description of a new species from Mexico

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Abstract

Background and aims – Ongoing studies on Mexican Rubiaceae revealed an undescribed species of *Coutaportla* endemic to the Sierra Madre Occidental pine-oak forests in the state of Sinaloa, near the border with Durango, Mexico. The species is here described and illustrated, and its morphological characters are compared with those of the other species in the genus.
Material and methods – This study is based on field observations, examination of herbarium specimens including digital images, and morphological studies based on samples from dried and spirit specimens.
Key results – The morphological comparison of taxonomically important characters among the species of *Coutaportla* reveals conditions that were previously not reported for the genus. The placentation and ovule number of *C. lorenceana*, which belongs in the *Portlandia* complex, is comparable to that in the Chiococceae tribe. This tribe was proposed to include the latter complex based on molecular data, but the classification was controversial according to the morphology. *Coutaportla lorenceana* hence provides a morphological link between the *Portlandia* complex and the taxa traditionally placed in Chiococceae. The new species is assessed as Critically Endangered following the IUCN Red List criteria.

Keywords

Mexican flora, Neotropics, pine-oak forest, placentation, Santuario El Palmito, Sierra Madre Occidental, taxonomy

INTRODUCTION

The monophyly of the tribe Chiococceae, within the Cinchonoideae subfamily (Rubiaceae), including the tribe Catesbaeeae and the genera previously grouped in the *Portlandia* complex (Ochoterena 2000) or PECC complex (Dessein et al. 2009), was first revealed by molecular data (Bremer 1992). Its current circumscription is well-accepted and the tribe includes ca 200 species in 29 genera (Motley et al. 2005; Negron-Ortiz 2005; Manns and Bremer 2010; Paudyal et al. 2014, 2018). Despite the potentially synapomorphic character of basally inserted stamens with filaments fused at the base in a ring (Robbrecht 1988; Ochoterena 2000) and the frequent presence of four distinct types of nexine ornamentation in the pollen (Dessein et al. 2009), the morphological characterisation of the tribe is challenging. Also, in the current circumscription, Chiococceae is one of the most morphologically diverse tribes within Rubiaceae.

The tribe Chiococceae includes erect or scandent subshrubs, vines, treelets, and tall trees; flowers with four to eight parts; corolla tubes ranging from few millimetres in length (e.g. *Erithalis* P.Browne) to 27 cm (e.g. *Osa* Aiello); cylindrical or flattened, dry (capsular) or fleshy (drupes or

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baccate) fruits; and flat, polygonal, or globose winged or wingless seeds. Chiococceae has an amphi-Pacific tropical distribution, but its species are primarily distributed in the Neotropics, with centres of diversity in the Caribbean islands (16 endemic genera and ca 160 spp.), Mexico and Central America (two endemic genera: *Coutaportla* Urb. and *Nernstia* Urb.), South America (four endemic genera: *Adolphoduckea* Paudyal & Delprete, *Coutareopsis* Paudyal & Delprete, *Motleyothamnus* Paudyal & Delprete, and *Salzmannia* DC.), and the islands of the western Pacific Ocean (one endemic genus: *Thiollierea* Montrouz.) (Motley et al. 2005; Manns et al. 2012; POWO 2022).

Coutaportla is a Madrean/Mesoamerican genus that can be morphologically distinguished from other Chiococceae genera by the combination of 4(–5)-merous flowers, variable ovule attachment position, and capsular fruits with few (2 to 5) seeds, in contrast to the other genera in the tribe that have 5–8-merous flowers, and, few or numerous ovules per locule, basal, medial, or apical placentation, and either capsular or fleshy fruits (Aiello 1979; Robbrecht 1988; Ochoterena 2012).

Coutaportla was described by Urban in 1923 based on *Portlandia ghiesbreghtiana* Baill. due to its peculiar placentation and floral morphology. It was a monotypic genus until *Portlandia guatemalensis* (Standl.) Lorence was transferred to this genus by Lorence (1986), and *C. pailensis* Villarreal was described (Villarreal 1987). Therefore, *Coutaportla* currently includes three species endemic or subendemic to Mexico: *C. ghiesbreghtiana* (Baill.) Urb. restricted to xerophytic regions and dry forests of Hidalgo, Oaxaca, and Puebla, in Mexico; *C. guatemalensis* (Standl.) Lorence in rain (cloud) forests of Veracruz and Chiapas in Mexico, as well as in Guatemala and Honduras; and *C. pailensis* endemic to a xeric canyon in Coahuila, Mexico.

Borhidi (2003) transferred *Coutaportla guatemalensis* to its own genus, *Lorencea*, characterised by being a tall tree, with 4- or 5-merous flowers, and ovaries with a semi-basal placenta (Borhidi 2018). However, except for the placentation and the size of the trees, the morphological features used to diagnose the genus overlap with the other species in *Coutaportla*, leading some authors to include *Lorencea* in *Coutaportla* (Ochoterena 2012). Molecular evidence has not resulted in a conclusive generic differentiation between *Coutaportla* and *Lorencea*. However, few phylogenetic studies on the subfamily include both taxa: Manns and Bremer (2010) recovered *Lorencea* in an unresolved and unsupported clade also including *C. ghiesbreghtiana*, together with a group of genera with Antillean species. Contrasting results by Paudyal et al. (2014) retrieved *Lorencea* as sister to *Coutarea hexandra* (Jacq.) K.Schum., while *C. ghiesbreghtiana* was placed in a polytomy including the *Lorencea*-*Coutarea* clade and the rest of Chiococceae. To date, the most comprehensive phylogenetic study of Chiococceae in which the three species of *Coutaportla* were sampled (Paudyal et al. 2018) recovered them in an early divergent clade within the tribe, but, because *Coutaportla* and *Lorencea* are sister taxa, two taxonomic scenarios are possible: the recognition as different genera (one with two species and the other monotypic) or the inclusion of *Lorencea* as part of *Coutaportla* (with three species).

During the course of a systematic study of *Coutaportla*, we found fruiting treelets in the temperate forest of the Sierra Madre Occidental, in Sinaloa state, near the border with Durango state, Mexico, that were first doubtfully assigned to *Chiococca* P.Browne due to the flattened, few-seeded fruits with apical placentation, with the immature fruits being rather chartaceous, not fleshy as in *Chiococca*. At the end of summer 2019, we visited the locality again and found these treelets in bloom, which made us realise that they correspond to a species of *Coutaportla*, morphologically similar to *C. ghiesbreghtiana*, but with significant differences that allow us to propose it as a new species. In this paper, we describe and illustrate this novelty and present an updated treatment of *Coutaportla*, including a revised key to its species.

MATERIAL AND METHODS

Plant material

The authors collected specimens between 2017 and 2019 at Santuario El Palmito natural protected area (Ávila-González et al. 2019), Sinaloa state, Mexico. The specimens were studied using the appropriate literature (e.g. Robbrecht 1988; Borhidi 2012, 2018) and compared to material deposited at MEXU (herbarium acronym according to Thiers 2022). Additionally, images of type specimens from diverse species were checked via JSTOR Global Plants (2022). Since these collections did not match any of the known species in the genus *Coutaportla*, they were hypothesized to represent an undescribed species. The description presented here is based on our field observations, herbarium specimens, and spirit material, while the terminology follows Harris and Harris (2001).

Distribution and conservation status

The distribution maps were drawn using locality data from all consulted herbarium specimens using QGIS Desktop v.3.4.11 (QGIS Development Team 2021). The maps were prepared using cartography shapefiles acquired from CONABIO (2020): state political division (1:250000), floristic provinces (1:8000000), and estimated vegetation (1:4000000). Conservation status was assessed by applying the IUCN Red List Category criteria (IUCN 2022). We used the GeoCAT program (Bachman et al. 2011) to estimate the extent of occurrence (EOO) and area of occupancy (AOO), based on 2 × 2 km cells.

TAXONOMIC TREATMENT

Coutaportla Urb. (Urban 1923: 146)

Lorencea (Borhidi 2003: 17) – Type species: *Lorencea guatemalensis* (Standl.) Borhidi [= *Coutaportla guatemalensis* (Standl.) Lorence]

Type species. *Coutaportla ghiesbreghtiana* (Baill.) Urb.
Description of the genus. Shrubs, treelets, or trees. Stipules triangular to deltoid, persistent, intrapetiolar, adpressed. Leaves opposite, petiolate. Inflorescence terminal or axillar, bracteate, racemose, cymose, or solitary flowers. Flowers hermaphrodite, 4-merous, rarely 5-merous, pedicellate, homostylous, fragrant; corolla infundibuliform, white, pink, or lavender, with imbricate aestivation; stamens with filaments basally inserted to the corolla and connate, anthers basifixed; stigma slightly bilobed; ovary 2-locular, with 1–5 ovules per locule, placentas basal, central, or apical. Fruits capsular, clearly woody at maturity, ellipsoid to oblate, strongly compressed, perpendicular to the septum, with persistent calyx lobes; dehiscence at first loculicidal, then septicidal. Seeds vertically attached to the placenta, flattened, wingless, with thickened margins.

Key to the *Coutaportla* species

1 Leaves orbicular, less than 1.2 cm long, mucronate at apex; corolla pink ..... ***C. pailensis***
– Leaves elliptic to lanceolate-/obovate-/ovate-elliptic, more than 1.3 cm long, acuminate or apiculate at apex; corolla white or lavender **2**
2 Corolla lavender; ovary with apical placentas; capsules with one seed per locule ..... ***C. lorenceana***
– Corolla white; ovary with basal or central placentas; capsules with 4–5 seeds per locule **3**
3 Shrubs or treelets; leaves with 4–5 pairs of secondary veins on each side of midrib; corolla 4-merous; seeds 4–5 mm long; plants growing in xerophytic (scrubs) and dry forests ..... **C. *ghiesbreghtiana***
– Trees; leaves with 7–10 pairs of secondary veins on each side of midrib; corolla 5-merous (rarely 4-merous); seeds 6–8 mm long; plants growing in rainforests ..... **C. *guatemalensis***

Coutaportla lorenceana Torr.-Montúfar, H.Ochot. & Art.Castro, **sp. nov.**
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Figs 1, 2

Chiococca grandiflora Lorence & T.Van Devender, pro parte (Lorence et al. 2018: only paratypes cited on page 76: *T. Walker s.n.* (ARIZ-212520), *S. Walker s.n.* (UTC-00263027; ARIZ-181630); *S. Walker 70,043* (K); see Notes).

Type. MEXICO • Sinaloa, Municipio: Concordia. El Palmito, alrededores del acceso principal al Santuario Chara Pinta; 23.56444°N, 105.848882°W; 1980 m; 10 Sep. 2019; fl.; *Castro-Castro, Ávila-González. & Zavala-Pérez 4532*; holotype: MEXU; isotype: CIIDIR, FCME, FESC, IEB, IBUG, MO, PTBG, SLPM.
Diagnosis. *Coutaportla lorenceana* differs from all the other species in the genus by the lavender corollas, the apical ovule placentation, and the capsules with 1-seeded locules. It most closely resembles *C. ghiesbreghtiana* (Baill.) Urb. by the treelet habit and leaf size and shape, but it differs by the leaves acuminate at the apex (vs apiculate in *C. ghiesbreghtiana*), the chartaceous leaf blades (vs subcoriaceous in *C. ghiesbreghtiana*), the 3–9-flowered inflorescences (vs solitary flowers in *C. ghiesbreghtiana*), and the lavender corollas (vs white in *C. ghiesbreghtiana*).
Description. Treelets 2–4 m tall. Twigs glabrous, greenish-brown, terete, striated; apical twigs resinous. Stipules rigid, broadly deltoid, 1.8–2.3 × 2–3.8 mm, acuminate at apex, basally connate, externally glabrous, internally with resinous colleters. Leaves petiolate, those of the same pair equal to subequal; petioles glabrous, 8–17 mm long, adaxially flat, distally winged; blades elliptic to elliptic-lanceolate, 1.3–5.8 × 0.8–1.4 cm, attenuate at base, acuminate at apex (acumen up to 1 cm long), chartaceous, matte and glabrous on both sides, concolorous; venation brochidodromous, 4–6 pairs of secondary veins on each side of midrib; domatia absent. Inflorescence axillary or rarely terminal on lateral branches, cymose, 3–9 flowered, 2.3–3.5 cm long (including the corollas); peduncles 0.2–1.4 cm long; bracts triangular, 1.3 × 0.5 mm. Flowers 4(–5)-merous; pedicels 1–4 mm long; hypanthium obconical, laterally flattened, 1–2 mm long. Calyx tube 0.4 mm long, lobes equal, subulate, rigid, erect, 1–1.5 × 0.3–0.4 mm, colleters absent. Corolla infundibuliform, lavender, tube 1.7–2.5 cm long, 0.7–0.9 cm wide at mouth, externally and internally glabrous; lobes narrowly imbricate in bud, triangular. Stamens 1.8–2.7 cm long; filaments puberulent; anthers linear. Style 2.3–2.8 cm long, glabrate. Ovules apically inserted. Capsule oblate, 4–5 × 4–5 mm. Seeds one per locule, thin, discoid, 3 × 1.2 mm, brown; testa granulate.
Distribution and habitat. Endemic to Mexico. Only known from the oak-pine forest in El Palmito, Sinaloa state, on rocky slopes, in the Tropical Madrean Region (González-Elizondo et al. 2012) of the Sierra Madre Occidental (Fig. 3), where the predominant climate is temperate-subhumid, with rains in the summer and a marked dry season in the late spring. It occurs about 1950 to 1980 m a.s.l. The only known population consists of numerous individuals associated with *Agave inaequidens* subsp. *barrancensis* Gentry, *Arbutus tessellata* P.D.Sørensen, *Calliandra houstoniana* (Mill.) Standl., *Montanoa leucantha* subsp. *arborescens* V.A.Funk,

Muhlenbergia spp., *Opuntia* sp., *Pinus herrerae* Martínez, *P. lumholtzii* B.L.Rob. & Fernald, *Quercus candicans* Née, *Q. scytophylla* Liebm., *Tithonia calva* Sch.Bip., and *Vachellia pennatula* (Schltdl. & Cham.) Seigler & Ebinger.

Phenology. Flowering in September and fruiting in October and November.

Etymology. The specific epithet is dedicated to David Lorence, who has immensely contributed to the knowledge of Mexican Rubiaceae, establishing for the first time an enviable collection for the family at MEXU, which serves as an invaluable basis for research.

IUCN conservation assessment. The species is given a Red List status of Critically Endangered [CR B1a+b(iii);

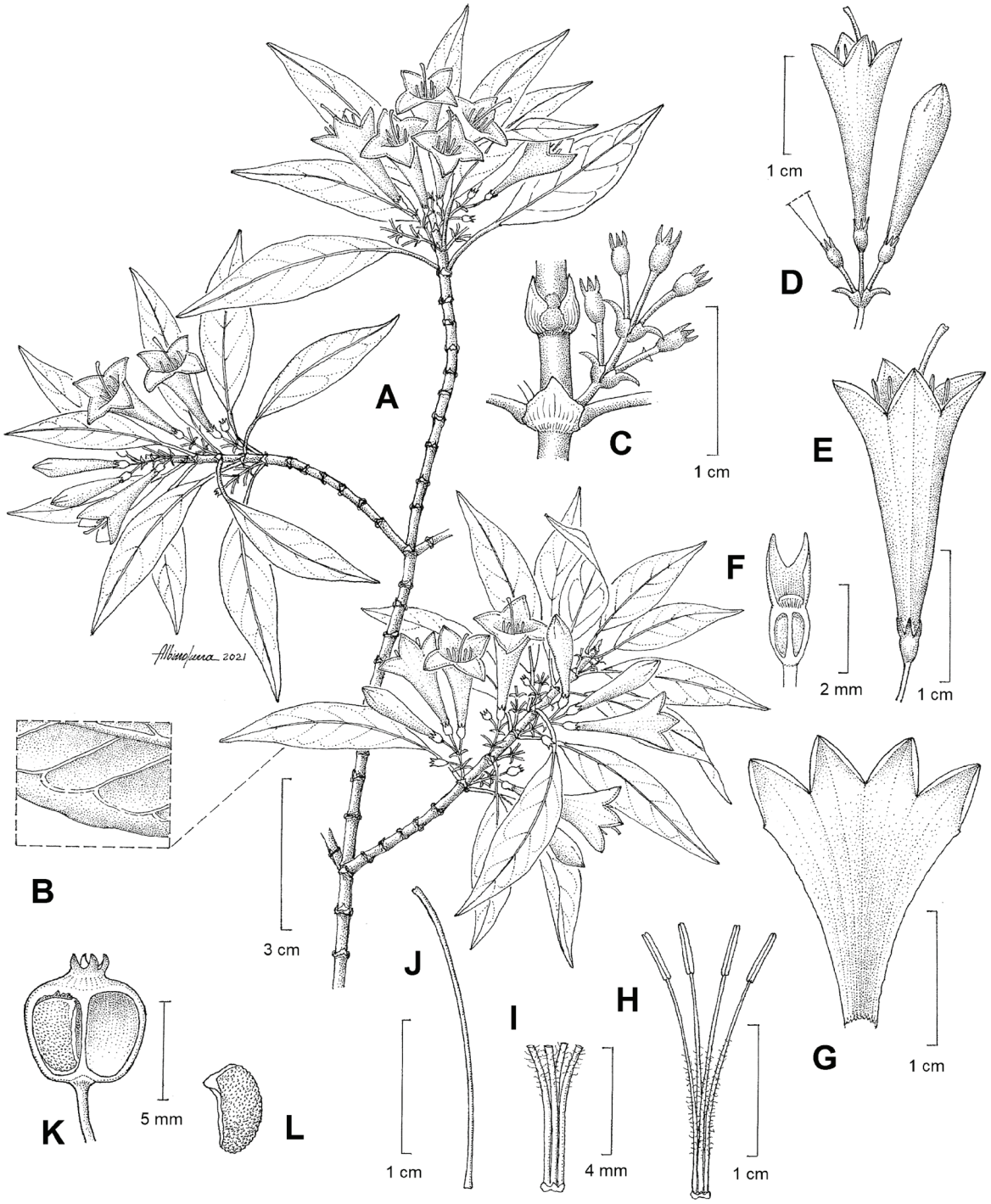

Figure 1. *Coutaportla lorenceana*. **A**. Flowering branch. **B**. Detail of the venation on the abaxial leaf surface. **C**. Stipule and immature fruiting branch. **D**. Inflorescence. **E**. Flower. **F**. Ovary and calyx longitudinally dissected. **G**. Dissected corolla. **H**. Androecium. **I**. Detail of the puberulent filaments. **J**. Style. **K**. Capsule longitudinally dissected showing seed attachment. **L**. Seed. Drawn by Albino Luna (A–J, from *A. Castro-Castro et al. 4532*; K–L from *A. Castro-Castro et al. 4695*).

B2a+b(iii)]. *Coutaportla lorenceana* is known from three collections, representing three occurrences, at relative proximity around El Palmito in Mexico. The extent of occurrence (EOO) is of 0.76 km^2 and the area of occupancy (AOO) is of 8 km^2. Both EOO and AOO fall within the limits of the Critically Endangered (CR) category under subcriteria B1 and B2. Since this species occurs at a single location and is threatened by logging and agricultural encroachment, it meets the conditions for the CR category.

Additional material examined (paratypes). MEXICO • Sinaloa: Municipio: Concordia, El Palmito, km 201 de la Carretera Durango-Mazatlán; 23.566917°N, 105.84525°W; 1966 m; 6 Nov. 2020; fr.; *Castro-Castro, Ávila-González & González-Gallegos 4695*; CIIDIR, FCME, FESC, MEXU • Ca 2 km al N de El Palmito; 1955 m; 24 Oct. 2017; fr.; *Torres-Montúfar, Morales-García & Castro-Castro 987*; ENCB, FESC, MO, PTBG.

Notes. Lorence et al. (2018) described *Chiococca grandiflora* Lorence & T.Van Devender and included as paratypes some collections from El Palmito, Sinaloa (*S. Walker s.n.* (UTC-00263027, ARIZ-181630), *T. Walker s.n.* (ARIZ-212520), *S. Walker 70,043* (K)), while the holotype was collected from Sonora (*P.S. Martin et al. s.n.* (ARIZ-309922)), on the Pacific slope of the Sierra Madre Occidental. The holotype is vegetatively quite similar to *C. lorenceana* by the stipule and leaf morphology, but the two species differ by the number of flowers per inflorescence (solitary to 3-flowered in *C. grandiflora* vs 3- to 9-flowered in *C. lorenceana*), flower merosity (always 5-merous in *C. grandiflora* vs 4-merous to rarely 5-merous in *C. lorenceana*), flower colour (white in *C. grandiflora* vs lavender in *C. lorenceana*), and mature fruit texture (fleshy in *C. grandiflora* vs dry in *C. lorenceana*). We consider that the paratypes of *Chiococca grandiflora* from El Palmito belong in *C. lorenceana*, and therefore, the former species is considered a synonym pro parte. Our observation is supported by Lorence et al. (2018) who highlighted some differences among the holotype and the paratypes: the flower density being the most evident, as well as the corolla merosity and colour, clearly lavender in the specimens from El Palmito (e.g. *S. Walker s.n.* (UTC-00263027)).

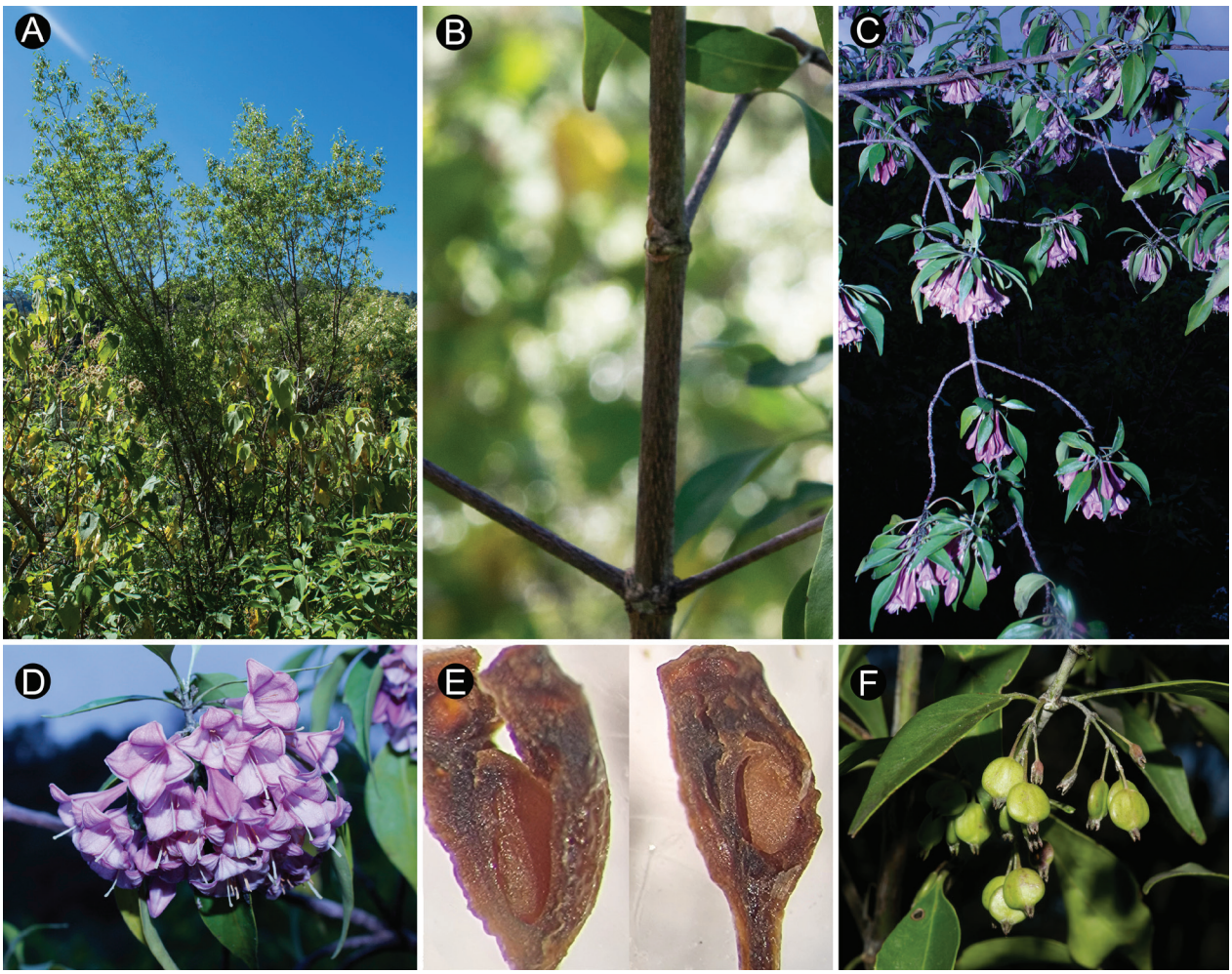

Figure 2. *Coutaportla lorenceana*. **A**. Habit. **B**. Twigs showing intrapetiolar persistent stipules. **C**. Flowering branch. **D**. Inflorescences showing corolla shape and colour. **E**. Longitudinal section of the ovary showing apical placentation in lateral (perpendicular to the fruit compression plane) and frontal (parallel to the fruit compression plane) views. **F**. Immature fruits. Photographs by Arturo Castro-Castro (A–D, F) and Helga Ochoterena (E).

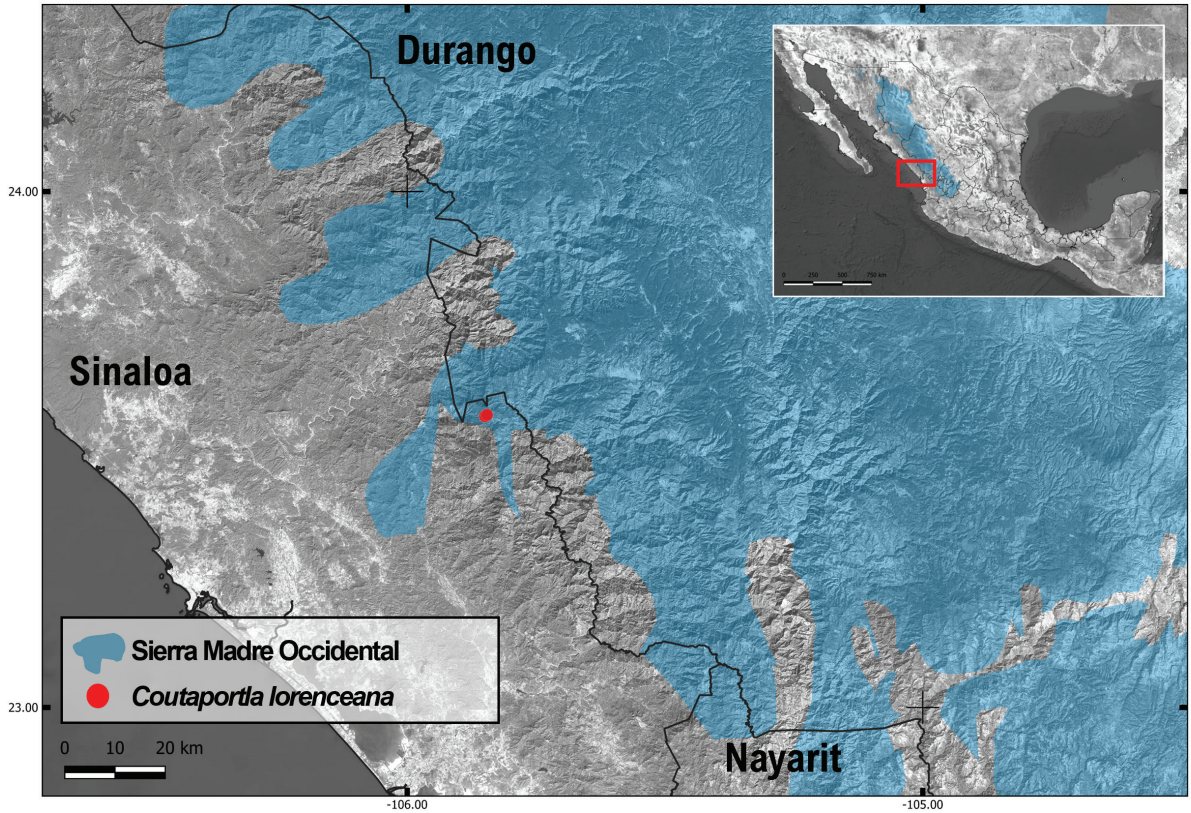

Figure 3. Single known locality of *Coutaportla lorenceana* (red circles) in the Sierra Madre Occidental.

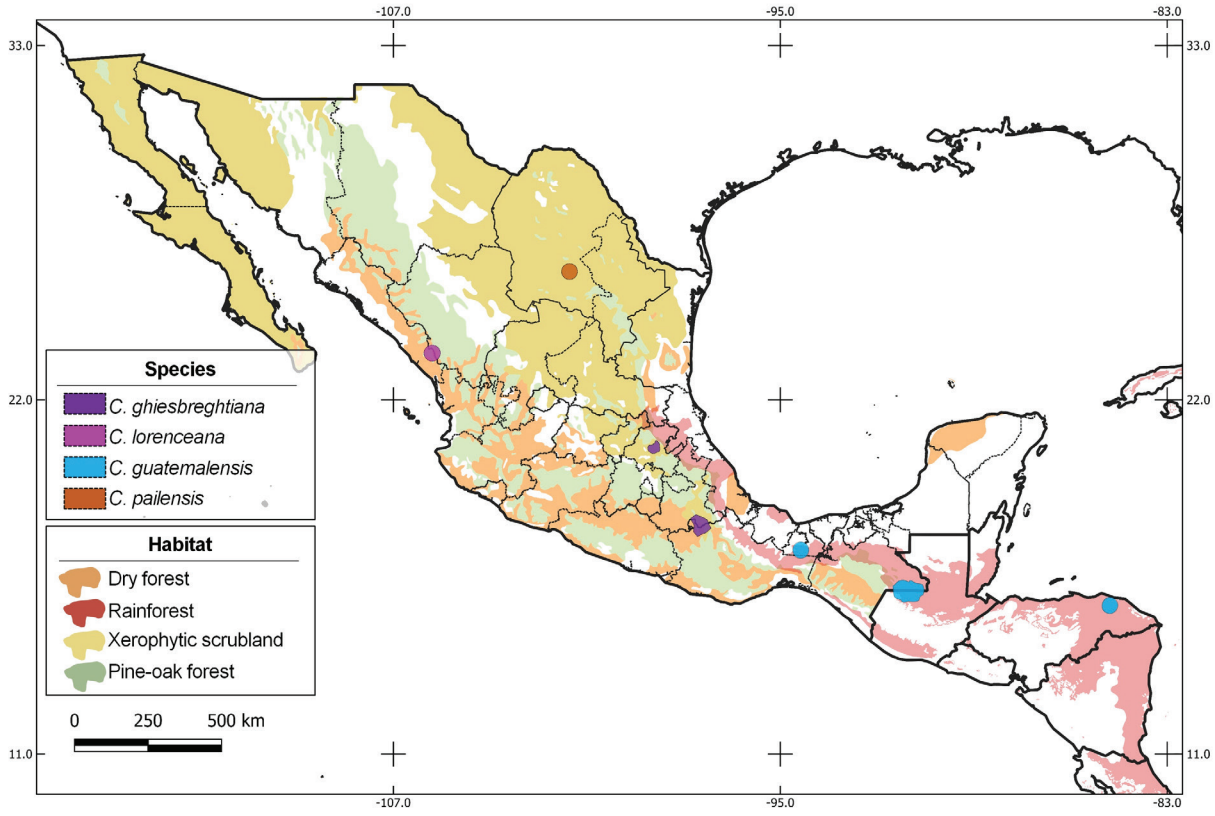

Figure 4. Geographic distribution of the four *Coutaportla* species and their habitats.

Table 1. Comparison of morphological characters and habitat of *Coutaportla* species.

Character	*C. lorenceana*	*C. ghiesbreghtiana*	*C. guatemalensis*	*C. pailensis*
Habit	Treelet	Shrub or treelet	Tree	Shrub
Leaf blade shape	Elliptic to elliptic-lanceolate	Elliptic to ovate-elliptic	Elliptic to obovate-elliptic	Orbicular
Leaf length	1.3–5.8 cm	1.7–4.5 cm	11–22 cm	0.4–1.2 cm
Leaf apex	Acuminate	Apiculate	Acuminate	Mucronate
Number of secondary veins on each side of midrib	4–6	4–5	7–10	Indistinct
Inflorescence position	Axillary and terminal	Axillary	Axillary and terminal	Terminal
Flower merosity	4(5)	4	5(4)	4(5)
Calyx colleters	Absent	Present	Absent	Present
Corolla colour	Lavender	White	White	Pink
Corolla length	1.7–2.5 cm	2–2.5 cm	2.5–3.5 cm	2–3.8 cm
Placental position	Apical	Central	Basal	Central
Capsule size	4–5 × 4–5 mm	7–10 × 6–7 mm	10–14 × 12–16 mm	8–10 × 4–5 mm
Number of seeds per locule	1	4–5	4–5	2–5
Seed length	3 mm	4–5 mm	6–8 mm	3–4 mm
Habitat and distribution	Pine-oak forest (Mexico: Sinaloa)	Xerophytic scrubland, dry forest (Mexico: Hidalgo, Oaxaca, Puebla)	Rainforest (Honduras; Guatemala; Mexico: Chiapas, Veracruz)	Xerophytic scrubland, (Mexico: Coahuila)

DISCUSSION

The new species as a member of *Coutaportla*

Coutaportla lorenceana has distinctive features that firmly support its recognition as a new species. Although it is substantially different from the other species in the genus, there is no doubt about its assignment to *Coutaportla*, despite the lack of molecular phylogenetic evidence, considering the mainly 4-merous flowers and the flattened capsular fruit. There are several morphological features, besides the type of habitat, that distinguish the species within *Coutaportla* (Table 1, Fig. 4).

Aiello (1979) provided the most comprehensive morphological study of the placenta in *Portlandia* and associated genera, thoroughly describing that of *Coutaportla ghiesbreghtiana*. This species has the placenta attached to the centre of the septum, which horizontally protrudes into each locule of the ovary resulting in two additional locules, an upper and a lower one; two flattened seeds ascending from the placenta into the upper locule, with the other two seeds descending from the placenta into the lower locule (Fig. 5A–B) – although occasionally there is an extra seed in one of the portions. In *Coutaportla guatemalensis*, the placenta is inserted near the base (Fig. 5C–D), also extending into the locule, bearing 4–5 ascending seeds per locule, similarly to the other species of *Coutaportla* (Lorence 1986). The new species here described has an apical placenta, bearing one descending seed per locule (Fig. 5G–H), while the placentation and seed number in *C. pailensis* (Fig. 5E–F) are like those in *C. ghiesbreghtiana*. The discovery of *C. lorenceana* shows that the placentation in the genus is variable and can be present in the top, the centre, or the bottom part of the locule.

The apical placentation of the new species completes a range in the ovule attachment in *Coutaportla* from the base to the top, raising further questions regarding the acceptance of *Lorencea* as a distinct genus. The monotypic genus *Lorencea* was described primarily based on the tree habit (vs treelet or shrub in *Coutaportla*), the 5-merous (rarely 4-merous) flowers (vs mainly 4-merous flowers in *Coutaportla*), and the basal placenta attachment (vs central placenta position in *Coutaportla*) (Borhidi 2018). The tree habit of *Lorencea* can be associated with its habitat, rainforests, while the smaller size of the other species can be attributed to the xeric growing conditions (Rowe and Speck 2005). The new species lives in a more temperate environment and grows as a treelet, but this can be explained by the seasonal rainfall. Although flower merosity was used to differentiate the two genera, it varies in *C. pailensis* from 4- to 5-merous (Villarreal 1987) as well as in the new species.

Due to the overlap of many characters among the species of *Coutaportla* and *Lorencea*, as well as the fact that both genera are sister, we prefer to recognise only *Coutaportla* (including *Lorencea*), as in the Rubiaceae treatment of the Flora Mesoamericana (Ochoterena 2012).

The new species as a member of Chiococceae sensu lato

The placenta is present at various positions among the different species of *Coutaportla*, and it is possible to associate this variation with the differences in fruit compression and size. Among the species in the genus, there is variation in fruit and seed sizes as well as seed number, ranging from many-seeded relatively large fruits with relatively large seeds basally attached, to relatively many-seeded medium size fruits with smaller seeds centrally attached, to relatively small fruits with one smaller seed apically attached. Aside from the new species here described, none of the taxa in the *Portlandia* complex formerly excluded from Chiococceae have apical placentation, which justifies the initial scepticism regarding the molecular phylogenetic results and the placement of this generic complex within that tribe. The new species shows a placentation similar to that of the species with fleshy fruits classified in Chiococceae, in its previous restricted sense. The less inclusive most recent common ancestor of Chiococceae sensu stricto in the phylogenetic tree (Paudyal et al. 2018) would suggest that the apical placental position with reduced number of seeds is a derived condition. Therefore, the discovery of *C. lorenceana* points to at least two independent origins of that derived condition.

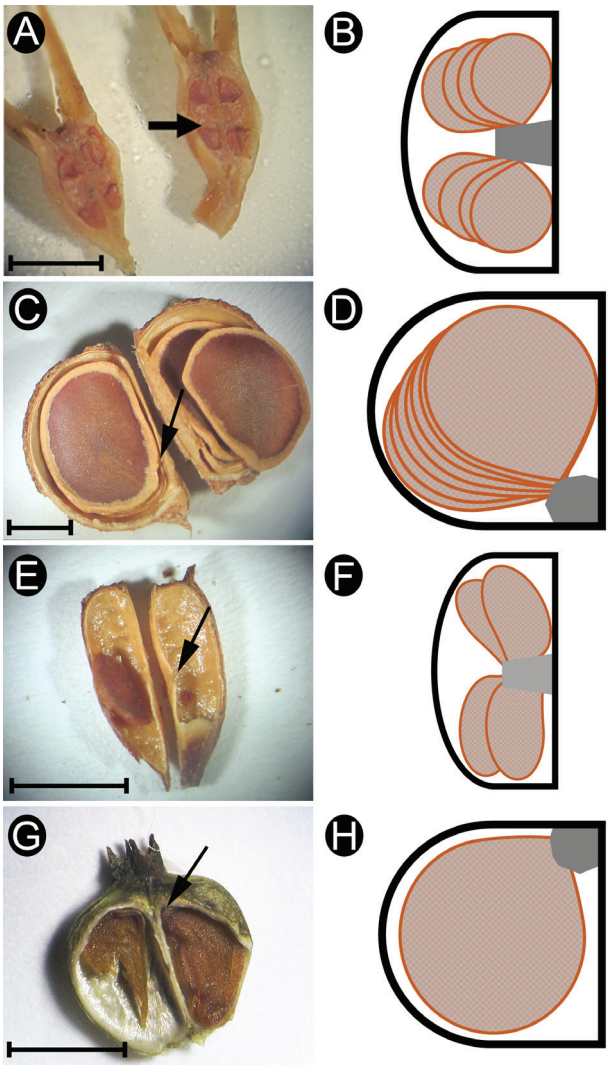

Figure 5. Longitudinal ovary sections (left column) and diagrams (right column), comparing the seed attachment and placenta shape and position within the locule (grey coloured area in the diagrams) in *Coutaportla*. Placenta position is indicated by a black arrow on the photographs. Scale bars correspond to 1 cm. **A**–**B**. Central: *C. ghiesbreghtiana*, A from *Aguilar et al. 4* (MEXU). **C**–**D**. Basal: *C. guatemalensis*, C from *Stevens et al. 25474* (MEXU). **E**–**F**. Central: *C. pailensis*, E from *Villarreal et al. 3063* (MEXU). **G**–**H**. Apical: *C. lorenceana* sp. nov., G from *Torres-Montúfar et al. 987* (MEXU).

Such highly variable placentation is likewise present among genera in the rest of Chiococceae, namely in *Chiococca* and *Erithalis* in which it is apical, in *Hintonia* and *Portlandia* in which it is central, while *C. guatemalensis* is the only taxon with basal placentation. This is in contrast to most other higher taxa of the Rubiaceae, where an either basal or apical placentation is characteristic for many tribes, e.g. apical in Vanguerieae and basal in Psychotrieae. However, some anatomical and development studies have shown that placentation can also be extremely variable in Rubiaceae (Svoma 1991; Figueiredo et al. 2013, 2017). According to Ronse Decraene and Smets (2000), in Rubiaceae, the basal, central, or apical placentation are the result of differential degrees of development among the basal placental portion of the ovary and the apical portion of the style. Based on this interesting and unique developmental and morphological variations within Rubiaceae, we consider that it is possible to assume that changes through evolution in these features could also have occurred among the species of *Coutaportla*, awaiting ontogenetic studies to explore in more detail the evolution of placenta development and ovule number in this genus.

CONCLUSION

The discovery of the species *Coutaportla lorenceana* sheds a new light on character evolution of the Chiococceae sensu lato. We hope that describing this narrowly endemic species from the Sierra Madre Occidental will further help the conservation efforts in the area, demonstrating how floristic studies in Mexico are still highly needed and to be encouraged. Additionally, the discovery of a species in a genus that has species with restricted geographic distribution and present in different vegetation types in Mexico opens biogeographic questions related to ecosystem adaptations and character evolution.

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