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Cyrtandra loratiloba (Gesneriaceae): a species new to science from Indonesian New Guinea

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Summary. *Cyrtandra loratiloba* Bramley is presented here as new to science. Due to its unusually narrow, 'strap-shaped' corolla lobes, large staminodes and the atypical insertion of the fertile stamen pair in the corolla mouth at the base of the three, lower corolla lobes, *C. loratiloba* is immediately distinct from any known *Cyrtandra* species. A full description, distribution map, illustration, photo plate and preliminary conservation assessment are provided.

Key Words. Papua Barat, taxonomy, understorey, Vulnerable.

Introduction

Cyrtandra J.R.Forst. & G.Forst., the largest genus in the Gesneriaceae, comprises c. 800 species of herbs, shrubs, climbers and small trees (Atkins *et al.* 2013). It is a predominantly Southeast Asian genus, found from the Nicobar Islands in the Indian Ocean, throughout Malesia, in Taiwan and the southern Japanese islands, in northern Australia and east across Polynesia to Hawaii. New Guinea is a centre of diversity for the group, with 92 names currently accepted (Bramley *et al.* 2024) and several species new to science described in the last few years (Atkins *et al.* 2019; Hatt *et al.* in press, a & in press, b).

During a herbarium study towards a revision of New Guinea *Cyrtandra*, several specimens collected from Indonesian New Guinea were set aside as a distinct species, unmatched to named material. Two collections were from the northern foothills of the Arfak Mountains, the third, from Nabire, *Kanehira & Hatusima* 11682, had been annotated by its collectors as *Cyrtandra sp. nov.* (Kanehira & Hatusima 1943). Despite descriptive label notes, the specimens lacked well-preserved flowering material. In November 2023, as part of the Royal Botanic Gardens Kew – BRIDA (Badan Riset dan Inovasi Provinsi Daerah Papua Barat) – UNIPA (Universitas Negeri Papua) Tropical Important Plant Areas project, a team visited an area of forest near Kwau, Arfak Mountains, Papua Barat province. Several flowering individuals matching the specimens found in the herbarium were discovered. The distinct structure of the flower, especially the unusual position of the staminodes, confirmed that these plants represent a species new to science. Further fieldwork in early 2025 to Windesi, located in the 'bird's neck' area, and roughly equidistant between the Arfak Mountains and Nabire, resulted in another collection, connecting the two formerly disjunct populations of this species. Here, we formally describe the species and provide supplementary information including a provisional conservation assessment following IUCN (2024) guidelines.

Materials and Methods

To confirm the novelty of the species presented here, specimens were examined from the following herbaria, either in person: BO, E, K, MAN, SING or digitally: A, BISH, BR, CANB, FU (images provided by T. Utteridge from a herbarium visit), L, LAE. Herbarium codes follow Thiers (2025, continuously updated). Measurements were taken from flowers dissected in the field, and from dried material, with flowers dissected after rehydration by soaking in 10% aqueous solution of Aerosol OT.

All cited specimens have been examined by the authors, either in digital or physical form, unless otherwise noted. Locality information is recorded as written on the herbarium specimen labels.

The proposed IUCN conservation category was determined according to the IUCN Red List Categories and Criteria guidelines (IUCN 2024). Extent of occurrence (EOO) and area of occupancy (AOO) were estimated where possible using GeoCAT with a 2 × 2 km grid cell (Bachman *et al.* 2011). Due to the limited

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number of collections from Indonesian New Guinea, these estimates may be lower than the actual values in some cases or overestimates where populations at documented sites no longer persist. The distribution map was produced in ArcGIS Pro 3.0.0 (ESRI 2022) using coordinate data geo-referenced from herbarium specimens.

Taxonomic Treatment

Cyrtandra loratiloba *Bramley* **sp. nov.** Type: Indonesia, Papua Barat province, Kabupaten Pegungunan Arfak, Minyambouw distr., Kwau homestay, Papua Lorikeet Guesthouse, near entrance to trail by larger house, 11 Nov. 2023, *G. Bramley* with *Kew-UNIPA team* GB88 (holotype MAN; isotypes MAN ×2 [specimens currently undistributed from MAN]).

http://www.ipni.org/urn:lsid:ipni.org:names:77367884-1

Shrubs, single stemmed, up to 2 m, erect. *Stems* woody, greyish-green, with dense appressed hairs, not leaf-bearing for c. half of their length, the leaves crowded in the upper half with bract-enclosed inflorescences in the axils, forest debris accumulating around the leaf bases and axils. *Leaves* opposite, both members of a pair more or less equal in size; narrowly elliptic to oblanceolate, 22 – 25 × 5.5 – 6 cm, apices acute to shortly acuminate, bases decurrent, margins shallowly serrate; 9 – 10 lateral veins, usually not meeting at the same point on the midrib, prominent in dried specimens; young leaves with dense brown hairs, upper surface of older leaves glossy dark green, with scattered appressed hairs, lower surface distinctly paler with dense dark hairs on the midrib and lateral nerve pairs in contrast with the lighter green of the lamina with its even covering of hairs. *Petioles* 2.5 – 3 cm long, indumentum as young stems. *Inflorescence* axillary, enclosed in conspicuous bracts and bracteoles, congested, typically under six flowers present within each outer bract pair, with only one corolla mature at a time. *Bracts* white to pale greenish-white, ovate with acute tip, with brown hairs concentrated on the venation and margins, some on the surface, 3.5 – 4 cm long; a larger pair enclosing several narrower and shorter individual bracts ranging in size, but always smaller than the outer pair. *Pedicels* c. 0.5 cm long, thick, with the same brown hairs as the bracts. *Flowers* with *calyx* lime green (*Sands* 6332) to greenish-white (GLCB, pers. obs.), but appearing darker due to indumentum, in flower c. 15 mm long, splitting about half way along on the ventral side, below the lower three corolla lobes, the lobe tips remaining joined/twisted together and sitting erect behind the upper lobe of the corolla, c. 5 – 6 mm long; as the corolla withers the lobes begin to separate, although remain joined at the apices; outer surface with dense brown spreading hairs, inner surface with brown silky appressed hairs. *Corolla* pale greenish-yellow, waxy texture, c. 35 mm long, the tube straight and narrow for c. 20 mm before splitting, two upper lobes joined to form a broad, shallow hood, c. 3 mm long; three lower lobes strap-shaped, patent to the corolla mouth, curling a little at the ends; the two lateral lobes c. 14 mm long, slightly shorter than the central lobe c. 16 mm long; outer surface glabrous, the inner surface of the upper lip and lower lobes with short glandular hairs. *Filaments* c. 12 mm long at anthesis [fresh material], white, inserted at the corolla mouth, at the base of the lower lobes, curling after dehiscence, as typical for the genus. *Anthers* c. 4 mm long at anthesis, cream [fresh material]. *Staminodes* three, the central one shorter, at first turgid, held patent from the back of the upper part of the corolla tube then withering, the two lateral staminodes, c. 4 mm long, at first turgid, held patent from within corolla mouth but at a transverse angle, each crossing over the other, between the fertile filaments, somewhat blocking the mouth of the corolla, white, with brown apex. *Gynoecium* white to cream, c. 25 mm (measured at anthesis), style hairy, ovary glabrous, stigma rounded, capitate (more or less oval head, centre slightly raised when fresh, with a dip in centre when dry). *Disc* surrounding the base of the ovary but not completely, a gap present, apex undulate to somewhat ragged. *Fruit* not seen. Figs 1, 2.

RECOGNITION. The pale greenish-yellow coloration of the corolla, the waxy texture and almost patent angle at which the three strap-shaped lower lobes are held, in combination with the staminodes, which protrude from the mouth of the corolla, each at a transverse angle so their ends cross, make this species unique in *Cyrtandra*. In addition, the stamens are inserted at the corolla mouth, at the point at which the lower lobes protrude from the corolla tube; in *Cyrtandra* it is typical for the stamens to be inserted lower down the tube. In flower, it is immediately distinct to any other *Cyrtandra*, with no obvious similar species.

DISTRIBUTION AND HABITAT. Moist areas in primary forest with minimal disturbance, at a broad altitudinal range, c. 30 – 1600 m. Map 1.

ADDITIONAL SPECIMENS EXAMINED. INDONESIA. Papua Barat province. Kabupaten Manokwari. Distr. Warmare. R. valley to W of camp (between Wariori and Mangopi Rs, c. 11 km inland), 25 April 1994,

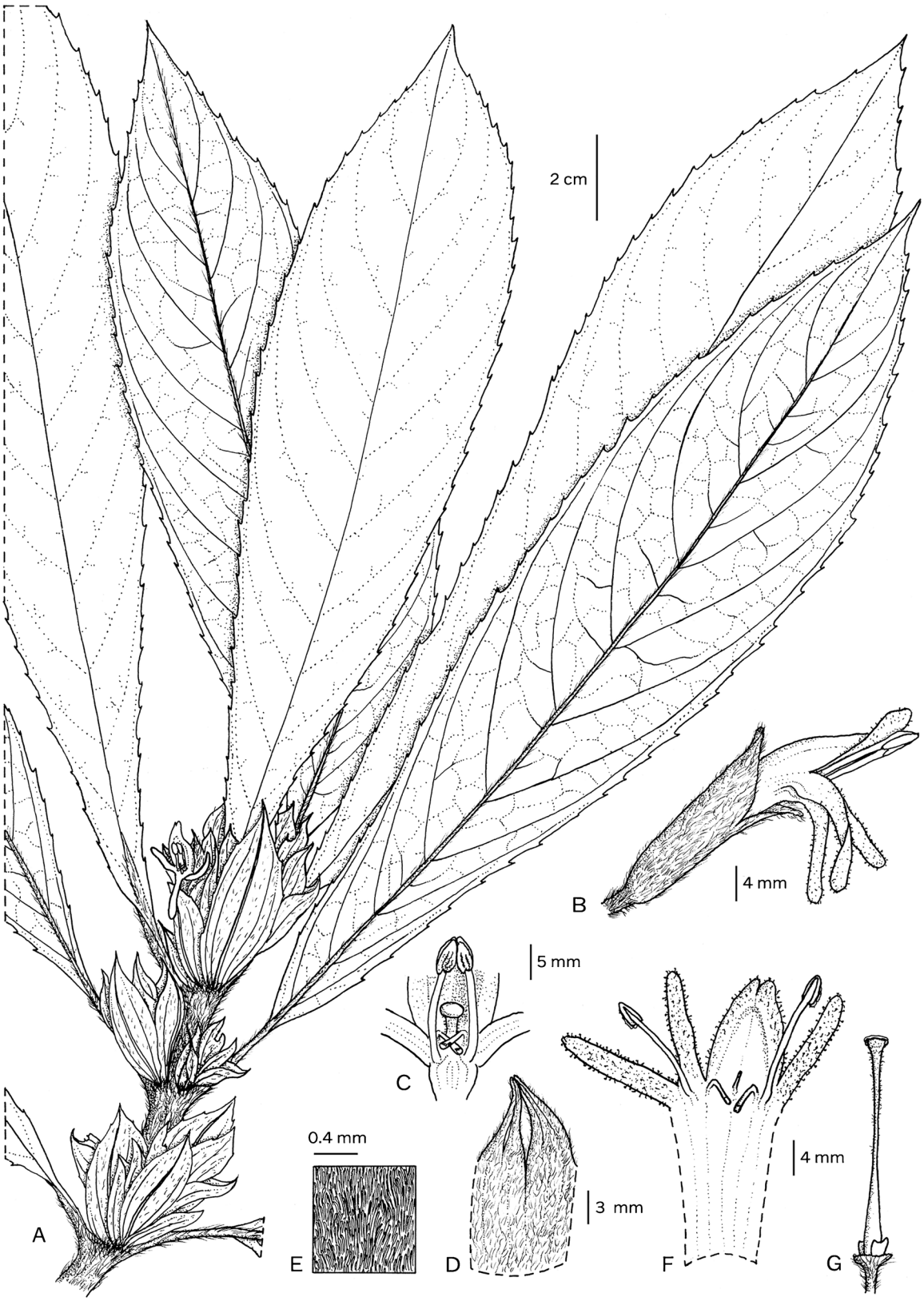

Fig. 1. *Cyrtandra loratiloba*. **A** habit, flowering, leafy stem, showing bracts; **B** flower at anthesis; **C** open flower, showing position of staminodes; **D** dissected calyx, showing exterior indumentum; **E** calyx, detail of interior indumentum; **F** dissected corolla showing position of two stamens and three staminodes; **G** gynoecium with disk. All from *Bramley* GB88. DRAWN BY SEBASTIAN A. HATT.

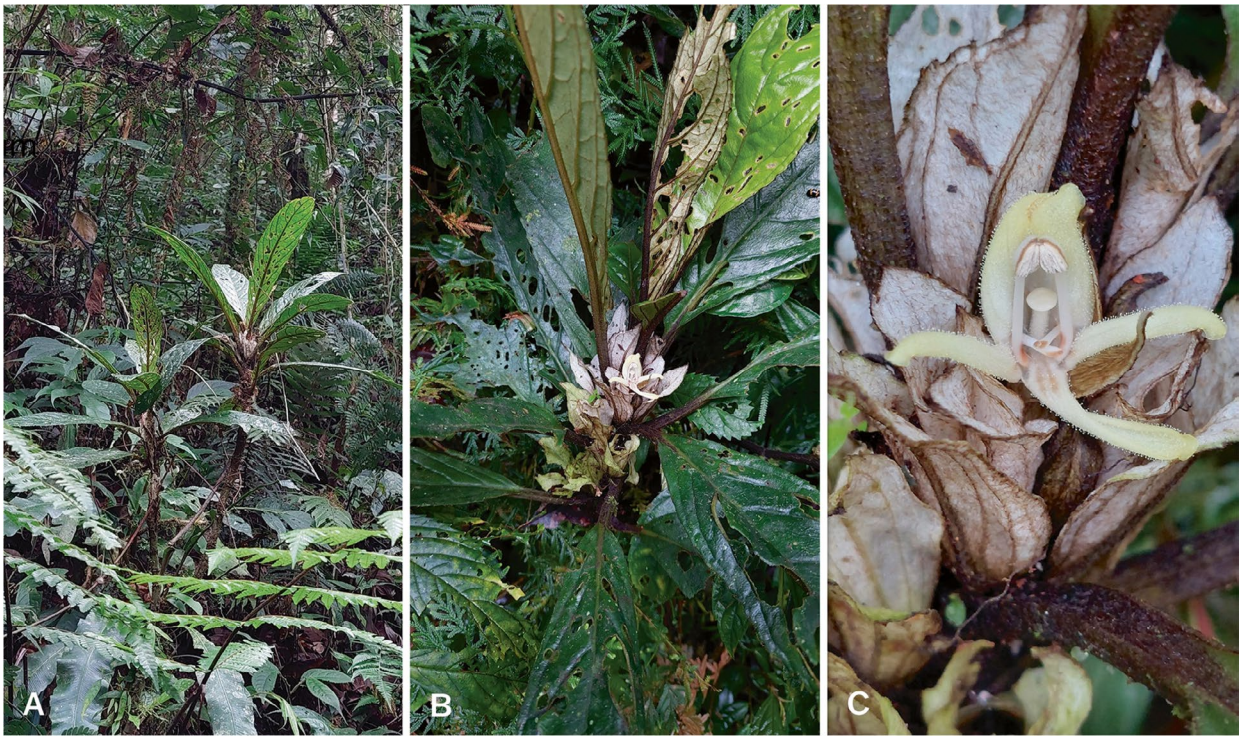

Fig. 2. *Cyrtandra loratiloba*. **A** habit; **B** individual showing inflorescence placement; **C** close-up of flower, note strap-shaped lower lobes, glandular hairs and protruding staminodes. PHOTOS: G. L. C. BRAMLEY.

R. J. Johns 8200 with *Muljono, S. & Sagisolo, M.* (BO [BO1517478], K [K000734999], L [L.3794101]; Foothills on the southern margin of the Arfak Plains, river valley between the Sungai Wariori and S Waramoi (Sungai Mangopi), 25 April 1994, *M. J. S. Sands* 6332 with *Jitmau, M. & Wally, E.* (A [A02313573], BISH [BISH773028] n.v., BR [BR0000009286252], CANB [CANB 534960.1], E [E00111099], K [K000735000], L [L.3794477], LAE [LAE273140]), SING [SING0200595]). Kabupaten Pegungunan Arfak. Minyambouw distr.. Kwau homestay, Papua Lorikeet Guesthouse, near entrance to trail by larger house. 11 Nov. 2023, *G. Bramley* with *Kew-UNIPA team* GB88 (MAN ×3); 22 Jan. 2025, *G. Bramley* with *Kew-UNIPA team* GB259 (MAN ×3). Kabupaten Teluk Wondama. Windesi distr. *G. Bramley* with *Kew-UNIPA team* GB337 (MAN ×3). Papua province. Nabire, 27 Feb. 1940, *R. Kanehira & S. Hatusima* 11682 (FU).

CONSERVATION STATUS. *Cyrtandra loratiloba* has an estimated AOO of 20 km^2 and EOO of 11,573 km^2, and there are five locations. A continuing decline in mossy forest cover can be inferred at three of the locations, with the major threats being conversion to oil palm plantations and urbanisation (Global Forest Watch 2025). The collecting locality for GB337 still has good forest cover but is within a logging concession (Global Forest Watch 2025). There is no population data available for this species, but it was observed by the authors to be relatively common in patches at the two locations visited in 2024 – 25. The values for EOO, AOO and number of locations, combined with the inferred continuing decline in area, extent and quality of habitat, means that this species is provisionally assessed as Vulnerable [VU B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)].

ETYMOLOGY. The epithet 'loratiloba' refers to the unusually narrow, 'strap-shaped' corolla lobes characteristic of this species.

NOTES. The broad distribution and altitudinal range for this species is remarkable, particularly in comparison to the *Cyrtandra* species of western Malesia, which are typically restricted to narrow ranges in terms of altitude and geographical scale. However, in New Guinea, taxonomic work is revealing further examples of *Cyrtandra* species with a similar altitudinal range; perhaps this relates to the geological age of New Guinea, particularly the Bird's Head area, in that it has only taken its current shape and position relatively recently (Pigram & Davies 1987). It could also be due to the presence of a different suite of pollinators and dispersers on the island, since its fauna has

Map 1. Distribution of *Cyrtandra loratiloba*.

its strongest affinities with Australia, as well as being highly endemic (Allison 2006).

The stigma and style are described as 'short to 2 – 3 cm with a forked stigma, brown, ovary to 3 cm' on *Johns* 8200, but the stigma does not appear to be forked on the specimen.

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further information, please visit https://www.ukri.org/what-we-do/browse-our-areas-of-investment-and-support/international-science-partnerships-fund/. We are grateful for physical access to herbarium collections at BO, E and SING, and digital access to A, BR, CANB, L and LAE; we thank Timothy Utteridge for taking specimen images at FU.

Declarations

Conflicts of Interest The authors declare that to their knowledge there are no conflicts of interest associated with the publication of this manuscript.

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