

# A new species of *Cyrtandra* (Gesneriaceae) from Aceh, Sumatra

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**Abstract:** A new species of *Cyrtandra* (Gesneriaceae) from Aceh, Sumatra, *C. rubriflora* P.E.Sm. & H.J. Atkins, is described and illustrated. Based on IUCN criteria, *C. rubriflora* is assessed as Near Threatened (NT).

**Keywords:** Aceh, *Cyrtandra*, Gesneriaceae, New species, Sumatra.

## Introduction

*Cyrtandra* J.R. Forst. & G. Forst. is the largest genus in the Gesneriaceae, recently estimated to contain c. 800 species and characterised by high levels of narrow endemism (Atkins *et al.*, 2013). It is found from the Nicobar Islands in the Indian Ocean, throughout Malesia, in Taiwan and the southern Japanese islands, in northern Australia and across the Pacific as far east as the Marquesas and North to Hawaii. It is recorded on the Asian continent only as far North as central Thailand (Atkins *et al.*, 2013) with centres of diversity in Borneo, New Guinea and the Pacific Islands (Burt, 2001). There are currently 62 recognised species of *Cyrtandra* in Sumatra (Bramley & Cronk, 2003).

The equatorial island of Sumatra with an area of 476,000 km<sup>2</sup>, is the second largest in the Malesian region (Laumonier *et al.*, 2010). It is dominated by the 1,700 km long Barisan mountain range which runs along the west coast. It is species-rich with an estimated 10,000 species of higher plants (Whitten *et al.*, 2000). The island is an area of high anthropogenic pressure where both lowland and

upland vegetation have been extensively cleared. The new species described here grows in Aceh province in lowland forest (as defined by Cannon *et al.*, 2009). Research on *Cyrtandra* in Sumatra has resulted in the discovery of this distinctive, red-flowered species from this province.

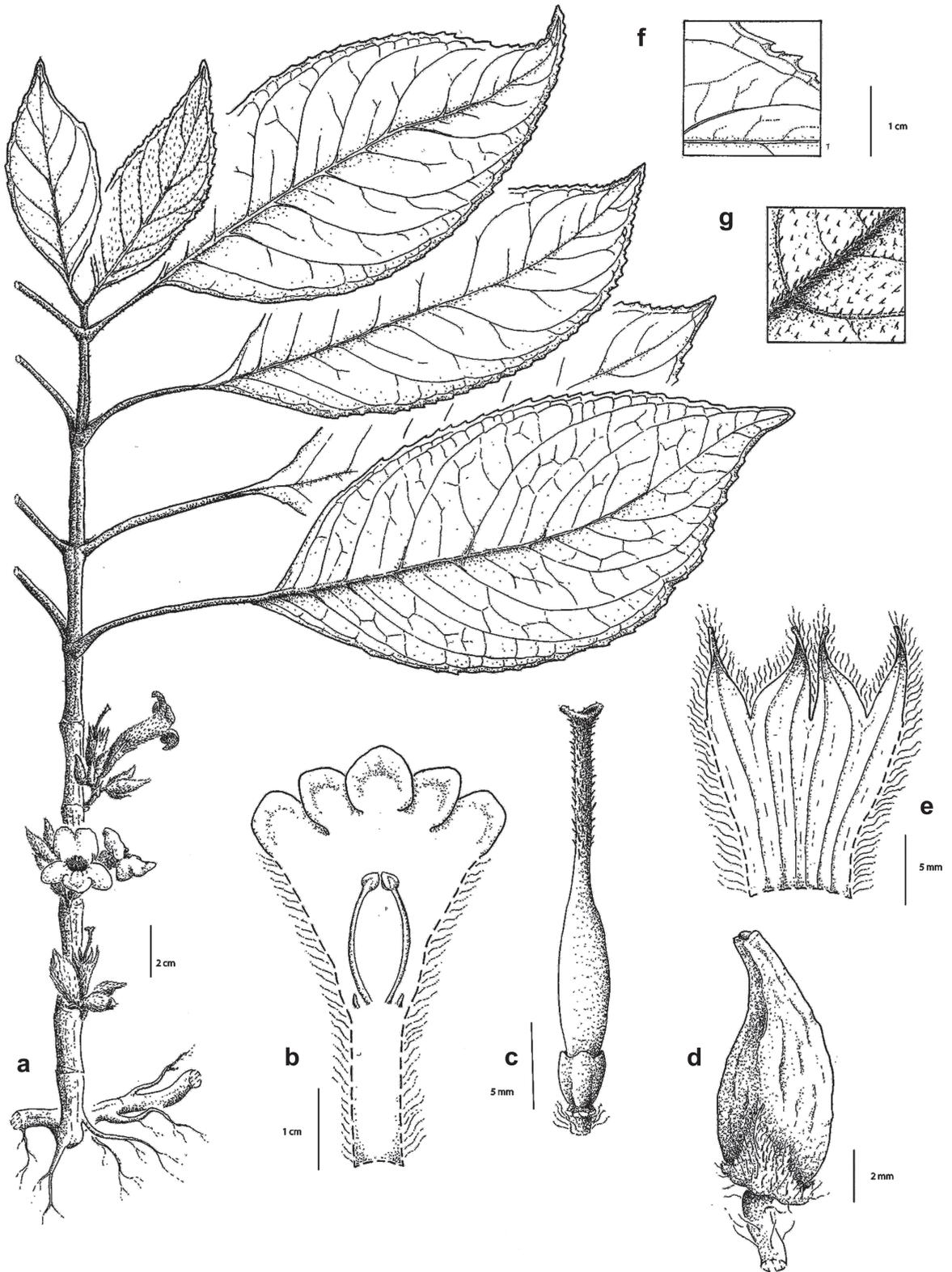
## Materials and Methods

Herbarium specimens from ANDA, BO, E, K, L, SING were examined during an ongoing research project on the taxonomy of Sumatran *Cyrtandra* (Herbarium acronyms follow Thiers (continuously updated)). Material from ANDA was examined electronically. Other materials were examined and compared using a stereomicroscope and flowers were dissected after boiling (Bridson & Forman, 1999). Colour and shape descriptions were recorded from digital photographs taken in the field. Detailed examination of all of the material available and comparison with type specimens and protologues of Sumatran species and those of neighbouring areas (Jack, 1823; Clarke, 1883; Ridley, 1917; Bakhuizen van den Brink, 1950; Bramley & Cronk, 2003; Bramley *et al.*, 2004) was carried out in order to confirm that this species is new.

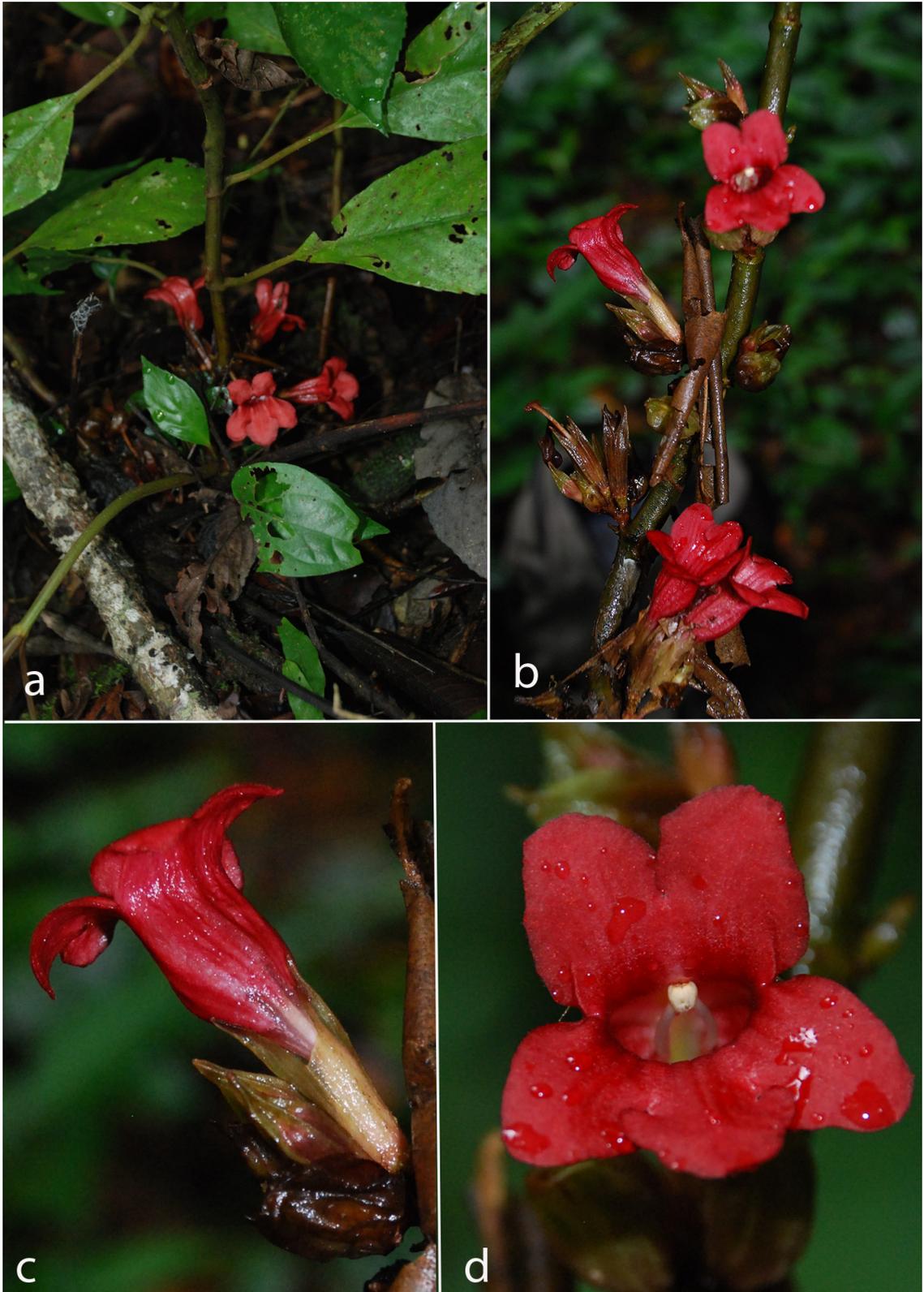
*Cyrtandra rubriflora* P.E.Sm. & H.J. Atkins, **sp. nov.**

**Figs. 1 & 2**

This species is similar to the widespread *C. picta* Blume in being a herb with subsessile inflorescences and large, slightly connate bracts that enclose the base of the inflorescence, and a glabrous ovary. It differs in corolla colour (dark pink to red *vs* white, cream or pale yellow



**Fig. 1.** *Cyrtandra rubriflora* P.E.Sm. & H.J.Atkins: **a.** Habit; **b.** Corolla opened to show position of stamens and staminodes; **c.** Gynoecium; **d.** Immature fruit; **e.** L.S. of the calyx showing the ventral surface; **f.** Detail of upper leaf surface; **g.** Detail of lower leaf surface (**a-c** & **e-g** from P. Wilkie, M. Hughes, A. Sumadijaya, S. Rasnovi, Marlan & Rabusin PW603; **d** from P. Wilkie, M. Hughes, A. Sumadijaya, S. Rasnovi, Marlan & Rabusin PW630; drawn by Rebecca Camfield).



**Fig. 2.** Plate of *Cyrtandra rubriflora* P.E.Sm. & H.J.Atkins: **a.** Habit; **b.** Inflorescence; **c.** Flower-lateral view; **d.** Flower-front view (photos by Peter Wilkie).

with purple dots in the throat); leaf shape (elliptic *vs* ovate) and anther indumentums (glabrous *vs* with a short tuft of simple hairs at the tips and along the connective).

*Type:* INDONESIA, Sumatra, Aceh, Gunung Leuser National Park, Ketambe Research Station, 08.03.2008, P. Wilkie, M. Hughes, A. Sumadijaya, S. Rasnovi, Marlan & Rabusin PW630 (holo E [E00416358!]; iso BO [BO1880564!]).

Erect herbs 30–100 cm tall. Stems terete to quadrangular, striate, glabrate. Leaves opposite and subequal, some pairs slightly anisophyllous. Petiole 4–10 cm long, sparsely hairy, more densely so when young, hairs simple and matted. Blade elliptic, 6.0–9.5 × 14–21 cm, base cuneate, somewhat soblique, apex acuminate, 8–20 mm long, margins serrate, upper surface more or less glabrous, lower surface with a sparse covering of simple hairs (*c.* 1 mm long), dense over midrib and veins, lateral leaf vein pairs 6–7. Inflorescence axillary, subsessile or shortly pedunculate, occurring from base of plant to about half way up the stem, usually below the leaves, four or more flowers per inflorescence; bracts *c.* 13 mm long, enclosing the base of the inflorescence, dark green to brown, with an indumentum of simple, matted hairs less than 1 mm long. Peduncles 2–3 mm long with dense, simple, matted hairs *c.* 1 mm long. Pedicels 2–3 mm long. Calyx yellow-green somewhat translucent, turning brown with maturity, tubular, 15–20 mm long, lobes four or five, narrowly acuminate, 2–3 mm long, externally with *c.* 1–3 mm long simple hairs, internally glabrous. Corolla dark pink to red, 43–50 mm long, tube narrow whilst within the calyx, widening to mouth, somewhat compressed laterally, lobes spreading, slightly recurved, posterior lobes *c.* 11 × 8 mm, lateral lobes *c.* 8 × 6 mm and anterior lobe 8 × 8 mm, externally with 4–7 mm long simple hairs, internally glabrous. Stamens 2, white, filaments 10–12 mm long, glabrous; anthers creamy-yellow 2–2.5 mm long, face to face and cohering at tips, thecae distally confluent, but proximally separate, glabrous; lateral staminodes 1.5 mm long, posterior staminode not seen. Gynoecium 22 mm long, disk cupular, 2 mm long, glabrous, with an undulate margin; ovary glabrous, style white with short, 0.5 mm hairs distally; stigma bilobed. Fruit ovoid,

somewhat scabrous, *c.* 10 × 4 mm, base of style and calyx persistent, glabrous, immature.

*Flowering & fruiting:* From January to May (based on limited material available).

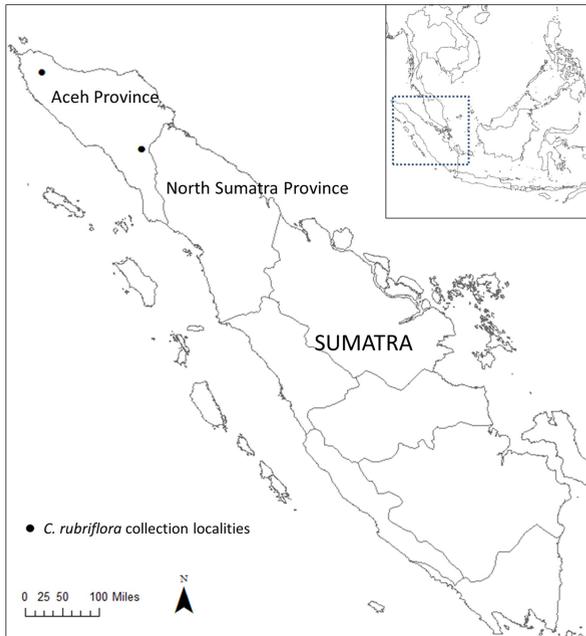
*Habitat:* Lowland forest, often riparian, 200–400 m elevation.

*Distribution:* Sumatra, Aceh province (Fig. 3).

*Etymology:* The specific epithet refers to its unusual red flowers.

*Specimens examined:* INDONESIA, Sumatra, Aceh Province, Gunung Leuser National Park, Valley of Lau Alas, 17.05.1972, W.J.J.O. de Wilde & B.E.E. de Wilde-Duyffjes 12059 (K, L); Jantho Pinus Nature Reserve, Nangroe Aceh Darussalam, forest area of Sumatran Orangutan Reintroduction Program (SOCP), 12.01.2017, Nurainas & Rezi NAS-3450 (ANDA); Ketambe Research Station, 06.03.2008, P. Wilkie, M. Hughes, A. Sumadijaya, S. Rasnovi, Marlan & Rabusin PW603 (E [E00416326!]).

*Conservation status:* *Cyrtandra rubriflora* has been collected on three separate botanical expeditions between 1972 and 2017. Three of the four collections were made close together in Gunung Leuser National Park which straddles the borders of Aceh and North Sumatra provinces. The fourth collection is from Pinus Jantho Nature Reserve which is approximately 275 km to the north. The species has an EOO of 658 km<sup>2</sup> and an AOO of 12 km<sup>2</sup> based on a 2 × 2 km grid cell size under the B criteria (Bachman *et al.*, 2011). The flora of the region is relatively poorly known and it is possible that further collecting will expand the range of *C. rubriflora*. The threat of habitat loss in the forest regions of Sumatra, however, is well documented and is particularly acute for lowland species. One estimate indicates that the island has lost nearly half of its forests in the past 15 years alone and it seems that designation of protected areas has not been totally successful in preventing logging and deforestation within their boundaries (Gaveau *et al.*, 2009, Global Conservation, 2017). Three collections were made in Gunung Leuser National



**Fig. 3.** Distribution of *Cyrtandra rubriflora* P.E.Sm. & H.J.Atkins.

Park which is known to be suffering from forest degradation and loss of habitat through illegal logging and encroachment. Areas adjacent to the park have been extensively cleared for palm oil plantations (UNESCO, 2012). It can therefore be considered likely that the habitat of *C. rubriflora* is threatened. Based on the small number of collections and our knowledge of the widespread deforestation and forest conversion in the area we would recommend a cautious listing for this species under Near Threatened (NT) as per guidelines for using IUCN Red list categories and criteria (2019) and emphasise the need for further collecting in the area.

*Notes:* *Cyrtandra rubriflora* is similar to the widespread and morphologically variable species *C. picta* but there are important differences that allow these two species to be easily distinguished and that are detailed in the diagnosis. Red-flowered species are unusual in *Cyrtandra*, especially in western Malesia where the majority of species have white flowers (Bramley & Cronk, 2003; Bramley *et al.*, 2004; Atkins *et al.*, 2013). There are only three other species from Sumatra that are described as having purplish or reddish flowers. They are all very

distinct from *C. rubriflora*; *C. frutescens* Jack and *C. rubiginosa* Jack have cylindrical fruits and small, linear inflorescence bracts and *C. rosea* Ridl. can be distinguished by being a woody shrub with smaller flowers (20 mm long as opposed to 43–50 mm long), decurrent leaf bases and a hairy ovary.

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