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RESEARCH ARTICLE

A NEW SPECIES OF *CEROPEGIA* (APOCYNACEAE: CEROPEGIEAE) FROM A MIDLAND
LATERITIC HILL OF KERALA, INDIA.

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Abstract

Ceropegia nampyana, a new species of Apocynaceae from the southern Western Ghats, is described and illustrated. The new species is morphologically allied to *Ceropegia spiralis* Hook.f. & Thomson, but differs by having corolla lobes shorter than the tube, corolla tube glabrous within and hairy outer corona. The new taxon belongs to *Ceropegia* Ser. *Attenuatae*.

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Introduction:-

The genus *Ceropegia* L. includes more than 200 species distributed in the Old World ranging from South East Asia, India, Madagascar, Tropical Arabia, Canary Islands and Africa except the Mediterranean region, New Guinea and Northern Australia (Surveswaran *et al.* 2009). Karthikeyan *et al.* (2009) reported 56 species, 2 subspecies and 3 varieties from India which does not include a species published by Daniel and Umamaheswari (2001). Since then few more taxa have been published by different authors (Yadav & Shendage 2010; Diwakar & Singh 2011; Kambale *et al.* 2012; Rahangdale & Rahangdale 2012) and the genus is now represented by 66 taxa (59 species, two subspecies and five varieties) in India. Western Ghats is the centre of diversity of the genus in India which harbors 46 taxa (Nair *et al.* 2014) of which 20 species and 2 varieties occur in Kerala (Nair *et al.* 2006). An interesting species of *Ceropegia* has been collected from the lateritic hill Pokkunnu, near Nanminda in Kozhikode district of Kerala. Following consultation of the relevant literature and a detailed study, the specimen was identified as a new species, which is described and illustrated here. This new taxon belongs to the series *Attenuatae* H. Huber under sect. *Tiloris* H. Huber.

***Ceropegia nampyana* Manudev, Kambale & Pramod, sp. nov. Figs. 1A-H, 2C&D:-**

Ceropegia nampyana is close to *C. spiralis* Wight but differs by having corolla lobes shorter than the tube, corolla tube glabrous within, hairy outer corona as opposed to corolla lobes as long as corolla tube, bulbous based conical trichomes present within tube, glabrous outer corona in *C. spiralis*.

Types:- INDIA, Kerala, Kozhikode District, 25 km from Kozhikode city, Nanminda, Pokkunnu, 13.IX.2014, Manudev, Pramod & Prakash 138969 (Holotype CALI!; Isotypes: DEV!, SUK!)

Perennial erect herbs. Rootstock tuberous, tubers 1.5 – 2 cm across, globose-discoid; roots fibrous. Stem terete, pubescent, unbranched, up to 9 – 15 cm high, c. 3 mm across. Leaves simple, opposite, decussate, petiolate; petiole 4 – 6 mm long, channeled above, glabrous; lamina 4.5 – 10 × 0.8 – 1 cm, linear to elliptic-lanceolate, falcate, acute at apex and narrowed at base, glabrous, margins serrulate, strigose towards base. Inflorescence a solitary, extra-axillary flower, shortly pedunculate; peduncles 1.5 – 2 mm long, terete, glabrous; bract solitary, 1.5 – 2 mm long, linear, glabrous; pedicels 0.8 – 1 cm long, terete, glabrous. Calyx 5-partite, sepals 2.5 – 3.5 mm long, linear-subulate, glabrous. Corolla c. 3 cm long; tube c. 2 cm long, slightly curved, glabrous, dilated at base, narrow at middle, funnel shaped above, pale green with purple bands at base, deep purple otherwise, glabrous and deep purple within, dilated portion glabrous within; corolla lobes up to 1.3 cm long, shorter than the tube, twisted, acute, folded along the margin, connate at the tip, glandular trichomes present along margins; trichomes clavate, purple and translucent; unicellular conical purple trichomes present within at the base of corolla lobes. Corona biseriate; outer corona bowl-shaped, c. 1.2 × 2.5 mm, with 5- bifid lobes; lobes c. 0.5 mm, hairy along margin and within; inner corona erect, whitish-cream coloured, linear, c. 2.5 mm long, alternate with outer corona. Pollinia yellow, attached to brown pollen carriers by short caudicles, Pollinarium c. 0.35 × 0.45 mm, yellow. Follicles in pairs, 6 – 7 × 0.3 cm, glabrous, tapering towards apex, usually unequal. Seeds c. 5 × 3 mm, ovate-oblong, comose; coma c. 2 cm long, white, silky.

Distribution:- Hitherto known from the type locality.

Phenology:- Flowering and fruiting after monsoon; flowers and fruits were collected in October.

Etymology:- This species is named in honour of Professor Santhosh Nampy, Department of Botany, University of Calicut, Kerala, for his valuable contribution to the field of Angiosperm taxonomy, who guided the first author to the field of taxonomical research.

Conservation Status:- *Ceropegia nampyana* is so far known from the type locality only. About 30 individuals were located. According to IUCN criteria, the species falls under the category Data Deficient (DD) (IUCN 2001, 2010)

Notes:- Series *Attenuatae* H. Huber is endemic to peninsular India, particularly to the Western Ghats, which is one of the centres of diversity of *Ceropegia* (Malpure *et al.* 2006). They are characterized by linear or linear-lanceolate leaves, globose tubers, sessile or shortly pedunculate, uni- or few-flowered, bracteate cymes and corolla lobes that are connate at the apex. Presence of unicellular glandular trichomes and clavate translucent trichomes on corolla lobes are unusual in the Series *Attenuatae*, which is seen only in *C. spiralis* Wight and *C. nampyana*. Now, this series is represented by 13 species in India including the new taxon. Of these 13 species, *Ceropegia anantii* S.R.Yadav, Sardesai & S.P.Gaikwad, *C. anjanerica* Malpure, M.Y.Kamble & S.R.Yadav, *C. attenuata* Hook., *C. concanensis* Kambale, Chandore & S.R.Yadav, *C. jainii* Ansari & B.G.Kulk., *C. mohanramii* S.R.Yadav, M.N.Gavade & Sardesai and *C. nampyana* Manudev, Kambale & Pramod grows in lateritic plateaus or hillocks. The remaining species viz., *C. bhatii* S.R.Yadav & Shendage, *C. fimbriifera* Bedd., *C. mahabalei* Hemadri & Ansari, *C. pullaiyahii* Raja Kullayisw., Sandhyar. & Karupp., *C. noorjahaniae* Ansari and *C. spiralis* Wight grows in dry deciduous forests or open scrub forests, along dry hill slopes among grasses and succulent *Euphorbias*. An updated taxonomic key to the species of Series *Attenuatae* in India is provided for the easy identification in the field.

Table 1. Comparison between *Ceropegia nampyana* and *C. spiralis*

Character	<i>Ceropegia nampyana</i>	<i>Ceropegia spiralis</i>
Corolla tube	Glabrous and deep purple within	Bulbous based conical trichomes present within the tube; deep pink within at lower half and greenish at upper half
Corolla lobes	Shorter than corolla tube and twisted	As long as corolla tube and spirally coiled
Outer corona	Hairy along margin and within	Glabrous throughout

Ecology and Habitat:- *Ceropegia nampyana* was collected from a midland lateritic hill, Pokkунnu, situated 25 km away from the Kozhikode city. The species was found growing in the shallow soil pockets near laterite rocks, in association with *Murdannia semiteres* (Dalzell) Santapau, *Ischaemum ciliare* Retz., *Gloriosa superba* L., *Cyanotis burmanniana* Wight, *Pogostemon quadrifolius* (Benth.) F.Muell., *Justicia japonica* Thunb., *Polycarpha corymbosa* (L.) Lam., *Eriocaulon eurypeplon* Körn., *Crotalaria nana* Burm.f., *Canscora pauciflora* Dalzell and species of *Arundinella*.

The climatic conditions in different seasons together with edaphic factors account for the development of characteristic vegetation on the midland lateritic hills and plateaus of Northern Kerala. The great diversity shown by these habitats are influenced by different factors such as physical and chemical properties of the soil, microclimate and varied types of geographical terrains which form a number of micro ecosystems. As indicated by Barthlott and Porembski (2000), lateritic plateaus can be treated as model ecosystems similar to oceanic islands. In the last few years, a number of new taxa were described from the lateritic plateaus of Southern and Western Coast of India, especially from Northern Kerala, that include *Nymphoides krishnakesara* (Joseph & Sivarajan 1990); *Rotala malabarica* (Pradeep *et al.* 1990); *Justicia ekakusuma* (Pradeep & Sivarajan 1991); *Lepidagathis keralensis* (Madusoodhanan & Singh 1992); *Coelachne madayensis* (Pramod *et al.* 2012); *Lindernia madayiparensis* (Ratheesh Narayanan *et al.* 2012); *Parasopubia hofmannii* (Pradeep & Pramod 2013); *Eriocaulon cheemenianum* (Biju *et al.* 2012); *Eriocaulon gopalakrishnanum* (Rasmi & Krishnakumar 2013); *Canscorinella bhatiana* (Subrahmanya Prasad & Raveendran 2012, Shahina & Nampy 2014); *Eriocaulon kannurensis* (Sunil *et al.* 2012); *Rotala khaleeliana* (Sunil *et al.* 2013); *Rotala tulunadensis* (Subrahmanya Prasad *et al.* 2012); *Rotala meenkulamensis* (Subrahmanya Prasad & Raveendran 2013a); *Rotala kasaragodensis* (Subrahmanya Prasad & Raveendran 2013b) and *Brachystelma vartakii* (Kambale *et al.* 2014).

These lateritic plateaus have high conservation value owing to the presence of a number of endemic, rare and habitat specific species of plants and animals. The lack of awareness of this aspect is leading to various destructive activities, especially mining for laterite bricks and clay. One such activity at the type locality is a major threat to the new taxon.

Key to the species of *Ceropegia* Ser. *Attenuatae* H.Huber (Sect. *Tiloris* H.Huber)

1. Twinning herbs..... 2
1. Erect herbs..... 3
2. Flowers green; corolla tube gradually dilated towards base *C. bhatii*
2. Flowers blotched with deep pink spots; corolla tube globose at base..... *C. pullaiyahii*
3. Flowers extra-axillary, solitary 4
3. Flowers in (2-flowered) cymose inflorescence 12
4. Corolla lobes with glandular trichomes 5
4. Corolla lobes not as above..... 6
5. Corolla lobes spirally coiled; tube with bulbous based trichomes within; outer corona glabrous *C. spiralis*
5. Corolla lobes twisted; tube glabrous within; outer corona hairy *C. nampyana*
6. Corolla lobes shorter than corolla tube 7
6. Corolla lobes as long as or longer than corolla tube 10
7. Corolla lobes form ampuliform globular cage..... *C. mohanramii*
7. Corolla lobes form ovoid – obovate cage 8
8. Corolla lobes beaked / linear *C. mahabalei*
8. Corolla lobes otherwise 9
9. Corolla tube funnel shaped at throat *C. concanensis*
9. Corolla tube cylindrical at throat *C. jainii*
10. Corolla lobes with deep purple spot at either side at the base..... *C. anantii*
10. Corolla lobes without deep purple spot on either side at the base..... 11
11. Flowers upto 3.5 cm long; cage obovate *C. anjanerica*
11. Flowers 3.5–7.5 cm long; cage attenuate *C. attenuata*
12. Corolla lobes fimbriate at the base; cage conical *C. fimbriifera*
12. Corolla lobes glabrous at the base; cage globular *C. noorjahaniae*

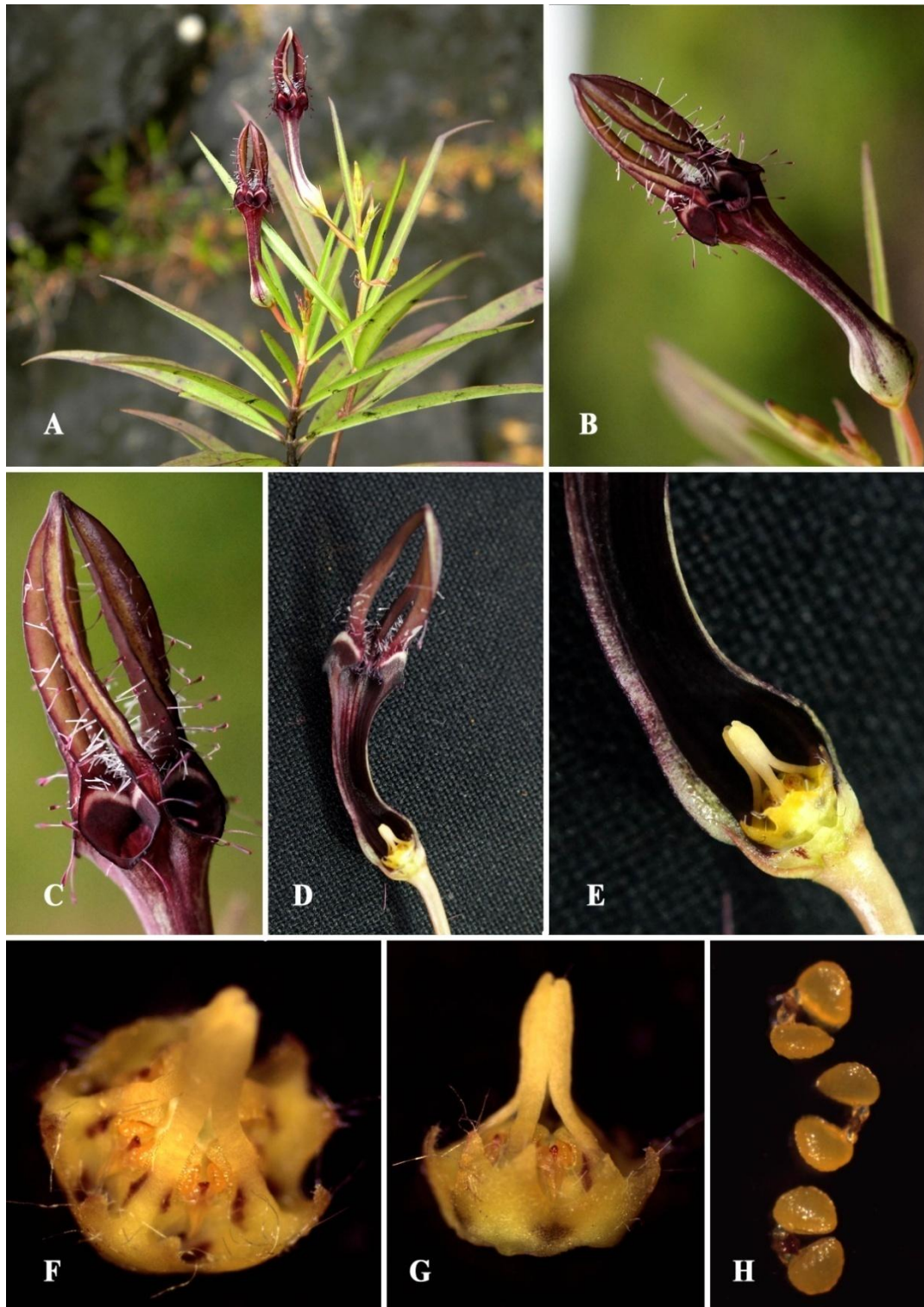


Fig. 1:- *Ceropegia nampyana* Manudev, Kambale & Pramod: **A.** Habit; **B.** Flower; **C.** Twisted corolla lobes with glandular trichomes; **D.** Longitudinal section of flower; **E.** Longitudinal section of corolla tube; **F & G.** Corona; **H.** Pollinia (All from Manudev, Pramod & Prakash 138969). Photos: Manudev & Pramod.



Fig. 2:- A & B. *Ceropegia spiralis*: A. Flower; B. Longitudinal section of corolla tube. C. & D. *Ceropegia nampyana*: C. Flower; D. Longitudinal section of corolla tube. Photos: Kambale & Manudev.

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