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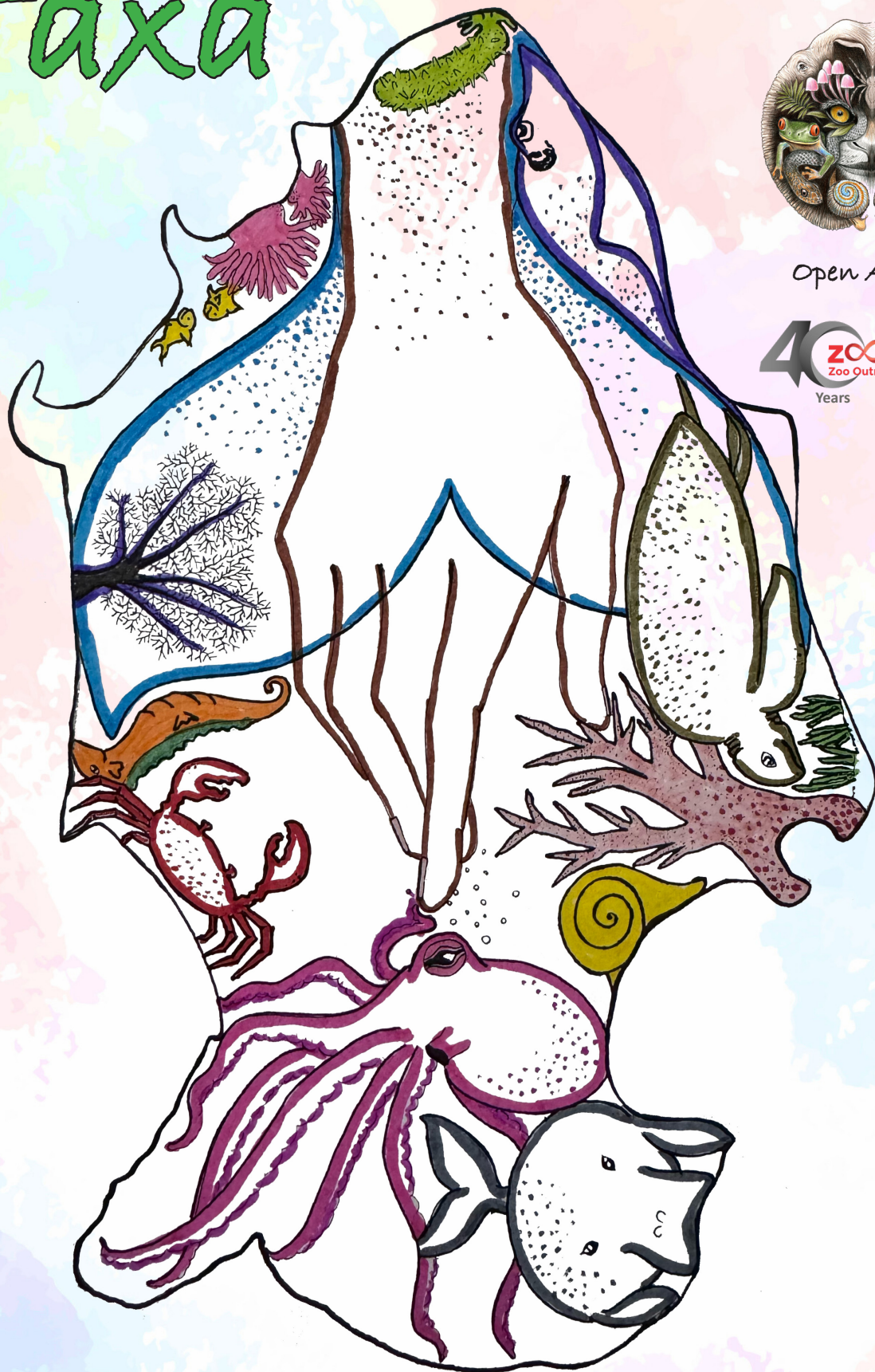
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Srivari Illam, No. 61, Karthik Nagar, 10th Street, Saravanampatti, Coimbatore, Tamil Nadu 641035, India
Registered Office: 3A2 Varadarajulu Nagar, FCI Road, Ganapathy, Coimbatore, Tamil Nadu 641006, India
Ph: +91 9385339863 | www.threatenedtaxa.org
Email: sanjay@threatenedtaxa.org

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continued on the back inside cover

Cover: Little Andaman is part of the island chain with incredible biodiversity, but these amazing species are threatened by development projects, and need our support.
Pen and ink artwork by Priyanka Iyer.



Re-collection of two climbing asclepiads: *Cynanchum corymbosum* and *Oxystelma esculentum* (Apocynaceae: Asclepiadoideae) from Assam, India

Gitartha Saikia¹ , Saurav Kumar Boruah² , Trishna Roy Prodhani³ & Nilakshee Devi⁴

^{1,2,4} Plant Taxonomy Laboratory, Department of Botany, Gauhati University, Guwahati, Assam 783314, India.

³ Department of Botany, Abhayapuri College, Bongaigaon, Assam 783384, India.

¹geetugitartha@gmail.com (corresponding author), ²skboruah19@gmail.com, ³trishnaprodhani123@gmail.com,

⁴devinilakshee@gmail.com

Abstract: Two lesser-known climbing asclepiads—*Cynanchum corymbosum* Wight and *Oxystelma esculentum* (L.f.) Sm.—of the family Apocynaceae, sensu lato, have been recollected from Assam, India after a gap of 67 and 87 years, respectively. A detailed taxonomic account, colour photo plates, and a map showing the collection sites in Assam has been provided. This recollection highlights the importance of continued botanical exploration and conservation efforts in the region.

Keywords: Climbers, conservation, Gentianales, pollinators, plant diversity.

Asclepiads are the fascinating group of plant kingdom belonging to the subfamily Asclepiadoideae under the family Apocynaceae, sensu lato (Endress 2016; Demarco 2017). They are characterised by having more complex and elaborate floral organization among the eudicots (Endress 2016). Via extreme floral synorganization, the asclepiads led to the evolution of floral organs (Demarco 2017). The presence of corona, gynostegium, and pollinaria bearing two pollinia distinguish the asclepiads from other Apocynaceous members of plant domain (Swarupanandan 1996; Endress & Bruyns 2000; Endress 2016). Furthermore, asclepiads exhibit a wide array of

habits ranging from herbs, shrubs, climbers to epiphytes; commonly distributed in the tropical areas.

Cynanchum L. and *Oxystelma* R.Br. are two climbing genera of asclepiads native to the tropics and subtropics, belonging to the family Apocynaceae under the subfamily Asclepiadoideae, and the tribe Asclepiadeae (Endress & Bruyns 2000; Endress et al. 2014). *Cynanchum* L. is a widespread genus of the tropics consisting of 259 globally accepted species (POWO 2024). Members of the genus are usually twiners, bearing basally cordate leaves and prophylls with annulated gynostegial staminal corona often forming cup shaped interstaminal corona (Liede & Kunze 1993; Liede & Meve 2013; Shen et al. 2019; Xu et al. 2021). While, *Oxystelma* R.Br. is a little-known genus of the family habituated by climbing herbs bearing campanulate flowers with pointed corolline corona comprising only two globally accepted species (POWO 2024).

During a field survey to Bongaigaon and Kamrup districts of Assam during the month of October and November in 2024, the authors encountered two climbing asclepiad taxa bearing milky latex and flowers with distinct corona, and pollinarium. Further taxonomic

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investigation of the collected specimens, the climbers were identified as *Cynanchum corymbosum* Wight and *Oxystelma esculentum* (L.f.) Sm. Upon consultation of the available literature and herbarium specimens, it was revealed that both the species are the recollection from the state after a gap of 67 and 87 years, respectively.

Cynanchum corymbosum Wight was first described by Robert Wight in 'Contributions to the Botany India' in the year 1834. In Assam, the species was first collected by U.N. Kanjilal in 1915 from Darrang District of Assam. Subsequently, G. Panigrahi collected the same species from Kakoi Reserve Forest of North Lakhimpur District of Assam in 1957. Following this collection, no further records of the species has been reported from Assam. Therefore, the present collection is a re-collection of the species *Cynanchum corymbosum* Wight from the state after a gap of 67 years.

The genus *Oxystelma* R.Br. was first described by R. Brown in 'Prodromus Florae Novae Hollandiae et Insulae van-Diemen' in the year 1810. Later on, James Edward Smith in 1813 validly published the name *Oxystelma esculentum* (L.f.) Sm. based on the type species *Periploca esculenta* L.f. (1781). The first collection of the species from Assam was made in 1868 from Goalpara District (K001129273!). After the collection, G.K. Dea again collected the species from the same locality in 1937, marking the last reported collection from the state. Hence, the present collection of the species *Oxystelma esculentum* by the authors reported the recollection of the lesser-known asclepiad taxon from Assam after a break of 87 years.

MATERIALS AND METHODS

The plant specimens were collected during October and November, 2024. Morphological observations of the climbers were recorded and colour photographs showing the habit of the plant has been taken at their natural habitats. Floral parts were dissected and photographed under the Labomed stereo zoom microscope. Further specimens were identified by consulting relevant literatures (Hooker 1883; Kanjilal et al. 1939; Deb 1983; Singh et al. 2012) and accessing available herbarium specimens housed at CAL, ASSAM, ARUN, and other online databases (<https://www.gbif.org/>; <https://plants.jstor.org/>). Voucher specimens were prepared following the standard herbarium techniques of Jain & Rao (1976), and submitted at ASSAM, and Gauhati University Botanical Herbarium (GUBH). A detailed taxonomic description of the collected species with colour photoplates and a location map showing the collection sites of the species have been provided.

TAXONOMIC TREATMENT

Cynanchum corymbosum

Wight, Contr. Bot. India: 56.1834; Hook.f. Fl. Brit. India. 4:24.1883; Kanjilal et al. Fl. Assam 3:286.1939; Deb, Fl. Tripura State 2:31.1983

Description

Climbing shrub, stem terete; twinning; glabrous. Internodes 12–16 cm long. Latex milky. Leaves opposite, ovate, glabrous, abaxially pubescent along the veins; apex acuminate, base cordate, margin ciliate, lateral veins 4–6 pairs, lamina 10–11 × 7–7.8 cm; petiole terete, 5–5.5 × 2–3 mm. Prophylls deciduous, orbicular with cordate base, apex apiculate, 0.7–1 × 0.6–1.1 cm. Flowers many, arranged in corymbiform cymes, peduncle slender, 2.5–3 cm long; Pedicel 0.8–1 cm long, Bract ovate triangular, apex acute, abaxial side pubescent, glabrous adaxially, 1–1.2 × 0.8 mm. Calyx 5-lobed, lobes 1.8–2 × 1.3–1.6 mm, ovate, apex acute, glabrous, green. Corolla campanulate, tube short, 1–1.2 mm long, lobes 5, linear, apex acute, glabrous, margin slightly recurved abaxially, 4.5–5.2 × 2–2.2 mm. Interstaminal corona cupular, shiny white, mouth with irregular incinerates, 3.8–4 × 2–2.4 mm, arises from the base of staminal corona; staminal corona five lobed, 1.2–1.5 mm, fused with anther cap. Gynostegium 2 × 1.3 mm, stigma pentagonal, creamy white, 1.2–1.3 mm long, laterally surrounded by five anther caps; anther cap rhomboid ovate, papery white, 0.6–0.8 × 0.4–0.6 mm; pollinarium five, inserted within anther caps, pollinia pendulous, elliptic, golden yellowish, glossy, 328–352 × 165–178 µm; caudicle short, corpusculum shiny red, 310–323 × 154–176 µm. Pistil 2.5–2.7 mm, stigma rhomboid, capitate, 1.2–1.3 mm long, style slender 1.5 mm long. Follicles lanceolate, 12–14 × 4–5.5 cm, covered with dense long fleshy spines. Seeds comose, 1–1.2 × 0.6–0.8 mm, ovate orbicular, margin dentate crenate, coma silky white.

Flowering and Fruiting: August–October (Flowering), October–December (Fruiting).

Habitat: Roadside forests and scrub jungles.

Distribution: Thailand, Vietnam, Cambodia, Bangladesh, Eastern Himalaya [China, Myanmar, northeastern India (Assam, Tripura)], Nicobar Island.

Specimen examined: BANGLADESH, Sylhet, coll. Wight., Wall. Asclep. no. 81(K), K000894620! (Isotype); INDIA, Assam, Darrang, 6.i.1915, coll. U.N. Kanjilal [ASSAM]; Lakhimpur, Kakoi RF, 22.xi.1957, G. Panigrahi [ASSAM]; Kamrup, Hajo, 26.245° N, 91.588° E, 2 October 2024, coll. G. Saikia GSL08 (ASSAM); Bongaigaon, Kakoijana RF, 26.471° N, 90.639° E, 5.xi.2024, coll. G.

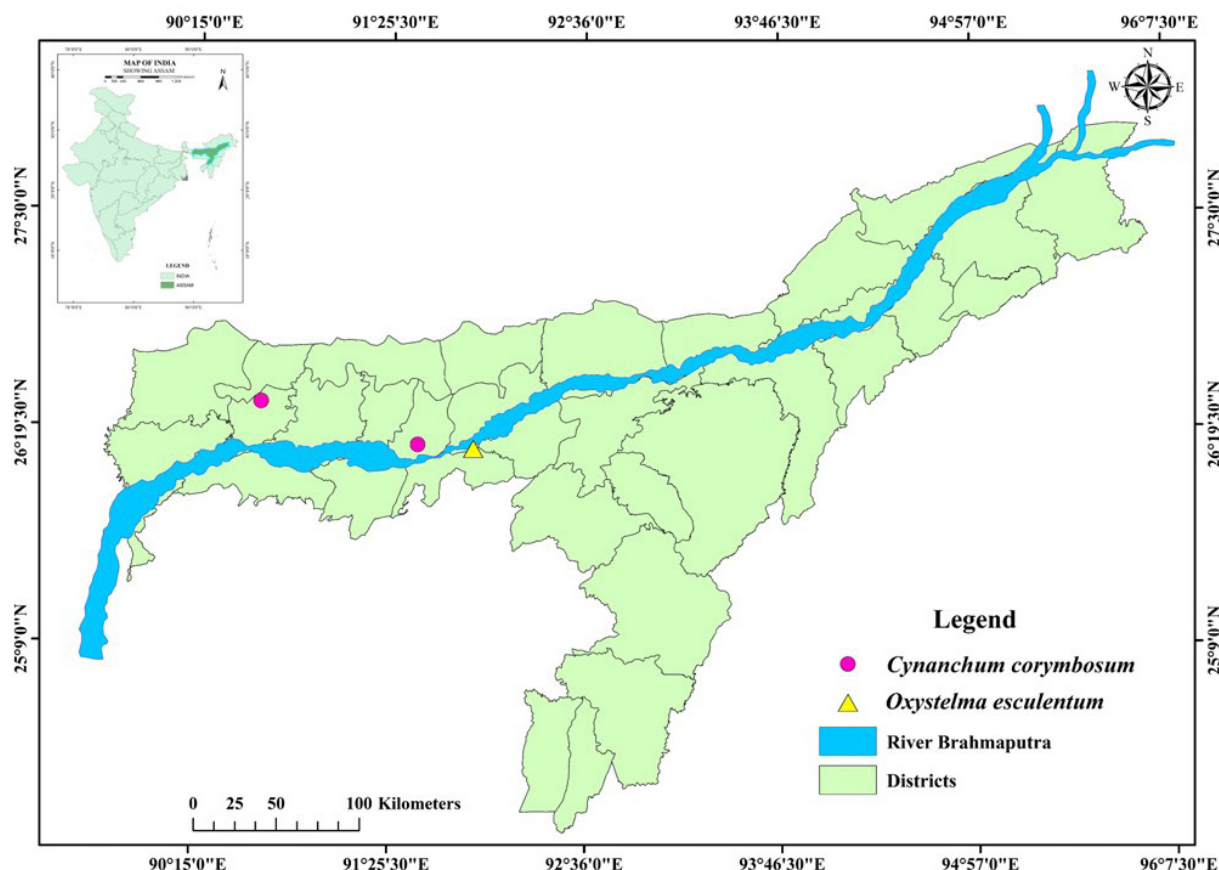


Figure 1. Map showing the collection sites of *Cynanchum corymbosum* and *Oxystelma esculentum* from Assam.

Saikia GSL09 (GUBH) [Present report].

Note: The specimen was collected from two locations, the roadside forest areas of Kakoijana RF, Bongaigaon, and Pakorkona region of Hajo, Kamrup District of Assam. The plant was found to climb on the bamboos, *Senna siamea*, *Ficus hispida*, *Tectona grandis*, and twinning with other climbers such as *Ichnocarpus frutescens*, *Mikania micrantha*, *Paederia foetida*, *Stephania japonica*, and *Tinospora cordifolia*. Remarkably, in both the collection sites the Common Leopard Butterfly *Phalanta phalantha* and Common Swift *Pelopidas agna* belonging to the order Lepidoptera were found as the common pollinators of the species. The common Black Garden Ant *Lasius niger* has been noticed as the pollinator in the Pakorkona area of Kamrup District (Image 3). Additionally, fruits of the genus *Cynanchum* are usually solitary (Khanum et al. 2016). In the present collection fruits bearing a pair of follicles have also been recorded (Image 4).

Oxystelma esculentum

(L.f.) Sm. A.Rees, Cycl. 1. 25: 1813; *Periploca esculenta* L.f., Suppl. Pl. 168 (1781); *O. esculentum* (L.f.)

R.Br. Hook.f. Fl. Brit. Ind. 4:17:1883; Kanjilal et al. Fl. Assam 3: 281: 1939; Sinha et al. Fl. Mizoram 2: 108: 2012

Description

Climbing or twinning herb. Stem terete, glabrous, green; internodes 2–10 cm long. Latex milky. Leaves opposite; lamina linear lanceolate, oblong, apex acute, base cuneate, glabrous, midvein distinct, 10–15 × 0.8–1.2 cm, lateral nerves 9–10 pairs; petiole 5–8 mm long. Inflorescence drooping, lateral or axillary, 1–6 flowered raceme; peduncle glabrous, 2.5–5.2 cm long. Flowers campanulate, 2.8–3.2 × 2–2.2 cm, pedicel 1–1.4 cm long, reddish-green. Bract ovate elliptic, apex acute, pubescent abaxially, adaxial side glabrous, 4.5–5 × 1.2–1.5 mm. Calyx five lobed, divided up to base, lobes ovate lanceolate, glabrous within, glandular outside, apex acute, faintly reddish, 5.2–5.5 × 1.2–1.4 mm. Corolla campanulate, articulated with purple veins on inner side, outer side creamy white, without purplish veins; tube 6–8 mm long, five lobed; lobes triangular, apex acute, margin ciliate with white dense hairs, 1–1.3 × 0.5–0.7 cm. Corona two types; outer coroline, lobes five,

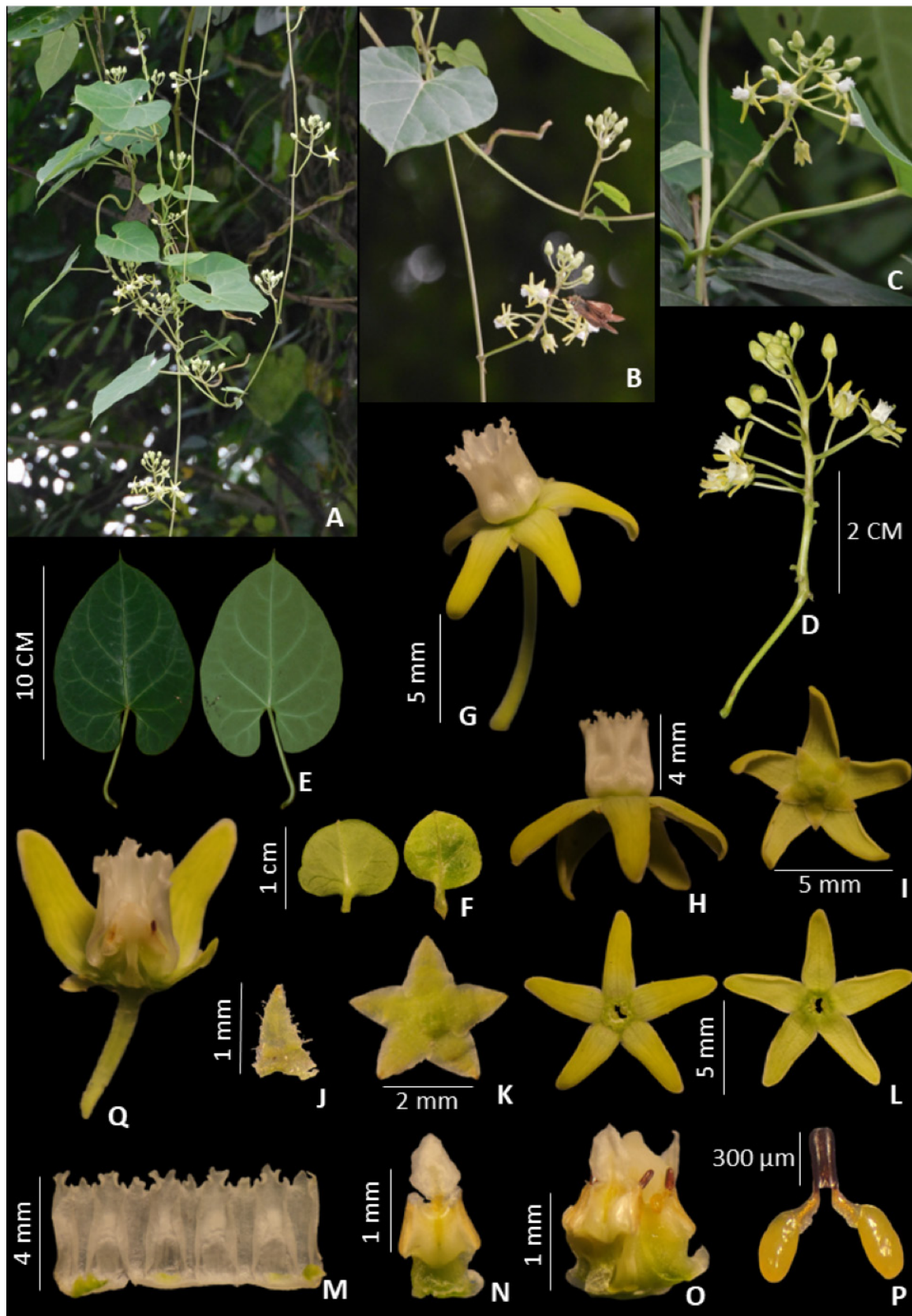


Image 1. *Cynanchum corymbosum* Wight: A,B—Habit | C,D—Inflorescence | E—Leaves | F—Prophylls | G—Complete flower | H—Corolla with corona | I—Back view of flower | J—Bract | K—Calyx | L—Corolla | M—Interstaminal corona with incised apex | N—Staminal corona lobe with fused anther cap | O—Gynostegium | P—Pollinarium | Q—LS of flower. © Gitartha Saikia.

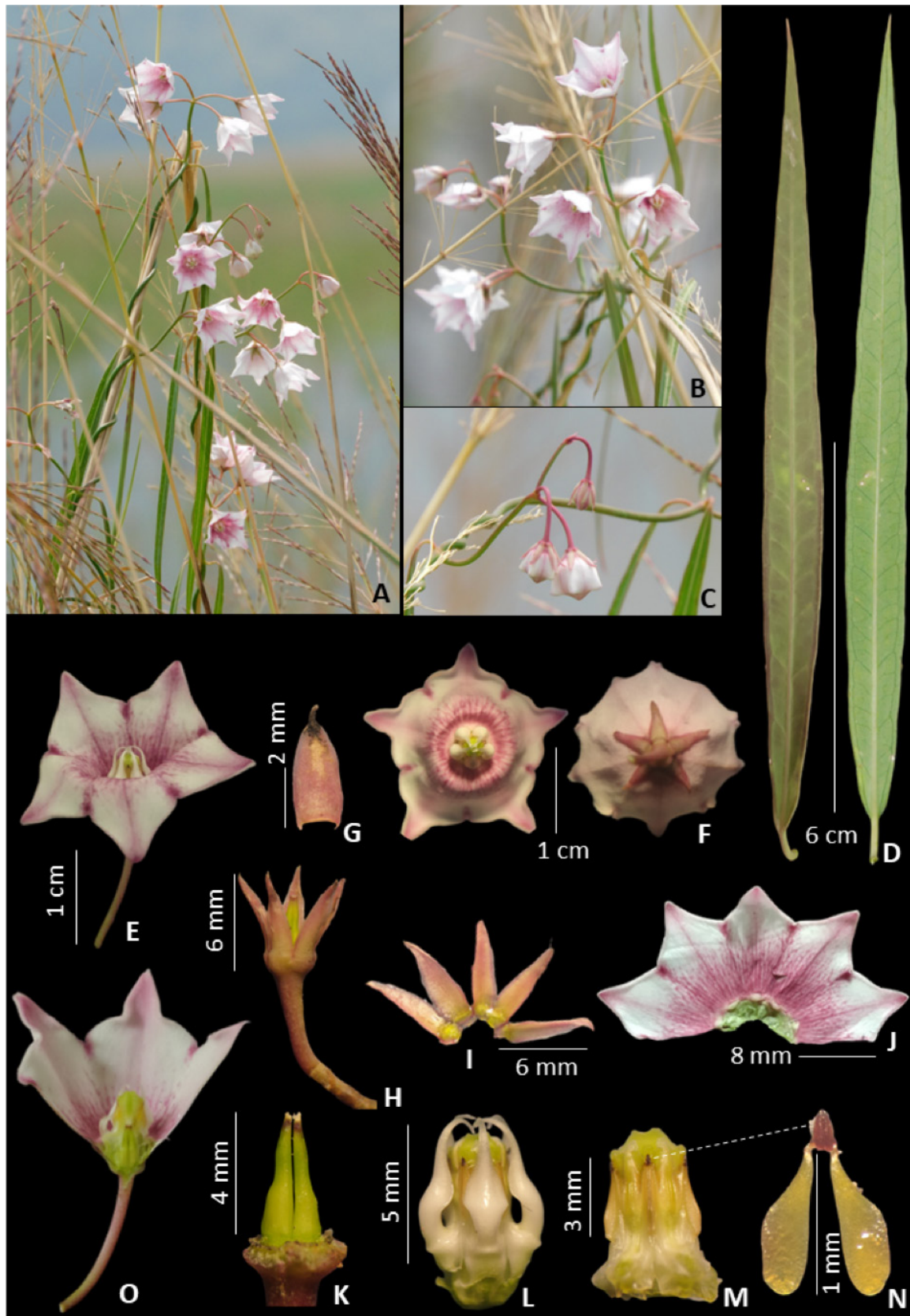


Image 2. *Oxystelma esculentum* (L.f.) Sm.: A—Habit | B,C—Inflorescence | D—Leaves | E—Complete flower | F—Top and back view flower | G—Bract | H—Calyx with gynoecium | I—Calyx | J—Corolla | K—Gynoecium | L—Gynostegium with coralline corona | M—Gynostegium with attached staminal corona | N—Pollinarium | O—LS of flower. © Gitartha Saikia & Saurav Kumar Boruah.



Image 3. Documented pollinators of *Cynanchum corymbosum*. © Gitartha Saikia.



Image 4. Solitary and paired follicles of *Cynanchum corymbosum*. © Gitartha Saikia.

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Dr. Annemarie Ohler, Muséum national d'Histoire naturelle, Paris, France

Reptiles

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Dr. Raju Vyas, Vadodara, Gujarat, India
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Dr. S.R. Ganesh, Chennai Snake Park, Chennai, Tamil Nadu, India
Dr. Himansu Sekhar Das, Terrestrial & Marine Biodiversity, Abu Dhabi, UAE

Birds

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Dr. Chris Bowden, Royal Society for the Protection of Birds, Sandy, UK
Dr. Priya Davidar, Pondicherry University, Kalapet, Puducherry, India
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Dr. Rajah Jayapal, SAGON, Coimbatore, Tamil Nadu, India
Dr. Rajiv S. Kalsi, M.L.N. College, Yamuna Nagar, Haryana, India
Dr. V. Santharam, Rishi Valley Education Centre, Chittoor Dt., Andhra Pradesh, India
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Dr. V. Gokula, National College, Tiruchirappalli, Tamil Nadu, India
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Dr. Grant Connette, Smithsonian Institution, Royal, VA, USA
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Mammals

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Dr. Spartaco Gippoliti, Socio Onorario Società Italiana per la Storia della Fauna "Giuseppe Altobello", Rome, Italy
Dr. Justus Joshua, Green Future Foundation, Tiruchirappalli, Tamil Nadu, India
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Dr. Jim Sanderson, Small Wild Cat Conservation Foundation, Hartford, USA
Dr. Dan Challender, University of Kent, Canterbury, UK
Dr. David Mallon, Manchester Metropolitan University, Derbyshire, UK
Dr. Brian L. Cypher, California State University-Stanislaus, Bakersfield, CA
Dr. S.S. Talmale, Zoological Survey of India, Pune, Maharashtra, India
Prof. Karan Bahadur Shah, Budhanilakantha Municipality, Kathmandu, Nepal
Dr. Susan Cheyne, Borneo Nature Foundation International, Palangkaraja, Indonesia
Dr. Hemanta Kafley, Wildlife Sciences, Tarleton State University, Texas, USA

Other Disciplines

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Dr. Jack Tordoff, Critical Ecosystem Partnership Fund, Arlington, USA (Communities)
Dr. Ulrike Streicher, University of Oregon, Eugene, USA (Veterinary)
Dr. Hari Balasubramanian, EcoAdvisors, Nova Scotia, Canada (Communities)
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Dr. O.N. Tiwari, Senior Scientist, ICAR-Indian Agricultural Research Institute (IARI), New Delhi, India
Dr. L.D. Singla, Guru Angad Dev Veterinary and Animal Sciences University, Ludhiana, India
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Dr. Bahar Baviskar, Wild-CER, Nagpur, Maharashtra 440013, India

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Tamil Nadu 641006, India
ravi@threatenedtaxa.org & ravi@zooreach.org

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