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Article in *Phytotaxa* · February 2021

DOI: 10.11646/phytotaxa.487.1.7

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Aeschynanthus rejieae (Gesneriaceae), a new species of lipstick vine from Tawi-Tawi, Philippines

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Abstract

Aeschynanthus rejieae from Panglima Sugala, one of the few remaining forested areas in Tawi-Tawi, Philippines, is illustrated and described as a new species. It resembles *A. obconicus* and *A. ovatus* by the ovate leaves and dense indumentum in the external calyx and corolla. However, *A. rejieae* is distinguished by having leaves that have persistent sparse pubescence, campanulate calyx with dense hirsute indumentum both internally and externally, and ovary with a glandular cilia. This species is named after Rejie Sahali-Generale, who initiated the biodiversity conservation in Panglima Sugala. This new discovery further highlights the urgent need to study and conserve the remaining forests of Tawi-Tawi.

Introduction

Aeschynanthus Jack (1823: 42), commonly known as lipstick vine, is a genus of epiphytic and lithophytic plants from the Gesneriaceae family. There are approximately 160 known species distributed in India, New Guinea, Solomon Islands, Southeast Asia, Southern China and Sri Lanka (Weber 2004). Although the genus is widespread, local endemism at the species level is high (Mendum *et al.* 2001).

Inflorescences of *Aeschynanthus* can be umbel-like, cyme or solitary, located at the axils of the leaves or pseudoterminal in clusters (Middleton 2007, Wu & Raven 1998). The form and texture of the calyx is especially diverse within the genus making it a significant character for species identification. It possesses a zygomorphic corolla, tubular, curved to different degrees. The distal end of the corolla tube consists of 2 upper and 2 lateral lobes, and a single lower one (Middleton 2007, 2009). Corolla color is also variable and quite a challenge to describe because of the gradations; however, this character is important. The fruit is a long narrow capsule (Middleton 2007, 2009; Wu & Raven 1998). Seed morphology is particularly used in sectional classification in the genus (Bentham 1876, Clarke 1883, Burt & Woods 1975, Mendum *et al.* 2001, Christie & Mendum 2002).

There are currently 30 known species of *Aeschynanthus* in the Philippines (Pelser *et al.* 2011 onwards), all of which are endemic to the country. The genus remains poorly documented and descriptions of the species described during Merrill's time are incomplete; thus, making taxonomic revisions a challenge. The most recent addition to Philippine *Aeschynanthus* was published in 2001 by Mary Mendum, in which two species from Palawan were described. After 19 years, a new species of *Aeschynanthus* from Tawi-Tawi, Philippines is described in this paper.

Tawi-Tawi is an island province in the southern tip of the Philippines within the Sulu archipelago. The island has low-lying, coralline southern part and a more hilly and mountainous northern section within the municipalities of Languyan, Tandubas and Panglima Sugala. Majority of the area was selectively logged in the 1960s and early 1970s leaving only the eastern and north-central portions of Panglima Sugala and Languyan forested (Stattersfield *et al.* 1998, Allen 1998); and Panglima Sugala (fig. 1) holds about 60–70% of the remaining forest in the island.

The last comprehensive account of the flora of Tawi-Tawi was written by Merrill (1926) who recorded 27 species. For a long time, the island province was left unstudied as political instability and insurgencies have hampered research

and conservation efforts. However, there were occasional collections by Olsen (1961), and Gaerlan and Sagcal (1994). This new addition to the flora of Tawi-Tawi is a taxonomic novelty that further highlights the need for research and the conservation of the remaining forests in the island. Furthermore, this discovery brings the total *Aeschynanthus* in the Philippines to 31 species.

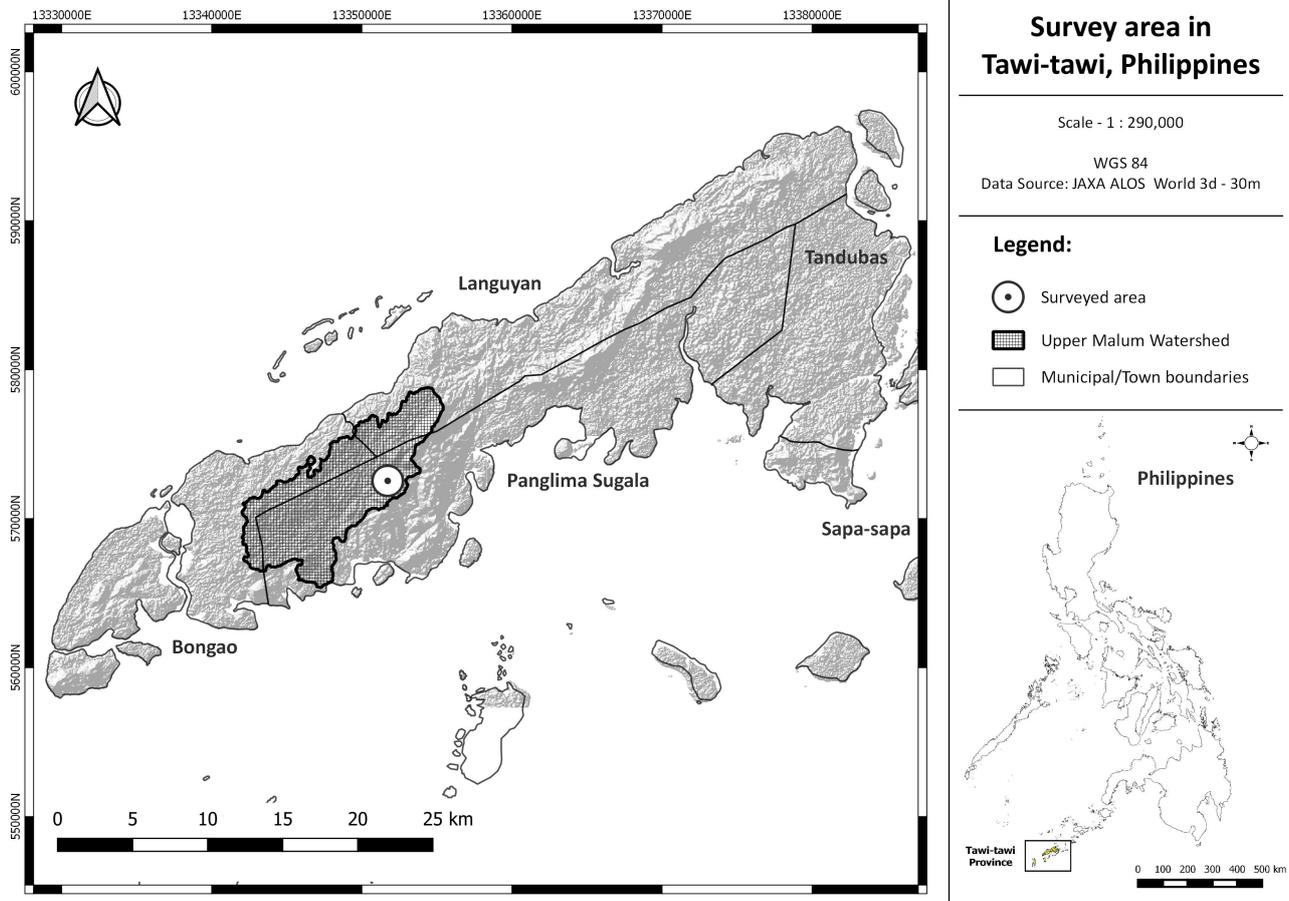


FIGURE 1. Map of Tawi-Tawi Island showing the surveyed area (dot) in Busay, Barangay Magsagaw within the Municipality of Panglima Sugala. Map by Andrew Ross Reintar.

Materials and Methods

From January 27 to February 7, 2020, the Philippines Biodiversity Conservation Foundation Inc. (PhilBio) conducted field work in loco dicto Busay, Upper Malum Watershed, Barangay Magsagaw, Panglima Sugala, Tawi-Tawi. During the survey, an *Aeschynanthus* specimen with ovate leaves and densely hirsute flowers was collected. After thorough morphological examination and comparison with voucher specimens of other *Aeschynanthus* species, it was concluded that it is unique from all of those previously described.

Taxonomy

Aeschynanthus rejieae Olimpos & Mansibang, *sp. nov.* (Figs. 2 & 3)

Type:—PHILIPPINES. Tawi-Tawi, Municipality of Panglima Sugala, Barangay Magsagaw, *loco dicto* Busay, Upper Malum Watershed, 5°7'48.432"N, 119°56'47.832" E, ca. 165 m elev., 3 February 2020, *Olimpos 88* (holotype PNH!, isotypes CAHUP!, CEBU!)

Diagnosis:—*Aeschynanthus rejieae* resembles Bornean species *A. obconicus* (Clarke 1883) and Philippine species *A. ovatus* (Merrill 1906: 226) Schlechter. (1923: 264) in having ovate leaves and densely hirsute external calyx and

corolla. However, *A. rejieae* can be readily distinguished from *A. obconicus* in having persistent sparse pubescence on the lamina (vs. few marginal indumentum at margin base), rounded to shallowly cordate leaf base (vs. cuneate to rounded), bluntly acute to obtuse leaf apex (vs. acuminate to acute); fewer flowers per fascicle (2 vs. 1–6), campanulate calyx (vs. broadly cup-shape), densely hirsute internal calyx surface (vs. sparsely pubescent to glabrous); weakly crenate disk (vs. simple annular) and ovary with glandular cilia (vs. with few sessile glands or glabrous).

It differs from *A. ovatus* in having persistent sparse pubescence on lamina (vs. glabrous), bigger leaves (4.7–7.9 × 2.7–4 cm vs. 1.5–3 × 1.5–2 cm), axillary inflorescence (vs. pseudoterminal or subterminal), fewer flowers per fascicle (2 vs. 5–6), longer pedicels (1–1.8 cm vs. 0.7 cm), campanulate calyx (vs. cylindrical calyx), calyx lobe apex rounded to subtruncate (vs. broad obtuse), internal calyx being hirsute (vs. glabrous) and sparsely glandular ciliate ovary (vs. glabrous ovary).

Description:—Scandent epiphyte with green, slender, long, terete, sparsely pubescent stems, 2.5 mm thick; internodes 6.8–7.5 cm long. Leaves opposite; petioles terete, 3–6 mm long, sparsely pubescent. Lamina ovate, 4.7–7.9 cm long, 2.7–4 cm wide, length/width ratio 2:1, apex bluntly acute-obtuse, base rounded to shallowly cordate, margin entire, venation obscurely 4–5 nerves, with persistent sparse pubescence, coriaceous, adaxial surface green, abaxial surface paler. Inflorescence axillary, fascicle 2-flowered, densely hirsute; peduncles almost obsolete, 3 mm long, 2 mm wide, slightly woody, arising from the axils; bracts oblong-ovate, 4 mm long, densely hirsute and pale green; pedicels 1–1.8 cm long, densely hirsute, pale green. Calyx campanulate, 1–1.7 cm long, not appressed to the corolla, abscission layer at the base, with 5 equal lobes 1.3–1.5 mm long, not spreading; apex rounded to subtruncate and densely covered with hirsute trichomes internally and externally, pale green at the base becoming pink towards lobes. Corolla tubular, inflated at the middle, gently flaring towards the mouth and slightly contracted at the throat, 2.8 cm long, 5–7 mm wide, densely hirsute externally, internally with scattered papillae along the floor of the tube and lateral lobe sinuses, red with cream to yellow bands extending from the middle of the lower 3 lobes to the base; upper lobes erect, oblong-elliptic, 5 × 6 mm, apex round; lateral lobes spreading, ovate-elliptic, 5–6 × 4–5 mm, round apex; lower lobe spreading, elliptic, 7 × 4 mm, apex round, lobe margins with glandular cilia. Stamens 4, exerted; staminode ca. 1 mm long; anthers 3–5 mm long, cream white; anterior filaments 1.3 cm long, posterior filaments 1.6 cm long, with sparse glandular cilia on the upper half and papillae at the lower, cream white; pollen light yellow. Disk 1 × 1 mm, weakly crenate, glabrous, white. Pistil 1 cm long; ovary 8 mm long, sparsely glandular ciliate, white; stigma with attachment 1.5 mm long, capitate. Fruit and seed not observed.

Distribution and habitat:—Only known from the type locality in Barangay Magsagaw, Panglima Sugala, Tawi-Tawi, a primary lowland forest at around 135–182 m elevation. The dominant canopy species are *Ficus* Linnaeus (1753: 1059) spp., *Knema* Loureiro (1790: 604) spp., *Myristica* Gronov (1755: 141) spp. and *Cananga odorata* (Lamarck 1785: 595) Hooker f. & Thomson (1855:130). The understory is composed of *Dillenia philippinensis* Rolfe (1884: 307), *Polyalthia insignis* (Hooker 1860: 156) Airy-Shaw (1939: 279), *Osmoxylon eminens* (Bull 1884: 17) Philipson (1976: 114), *Clerodendrum* Linnaeus (1753:637) spp. and *Ixora* Linnaeus (1753:110) spp. A nearby settlement has left some areas cleared, however, pioneer species of *Macaranga* Thouars (1806: 26) spp., *Mallotus* Loureiro (1790: 635) spp. and *Omalanthus* spp. Jussieu (1824: 50) were observed.

Conservation status:—*Aeschynanthus rejieae* was only seen from two individuals hence we cannot conclude if it is a common or rare species. Therefore, we propose it to be listed under the Data Deficient (DD) category.

Etymology:—The species is named after Rejie Sahali-Generale who initiated the biodiversity conservation program in Panglima Sugala, Tawi-Tawi. Through her commitment and political will, she won the support of the local communities for the conservation of the remaining forests and their watershed. Ms. Rejie has taken a strong stand and dedication in conserving and protecting the remaining forests of Panglima Sugala and its unique biodiversity.

Notes:—The type of *A. rejieae* has relatively small gynoeceum indicating early anthesis stage. Since all *Aeschynanthus* are strongly protandrous (Middleton 2016), the dimension of its gynoeceum might vary in the future collections.

A. rejieae strongly resembles species belonging to the classical grouping that fits under sect. *Aeschynanthus*. However, Middleton (2016) cautioned the usage of the existing sections. Until now, sectional classification that follows phylogenetic patterns for this genus is subjected for more study.

The intermediate affinity of *A. rejieae* from both Philippine and Bornean species may suggest an evidence of the transitioning speciation of *Aeschynanthus* from these ecoregions. Nonetheless, the Philippine species of *Aeschynanthus* needs phylogenetic and taxonomic attention.

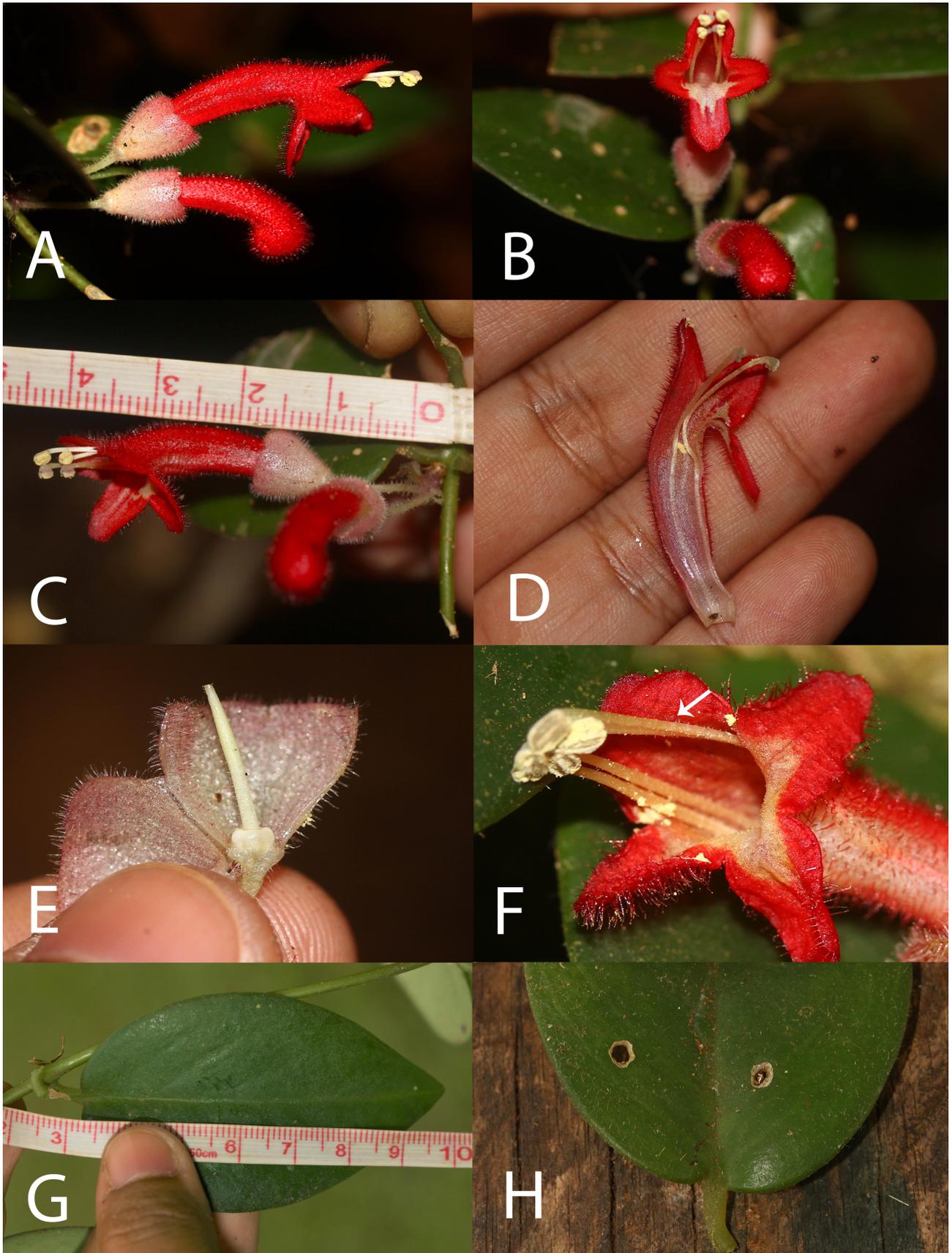


FIGURE 2. A-H. *Aeschynanthus rejieae*. A. Axillary inflorescence. B. Top view of flower showing the corolla mouth and lobes. C. Flower. D. Longitudinal corolla section. E. Longitudinal calyx section showing internal hirsute indumentum and ciliate ovary. F. Filament with glandular cilia (white arrow). G. Leaf. H. Leaf base showing the persistent sparse pubescence. Photos by Shiella Mae Olimpos.

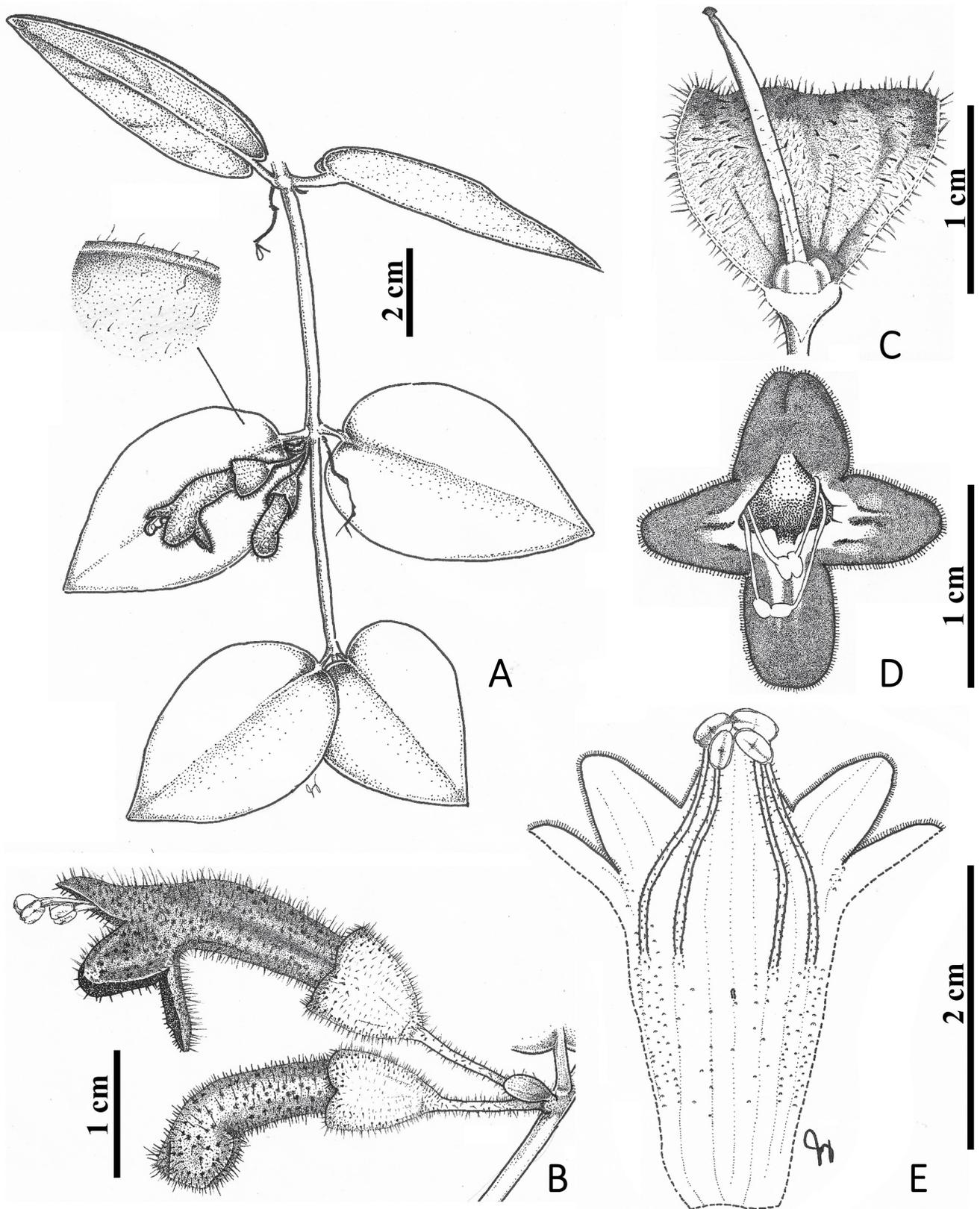


FIGURE 3. A-E. *Aeschynanthus rejieae* illustration. A. Habit with details of leaf indumentum. B. Inflorescence. C. Calyx tube longitudinal section with pistil. D. Corolla (split ventrally). E. Front view showing details of the corolla lobes and stamens. Illustrated by Jayson Mansibang.

TABLE 1. Comparison of *A. obconicus*, *A. ovatus* and *A. rejieae* morphology.

	<i>A. obconicus</i>	<i>A. ovatus</i>	<i>A. rejieae</i>
Leaf texture	With a few marginal hairs at margin base	Glabrous	Persistent sparse pubescent
Leaf base	Cuneate to rounded	Rounded to shallowly cordate	Rounded to shallowly cordate
Leaf length	2.5–10.7 cm	1.5–3 cm	4.7–7.9 cm
Leaf width	0.9–6 cm	1.5–2 cm	2.7–4 cm
Leaf apex	Acuminate to acute	Bluntly acute to obtuse	Bluntly acute to obtuse
Inflorescence position	Axillary to subterminal	Pseudoterminal to subterminal	Axillary
Flower number per fascicle	1–6	5–6	2
Pedicele length	0.6–1.2 cm	0.7 cm	1–1.8 cm
Calyx shape	Broadly cup-shaped	Cylindrical	Campanulate
Internal calyx texture	Sparsely pubescent to glabrous	Glabrous	Densely hirsute
Calyx lobe apex	Round	Broadly obtuse	Rounded to subtruncate
Disk shape	Simple annular	Not known	Weakly crenate
Ovary texture	With few sessile glands or glabrous	Glabrous	With glandular cilia

Acknowledgements

This discovery is part of the Sulu Hornbill Expedition by Philippines Biodiversity Conservation Foundation Inc. with funding support from the Protect Wildlife Project of USAID. We would like to thank Panglima Sugala Mayor Nurbert M. Sahali, Mrs. Ann Sahali, Janet Calinog, Benhar Habe, Filemon Romero, Ministry of Environment, Natural Resources and Energy Bangsamoro Autonomous Region in Muslim Mindanao- Provincial Environment and Natural Resources Officer (MENRE-BARMM PENRO) Jonel Monel, Community Environment and Natural Resources Officer (CENRO) Abdulmukim Maruji, Lieutenant Colonel Mark Anthony Arabe, 1st Lieutenant Rejie Regalado, Colonel Romulo D. Quemado II and the Marine Battalion Landing Team-9 of the Philippine Marine Corps for providing logistical support and security. In the same way, we are very grateful to Pedro Villarta, Lorry Alcala, Muksin Ahamad, Mutalib Bakil, Hermie Asaron, Omar Alih, Boy Alih and the rest of the Tawi-Tawi Advocates for Wildlife Support Initiative (TAWSI) Rangers and the local communities of Barangay Magsagaw for helping us in this fieldwork. We appreciate the encouragement and company during field explorations given by Lisa Paguntalan, Philip Godfrey Jakosalem, Andrew Ross Reintar, Manulito Sandoval and Yñigo Del Prado. We also acknowledge Pieter Pelsler, Julie Barcelona, Rene Bustamante, Wally Suarez, Maverick Tamayo, Mc Andrew Pranada and Lalaine Pantoja who provided very valuable insights in this manuscript, Val Salares for assisting us in the drying of the specimens. Lastly, Dr. David Middleton and Dr. Jesús Guadalupe González-Gallegos are thanked for their time, expertise and constructive comments in reviewing the paper.

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Appendix I. Additional *Aeschynanthus* specimens examined for morphological comparison.

Aeschynanthus obconicus C.B. Clarke. MALAYSIA. Bukir Perangi, Templer Park, Selangor, April 1968, *P.J.B. Woods* 606. (E00630509)

Aeschynanthus ovatus Schltr. PHILIPPINES. Mindanao, Camp Keithley, Lake Lanao, February 1906, *M.S. Clemens* 316 (F0060642F, F0060644F)