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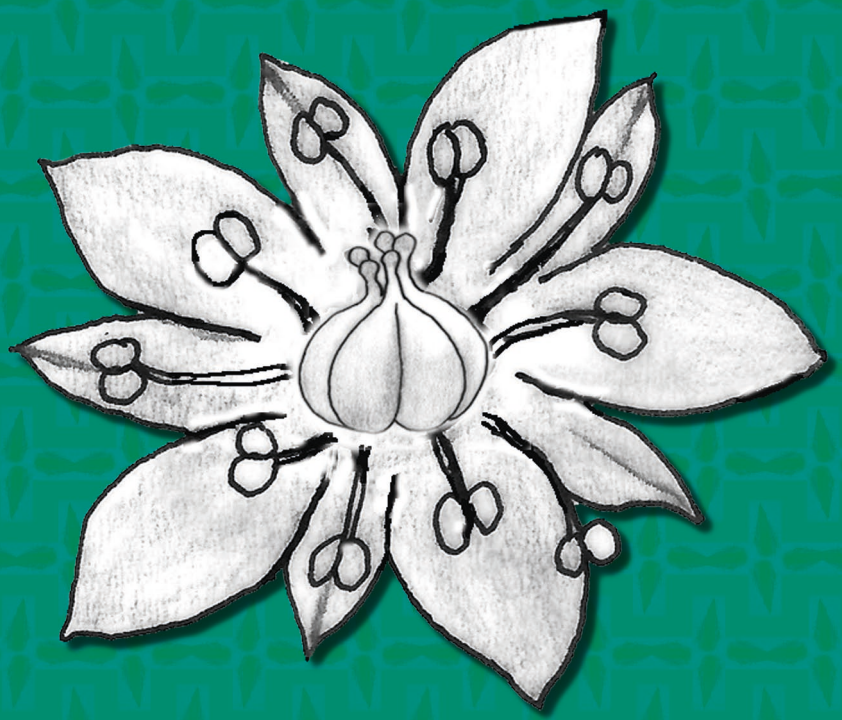

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Bergia cuddalorensis S. Soosairaj, sp. nov. (Elatinaceae), a new species from Tamil Nadu, India

Joseph LINCY
Sebastian SOOSAIRAJ
Department of Botany, St. Joseph's College (Autonomous),
(affiliated to Bharathidasan University, Tiruchirappalli),
Tiruchirappalli, Tamil Nadu (India)
pspsoosai@yahoo.co.in (corresponding author)

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ABSTRACT
Bergia cuddalorensis S. Soosairaj, sp. nov. a new species from Tamil Nadu, India, has some distinct characteristics that set it apart from other related species like *B. trimera* Fisch. & C.A. Mey., *B. ammannioides* Roxb., and *B. suffruticosa* (Delile) Fenzl. It can be distinguished by the number of stamens, the shape of sepals, leaves and stipules as well as trichome features. A key to the Indian species of *Bergia* L. is provided.

KEY WORDS
Elatinaceae,
Bergia,
India,
Tamil Nadu,
new species.

RÉSUMÉ
Bergia cuddalorensis *S. Soosairaj, sp. nov. une nouvelle espèce du Tamil Nadu, Inde.*
Bergia cuddalorensis S. Soosairaj, sp. nov. une nouvelle espèce du Tamil Nadu, Inde, présente des caractéristiques distinctes qui la distinguent d'autres espèces apparentées comme *B. trimera* Fisch. & C.A.Mey., *B. ammannioides* Roxb. et *B. suffruticosa* (Delile) Fenzl. Elle se distingue par le nombre d'étamines, la forme des sépales, des feuilles et des stipules ainsi que par la morphologie des trichomes. Une clé des espèces indiennes de *Bergia* L. est fournie.

MOTS CLÉS
Elatinaceae,
Bergia,
Inde,
Tamil Nadu,
espèce nouvelle.

INTRODUCTION

Bergia, a genus within the Elatinaceae family, was first described by Linnaeus in 1771, honouring Petrus Jonas Bergius, a pupil of Linnaeus (Leach 1989). With 29 species worldwide it is mainly found in tropical and subtropical regions, with Africa and Australia hosting the highest diversity as centres of diversity (POWO 2024). In India, there are seven species, with Tamil Nadu hosting three (Nair & Henry 1983, Britto 2019). However, confusion persists in Indian literature regarding the distinction between *B. ammannioides* Roxb. and *B. trimera* Fisch. & C.A. Mey. Often, the latter taxon is overlooked. Leach (2021) clarifies this issue, noting that *B. ammannioides* features 5-merous flowers, while *B. trimera* exhibits 3-4-merous flowers.

While undertaking a botanical survey in Cuddalore district of Tamil Nadu, the authors have collected a specimen of *Bergia*. The identity of this specimen was traced with the help of published literature, local floras, online databases and herbarium collections at various herbaria. After consulting these sources it was found to be unknown to science and hence it is described as a distinct new species.

MATERIAL AND METHODS

The authors are conducting a comprehensive survey of the flora in the Cuddalore district for a doctoral degree since 2019. Methodology involves frequent field exploration to collect plant specimens, which are then processed using standard herbarium techniques. During one of these surveys, they discovered an intriguing herb in a dried pond near Veppur (Fig. 1). Identity of the taxon underwent a thorough literature screening using local floras (Thiselton Dyer 1885; Sohmer 1980; Matthew 1983; Nair & Henry 1983; Bhattacharya 1993; Britto 2019), published literature (Leach 1989, 2021), the study of herbarium specimens deposited at MH, CAL and RHT, consultation with various online databases such as Kew Data Portal (http://data.kew.org), GBIF (http://www.gbif.org), POWO (https://powo.science.kew.org/), and online floras including eflora of China (http://www.efloras.org/florataxon.aspx?flora_id=2&taxon_id=103833), Kerala plants (http://www.keralaplants.in) and Flora of Peninsular India (http://flora-peninsula-indica.ces.iisc.ac.in/).

TAXONOMIC TREATMENT

Family ELATINACEAE Dumort.
Genus *Bergia* L.

Bergia cuddalorensis S. Soosairaj, sp. nov.
(Figs 2; 3)

B. cuddalorensis S. Soosairaj, sp. nov. can be distinguished from *B. suffruticosa* (Delile) Fenzlas a nonaromatic erect herb (vs aromatic shrub), with glabrous leaves and stipules (vs pubescent), a mucronate apex of the petals (vs obtuse) and a vesicular seed surface (vs smooth). The morphology of *B. cuddalorensis* S. Soosairaj, sp. nov. closely resembles *B. ammannioides* Roxb. but can be differentiated by having glabrous leaves and stipules (vs pubescent), a mucronate apex of the petals (vs obtuse), 6-10 flowers per node (vs *c.* 30 flowers per node) and seed surface vesicular (vs reticulate) (Table 1).

TYPE MATERIAL. — **India** • 2 specimens; Tamil Nadu, Cuddalore district, Veppur, Lathur Forest; 11°28'04.72"N, 78°57'57.93"E; alt. *c.* 90 m; 26.I.2023; *S. Soosairaj 7816*; holo-, RHT!; iso-, MH!

ETYMOLOGY. — The species epithet is based on the collection locality of the type specimen in Cuddalore district of Tamil Nadu, India.

DISTRIBUTION. — The species is known from the state of Tamil Nadu at the type location in Cuddalore district and also a single location in Pudukkottai district.

PHENOLOGY. — Flowering and fruiting January-March.

ECOLOGY. — It is an annual species that thrives in wet environments, specifically in ponds in clay soils after the water has drained and in cultivated fields after harvest. It is found growing in association with *Ammania verticillata* (Ard.) Lam., *Vahlia digyna* (Retz) Kuntze,

KEY TO INDIAN SPECIES OF *BERGIA* L.

1. Plants pubescent 2
— Plants glabrous 5

2. Petals 3, sepals 3; stamens 3 ..... *B. trimera* Fisch. & C.A. Mey.
— Petals 5, sepals 5; stamens 5-10 3

3. Stamens 5; flowers > 15 per node ..... *B. ammannioides* Roxb.
— Stamens 10; flowers < 10 per node 4

4. Perennial; aromatic; leaves sessile, pubescent; petals obtuse ..... *B. suffruticosa* (Delile) Fenzl

— Annual; nonaromatic; leaves petiolate, glabrous; petals acute, mucronate ..... *B. cuddalorensis* S. Soosairaj, sp. nov.

5. Undershrub; stipules glandular; sepals denticulate; style straight ..... *B. aestivosa* (Wight & Arn.) Steud.
— Herb; stipules eglandular; sepals entire; style recurved 6

6. Plants succulent; stipules pectinate; flowers in a cluster ..... *B. capensis* L.
— Plants not succulent; stipules fimbriate; flowers solitary or in pairs ..... *B.polyantha* Sond.

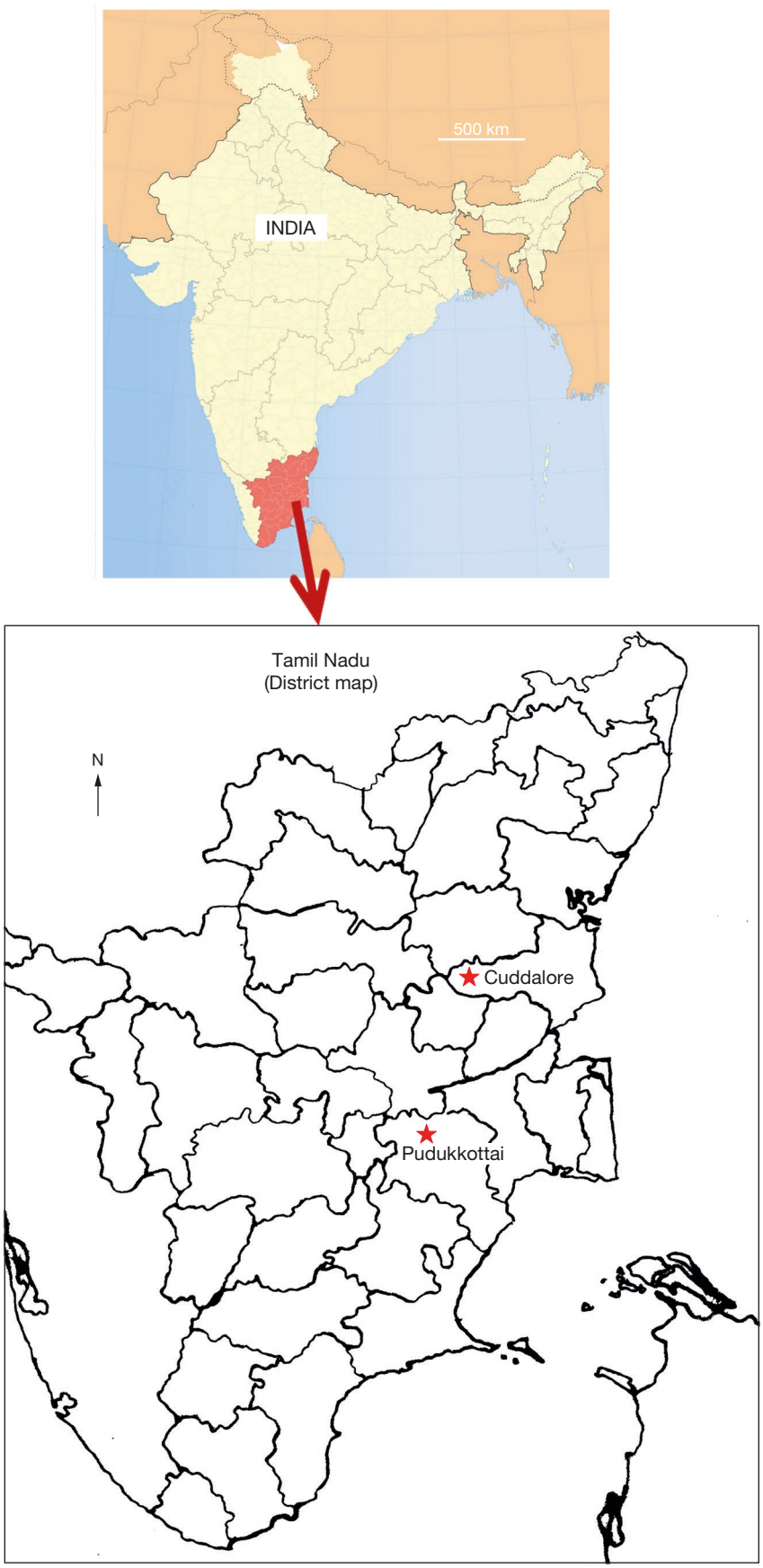

Fig. 1. — Location map of study area and collection sites of *Bergia cuddalorensis* S. Soosairaj, sp. nov.

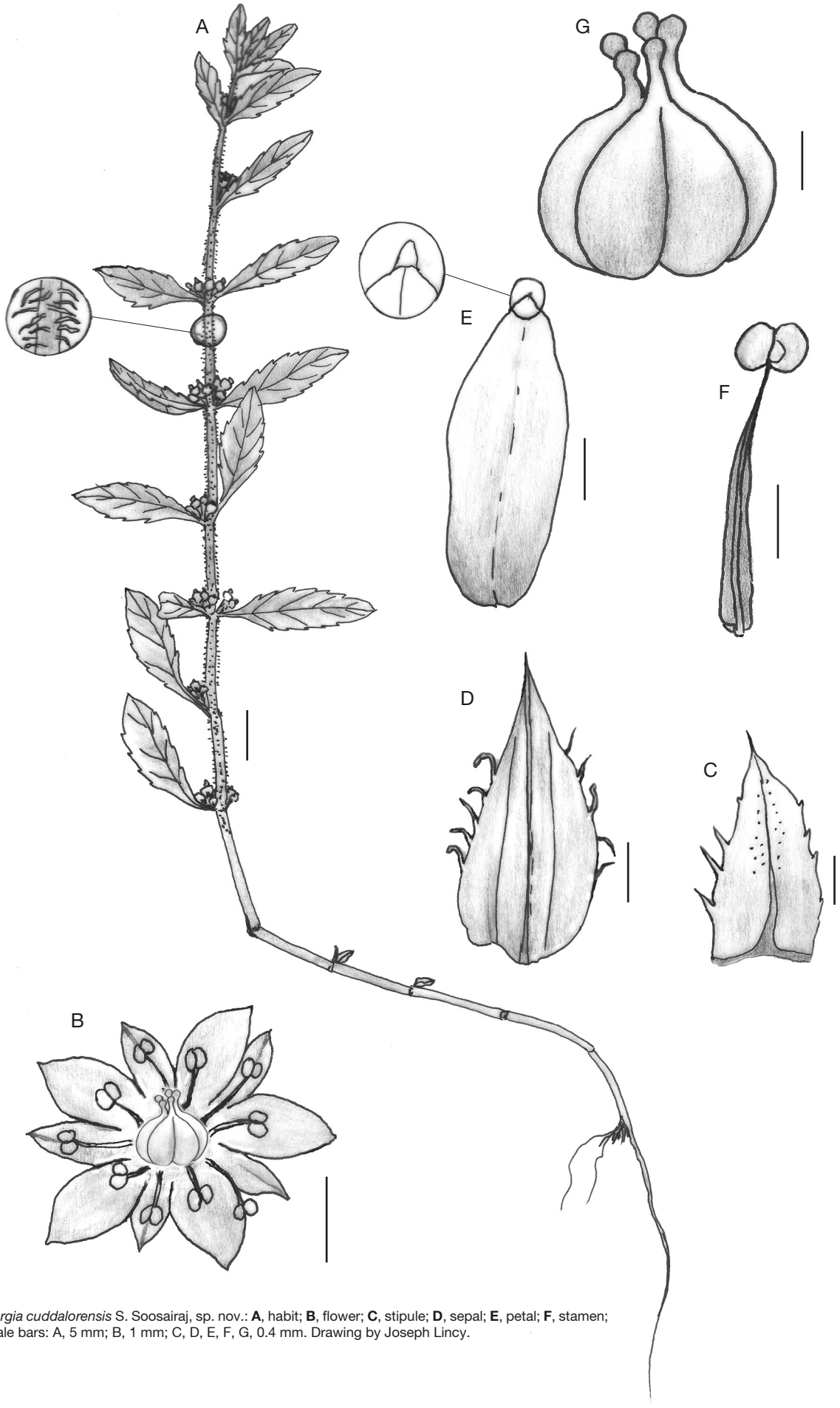

FIG. 2. — *Bergia cuddalorensis* S. Soosairaj, sp. nov.: **A**, habit; **B**, flower; **C**, stipule; **D**, sepal; **E**, petal; **F**, stamen; **G**, pistil. Scale bars: A, 5 mm; B, 1 mm; C, D, E, F, G, 0.4 mm. Drawing by Joseph Lincy.

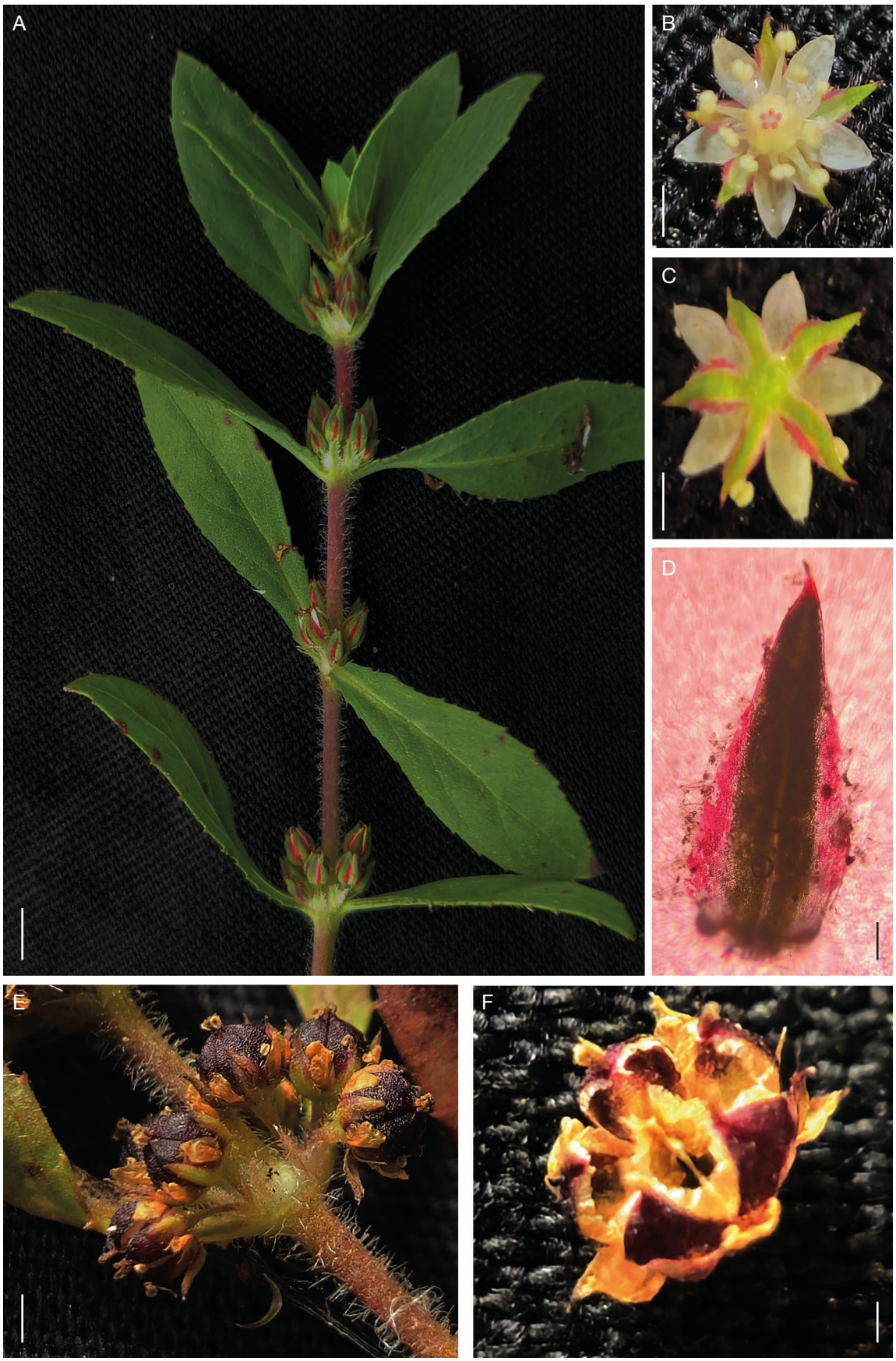

Fig. 3. — *Bergia cuddalorensis* S. Soosairaj, sp. nov.: **A**, habit; **B**, **C**, flower; **D**, sepal; **E**, fruit; **F**, fruit dehiscence. Scale bars: A, 4 mm; B, C, 0.3 mm; D, 0.2 mm; E, 2 mm; F, 0.4 mm. Photos by S. Soosairaj.

TABLE 1. — Distinct features of *Bergia cuddalorensis* S. Soosairaj, sp. nov. and its allied species.

	***B. cuddalorensis* sp. nov.**	***B. suffruticosa***	***B. ammannioides***
Habit	Erect herb, nonaromatic	Shrubs, aromatic	Erect herb, nonaromatic
Leaves	Petiolate, winged, glabrous	Sessile, densely glandular pubescent	Petiolate, glandular pubescent
Stipule	Glabrous	Pubescent	Pubescent
Flowers	6-10 per node	2-8 per node	*c.* 30 per node
Sepals	Lanceolate, apex acuminate, glabrous, margin ciliate, pinkish red	Ovate, oblong, apex acute, glandular pubescent, margin hyaline.	Lanceolate to ovate, apex acute, glandular pubescent, margin entire
Petals	Oblong, apex acute, mucronate	Obovate-oblong, apex obtuse	Elliptic to oblong, apex obtuse
Anther	0.2 × 0.2 mm	0.5 × 0.3 mm	0.3 × 0.3 mm
Ovary	Globose	Ovoid	Subglobose
Capsule	Globose	Ovoid	Subglobose
Seed	Oblong, surface vesicular	Oblong to ellipsoid, smooth	Oblong, surface reticulate

Epaltes divaricata (L.) Cass., *Hoppea dichotoma* Willd., *Exacum pedunculatum* L., *Lindernia dubia* (L.) Pennell and *Rotala verticillaris* L.

CONSERVATION STATUS. — *B. cuddalorensis* S. Soosairaj, sp. nov. is reported from only two locations and further exploration is needed to study the actual distribution in similar habitats, hence, it is categorized as 'data deficient' (DD) under the IUCN (2019) conservation status.

ADDITIONAL SPECIMENS EXAMINED. — **India** • 1 specimen; Tamil Nadu, Pudukkottai district; 10°31'42"N, 78°47'06"E; alt. *c.* 150 m; 14.II.2024; *S. Soosairaj 7826*; RHT!

DESCRIPTION

Annuals. Erect herbs to 15 cm with opposite branches. Stem pubescent (nonglandular), internodes 1.5-2.5 cm long. Leaves opposite, decussate, elliptic-oblanceolate, glabrous, base attenuate, apex acute, margin serrate, 18-22 × 4-5 mm, lateral nerves 3-4 pairs. Petiole 4-7 mm, winged. Stipule 2 × 0.75 mm, lanceolate, glabrous, apex acuminate, margin ciliate. Flowers axillary, 6-10 in fasciculate cymes, 1.5-2 mm across; pedicel 1-1.5 mm, pubescent, accrescent. Sepals 5, lanceolate, adnate at base, green at middle, pinkish red at both edges, pubescent abaxially, apex acuminate, margin ciliate, 2 × 0.75 mm. Petals 5, white, oblong, apex acute, mucronate, 2 × 1 mm. Stamens 10, two rows, filament glabrous, 1-1.5 mm long, dilated at base, anther 0.2 × 0.2 mm, basifixed. Pistil 1.5 mm long, ovary globose, glabrous, 1 × 1 mm, styles 5, pinkish, straight, 0.5 mm long, stigma subcapitate, papillose. Capsule globose, brownish. Seeds numerous, minute, oblong, yellowish brown, surface vesicular.

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REFERENCES

BHATTACHARYA J. 1993. — Elatinaceae, *in* SHARMA B. D. & SANJAPPA M. (eds), *Flora of India.* Vol. 3. Botanical Survey of India, Culcutta: 32-42.

BRITTO S. J. 2019. — *The Flora of Central and North Tamil Nadu*. Vol. 2. Rapinat Herbarium, Tiruchirappalli: 1082-1084.

IUCN 2019. — *The IUCN Red List of Threatened Species. Version 11*. https://www.iucnredlist.org. Accessed on 12.05.2024.

LEACH G. J. 1989. — Taxonomic revision of *Bergia* (Elatinaceae) in Australia. *Journal of the Adelaide Botanic Gardens* 11 (2): 75-100. http://www.jstor.org/stable/23873795

LEACH G. J. 2021. — Proposal to conserve *Lechea verticillata* (*Bergia ammannioides*) (Elatinaceae) with a conserved type. *Taxon* 70 (5): 1140-1142. https://doi.org/10.1002/tax.12584

MATTHEW K. M. 1983. — *The Flora of Tamil Nadu Carnatic*. Vol. 1. Rapinat Herbarium, Tiruchirappalli: 86-91.

NAIR N. C. & HENRY A. N. 1983. — *Flora of Tamil Nadu, India. Series 1: Analysis*. Vol. 1. Botanical Survey of India, Coimbatore: 25-26.

SOHMER S. H. 1980. — Elatinaceae, *in* DASSANAYAKA (ed.), *A Revised Handbook to the Flora of Ceylon*. Vol. 5. Oxford and IBH Publishing Co., New Delhi: 424-427.

THISELTON DYER W. T. 1885. — Elatinaceae, *in* HOOKER J. D. (ed.), *The Flora of British India*. Vol. 1. Reeve & Co., London: 250-252.

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