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Bacopa aquatica Aubl. (Plantaginaceae): a new record for Asia from Andaman and Nicobar Islands, India.

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Abstract

This report describes *Bacopa aquatica* Aubl. as first record to the Indian flora, based on collections from the Andaman and Nicobar Islands. Since its discovery, the species was previously known only from the moist tropical biomes of Trinidad to South America has significantly expanded its range eastward. A description, photo plate and distribution information are provided

Key words: *Bacopa aquatica Aubl. First record, India flora, Andaman & Nicobar Islands*

Introduction

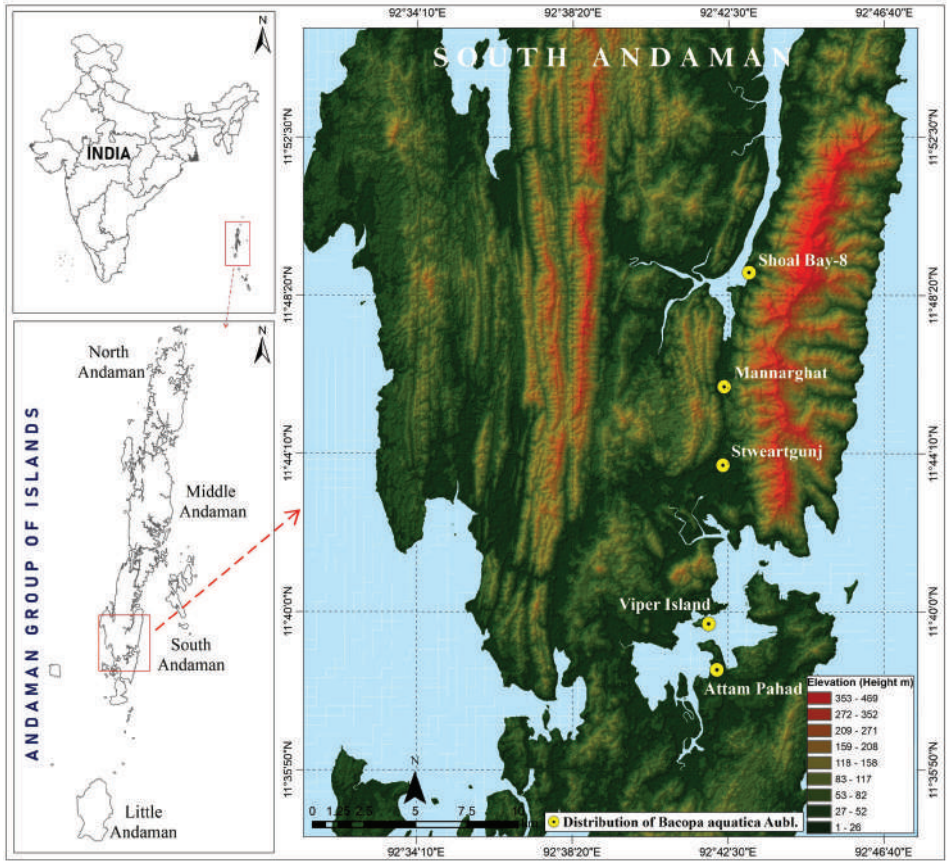
The genus *Bacopa* Aubl. is represented by 60 species, distributed in tropics and subtropics of the world (Tippery et al., 2024; POWO, 2025) and commonly known as Water Hyssop. Aublet, Jean Baptiste Christophore Fusée (1720-1778) first described the genus *Bacopa* in 1775 based on the collections made from the stream banks in Cayenne, French Guiana with *Bacopa aquatica* Aubl. as a type species. All species of the genus are found in marshy and aquatic habitats, hence shown many marshy aquatic characters like spongy stem with parenchyma, thin epidermis layer etc. Genus *Bacopa* Aubl. is characterized by annual or perennial, decumbent or erect habit, smooth or hairy stems, opposite or whorled, sessile or sub-petiolate leaves, flowers solitary or 2–3 born from one or both axils of the leaves, white, blue to purple corolla and numerous seeds.

Recent botanical surveys conducted during 2022–2025 in South Andaman, the authors collected an interesting specimen of the family Plantaginaceae from some localities *viz*. Attam Pahad, Mannar Ghat, Shoalbay-8, Stweartgunj and Viper Island. After a critical review of literature and study of herbarium specimens housed in CAL, PBL) and digital herbaria (K, NY) the collected specimens morphological characters matched with the genus *Bacopa* and the species *Bacopa aquatica* Aubl. All the relevant literature (Singh et al., 2014, 2021; Murgan et al., 2016; Garg et al., 2020, 2024; **N**aik et al., 2020; Singh and Ranjan, 2021; Karthigeyan et al., 2023; Das and Sivaperuman, 2023) indicated that this species is not recorded for India and is described here as a new record for Indian flora.

In India, *Bacopa* is distributed throughout the country including Andaman and Nicobar Islands (ANI) and comprises four wild species *i.e. Bacopa floribunda* (R.Br.) Wettst., *B. hamiltoniana* (Benth.) Wettst. and *B.monnieri* (L.) Wettst. including *Bacopa aquatica* Aubl. recorded here. Although, this species was first collected in 1978 by P. Basu from Viper Island (29.07.1978, *P. Basu* 6684 (PBL, Barcode: PBL0000014584, 0000014585)., it was misidentified as *Bacopa floribunda* (R.Br.) Wettst. *Bacopa aquatica* Aubl. differ from *B. floribunda* (R.Br.) Wettst., in having creeping habit, rooting nodes (against erect habit without roots at nodes), 1–1.5 cm long pedicels (against c. 2 mm), glabrous calyx (against scabrous), capitate stigma (against bi-lobed) dorsally compressed flattened fruits c. 6 mm long (against ovoid fruits, 3–3.5 mm long). All, except *B. hamiltoniana* (Benth.) Wettst., are found in these islands. Further, one species, *Bacopa caroliniana* (Walter) B.L.Rob. (Native to SE. U.S.A. to Texas, Cuba) is grown as an aquarium plant almost throughout the country.

Material and Methods

In ANI, *Bacopa aquatica* Aubl. is recorded from Attam Pahad, Mannar Ghat, Shoal bay 8, Stweartgunj, Viper Island of South Andaman (Map 1). During the field explorations, specimens were collected and herbarium sheets were prepared following standard techniques. The description and illustrations were made using live specimens and field observations. Plants were photographed and GPS coordinates were recorded. To confirm the identity of the species, comparative study of morphological characters of specimens collected during field study, with herbarium specimens housed in Indian herbaria (CAL, PBL), digital herbaria (K, NY) and also consulted the relevant literature. Micromorphological (indumentum and floral parts study was made using Olympus SZ 61 binocular microscope. All collected specimens are deposited in PBL.



Map 1: Distribution of *Bacopa aquatica* Aubl. in India.

Taxonomic treatment

Bacopa aquatica Aubl.in Hist. Pl. Guiane 1: 129 (1775). **Fig. 1-2, Map 1.**

Type: Brazil, 07.08. 2013, *Gardner* 1090 (K; Barcode K000533472).

Annual erect or ascending herb, up to 50 cm high. Stems cylindrical to slightly angled, glabrous, spongy. Leaves opposite, sessile to pseudo- petiolate; lamina linear-lanceolate, truncate at base, acute at apex, crenate serrate on margins, glabrous on both surfaces. Flowers solitary, axillary in one or both the opposite leaf axils; 1–1.2 cm long; pedicels 1.2–1.6 cm long, cylindrical, glabrous; bracteoles membranous, c. 2 mm long, linear, glabrous; Calyx 5, polysepalous, glabrous, outer two leafy, 7–8.5×6–8.5 mm, base cordate-auriculate apex obtuse, glabrous; middle one lanceolate, c. 6 × 3.4 mm, inner margin hyaline, ciliate; 2 innermost membranous, boat-shaped, c. 3.5×0.5 mm, ciliate on margins. Corolla gamopetalous, c. 5 mm long, with c. 2 mm tube, 5-lobed, lobes equal to subequal, sparsely ciliate on outside and

prominently on margins Stamens 5, epipetalous, attaches to the middle of the corolla tube; filaments light blue, c. 2 mm long, included; anther c.1 mm long, bilobed, purple, dehisce longitudinal. Pistil cylindrical, c. 1.5 mm long, glabrous; stigma capitate. Fruit capsule, ovoid, c. 6 × 5 mm, slightly compressed, glabrous, Seeds numerous, minute, linear-oblong, cylindrical.

Habitat: Grows in marshy to aquatic habitats

Flowering & fruiting: September– November.

Distribution: India (Andaman Islands) Trinidad to S. Tropical America: Bolivia, Brazil North, Brazil Northeast, Brazil Southeast, Brazil West-Central, French Guiana, Guyana, Suriname, Trinidad-Tobago, Venezuela (POWO, 2025).

Specimen examined: India, Andaman and Nicobar Islands, South Andaman: Viper Island, 29.07.1978, *P. Basu* 6684(PBL); Mannar Ghat, 03.12.2023, 11°45'55.7"N 92°42'23.6"E, *P.A. Dhole & M. Anil Kumar* 34557 (PBL); Sholbay-8, 04.12.2023, 11°43'51.6"N 92°42'21.8"E, *P. A. Dhole* 34558(PBL); Stweartgunj, 05.08.2025, 11°48'56.1"N 92°43'03.3"E, *P.A. Dhole & M. Anil Kumar* 35601 (PBL); Attam Pahad, 28.09.2025, 11°38'28.9"N 92°42'10.8"E, *A. K. Das & C. Shivaperman* 005601 (PBL).

Conclusion

Bacopa aquatica Aubl. is the first record for Indian flora reported from the Andaman and Nicobar Islands. Compared to its natural distribution in the Neotropics, which stretches from Trinidad to South Tropical America, this marks a substantial transcontinental disjunction. Future phytogeographical and ecological studies should focus on the establishment and distribution of this plant in the ANI region.

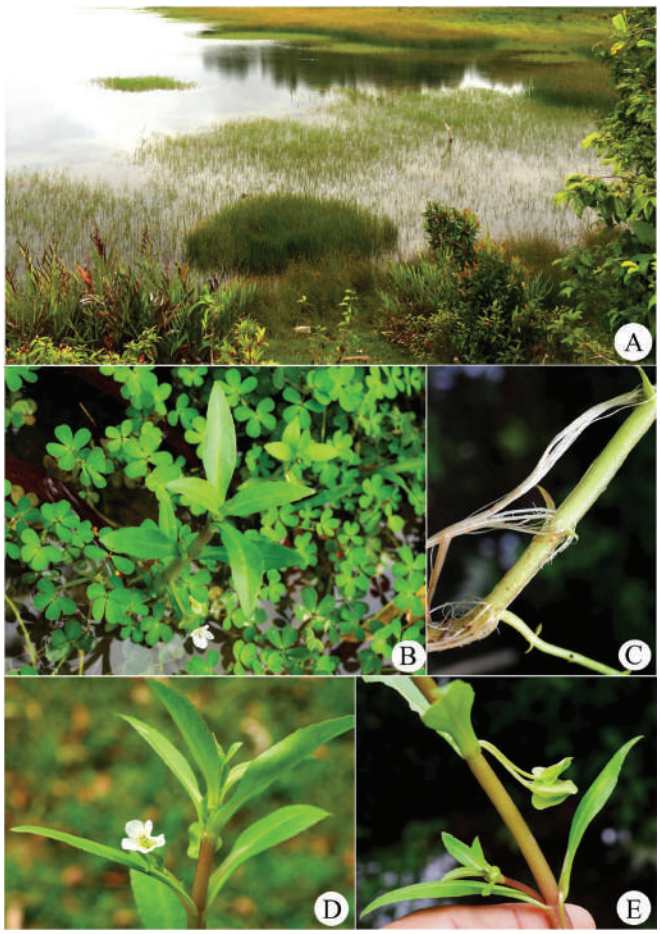


Fig. 1: ***Bacopa aquatica*** **Aubl. A.** Habitat, **B.** Habit, **C.** Rooting from lower nodes, **D.** Flowering twig, **E.** Fruiting twig.

Fig. 2: ***Bacopa aquatica*** Aubl. **A.** Habit, **B. & C.** Leaf (Ventral & Dorsal), **D.** Flower, **E.& F.** Bracteoles, **G.–J.** Calyx outer lobes, **K. & L.** Calyx middle lobe, **M.** Corolla tube, **N. & O.** Corolla opened with stamens exposed, **P. & O.** Innermost lobes of calyx, **R.** Stamen, **S.** Gynoecium with inner calyx lobes, **T.** Gynoecium, **U.** Fruit, **V. T. S.** of Ovary.

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