

Bonnaya sanpabloensis (Linderniaceae): An addition to the flora of India

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Abstract: *Bonnaya sanpabloensis* (Linderniaceae) previously reported from South China, Thailand and Philippines, is newly reported for the flora of India from Maharashtra. The species is distinct from other species of the genus in having flowers in terminal racemes, pedicels almost vertical in fruiting and densely pilose staminodes.

Keywords: *Bonnaya sanpabloensis*, India, Linderniaceae, Maharashtra, New Record.

Introduction

The genus *Bonnaya* Link & Otto was segregated from *Lindernia* All. by Fischer *et al.* (2013) on the basis of molecular and morphological evidences. The presence of a single pair of staminodes, narrow lanceolate entire or denticulate leaves, pinnate venation with clearly visible lateral veins and narrow linear capsules are the characteristic features of this genus (Bentham, 1846, 1876; Hooker, 1884; Fischer *et al.*, 2013). During a taxonomic revision of the family Linderniaceae for the state of Maharashtra, the authors collected some interesting specimens of genus *Bonnaya* from the forest areas of two different districts. Laboratory studies showed a few character differences by which these specimens are distinct from all the hitherto described species from India. Therefore, the authors have approached Prof. Jenn-Che Wang, National Taiwan Normal University, Taiwan for his expert opinion and, the specimens were identified as *Bonnaya sanpabloensis* Y.S. Liang & J.C. Wang, a recently described species from South China, Thailand and Philippines (Liang & Wang, 2014). This species was previously been confused with *B. antipoda* because of its similarities

in morphological characters, but differs from *B. antipoda* by having 8–16 pairs of teeth on the leaf margins, a racemose inflorescence, densely pilose staminodes and fruiting pedicels held almost vertically. As the species is added for the first time to the flora of India, a detailed description, photo plate and notes on its distribution are presented here.

Bonnaya sanpabloensis Y.S. Liang & J.C. Wang, Australian Systematic Botany 27: 192. 2014. *Type:* PHILIPPINES, Luzon, Laguna Province, San Pablo City, 23.11.2007, Y.S. Liang 1534 (holo PNH; iso TAIF, TNM, TNU) **Fig. 1**

Annual, erect to ascending (sometimes creeping) herbs, 25–30 cm long (rarely upto 1 m); rooting at lower nodes. Stems branched, usually quadrangular, glabrous, green to brown; internodes 2–4 cm long. Leaves sessile or subsessile, oblong-obovate to elliptic, 2–4 × 0.5–1 cm, obtuse or rarely acute at apex, acute at base, margins serrate with 7–15 pairs of teeth, glabrous on both surfaces, pinnately veined, secondary veins 9–11 pairs. Racemes lax, glabrous. Flowers 8–15 on each peduncle, with a subtending bract; bracts linear-lanceolate, 2–4 mm long in flowers, 6–8 mm in fruiting; pedicels ascending in flowers, almost vertical in fruits, 3–20 mm long in flowers, 10–20 mm long in fruits. Calyx deeply 5-lobed; lobes linear-lanceolate, acute to acuminate, glabrous, appressed in fruiting, 3–5 × c. 1 mm in flower, 4–6 mm long in fruiting. Corolla bi-lipped, 9–12 mm long, abaxially sparsely glandular, blue to purple, upper 2-lobed, 4–5 × 2–3 mm, lower 3-lobed, 3–4 × 3.2–4 mm, middle lobe elongated, with a white mark at the base. Stamens 2; filaments 1.3–2.2 mm long, pale blue to pale purple; anther 1.2–1.6 mm long. Staminodes 2, clavate, 5–6 mm long, lower half white and pilose, upper half glabrous and yellow. Ovary cylindrical, c. 2 mm long, c. 0.8 mm wide; style 5–6 mm long;

Received: 05.05.2018; Revised & Accepted: 25.03.2019

Published Online: 30.06.2019

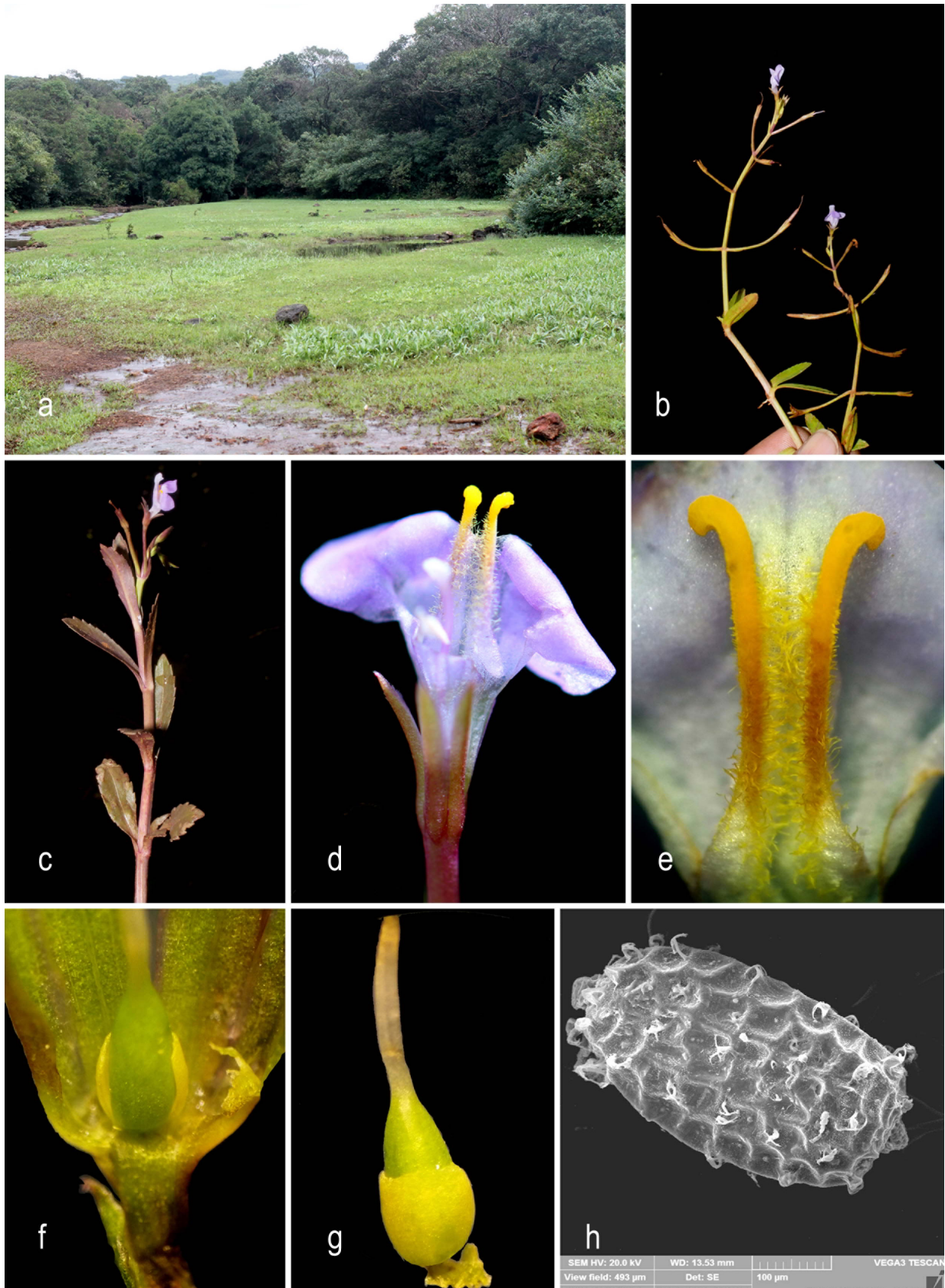


Fig. 1. *Bonnaya sanpabloensis* Y.S. Liang & J.C. Wang: **a.** Habitat; **b & c.** Flowering twig of Ajara and Amboli populations respectively; **d.** Single flower; **e.** Staminodes; **f.** Pistil; **g.** Ovary with disc; **h.** SEM of seed.

disc yellow to greenish, adherent to ovary on ventral side. Capsules cylindrical, 1.3–1.8 cm long, 1–2 mm wide, acute at apex, slightly shorter than fruiting pedicels, 2–3 times longer than fruiting calyx. Seeds many, angular, brownish, 0.3–0.4 mm long, 0.2–0.3 mm wide, scrobiculate, with stellate projections and scattered mesh.

Flowering & fruiting: Throughout year.

Habitat: Grows along river beds at elevation ranging from 2000 to 2260 feet.

Distribution: Known from southern China, Thailand and the Philippines (Liang & Wang, 2014) and now from Maharashtra, India.

Specimens examined: INDIA, **Maharashtra**, Kolhapur district, Ajara tahshil, Ajara village, 16°04'49"N, 74°12'36.8"E, 2165 ft., 29.10.2016, *Sardesai & Shimpale* 2145 (The New College Herbarium, SUK!); Sindhudurg district, Sawantwadi tahshil, Amboli village 15°57'10"N, 74°01'32"E, 2234 ft., 12.11.2016, *Sardesai & Shimpale* 2148 (The New College Herbarium, SUK!).

Notes: During the present study two different populations were noticed from similar habitats. The Amboli population showed brown coloured leaves and inflorescence with a few flowers whereas the Ajara population showed a dense inflorescence. Plants were growing associated with *Bonnaya antipoda* (L.) Druce, *B. hyssopoides* (L.) Haines, *Cyperus* sp., *Lindernia anagalis* (Burm.f.) Pennell *Ludwigia* sp. and *Panicum* sp.

According to Liang and Wang (2014) the flowers are solitary and axillary or in terminal racemes in *B. antipoda* while always in terminal racemes in *B. sanpabloensis*. But Philcox (1968) noted that, the flowers are in racemes or solitary in the leaf axils and intermediate between these two types being

quite frequent in *B. antipoda*. Hence the character of inflorescence is overlapping and cannot be considered as a diagnostic character for segregation of the species. However, *B. sanpabloensis* can be separated from the morphologically similar *B. antipoda* in having clearly vertical fruiting pedicel (*vs.* ascending pedicel), smooth pollen exine surface (*vs.* rough surface) and densely pilose, 5–6 mm long staminodes (*vs.* sub-glabrous, 3.3–4.3 mm long).

Acknowledgements

Authors are thankful to Prof. Jenn-Che Wang, National Taiwan Normal University, Taiwan for confirming the identity of specimen and Principal, The New College, Kolhapur for financial assistance under the scheme 'Seed money' for research grant.

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