

## Notes on identity and distribution of *Argyreia boseana* and *A. hookeri* (Convolvulaceae) in India

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**Abstract:** Confusion regarding the identity of *Argyreia hookeri* C.B. Clarke and *A. boseana* Santapau & V. Patel, two closely similar species found in India are discussed. Notes on its distribution, morphological comparison and photographic images are provided for comparison and easy identification in the field.

**Keywords:** Endemic, Northeast India, Western Ghats.

### Introduction

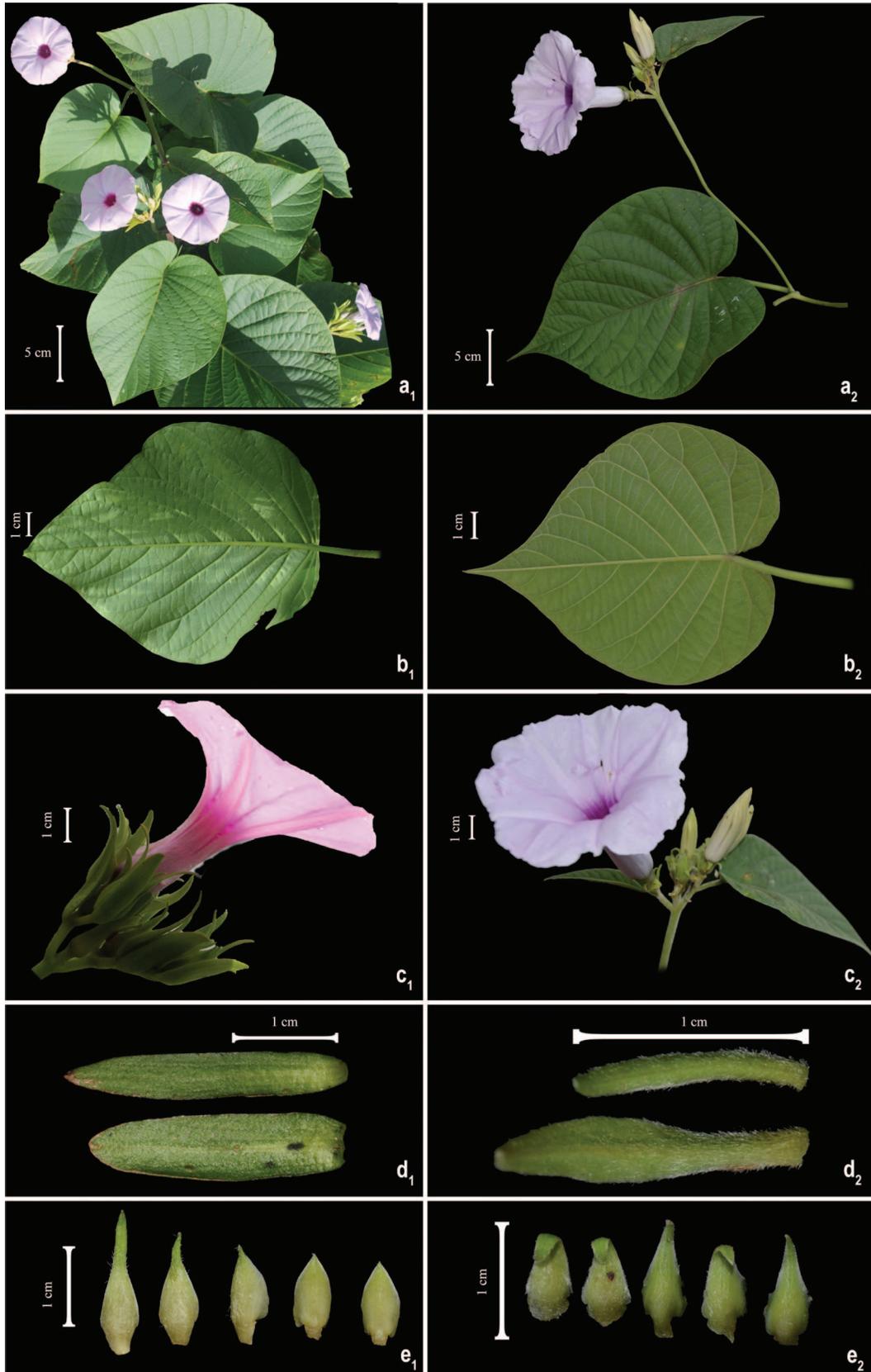
The genus *Argyreia* Lour. (Convolvulaceae), a native of continental Asia, with about 135 species (Staples & Traiperm, 2017) is distributed throughout China, Indian subcontinent and Southeast Asia. *Argyreia* is represented by 40 taxa in India (Lawand *et al.*, 2019) of which 17 are endemic.

While collecting *Argyreia* specimens for a revision of the genus, the authors found that the specimens of *A. hookeri* C.B. Clarke collected from the Western Ghats differ from those collected from the type locality in Northeast India. This forced the authors to conduct a detailed examination of literature and type specimens which lead to the conclusion that the Western Ghat's specimens identified as *A. hookeri* in many Indian herbaria represents a closely similar but distinct species, *A. boseana* Santapau & V. Patel. The confusion between these two species could be attributed to the scanty description in the protologue and overlapping characters usually found among the two species. This paper aims to present the important morphological differences between the two species for easy identification.

**Argyreia boseana** Santapau & V. Patel, Trans. Bose Res. Inst. Calcutta 22: 35. 1958; *A. hookeri sensu* T. Cooke, Fl. Pres. Bombay 2: 255. 1905; Venkanna & Das Das in Singh *et al.*, Fl. Maharashtra St. Dicot. 2: 441. 2001; S.R. Yadav & Sardesai, Fl. Kolhapur district 369. 2002. *Type:* INDIA, **Bombay state [Maharashtra]**, Satara district, near Mahabaleshwar, Fitzgerald Ghat (Ambenali Ghat), 15.07.1956, Z. Kapadia 2083 (holo BLAT!). **Fig. 1a1-e1**

A moderate perennial climber, rarely prostrate; older stems semi-woody, warty, herbaceous towards apex, younger stem hairy, green sometimes purplish. Lamina widely ovate, 15–22 × 10–15 cm, apex acute to narrowly acute, base cordate, secondary veins 10–12 pairs, nearly glabrous adaxially, sparsely hairy on veins abaxially; petioles 10–15 cm long, shorter than the peduncle, adaxially shallowly grooved, green to pale purple, sparsely hairy. Inflorescence a compact cyme, 10–15-flowered; peduncles sparsely hairy, 15–25 cm long. Flowers sub-sessile; bracts 2, narrowly oblong, 2–2.5 cm long, sparsely hairy externally, glabrous within. Sepals unequal, outer three narrower and longer, 1.5–2 cm long, inner two shorter, 1–1.5 cm long, apex acuminate, glabrous within, sparsely hairy externally, persistent in fruit. Corolla pink, 5–7 × 5–6 cm; tube 2.5–3 cm long, dark purple inside, hairy on midpetaline bands; lobes shortly apiculate, twisted in bud. Stamens included in the corolla tube, 3–4 cm long; filaments white, dilated and glandular hairy at base. Fruit a fleshy berry, c. 1 cm in diam., yellow.

**Flowering & fruiting:** Flowering in August to October and fruiting in October to January.



**Fig. 1.** Comparison of *Argyreia boseana* Santapau & V.Patel (a1–e1) and *Argyreia hookeri* C.B.Clarke (a2–e2): **a.** Flowering twigs; **b.** Leaf–abaxial surfaces; **c.** Inflorescences; **d.** Bracts; **e.** Sepals.

*Distribution:* Endemic to the Western Ghats of India.

*Specimens examined:* INDIA, **Karnataka**, Belgaum district, Yedur, 27.08.1963, *R.S. Raghavan* 90270 (BSI); Shimoga district, Agumbe, 18.05.1960, *R.S. Raghavan* 62637 (BLAT); Uttar Kannada district, Balehalli, 30.10.1980, *R. Raghavan* 67943 (BLAT); Yellapur, Teligeri, 13.03.1957, *S.K. Jain* 16505 (BSI); *Ibid.*, 11.03.1957, *S.K. Jain* 16272, 16505 (BLAT). **Maharashtra**, Satara district, Ambenali Ghat, 16.09.2018, *P.R. Lawand* 031 (New College Herbarium); Fitzgerald Ghat, Mahabaleshwar, 06.09.1954, *U.M. Patel* 767; Lingmala Falls, 21.12.1954, *U.M. Patel* 1129; Mahabaleshwar, 10.1924, *R.D. Acland* 759 (BLAT); *Ibid.*, 30.01.1956, *V.D. Vartak* 3021, 2107; *Ibid.*, 03.10.1955, *V.D. Vartak* 1186 (AHMA); Valmiki plateau, 09.09.2016, *P.R. Lawand & V.B. Shimpale* 005 (SUK); Wada, Kas, 02.12.1983, *S.D. Deshpande* 166571 (BSI); Sindhudurg district, Phonda Ghat, 18.08.1965, *B.G. Kulkarni* 105572 (BSI).

***Argyreia hookeri*** C.B. Clarke in Hook. f., Fl. Brit. India 4: 185. 1883. *Rivea hookeri* (C.B. Clarke) Hallier f., Bull. Herb. Boiss. 7: 60. 1899. *Lectotype* (designated by Shalini *et al.*, 2017): INDIA, **Sikkim**, Sikkim Himalaya, 4000 m, *s.d.*, *J.D. Hooker s.n.* (K [K001081783 digital image!]; isolecto K [K001081784, K000830585, K000830586, K000830588 digital images!], P [P00584821, P00584822 digital images!]).

*Argyreia populifolia* Choisy, Convolv. Orient. 32. 1834, *p.p.*; Kanjilal *et al.*, Fl. Assam 3: 342. 1939; Balakr., Fl. Jowai 2: 328. 1983; Ghosh & Mallick, Fl. Darjeeling Himalaya 165. 2014; Mao *et al.*, Checkl. Fl. Meghalaya 120. 2016. **Fig. 1a2-e2**

A woody climber; older stems woody, glabrous or remotely hairy, younger stems white hairy, green. Lamina widely ovate to orbicular, 10–18 × 8–14 cm, apex abruptly acuminate, base deeply cordate, lobes round, secondary veins 9–11 pairs, depressed above, sparsely hairy adaxially, densely white sericeous abaxially, denser on veins, juvenile leaves with silky hairs; petioles 8–12 cm long, terete, not grooved, green, white strigose. Inflorescence loosely arranged, 6–15-flowered; peduncles 12–22

cm long, white appressed-strigose; inflorescence bracts (outer bract) leafy, stalk 3–3.5 cm long, reticulately veined, abaxially white sericeous. Flowers pedicellate; floral bracts 2, lance-ovate to oblong-linear, 1–1.5 cm long, caducous, white tomentose outside, strigulose within. Sepals subequal, *c.* 1 cm long, outer two with a reclined upper half, apex narrowly acute, glabrous within, strigose outside. Corolla rose-pink, 5–6 × 5–6 cm; tube dark purple within, hairy on midpetaline bands; corolla lobes twisted in bud. Stamens inserted, *c.* 0.5 cm above base of tube, included, raised up to half of corolla tube; filaments white, dilated and glandular hairy at base. Fruit a fleshy berry, yellow.

*Flowering & fruiting:* Flowering in July to October and fruiting in October to January.

*Distribution:* India, Indonesia, Myanmar, Nepal and Thailand.

*Specimens examined:* INDIA, **Meghalaya**, West Jaintia Hills district, Khasi and Jaintia Hills, Mytang Valley, 20.01.1916, *U. Kanjilal* 6567 (ASSAM); West Garo Hills district, Nokrek National Park, near Sisubibra village, 16.10.2007, *V.K. Singh & Bikram Singh* 116739 (ASSAM). **Mizoram**, Aizawl district, Aizawl City, 08.10.2018, *P.R. Lawand* 043 (SUK); Mamit district, Dampa Tiger Reserve, Lallen, 12.12.2006, *N. Odyuo* 113629 (ASSAM); West Phaileng, 08.10.2018, *P.R. Lawand* 014 (SUK). **Sikkim**, East Sikkim district, 1895, *G.M. Gammie s.n.* (BSI); Baghey Khola, 13.11.1998, *S.S. Dash* 20928; Saramsa, 23.08.1980, *P.K. Hajra* 593; Reshi Khola, 10.12.1980, *P. Chakraborty* 1099 (BSHC); South Sikkim district, Ratey Pani, 11.09.1981, *B. Krishna* 1771 (BHSC); North Sikkim district, Right Flank, Dikchu, 13.12.1997, *B.K. Shukla* 20315 (BHSC); West Sikkim district, Tashiding, 11.12.1994, *G.P. Sinha & S. Pradhan* 15279 (BHSC). **West Bengal**, Darjeeling district, Darjeeling, on the way to Bagrakote, 13.10.2018, *P.R. Lawand* 044 (SUK); Jalpaiguri district, Poro Buxa Div., 22.11.1975, *J.K. Sikdar* 838 (CAL); Kalimpong district, Kalimpong, 08.08.1997, *P. Sinha & S.S. Dash* 17282 (BSHC).

*Notes:* *Argyreia hookeri* is closely similar to *A. boseana*

**Table 1.** Morphological comparison of *A. boseana* and *A. hookeri*

Characters	<i>A. boseana</i> Santapu & V.Patel	<i>A. hookeri</i> C.B.Clarke
Leaf indumentum	Sparsely hairy abaxially	White tomentose abaxially
Bracts	Narrowly oblong, 2–2.5 cm long, glabrous to sparsely hairy outside	Lance-ovate to oblong-linear, 1–1.5 cm long, white tomentose outside
Sepals	Unequal, acuminate at apex, not reflexed	Sub-equal, acute at apex, reflexed

in having widely ovate to orbicular leaves, longer peduncles, few to many flowered inflorescence, rose-pink corolla and yellow fleshy berries. However, *A. hookeri* can be distinguished by its sparsely hairy adaxial and white tomentose abaxial leaf surfaces, 6–15-flowered, dichotomously branched cymes, lance-ovate caducous bracts and outwardly reflexed lance-ovate sepals with acute apex. In addition, both the species shows a disjunct distribution. Some additional morphological differences between these taxa are given in Table 1 and Figure 1.

Based on extensive field surveys along the Western Ghats and after examining the herbarium specimens of *Argyreia* at AHMA, BLAT, BSI, CALI, DRC, MH and TBGT, it is concluded that *A. hookeri* does not occur in the Western Ghats. After careful scrutiny of our own collections and specimens at above mentioned herbaria, it is revealed that whatever specimens collected and identified as *A. hookeri* from the Western Ghats are actually belong to *A. boseana*. The original taxon identified erroneously as *A. hookeri* by Cooke (1908) was later described as *A. boseana* by Santapau and Patel (1958). The Cooke's concept of *A. hookeri* was, however, followed by succeeding taxonomists (Sharma *et al.*, 1984; Venkanna & Das Das, 2001; Ramaswamy *et al.*, 2001; Manikandan & Lakshminarasimhan, 2013; Nayar *et al.*, 2014). Report on the occurrence of *A. hookeri* in Western Ghats is thus erroneous.

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