

Dubyaea atropurpurea (Asteraceae): an addition to the flora of India

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Abstract: *Dubyaea atropurpurea* Stebbins (Asteraceae: Cichorieae) is reported here for the first time from India. A brief description of the plant along with colour photographs, distribution map and a key to the Indian taxa of *Dubyaea* DC. is provided to facilitate easy identification, as well as to throw light on its phyto geography. Its taxonomic affinities and differences with closely related species are examined and discussed.

Keywords: Alpine herb, Flora of India, Nagaland, New record.

Introduction

Dubyaea DC. (Asteraceae: Cichorieae) is a small genus of 11 species (POWO, 2023), almost entirely endemic to the Pan-Himalayan region (Xu & Chen, 2021). The genus is characterized by nodding capitula, phyllaries in several series, having brownish, purplish, or blackish stiff and often glandular hairs along midveins (rarely glabrous), fusiform cypselae that are weakly compressed with truncate or attenuate apices, and coarse and rigid pappus setae (Stebbins, 1940; Chen *et al.*, 2021). It is represented by three species and a subspecies in India, viz. *D. cymiformis* C. Shih, *D. hispida* (D. Don) DC., *D. oligocephala* (Sch. Bip.) Stebbins and *D. oligocephala* subsp. *latifolia* Stebbins. These are confined to alpine and sub-alpine habitats of the Himalaya (Hooker, 1881; Mamgain & Rao, 1995; Grierson & Springate, 2001; Chowdhery *et al.*, 2008; Singh *et al.*, 2019; Gogoi *et al.*, 2021).

During field exploration in August 2021 at Mt. Saramati located in the Kiphire district, Nagaland,

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Northeast India, the first author collected a species of *Dubyaea* growing on an alpine meadow. Critical examination of the collected material revealed its identity as *Dubyaea atropurpurea* Stebbins, a species previously known from southwestern China and adjacent Myanmar. Screening of the relevant literature (Kanjilal *et al.*, 1939; Chowdhery *et al.*, 2008; Karthikeyan *et al.*, 2009; Mao *et al.*, 2017; Karthikeyan *et al.*, 2020) further confirmed that this plant had not been reported from India. Hence, the present collection of the species forms a new addition to the flora of India, extending its distributional range to the northeastern part of the country. A brief description of the plant, along with a photo plate and distribution map, is provided to facilitate its identification.

Taxonomic Treatment

Dubyaea atropurpurea Stebbins, J. Bot. 75: 51. 1937, Mem. Torrey Bot. Club 19(3): 14. 1940; C. Shih & N. Kilian, Fl. China 20–21: 337. 2011. *Lactuca atropurpurea* Franch., J. Bot. (Morot) 9(16): 294. 1895, *nom. illeg.* Type: CHINA, Yunnan, at the top of Tsang-chan, above Tali, alt. 4000 m., J.M. Delavay 1001 (Holo P? [not traced]). **Fig. 1**

A perennial herb with stout taproot, up to 80 cm high. Stem green, stout, erect, covered with long stiff purplish hairs, blackish when dried. Leaves mostly cauline, 10–25 × 3–6 cm; lower ones large, lyrate-pinnatifid, sessile, blade glabrous above, sparsely short hirsute along the veins beneath; upper ones elliptic, sinuate-dentate, usually cordate-clasping at base. Capitula purplish, 3–8, drooping on elongate, densely purplish-hirsute peduncles, c. 5 cm across, 60–70-flowered. Involucral bracts in several series, the outer narrowly



Fig. 1. *Dubyaea atropurpurea* Stebbins: a. Natural habitat; b. Habit; c. Portion of ventral surface of leaf and young capitulum; d. Top view of an open capitulum (from S. Dey s.n.; photos by S. Dey).

lanceolate or linear, *c.* 25 × 3 mm, acuminate at apex, the inner shorter, broadly lanceolate, 4–5.5 mm broad, all greyish-purple, long-hirsute along midrib. Corolla greyish-purple, 10–15 mm long; tube 2–3 mm long. Stamens 5; filaments free, ribbon-like, *c.* 5 mm long; anthers fused together to form a tube-like structure surrounding the style, 4–5.5 mm long, yellowish. Ovary oblong to fusiform, up to 6 mm long; style *c.* 15 mm long; stigmatic lobes 1.5–2.5 mm long. Achenes oblong or somewhat fusiform, 4–6 mm long, shallowly ribbed; pappus bristles 1–2-seriate, plumose, yellowish, 6–10 mm long.

Flowering & fruiting from July to September.

Habitat: The species grows on an alpine meadow at an altitude of 3678 m. Only four mature individuals were spotted during the entire field survey. The associated species include *Cremanthodium reniforme* (DC.) Benth., *Ligularia kingiana* (W.W.Sm.) R.Mathur, *L. fischeri* (Ledeb.) Turcz. (all Asteraceae), *Morina nepalensis* D.Don (Caprifoliaceae), *Cyanotis vaga* (Lour.) Schult. & Schult.f. (Commelinaceae), *Rhodiola yunnanensis* (Franch.) Fu (Crassulaceae), *Geranium* sp. (Geraniaceae), *Epilobium* sp. (Onagraceae), *Hemipilia chusua* (D.Don) Y.Tang & H.Peng (Orchidaceae), *Pedicularis pantlingii* Prain (Orobanchaceae), *Bistorta macrophylla* (D.Don) Soják (Polygonaceae), and *Rosa sericea* Lindl. (Rosaceae) (Fig. 1a).

Distribution: India, China, Myanmar (Stebbins, 1940; Zhu & Kilian, 2011) (Fig. 2).

Specimen examined: INDIA, Nagaland, Kiphire district, Mt. Saramati peak, *c.* 3678 m, 04.08.2021, S. Dey *s.n.* (HBARC [HBARC00006632]).

Conservation status: *Dubyaea atropurpurea* is a rare species, so far known from a few (≤ 10) locations. The Extent of Occurrence is estimated to be less than 20,000 km². Also, there is continuing decline of Area of Occupancy due to habitat degradation resulting from various anthropogenic activities. Hence, following IUCN (2012, 2022) this species is categorised as Vulnerable (VU B1ab(ii)).

Notes: *Dubyaea atropurpurea* shows close affinity with *D. forrestii* Mamgain & R.R.Rao in general appearance. However, the former is distinguished from the latter in having hirsute stems, lyrate-pinnatifid leaves, densely hirsute peduncles, larger involucre, involucre bracts in several series, and non-compressed achenes. Whereas, in *D. forrestii* the stems and peduncles are glabrous, cauline leaves broadly pinnatisect and sub-glabrous, involucre smaller, involucre bracts in 2–3 series and the achenes compressed (Mamgain & Rao, 2008). The Indian taxa of the genus *Dubyaea* can be identified by using the following key.

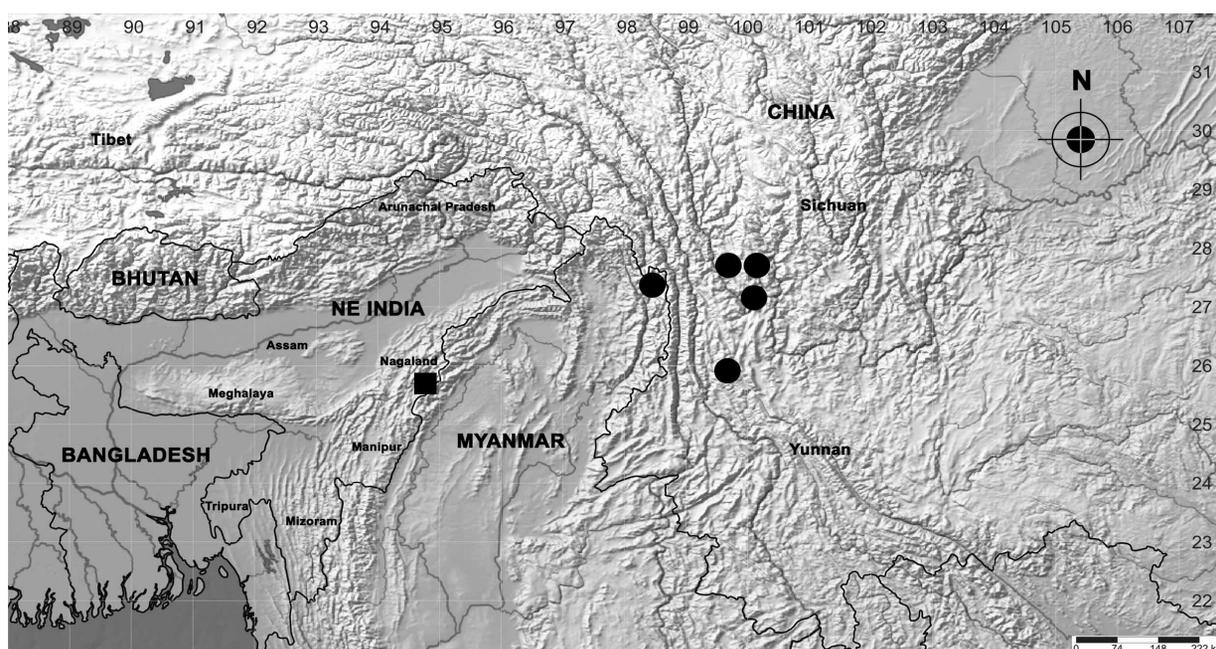


Fig. 2. Distribution map of *Dubyaea atropurpurea* Stebbins: Solid circle (●) indicates previously known localities, and solid square (■) indicates the currently reported locality. Map created with SimpleMapper (Shorthouse, 2010).

Key to the taxa of *Dubyaea* in India

1. Flowers purplish.....2
1. Flowers bright yellow.....3
2. Capitula erect; pappus whitish *D. cymiformis*
2. Capitula drooping; pappus yellowish
..... *D. atropurpurea*
3. Capitula drooping; involucre bracts few;
achenes dark brown to black.....*D. hispida*
3. Capitula erect; involucre bracts numerous;
achenes straw-coloured4
4. Basal leaves 1.5–5 cm broad; outer involucre
bracts not usually squarrose; mature achenes 9–12
mm long *D. oligocephala* subsp. *oligocephala*
4. Basal leaves 4.5–8 cm broad; outer involucre
bracts squarrose; mature achenes 7–8.5 mm
long *D. oligocephala* subsp. *latifolia*

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