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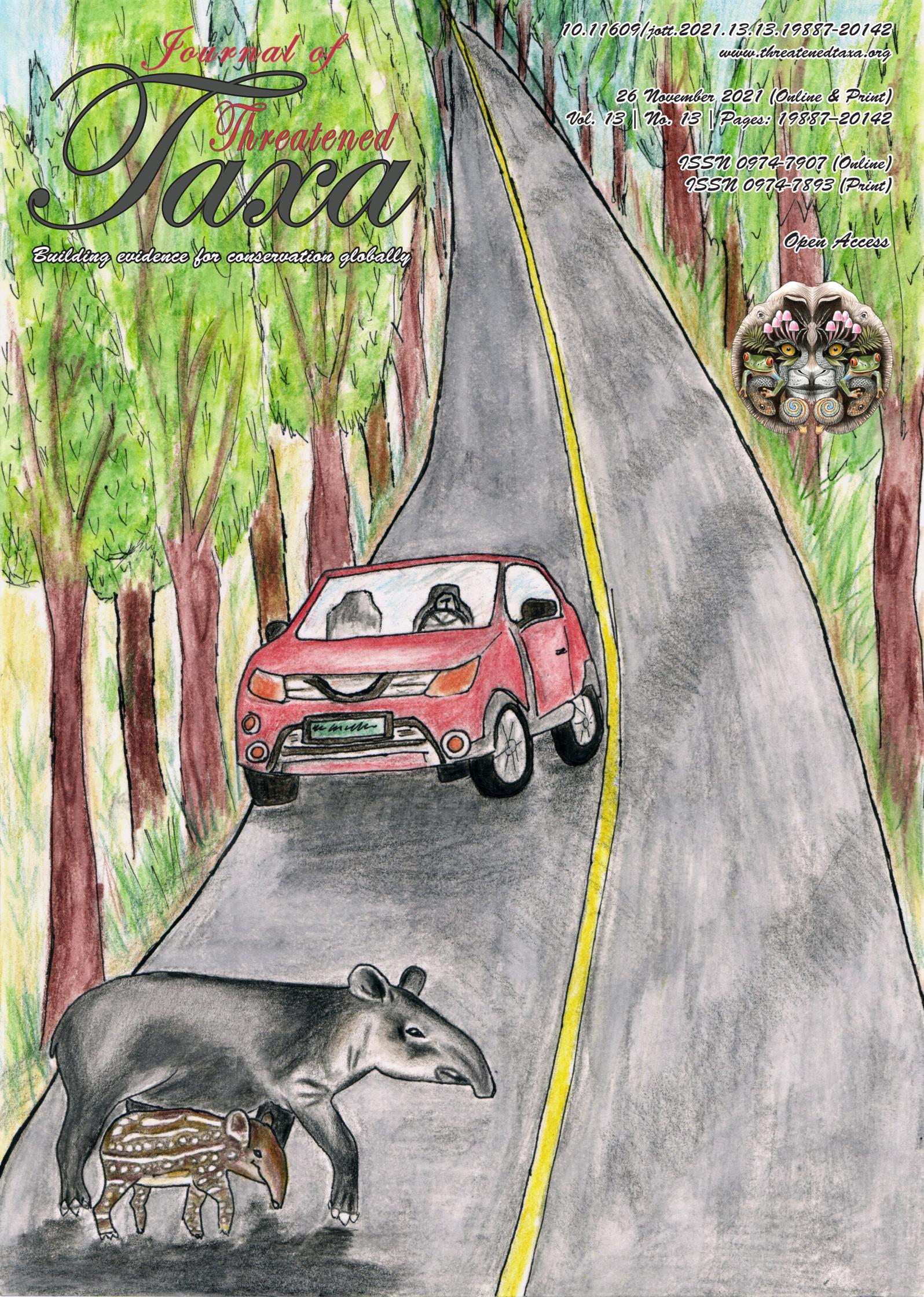
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Caption: Lowland Tapir *Tapirus terrestris* (Medium—watercolours on watercolour paper) © Aakanksha Komanduri.



On the IUCN status of *Boesenbergia albolutea* and *B. rubrolutea* (Zingiberaceae) and typification of *B. rubrolutea*

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Boesenbergia albolutea (Baker) Schltr. and *B. rubrolutea* (Baker) Kuntze belong to the genus *Boesenbergia* Kuntze of the family Zingiberaceae. The genus is characterized by the two-ranked arrangement of the bracts of the inflorescence, and was originally described under the genus *Gastrochilus* Wall. But, finding *Gastrochilus* as a later homonym for an orchidaceous genus *Gastrochilus* Don (Don 1825), Kuntze (1891) proposed the new name *Boesenbergia*. Subsequently, the genus was treated by various authors, viz., Baker (1890) for British India, Schumann (1904) for Borneo and Sumatra, Gagnepain (1908) for Indochina, Valetton (1918) for Java and Malaysia, Ridley (1907, 1924) and Holttum (1950) for the Malay Peninsula, Das & Sikdar (1982) for India and Sirirugsa (1992) for Thailand. In India, the genus is represented by 10 species (Aishwarya 2017) including a new species (*B. meghalayensis* Aishwarya & M.Sabu) recently described (Aishwarya et al. 2015).

B. albolutea and *B. rubrolutea* are less explored

species of the genus *Boesenbergia*. They were originally described under *Gastrochilus*, as *G. albolutens* (Baker 1894) and *G. rubrolutea* (Baker 1890), respectively. Later, once the genus *Boesenbergia* was established, Schlechter (1913) and Kuntze (1891) brought the new combinations of these two species as *B. albolutea* and *B. rubrolutea*, respectively.

Relevant literature and herbaria related to the species under study were thoroughly studied. The various herbaria consulted in India include CAL, MH, ASSAM, BSHC, CAL, CALI & DD (Thiers (2020 continuously updated)). In addition, digital database of world herbaria like BM, E, K, KEP, LINN, LIV, MO, NY, PBL, SING & W (Thiers (2020 continuously updated)) were also accessed.

The IUCN statuses of these species have been evaluated against IUCN Red List Categories and Criteria Version 14 (IUCN 2019) based on repeated field visits for the past 30 years and herbaria reference.

Editor: Anonymity requested.

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A revision on the genus shows that the species *B. albolutea* and *B. rubrolutea* are extinct in the wild (IUCN 2019). This is based on the observation that there has been no report of these species after type collection [*B. albolutea* from England (originally from Andaman; flowering condition from England) and *B. rubrolutea* from Meghalaya]. Besides, the field explorations conducted by the senior author over 30 years throughout India including Andaman & Nicobar Islands as part of the taxonomic revision of the family Zingiberaceae in India, could not spot even a single specimen of these species in the field. A thorough search of various herbaria also could not find any specimen added after the type collection.

Moreover, Jain & Prakash (1995) reported the species, *B. rubrolutea* as endemic to Meghalaya and as endangered by commenting on the endangered species of Zingiberaceae as “confined to very small areas of one state and facing immediate danger of extinction, these species need urgent conservation.” The present study also tried to locate further collections of these species, however failed to find any. Based on all these, the present study recommends assigning these species under the IUCN Red List category, ‘Extinct in the Wild’ (EW) (IUCN 2019).

The study also shows that the type *B. rubrolutea* is not yet designated. Consequently, after studying the literature and herbaria deposition of the species in detail, the lectotype is being designated here.

Taxonomic Treatment

1. *Boesenbergia albolutea* (Baker) Schltr., Repert. Spec. Nov. Regni Veg. 12: 315. 1913; C.R. Das & Sikdar, Bull. Bot. Soc. Bengal 36: 41. 1982. ≡ *Gastrochilus albolutens* Baker, Gard. Chron. 2: 34. 1894.

Type: England, London, Kew Gardens, 26 June 1894, s.c. s.n. (holotype, K; K000640518 image!).

(Image 1A)

Notes: In the protologue, Baker (1894), while describing the species, noted that the plant was to be collected by Mr. Mann from Andamans and sent to Kew in 1889, where it flowered and was identified and described as a new species. As this is the only specimen mentioned in the protologue of the species, it is the holotype.

Distribution: Endemic to Andaman Islands.

Recommended IUCN Red List Status: Extinct in the wild (EW) (IUCN 2019).

2. *Boesenbergia rubrolutea* (Baker) Kuntze, Rev. Gen. Pl. 2:685. 1891; Schltr., Repert. Spec. Nov. Regni Veg.12:

316. 1913; C.R. Das & Sikdar, Bull. Bot. Soc. Bengal 36: 44. 1982. ≡ *Gastrochilus rubrolutea* Baker in Hook.f., Fl. Brit. India 6: 218. 1890.

Type: India, Meghalaya, Khasi Hills, Thera, 10 October 1886, C.B. Clarke 44985 A (lecto, K; K000640511 image! designated here); *ibid.*, C.B. Clarke 44985 B (isolecto, K; K000640512!). (Image 1B)

Notes: In the protologue, the specimen/specimens mentioned by Baker (1890) is the collection/collections by ‘J.D.H. & T.T., Clarke’ from Khasi Hills. Herbarium sheets of two specimens that were collected by C.B. Clarke are now housed at K (Thiers (2020 continuously updated)), viz., 44985 A & 44985 B. Out of these, following Articles 9.3, 9.12 and 9A.3 of ICN (Turland et al. 2018), 44985 A’ is selected here as the lectotype of *B. rubrolutea* because this sheet depicts the details of the species, especially the spike, with better clarity compared to the other. Moreover, the herbarium label in it bears a sketch and a brief description of the anther, labellum and corolla segments of the species. No other collection of this species could be located anywhere else.

Distribution: *B. rubrolutea* is endemic to Meghalaya. Das & Sikdar (1982) noted that *B. rubrolutea* is not represented even by a single specimen at CAL. They added, “on the basis of two localities mentioned in Meghalaya, it is assumed that this species is restricted to Meghalaya, and therefore may be taken as endemic”.

Recommended IUCN Red List status: Extinct in the wild (EW).

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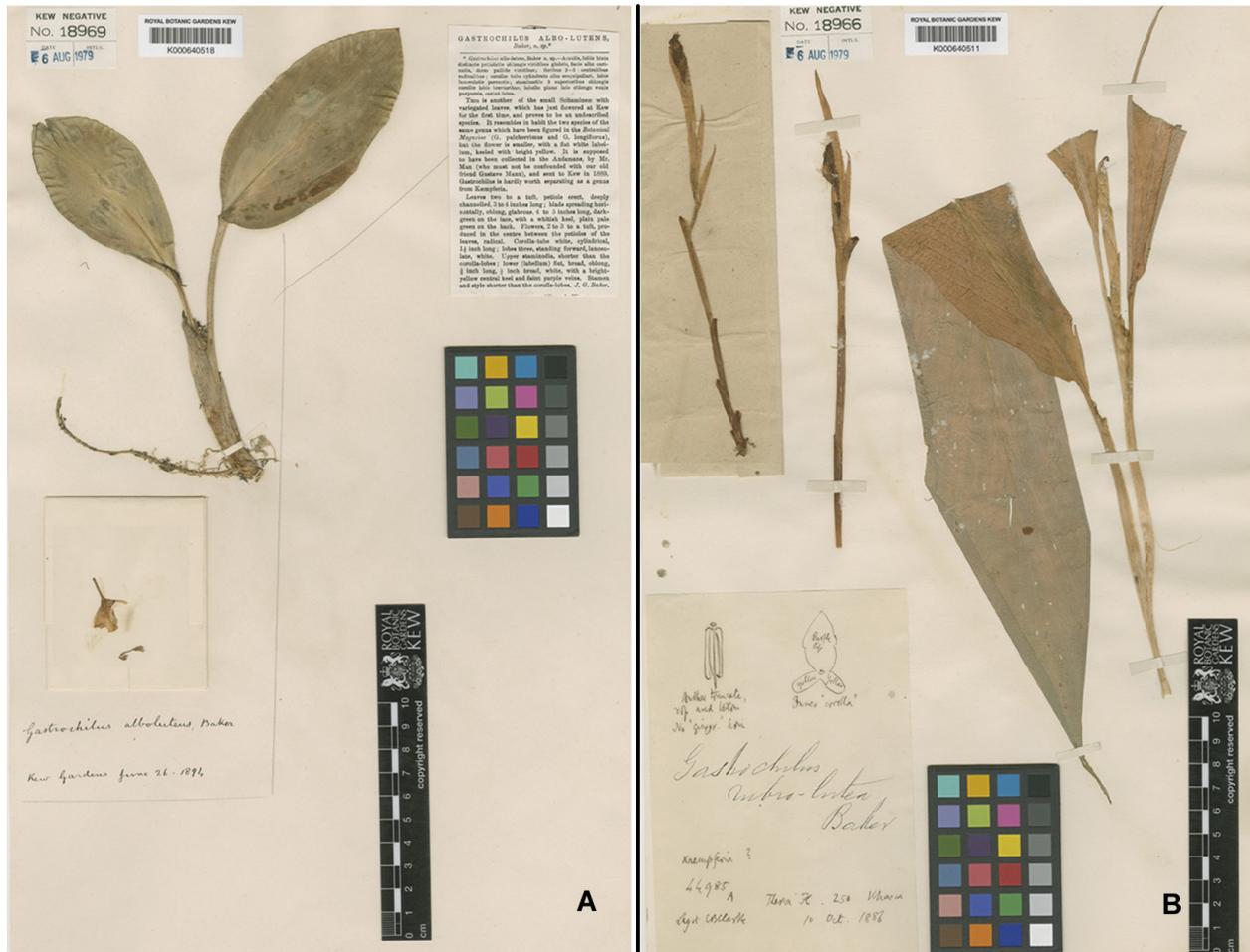


Image 1. Lectotypes of *Boesenbergia* spp.: A—*B. albolutea* | B—*B. rubrolutea*.

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