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## NOTE

### RECENT RECORD OF A THREATENED HOLOPARASITIC PLANT *SAPRIA HIMALAYANA* GRIFF. IN MEHAO WILDLIFE SANCTUARY, ARUNACHAL PRADESH, INDIA

Arif Ahmad, Amit Kumar, Gopal Singh Rawat & G.V. Gopi

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## Recent record of a threatened holoparasitic plant *Sapria himalayana* Griff. in Mehao Wildlife Sanctuary, Arunachal Pradesh, India

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In India, a variety of the climatic, edaphic, and topographic variations have resulted in a great range of habitats. Northeastern India, particularly, is extremely diverse and rich in biodiversity (Singh 2003). Lying between 22–30°N & 89–97°E and spread over 262,379km<sup>2</sup>, this region represents the transition zone between the Indian, Indo-Malayan, and Indo-Chinese biogeographic regions and a meeting place of the Himalayan mountains and peninsular India (Ramakantha et al. 2003). Northeastern India is, thus, the biogeographical 'gateway' for much of India's flora and fauna, as a result, the region is one of the richest in biological values. Despite being rich and diverse in terms of biological diversity, the vegetation of the northeastern India is fairly less known. With about 167,000km<sup>2</sup> area under forest, this region accounts for approximately 7,500 species of angiosperms (Ramakantha et al. 2003).

Arunachal Pradesh, the largest state in northeastern India among the seven sisters (a term used for the northeastern states collectively) is situated between 26.500°N–91.500°E and 29.500°N–97.500°E. It covers a geographical area of 83,743km<sup>2</sup>. The state is predominantly hilly with deep valleys, accompanied by

a wide variation of climate and soils that have resulted in the formation of varied ecological diversity (Baishya et al. 2001). Mehao Wildlife Sanctuary (WS) is rich in floral and faunal diversity and it harbours an interesting and endangered plant species, *Sapria himalayana* Griff., (Nayar & Sastry, 1987), which was recorded for the first time from the sanctuary (28.083°N–93.500°E and 28.250°N–95.750°E), Lower Dibang Valley, Arunachal Pradesh and later in 2014 (Andreas & Jis 2014). This species is the largest root parasite having a host specific relationship with the plant genus *Tetrastigma* of Vitaceae family (Hajra et.al. 2008) and *T. bracteolatum* (Wallich) Planchon and *T. serrulatum* (Roxb.) Planchon are reported as the host plants of *Sapria* in Namdapha National Park (Arunachalam et al. 2004).

*Sapria* needs special attention due to its botanical characteristics and a very restricted distribution around the world (Borah & Ghosh 2018). Globally, it is distributed in southeastern Tibet, northeastern India, Myanmar (Burma), Thailand, and Vietnam. In India, it was first reported from the tropical wet evergreen forests of Mishmi Hills in Lohit District by William Griffith in 1847 and later from Aka Hills in Kameng

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Image 1. Flower of *Sapria himalayana* Griff. in Mehao Wildlife Sanctuary.



Image 2. A globose bud of *Sapria* in the forest floor of Mehao Wildlife Sanctuary.

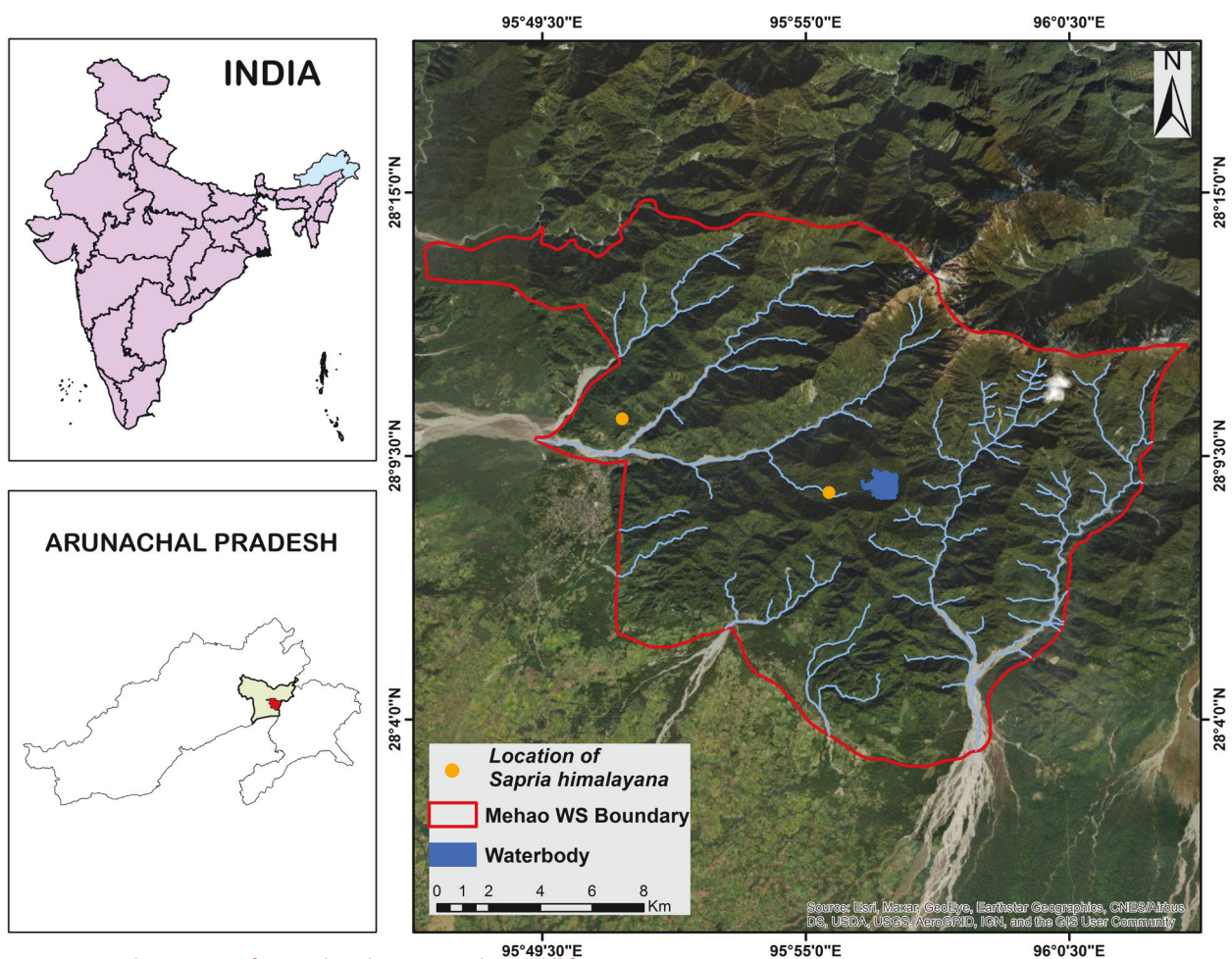


Image 3. Distribution map of *Sapria himalayana* in Mehao Wildlife Sanctuary.

District by Norman Loftus Bor in 1938 (Borah & Ghosh 2018). Recently, it was reported by Jayom Karlo in the Perlek Modi Hills of West Siang and in Namdapha Tiger Reserve in Changlang District (Borah & Ghosh 2018).

Earlier, *Sapria* was also distributed in Assam, Manipur, and Meghalaya, however, all current locations of this plant are in Arunachal Pradesh in the eastern Himalaya. According to Elliot (1992), *S. himalayana* is also known as

a 'Hermit's Spittoon' which has been reported from the evergreen forest of Thailand which is similar in its habitat to the Mehao WS. Thailand acts as a geographical bridge that connects communities from the northern parts of the Himalayan mountain range and southern China to the Malay Peninsula and Cambodia to Laos.

*Sapria himalayana* belongs to the Rafflesiaceae family, recognized as large-flowered genera. The sister clades *Rafflesia*, *Rhizanthus*, and *Sapria* have reduced vegetative body among all angiosperms. The members of Rafflesiaceae family produce the world's largest flowers (*Rafflesia arnoldii*), which is an iconic symbol of the southeastern Asian rainforests. *Rafflesia* and *Sapria*, however, share a very similar conspicuous floral chamber. Thus, despite their superficial similarities, the floral chambers are constructed differently in these two cousin genera (Nikolov et al. 2014).

*Sapria himalayana* is a rare holoparasitic (or obligate parasitic) flowering plant which is completely dependent on its host plant for water, nutrients, and products of photosynthesis. It sucks food through a specialised root system called haustoria, which are attached to both xylem and phloem of the host plant. The visible body is globose, flowers are dioecious and unisexual. Flowers bloom in winter have 10 bracts each which are bright red in colour covered with sulphur-yellow spots. Flowers are fleshy with imbricate inflorescence while perianth being campanulate. It flowers in between August and September followed by fruiting during winters. Fruits are swollen and crowned with perianth. The seeds are of the size of grapefruit and are blackish-brown in colour (Elliot 1992; Borah & Ghosh 2018).

The forests of Mehao WS have been facing disturbances due to anthropogenic sources such as shifting cultivation and non-timber forest produce extraction that are now visible in several parts of the sanctuary. During the early process of developing a forest, the ground is lopped off followed by burning of forest remains, which has severely damaged the host plants of *Sapria*. *Sapria* favours shady, gentle slope, nutrient-rich humus soil with plenty of leaf litter on forest floor, humid habitats with great canopy cover throughout. *Sapria* generally grow in patches. We found three flowers in one patch and five flowers in another

patch. The patch which is found near Mehao Lake had three globose buds of *Sapria*. The parasitic plant is lesser-known and a poorly understood taxon. The plant has no known commodity value in terms of food, drug or other natural products for the local inhabitants (Borah & Ghosh 2018). Identification of their peculiar morphology is problematic and thus has contributed greatly towards the confusion surrounding the plants evolutionary affinities and development of their body plan. Due to its restricted distribution, little knowledge about its host range and host-parasite interaction exist. Increased human interference and habitat shrinkage impose the risk of extirpation. Further studies focusing on population dynamics and vegetation ecology of *Sapria* and its host species is suggested for its conservation.

## References

- Andreas H. & S. Jis (2014). *Sapria himalayana* Griffith, an endangered species from the Mishmi hills, Dibang Valley, Arunachal Pradesh. *Indian Forester* 140(4) : 433–434.
- Arunachalam, A., D. Adhikari, R. Sarmah, M. Majumder & M.L. Khan (2004). Population and conservation of *Sapria himalayana* Griff. in Namdapha National Park, Arunachal Pradesh, India, *Biodiversity and Conservation*, 13: 2391–2397.
- Baishya, A.K., S. Haque, P.J. Bora & N. Kalita (2001). Flora of Arunachal Pradesh: an overview. *Arunachal Forest News* 19(1&2): 1–25.
- Bor, N.L. (1938). A sketch of the vegetation of the Aka Hills, Assam: a synecological study. *Indian Forest Record (N.S.) Bot.*, 1(i–ix): 103–221.
- Borah, D. & D. Ghosh (2018). *Sapria himalayana* the Indian cousin of World's largest flower. *Resonance* 23(4): 479–489.
- Elliot, S. (1992). Status, ecology and conservation of *Sapria himalayana* Griff. (Rafflesiaceae) in Thailand. *Journal of Wildlife in Thailand* 2(1): 44–52.
- Griffith, W. (1847). *Journals of travels in Assam, Burma, Bootan, Affghanistan and the neighbouring countries*. Bishop's College Press, Calcutta, 529pp.
- Hajra, P.K., G.S. Giri & D.M. Verma (2008). *Materials for the Flora of Arunachal Pradesh: Asteraceae-Ceratophyllaceae*. Botanical Survey of India 2: 318–319.
- Nikolov, L.A., Y.M. Staedler, S. Manickam, J. Schonenberger, P.K. Endress, E.M. Kramer & C.C. Davis (2014). Floral structure and development in Rafflesiaceae with emphasis on their exceptional Gynoecia. *American Journal of Botany* 101(2): 225–243.
- Nayar, M.P. & A.R.K. Sastry (1987). *Red Data Book of Indian Plants*. Botanical Survey of India, 1: 310pp.
- Ramakantha, V., A.K. Gupta & A. Kumar (2003). Biodiversity of Northeast India: an overview. pp. 1–24. In: Gupta, A.K., A. Kumar & V. Ramakantha (eds.). ENVIS Bulletin Vol. 4, No.1: Wildlife & Protected Areas, Conservation of Rainforests in India.
- Singh, D.N. (2003). Conservation of Tropical Rain Forests in Arunachal Pradesh, pp. 279–286. In: Gupta, A.K., A. Kumar & V. Ramakantha (eds.). ENVIS Bulletin Vol. 4, No.1: Wildlife & Protected Areas, Conservation of Rainforests in India.





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