

***Maharanga griersonii* (R.R.Mill) L.Cecchi & Hilger: A Critically Endangered Plant Rediscovered after 44 years**

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Abstract

During a recent botanical excursion, *Maharanga griersonii* (R.R.Mill) L.Cecchi & Hilger formerly *Onosma griersonii* R.R.Mill was rediscovered in its type locality after a gap of 44 years. Despite the huge habitat destruction and disturbance caused by the widening of the northern east-west highway, this critically endangered endemic plant was found thriving in the location where it was first collected in 1979. Detailed description and photographic illustrations are provided. However, detailed studies regarding its habitat and distribution are required in the future to better understand this rare species.

Keywords: Critically Endangered, Endemic, *Maharanga griersonii*, *Onosma griersonii*

Introduction

Maharanga griersonii (R.R.Mill) L.Cecchi & Hilger (Boraginaceae), which was formerly placed in genus *Onosma* L. in the *Flora of Bhutan* (Grierson & Long, 1999) is a species of herbaceous plant endemic to Bhutan. According to the authors, genus *Onosma* is represented by six species and one variety. Of the six species, *Maharanga griersonii* along with *Maharanga bhutanica* I.M.Johnst. are recorded as endemic to Bhutan (Grierson & Long, 1999;

Yangzom & Long, 2015).

Nomenclature of *Maharanga griersonii*

Mill (1994) described *Maharanga griersonii* as *Onosma griersonii* R.R.Mill with the specimen collected by A.J.C. Grierson and D. G. Long from Norbding below the Pelela pass in Wangdue Phodrang District under collection number 1080 on 16 May 1979. The holotype is preserved in the herbarium of the Royal Botanic Garden Edinburgh with catalogue number E00288440 while the isotype is currently preserved in the herbarium of the Royal Botanic Gardens Kew with herbarium catalogue number K000958717 and both can be viewed online. Long, D.G. (personal communication, September 27, 2021) through an email suggested that the only other species collected at that location was the *Cupressus corneyana* Knight & Perry ex Carrière on that day. Therefore, the presence

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of the *C. corneyana* trees offered the best clue of the whereabouts of the *M. griersonii*.

The species have been well described and illustrated by Mill (1994) in his publication of the species as a species new to science. This description was later adopted by (Grierson & Long (1999) in the Flora of Bhutan. The closest relative present in Bhutan is *Onosma emodi* var. *emodi* and *O. emodi* var. *stelligera* (I.M.Johnst.) R.R.Mill (Figure 1a) which is now a synonym of *Maharanga vestita* var. *stelligera* (Grierson & Long, 1999; Mill, 1994)

According to Mill (1994), *Maharanga griersonii* can be easily distinguished from *M. emodi* and *M. vestita* var. *stelligera* in having white flowers and by the stems which lack an indumentum of shorter appressed hairs beneath the spreading setules (Figure 1b). *M. vestita* var. *stelligera* is currently known only from its type collection by Ludlow and Sherriff from Tangchu (Dangchu), Ritang, central Bhutan in 1937 under collection number 3234 (BM000798541) (GBIF.Org, 2023) and hence is endemic to Bhutan. It was recollected by the first author from the same locality in 2021 (Phuentsho *et al.*, 2021).

Both *Maharanga vestita* var. *stelligera* and *M. griersonii* have type localities in the Dangchu river basin, about 16 kilometres apart by crow's flight, with the former species at a significantly higher altitude than the latter. *M. griersonii* was given that name in honour of Andrew J.C. Grierson, one of the authors of the

Flora of Bhutan and also one of the main persons behind the project's inception along with David G. Long.

Habitat and Ecology

A mixed forest with steep slopes (Figure 2) is the only known locality (Grierson & Long, 1999; Mill, 1994). *Cupressus corneyana* and *Maharanga griersonii* coexist in the same area and the presence of natural stands of *C. corneyana* may provide a clue to the presence of *M. griersonii* in other areas. Plant species such as *Alnus nepalensis* D.Don, *Berberis napaulensis* (DC.) Spreng., *Castanopsis* spp., *Quercus* spp., *Urtica* sp., and various bryophytes were found in its habitat. Additional research may yield a comprehensive list of allied species in its habitat and ecology.

Conservation Status

Bhutan Endemic Flowering Plants Workshop (2017) assessed *Maharanga griersonii* as Critically Endangered and possibly extinct under the red list category as it falls under criteria B1ab (iii) and 2ab (iii). The experts present in the workshop concluded that *M. griersonii* has not been sighted since it was discovered in 1979 and that the collection site is located near a major national highway. The assessment panel decided to categorise it as Critically Endangered or potentially Extinct since it is known to



Figure 1: A. *Maharanga vestita* var. *stelligera*, B. *Maharanga griersonii*

have a relatively small area of occupancy in just one place, as well as a deteriorating extent and quality of habitat brought under by urbanisation and development activities.

The rediscovery

The species was discovered by the authors on May 14, 2023, in its type locality, below Nob-



Figure 2: *Maharanga griersonii* growing on steep slopes in its habitat

ding (Norbding), at an elevation of 2502 m (GPS coordinates are not given due to the Critically Endangered status of this species). Under the collection number BTN682, herbarium specimens were collected.

Conclusion

Following the first collection from Bhutan in 1979, *Maharanga griersonii* (R.R. Mill) L.Cecchi & Hilger has been rediscovered after 44 years. Since it has only been sighted in its type locality until today, we anticipate finding a larger population and more widespread distribution in other regions of Bhutan as we continue to explore habitats with a comparable ecology. Ex-situ cultivation may be used to save this endangered species in future. Research in future may provide deeper understanding of the ecology of the species.

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