

BORTIPA001



Bukit Kelam or Mount Kelam is a granitic dome in the western part of Indonesian Borneo. It has the highest point at 1002 metres above sea level (Phillips et al. 2008). The granite has a slightly crescent-shaped outline that stretches around 3.6 km long and 1 km wide. The upper nearly flat summit area is separated from the lowlands by steep slopes, except for the two ends, which have a relatively climbable degree. Below the cliff, the vegetation is lowland, but there is a montane forest above. In many parts, mosses cover rocks, and carnivorous plants are present. The landscape is protected under the governance of Bukit Kelam Nature Tourism Park, Kalimantan Barat Natural Resource and Conservation Agency.

Bukit Kelam is an important habitat for globally threatened plants, with two Critically Endangered, one Endangered, and three Vulnerable species recorded at the site. Three species are so far been recorded only in Bukit Kelam, named *Lithocarpus rufus* (Strijk 2023), *Nepenthes clipeata* (Mansur et al. 2021) and *Seorsus aequatorius* (Sunarti et al. 2023). Some species in this site are targeted for poaching, i.e. *Nepenthes clipeata*, *Nepenthes bicalcarata*, and *Paphiopedilum bullenianum*, since they are popular ornamental plants sold in the Indonesian market. Studies on culturally important plants have been done a few times, but the results show that plants used in traditional medicines are neither endemic nor threatened.

Bukit Kelam harbours the entire global populations of two globally threatened species, i.e. *Nepenthes clipeata* and *Lithocarpus rufus*. The cliff is now the only area where the *Nepenthes clipeata* can be found. Other threatened species recorded here include *Paphiopedilum bullenianum* and, Bornean endemic, *Nepenthes bicalcarata*. There is also another species endemic to Mount Kelam named *Seorsus aequatorius*, which is potentially threatened since it occurs in the trail and camp area. Bukit Kelam is unique since it is the largest monolith in the world, with some remarkable endemic species. Some potentially undescribed species also occur at this

site, but the botanical knowledge seems still incomplete. The habitat is rich in carnivorous plants, including pitcher plants and the genus *Utricularia*.

Habitat and geology

With its unique geological history, the forest in Mount Kelam can be divided into two main types, i.e. the lowland tropical forest below the cliff and the submontane forest along the summit areas. The scattered shrub is the main habitat for the threatened species, *Nepenthes clipeata* and the Mount Kelam endemic *Seorsus aequatorius*. Meanwhile, the forested part is the main habitat for *Lithocarpus rufus* and with the *Paphiopedilum bullenianum* growing in the shaded forest floor. The monolithic granite of Mount Kelam, alongside Uluru in Australia, stands among the largest in the world (Mansur et al. 2021).

Conservation issues

With the existing protection from the Indonesian government, the vegetation of Mount Kelam is not considered threatened. However, forest fires were observed to occur during the El-Nino from 1997 to 1998 (Cantley et al. 2004). Current threats are considered minor, notably the small-scale non timber forest product (NTFP) extraction and tourism activities that consist of climbing, caving, and waterfall tourism. Bukit Kelam is a habitat for the endemic freshwater crab *Lepidothelphusa menneri* (Ng & Wowor 2024).

Site assessor(s)

- Wendy Mustaqim, Universitas Samudra, Indonesia
- Agusti Randi, Tumbuhan Asli Nusantara Foundation, Indonesia
- Laura Jennings, Royal Botanic Garden Kew
- Liam Trethowan, Royal Botanic Gardens, Kew

Date of first assessment:
19th May 2025

IPA criterion A species

SPECIES	QUALIFYING SUB-CRITERION	≥ 1% OF GLOBAL POPULATION	≥ 5% OF NATIONAL POPULATION	1 OF 5 BEST SITES NATIONALLY	ENTIRE GLOBAL POPULATION	SOCIO-ECONOMICALLY IMPORTANT	ABUNDANCE AT SITE
<i>Nepenthes clipeata</i> Danser	A(i)	—	✓	✓	✓	—	Scarce
<i>Coelogyne kelamensis</i> J.J.Sm.	A(iv)	—	—	✓	—	—	Occasional
<i>Lithocarpus rufus</i> (Seemen) A.Camus	A(i)	—	✓	✓	✓	—	Unknown
<i>Seorsus aequatorius</i> Rye & Trudgen	A(iii)	—	✓	✓	✓	—	Occasional
<i>Nepenthes bicalcarata</i> Hook.f.	A(i)	—	—	—	—	—	Scarce
<i>Paphiopedilum bullenianum</i> Pfitzer	A(i)	—	—	—	—	—	Unknown
<i>Ficus subfulva</i> Corner	A(i)	—	—	✓	—	—	Unknown
<i>Cinnamomum angustitepalum</i> Kosterm.	A(i)	—	—	—	—	—	Unknown

IPA criterion C qualifying habitats

HABITAT	QUALIFYING SUB-CRITERION	≥ 5% OF NATIONAL RESOURCE	≥ 10% OF NATIONAL RESOURCE	1 OF 5 BEST SITES NATIONALLY	AREAL COVERAGE AT SITE
---------	--------------------------	---------------------------	----------------------------	------------------------------	------------------------

General site habitats

GENERAL SITE HABITAT	PERCENT COVERAGE	IMPORTANCE
Forest - Subtropical/Tropical Moist Lowland Forest	—	
Forest - Subtropical/Tropical Moist Montane Forest	—	
Wetlands (inland) - Bogs, Marshes, Swamps, Fens, Peatlands [generally over 8 ha]	—	
Rocky Areas - Rocky Areas [e.g. inland cliffs, mountain peaks]	—	

Land use types

LAND USE TYPE	PERCENT COVERAGE	IMPORTANCE
Tourism / Recreation	—	Minor
Harvesting of wild resources	—	Minor
Nature conservation	—	Major

Threats

THREAT	SEVERITY	TIMING
Residential & commercial development - Tourism & recreation areas	Low	Ongoing - stable
Biological resource use - Gathering terrestrial plants - Intentional use (species being assessed is the target)	Low	Ongoing - trend unknown

Protected areas

PROTECTED AREA NAME	PROTECTED AREA TYPE	RELATIONSHIP WITH IPA	AREAL OVERLAP
Taman Wisata Alam Bukit Kelam	National Reserve	protected/conservation area matches IPA	—

Management type

MANAGEMENT TYPE	DESCRIPTION	YEAR STARTED	YEAR FINISHED
Site management plan in place	Forest Tourism Management. This area is included within the Nature Tourism Park where all plants, and wildlife in the area are protected by the Indonesian government.	1990	—

Bibliography

Phillips, A., Lamb, A. and Lee, C.C. 2008. **Pitcher Plants of Borneo (2nd ed.)**.

Cantley, R., Clarke, C., Cokendolpher, J., Rice, B. and Wistuba, A. 2004. **Nepenthes clipeata Survival Project**.

Sensarius 2019. **Redesign Taman Wisata Alam Gunung Kelam**. Jurnal Online Mahasiswa Arsitektur Universitas Tanjungpura, Vol 7(1), page(s) 36-50

Sunarti, S., Rugayah, Sulistiarini, D. and Damayanto, I.P.G.P. 2024. **Seorsus aequatorius (Myrtaceae), a Borneon endemic, rediscovered after 129 years: Conservation implications..** Journal for Nature Conservation, Vol 81, page(s) 126699

Mansur, M., Brearley, F.Q., Esseen, P.J., Rode-Margono, E.J. and

Tarigan, M.R.M. 2021. **Ecology of Nepenthes clipeata on Gunung Kelam, Indonesian Borneo**. Plant Ecology & Diversity, Vol 14(3-4), page(s) 195–204

Lestari L.D., Rafdinal and Mukarlina 2019. **Inventarisasi jenis anggrek (Orchidaceae) terrestrial di Taman Wisata Alam Bukit Kelam Kabupaten Sintang**. Protobiont, Vol 8(3), page(s) 46-52

Ng, P.K.L. and Wowor, D. 2024. **Lepidothelphusa menneri n. sp. (Crustacea: Brachyura: Gecarcinucidae), first record of the genus from Kalimantan, Indonesia..** Zootaxa, Vol 5397(2), page(s) 218–224