Bi Dup-Nui Ba Nature Reserve

Alternative site name(s)
Bi Doup-Nui Ba, Thuong Da Nhim
Province(s)
Lam Dong
Status
Decreed
Management board established
Yes
Latitude
$12^0$00' - $12^0$19'N
Longitude
$108^0$21' - $108^0$44'E
Bio-unit
Mb - Dalat Plateau

Conservation status

Decision No. 194/CT of the Chairman of the Council of Ministers, dated 9 August 1986, decreed the establishment of two separate nature reserves: Nui Ba, with an area of 6,000 ha, and Thuong Da Nhim, with an area of 7,000 ha. These two proposals were later combined to form the basis for establishing Bi Dup-Nui Ba Nature Reserve (MARD 1997).

Prior to 1993, the area was managed by the management boards of Da Nhim Hydro-electric Reservoir Watershed Protection Forest, Lac Duong Forest Enterprise and Lam Vien Special-use Forest. However, on 22 October 1993, management responsibility for Bi Dup-Nui Ba Nature Reserve was transferred to a management board established by Decision No. 1496/QD-UBTC of Lam Dong Provincial People's Committee (Anon. 1995).

In 1995, an investment plan for Bi Dup-Nui Ba was prepared by FIPI, in collaboration with Lam Dong Provincial FPD. This investment plan proposed establishing a 71,062 ha nature reserve, comprising a strict protection area of 50,503 ha and a forest rehabilitation area of 20,559 ha. Later that year, the investment plan was approved by Lam Dong Provincial People's Committee and the former Ministry of Forestry (Anon. 1995).

Bi Dup-Nui Ba Nature Reserve is included on the 2010 list, with a total area of 73,972 ha (FPD 1998). Lam Dong Provincial FPD (2000), however, give the current area of the nature reserve as 72,573 ha. The nature reserve is currently under the management of the provincial DARD (Lam Dong Provincial FPD 2000).

Topography and hydrology

Bi Dup-Nui Ba Nature Reserve is located in Lac Duong district on the Da Lat plateau. The topography of the nature reserve is mountainous and the whole site lies above c. 1,400 m. The highest points in the nature reserve are Mount Lang Bian (also known as Nui Ba) in the west, which reaches 2,167 m, and Mount Bi Dup in the east, which reaches 2,287 m.

The nature reserve contains three distinct water catchments. The east of the nature reserve, around Mount Bi Dup, is the catchment of the Da Nhim river, which feeds Da Nhim hydro-electric reservoir. The west of the nature reserve, around Mount Lang Bian, is the catchment of Dan Kia lake, which drains into the Da Dung river. Finally, streams originating in the north of the nature reserve feed the Dak Krong Kno river, which flows west then north, before joining the Srepok river.

Biodiversity value

There are two main forest types at Bi Dup-Nui Ba Nature Reserve: coniferous forest and evergreen forest. The coniferous forest is dominated by *Pinus kesiya* with smaller amounts of *P. merkusii*. This forest type covers 21,019 ha or 29% of the nature reserve (Anon. 1995). Coniferous forest is a seral vegetation type, formed as a result of repeated burning; if the forest was not burnt, succession to broadleaf evergreen forest would occur (Eames 1995).

Evergreen forest covers 36,069 ha or 51% if the nature reserve (Anon. 1995). A large proportion of the evergreen forest belongs to the mixed broadleaf and coniferous forest subtype, containing such coniferous elements as *Pinus dalatensis*, *Calocedrus macrolepis*, *Fokienia hodginsii* and *Podocarpus imbricatus*. The evergreen forest can be broadly classified into two forest formations: lower montane and upper montane. The lower montane evergreen forest is dominated by species in the Fagaceae and Lauraceae families, including *Castanopsis indica*, *Lithocarpus* spp., *Quercus* spp., *Cinnamomum* spp. and *Litsea* spp. The upper montane evergreen forest is characterised by the presence of the genera *Syzygium* and *Rhododendron* (Eames and Nguyen Cu 1994). Within the upper montane zone, Bi Dup-Nui Ba supports a small area of elfin forest (Anon. 1995)

Bi Dup-Nui Ba Nature Reserve supports high levels of plant diversity and endemism. During field surveys in 1993 and 1994, a total of 827 vascular plant species were recorded at the site, of which 87 are endemic to the Central Highlands of Vietnam. An indication of the level of plant endemism is given by the fact that 23 plant species described from the area have been assigned the specific names *dalatensis*, *bidoupensis* or *langbianensis* (Anon 1995). Many of the plant species recorded at Bi Dup-Nui Ba are listed in the *Red Data Book of Vietnam* or the *1997 IUCN Red List of Threatened Plants.*

The fauna of Bi Dup-Nui Ba Nature Reserve is also very species rich, and exhibits high levels of endemism. To date, a total of 382 vertebrate species have been recorded at the nature reserve, comprising 89 species of mammal, 202 species of bird, 62 species of reptile and 29 species of amphibian (Anon. 1995). A number of mammal species of conservation concern have been recorded at Bi Dup-Nui Ba, including Buff-cheeked Gibbon *Hylobates gabriellae* and Gaur *Bos gaurus* (Eames and Nguyen Cu 1994). In addition, the investment plan reports the occurrence of the recently discovered, endemic Giant Muntjac *Megamuntiacus vuquangensis* (Anon. 1995).

Bi Dup-Nui Ba Nature Reserve lies within the Da Lat Plateau Endemic Bird Area (EBA) (Stattersfield *et al.* 1998). Seven of the eight restricted-range bird species that occur in this EBA have been recorded at the site in recent times: Crested Argus *Rheinardia ocellata*, Yellow-billed Nuthatch *Sitta solangiae*, Black-hooded Laughingthrush *Garrulax milleti*, White-cheeked Laughingthrush *G. vassali*, Collared Laughingthrush *G. yersini*, Short-tailed Scimitar Babbler *Jabouilleia danjoui* and Vietnamese Greenfinch *Carduelis monguilloti* (Eames 1995).

Conservation issues

The overall level of human impact on the nature reserve is moderate. One of the greatest threats to biodiversity comes from shifting cultivation. As well as resulting in forest loss, the associated fires promote the spread of fire-climax coniferous forest dominated by *Pinus kesiya*. As the biodiversity value of coniferous forest is lower than that of evergreen forest, this transition tends to reduce the biodiversity value of the nature reserve (Eames and Nguyen Cu 1994). In order to link fragmented patches of evergreen forest, Eames and Nguyen Cu (1994) recommended that corridors of pine forest should be carefully managed to promote ecological succession to evergreen forest.

Alongside shifting cultivation, one of the main causes of forest loss at Bi Dup-Nui Ba has been charcoal production and fuelwood collection. Charcoal production has already lead to the destruction of most of the evergreen forest on Mount Lang Bian. As the principle market for charcoal and fuelwood is Da Lat city, the continued expansion of this urban centre is likely to lead to increased pressure on the forest resources of Bi Dup-Nui Ba Nature Reserve (Eames and Nguyen Cu 1994).

In the recent past, parts of Bi Dup-Nui Ba Nature Reserve were under forest enterprise management and were the focus of commercial logging operations. The focus of these operations was the selective extraction

of species of high economic value, such as *Fokienia hodginsii*. A network of logging roads was built along ridges in the evergreen forest, in order to facilitate the extraction of these species. This resulted in the destruction of much evergreen forest, which is confined to such areas. Fortunately, this practice now appears to have ceased (Eames and Nguyen Cu 1994).

Other threats to biodiversity at Bi Dup-Nui Ba include hunting and the over-exploitation of non-timber forest products, including orchids, which are sold in Da Lat city (Eames and Nguyen Cu 1994).

Other documented values

The principal economic value of the proposed nature reserve is watershed protection. Loss of forest cover could result in increased severity of both drought and flooding, with negative repercussions for downstream communities that depend upon rivers originating within the nature reserve for irrigation and potable water. Forest at high elevations in the east of the nature reserve plays an important role in protecting the watershed of the Da Nhim hydropower reservoir.

Related projects

No information.

Literature sources

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