Pu Hoat Proposed Nature Reserve

Alternative site name(s)
None
Province(s)
Nghe An
Status
Proposed
Management board established
No
Latitude
$19^{0}38'$ - $20^{0}00'$N
Longitude
$104^{0}40'$ - $105^{0}09'$E
Bio-unit
10b - Northern Indochina

Conservation status

Pu Hoat is not included on any government decision regarding the Special-use Forests network (MARD 1997). However, the establishment of a nature reserve at the site was proposed by Que Phong District People's Committee in Official Letter No. 310/CV-UB submitted to Nghe An Provincial FPD. Following this, an investment plan was prepared by FIPI, which proposed establishing a 67,934 ha nature reserve, comprising a strict protection area of 56,837 ha and a forest rehabilitation area of 11,097 ha (Anon. 1997). To date, however, the investment plan has not been approved by MARD, and a management board has yet to be established (Le Trong Trai pers. comm.). The proposed nature reserve is currently managed by Que Phong District FPD, under the management of the provincial FPD.

The 2010 list included a proposal to establish a 67,934 ha nature reserve at Pu Hoat (FPD 1998). This recommendation was reiterated by BirdLife International and FIPI following their review of Vietnam's system of Special-use Forests (Wege *et al.* 1999).

Topography and hydrology

Pu Hoat proposed nature reserve is located in Thong Thu, Dong Van, Tien Phong, Hanh Dich, Nam Glai and Tri Le communes, Que Phong district. To the north, the proposed nature reserve borders Thanh Hoa province and, to the south, it borders Laos. The proposed nature reserve lies along the ridge of mountains that forms the border between Vietnam and Laos in northern Nghe An province. The highest point in the nature reserve is Mount Pu Hoat at 2,452 m, although the majority of the site lies between 800 and 1,400 m, and elevations reach as low as 100 m in the river valleys exiting the site in the south-east. The topography of the proposed nature reserve is characterised by high, rugged mountain ridges, interspersed with steep-sided valleys.

The extreme south of the proposed nature reserve is situated in the catchment of the Ca river, the major river in southern Nghe An province. Most of the proposed nature reserve, however, is drained by the Chu river, which flows north, through Xuan Lien Nature Reserve in Thanh Hoa province, to the sea near Thanh Hoa city. Most of the streams and rivers in the nature reserve are permanent, although with pronounced seasonal variation. The seasonal variation in water flow, coupled with the rugged topography,

severely restricts the cultivation of wet rice by local communities.

Biodiversity value

According to the investment plan, Pu Hoat Nature Reserve supports 56,232 ha of natural forest, equivalent to 83% of the total area of the nature reserve. However, this figure only includes 33,555 ha of lightly disturbed forest. The natural forest at Pu Hoat is of three main types: lowland evergreen forest, lower montane evergreen forest and upper montane evergreen forest. Lowland evergreen forest is distributed at elevations below 800 m and supports a high diversity of tree species. Lower montane evergreen forest is distributed at elevations between 800 and 1,500 m and is dominated by tree species in the Lauraceae and Fagaceae families, including *Litsea* spp., *Cinnamomum* spp., *Castanopsis* spp. and *Quercus bambusaefolia*. Upper montane evergreen forest is distributed at elevations above 1,500 m and is characterised by conifers, such as *Cunninghamia konishii*, *Calocedrus macrolepis*, *Fokienia hodginsii* and *Podocarpus imbricatus*, although broadleaf tree species in the Fagaceae and Lauraceae families are also common. Along ridge lines, an elfin forest sub-type is distributed, which is characterised by the presence of *Rhododendron* spp., a high diversity of orchids, and an understorey of dwarf bamboo, *Arundinaria* sp. (Anon. 1997).

Pu Hoat is one of very few sites in Vietnam known to support the globally threatened conifer *Cunninghamia konishii* (Phan Ke Loc and Nguyen Tien Hiep 1999). As a result of selective logging, however, there are very few mature specimens of this species left, and special attention must be paid to protecting the lower montane evergreen forest, the habitat where this and another globally threatened conifer, *Fokienia hodginsii*, occur. *C. konishii* is believed to be a keystone species, and the loss of this species may result in the loss associated biodiversity (Osborn *et al.* 2000).

Several globally threatened mammal species have been recorded at Pu Hoat proposed nature reserve during surveys by FIPI, and Frontier-Vietnam and the Institute of Ecology and Biological Resources (IEBR), including Assamese Macaque *Macaca assamensis* and Gaur *Bos gaurus* (Anon. 1997, Osborn *et al.* 2000). Interview data collected by Frontier-Vietnam and IEBR indicate that Asian Elephant *Elephas maximus* and Tiger *Panthera tigris* occurred at the proposed nature reserve in the mid 1980s but are now extinct in the area. Similarly, Sao La *Pseudoryx nghetinhensis* reportedly used to occur in the area south of Mount Pu Hoat but has since been eradicated (Osborn *et al.* 2000).

During the FIPI survey in 1997, the skull and skins of an unknown species of muntjac were collected. DNA data indicate that these specimens may belong to a previously undescribed taxon, although a final determination of the specimens has not yet taken place (Le Trong Trai pers. comm.). During the Frontier-Vietnam/IEBR survey in 1999, amphibian specimens were collected at Pu Hoat that are believed to represent a previously undescribed species of *Philautus* (Osborn *et al.* 2000).

During the FIPI survey in 1997, a total of 142 bird species were recorded at Pu Hoat. However, these only include one globally threatened species: Blyth's Kingfisher *Alcedo hercules* (Anon. 1997). Similarly, of the 98 species recorded during the Frontier-Vietnam/IEBR survey, none are globally threatened (Osborn *et al.* 2000). At first glance, these results suggest that the site may be only moderately important for bird conservation. However, survey effort to date has been concentrated at lower elevations, and a detailed study of the montane avifauna may reveal a number of species of conservation concern previously unrecorded at the site.

Conservation issues

Que Phong district is home to several ethnic minorities, including the Thai, Thanh, Muong, Hmong and Kho Mu. The household economy of many of these people is centred on the cultivation of wet rice in flat valley bottoms, and hill rice and cassava in hill fields, which are farmed on rotational swidden basis. These agricultural practices have led to the extensive clearance of forest from flat valley bottoms, and the conversion of forested hillsides close to villages into a patchwork of hill fields, remnant forest and secondary growth. Only at higher elevations are extensive,

contiguous areas of forest found (Osborn *et al.* 2000, M. Grindley pers. comm.).

Despite government efforts to control hill rice cultivation, swidden agriculture is resulting in the gradual loss of forest in the proposed nature reserve, as primary forest as well as secondary growth is cleared for hill fields. The principal driving force behind forest clearance is population growth, which is causing villages to expand beyond the carrying capacity of surrounding hill agricultural land. To date, most of this population growth has been the result of natural population growth. In the future, however, the development of infrastructure, such as roads, threatens to make the Pu Hoat area a focus for in-migration, and, thereby, accelerate rates of forest loss (M. Grindley pers. comm.).

Forest loss has been identified by Osborn *et al.* (2000) as one of the biggest threats to biodiversity at the proposed nature reserve, as habitat fragmentation leads to species loss. The second major threat identified by Osborn *et al.* (2000) is hunting, which has already led to a rapid decline in large and medium-sized mammals, and the local extinctions of some globally threatened species. Animals are hunted both for local consumption and to supply the wild animal trade, and there is evidence that, as populations of large and medium-sized mammals decline, hunting pressure is shifting to small mammals and birds (Osborn *et al.* 2000).

Other documented values

Forest at Pu Hoat proposed nature reserve, particularly that at high elevations, has an important role in safeguarding the water resources of local communities, and protecting the watersheds of the Ca and Chu rivers.

Pu Hoat proposed nature reserve supports populations of both *Fokienia hodginsii* and *Cunninghamia konishii*. Both of these economically valuable tree species have proven cultivatable at 400 m: an elevation much lower than that at which they are found in the wild. The forest at Pu Hoat proposed nature reserve could, therefore, be an important source of seed for forestry schemes to off-set local timber demand or generate cash income (T. Osborn pers. comm.).

Related projects

Between January and December 1999, Frontier-Vietnam and IEBR carried out a biodiversity survey of Pu Hoat proposed nature reserve. In 2000, Frontier-Vietnam began implementing a pilot environmental education project in the buffer zone of Pu Hoat Nature Reserve, with support from the Australian Embassy.

In 2001, the Vietnamese NGO Towards Ethnic Women plans to implement a development project in Que Phong district, with support from the Canadian NGO Partners in Rural Development. This project is still in the planning stages.

Literature sources

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