

# Pu Luong Proposed Nature Reserve

## Alternative site name(s)

Phu Luong

## Province(s)

Thanh Hoa

## Status

Proposed

## Management board established

Yes

## Latitude

20°21' - 20°34'N

## Longitude

105°02' - 105°20'E

## Bio-unit

10b - Northern Indochina



## Conservation status

Pu Luong is not included on any government decision regarding the Special-use Forests system (MARD 1997). However, a proposal to establish a 17,662 ha nature reserve at Pu Luong was included on the 2010 list (FPD 1998). In 1998, an investment plan was prepared by FIPI, which proposed establishing a 17,662 nature reserve, comprising a strict protection area of 13,320 ha and a forest rehabilitation area of 4,343 ha (Anon. 1998a). This investment plan was approved by Official Letter No. 556/BNN-KH of MARD, dated 9 February 1999, and by Decision No. 495/QĐ-UB of Thanh Hoa Provincial People's Committee, dated 27 March 1999. Following the approval of the investment plan, a nature reserve management board was established by the provincial people's committee on 24 April 1999 (Thanh Hoa Provincial FPD 2000).

## Topography and hydrology

Pu Luong proposed nature reserve is located in Quan Hoa and Ba Thuoc districts, in north-western Thanh Hoa province. To the north-east, the nature reserve is bordered by Mai Chau, Tan Lac and Lac Son districts, Hoa Binh province. The proposed nature reserve lies along two parallel mountain ridges, that

run from north-west to south-east, and are bisected by a central valley. This valley contains several human settlements and a large area of agricultural land, and, hence, is not included within the proposed nature reserve.

The two mountain ridges in the proposed nature reserve have starkly contrasting landforms based on their different substrates. The smaller, south-western ridge is made up of mostly igneous and metamorphic rocks, and consists of rounded forested hills and wide, shallow valleys. The larger, north-eastern ridge is composed of heavily dissected limestone karst, and is a continuation of the limestone range that runs from Cuc Phuong National Park to Son La province. Elevations in the proposed nature reserve range from 60 to 1,667 m.

The hydrology of the limestone ridge is complex, and there is little or no permanent surface water. On the south-western ridge, surface water is more common and streams much less seasonal. However, the main drainage features of the proposed nature reserve are located in the central valley. This valley is not continuous but has a saddle at its mid-point, which forms the watershed between two small rivers. One of these rivers flows north-west along the valley, and joins the Ma river, which runs to the west and south of the proposed nature reserve. The other river flows

south-east along the valley, and joins the Ma river further downstream.

## Biodiversity value

Pu Luong has been the site of two surveys by FIPI in 1997 and 1998 (Anon. 1998a, Le Trong Trai and Do Tuoc 1998), and was part of a survey for Delacour's Leaf Monkey *Semnopithecus francoisi delacouri* conducted for the Frankfurt Zoological Society and the Endangered Primate Rescue Centre (Baker 1999). To date, the results of these surveys represent the only information on the biodiversity value of the proposed nature reserve.

There are three main forest types at the site. Lowland evergreen forest is distributed at elevations below 700 m, mainly on the south-western ridge. Lower montane evergreen forest is distributed at elevations above 700 m, mainly on the south-western ridge but, also, in some areas of the north-eastern ridge. Limestone forest is distributed on the north-eastern ridge, and has a lower canopy height than the other forest types. The proposed nature reserve also supports a range of secondary vegetation types, including bamboo and scrub (Anon. 1998a).

During the two FIPI surveys, a total of 552 vascular plant species were recorded. Of these species, 39 are listed in the *Red Data Book of Vietnam*, including *Amentotaxus argotaenia*, *Burretiodendron tonkinensis* and *Garcinia fagraeoides*. With regard to the fauna of Pu Luong, the FIPI surveys recorded 62 mammal species, 162 bird species, 28 reptile species and 13 amphibian species. These included 47 species listed in the *Red Data Book of Vietnam* (Anon. 1998a). Pu Luong proposed nature reserve is an important site for the conservation of the globally critically endangered, endemic primate, Delacour's Leaf Monkey. The population at Pu Luong has recently been estimated to number 40 to 45 individuals, making it the second largest known population in Vietnam (Baker 1999). Most importantly, Pu Luong proposed nature reserve is connected to Cuc Phuong National Park, which also supports a population of the primate, by intervening areas of contiguous habitat. Consequently, Pu Luong has high potential to support a viable population.

The limestone forest at Pu Luong can be expected to support high diversity and levels of endemism of

such groups as fish, snails and crabs. However, these groups have not yet been surveyed at Pu Luong.

It is likely that Pu Luong has strong faunal and floral affinities with Cuc Phuong National Park, which is situated to 25 km to the south-east, along the same limestone range. However, the higher elevations at Pu Luong and the presence of more extensive areas of evergreen forest means that Pu Luong can be expected to support a number of species that do not occur at Cuc Phuong. Consequently, the faunas and floras of the two sites are complementary, and the conservation of both sites is necessary to conserve the full range of biodiversity of the limestone range.

## Conservation issues

Pu Luong proposed nature reserve is under the management of the provincial FPD, via the management board based in Ba Thuoc town. The management board currently has 23 members of staff, including 17 forest guards, based at the headquarters and three guard stations (Thanh Hoa Provincial FPD 2000). These figures represent a lower level of staffing than the 30 forest guards and five guard stations recommended in the investment plan (Anon. 1998a).

Thanh Hoa Provincial FPD (2000) consider the main threats to biodiversity at Pu Luong proposed nature reserve to be illegal clearance of forest for agriculture, hunting of wild animals, forest fire and illegal mineral exploitation. Orchid collection was also reported by Baker (1999). These threats will be addressed under an externally funded conservation project currently being developed by the Fauna and Flora International-Indochina Programme.

In addition, the management board of Pu Luong proposed nature reserve is planning several activities to tackle what it sees as the main threats to conservation. These activities include the establishment of two additional guard stations; collaboration with local police on gun control, perhaps through a programme of gun registration and a ban on carrying guns within the proposed nature reserve; raising awareness of the existence of the protected area and dissemination of information on forest management regulations among local communities; development of local forest protection regulations for each village; issuing of forest protection contracts for forest areas in the buffer zone;

and reforestation of 100 ha of deforested land on the south-western ridge (O. Maxwell pers. comm.)

## Other documented values

Forest in the proposed nature reserve has a role in protecting the watershed of the Ma river, the largest river in Thanh Hoa province. Just as importantly, the forest has an important role in protecting the water resources of local communities. Already, water is scarce during the dry season, because of the limestone geology of much of the area. Therefore, forest loss would be expected to increase periods of drought, leading to reduced agricultural productivity.

Low levels of mineral exploitation have been noted in the area, principally extraction of limestone for construction and gold prospecting. Although a small number (c.100) of illegal gold miners are thought to be present in the proposed nature reserve at any one time, this number is said to be much reduced from a peak in the mid 1990s.

## Related projects

The Fauna and Flora International-Indochina Programme is currently developing a medium-sized Global Environment Facility (GEF) project for the limestone range between Cuc Phuong National Park and Pu Luong proposed nature reserve. Planned project activities include biological monitoring and conservation awareness raising. The project is expected to run for three years, beginning in 2001.

## Literature sources

Anon. (1998a) [Investment plan for Pu Luong Nature Reserve, Thanh Hoa province]. Hanoi: Forest Inventory and Planning Institute. In Vietnamese.

Anon. (1998b) [Summary of investment plan for Pu Luong Nature Reserve, Thanh Hoa province]. Hanoi: Forest Inventory and Planning Institute. In Vietnamese.

Baker, L. R. (1999) Survey of the Delacour's Langur for the Frankfurt Zoological Society and the Endangered Primate Rescue Centre. Unpublished report to the Frankfurt Zoological Society and the Endangered Primate Rescue Centre.

Le Trong Trai and Do Tuoc (1998) [Animal resources of Pu Luong Nature Reserve]. Hanoi: Forest Inventory and Planning Institute. In Vietnamese.

Luong Van Hao (1999) [Survey of the distribution of Delacour's Langur in Hoa Binh province, June 1999]. Unpublished report to the Endangered Primate Rescue Centre. In Vietnamese.

Ngo Van Tri (1999) Preliminary assessment on the mammal in Tuong limestone mountain complex, Ba Thuoc district, Thanh Hoa province. Unpublished report to the Fauna and Flora International-Indochina Programme.

Thanh Hoa Provincial FPD (2000) [FPD questionnaire]. Thanh Hoa: Thanh Hoa Provincial Forest Protection Department. In Vietnamese.