

# Pu Mat Nature Reserve

## Alternative site name(s)

Anh Son, Thanh Chuong, Thanh Thuy

## Province(s)

Nghe An

## Status

Decreed

## Management board established

Yes

## Latitude

18<sup>0</sup>46' - 19<sup>0</sup>08'N

## Longitude

104<sup>0</sup>24' - 104<sup>0</sup>59'E

## Bio-unit

05c - North Annam



## Conservation status

Decision No. 194/CT of the Chairman of the Council of Ministers, dated 9 August 1986, decreed the establishment of two separate Special-use Forests in what is now southern Nghe An province: Anh Son Nature Reserve in Anh Son district, with an area of 1,500 ha, and Thanh Thuy Nature Reserve in Thanh Chuong district, with an area of 7,000 ha. These two decreed protected areas were later combined to provide the legal basis for establishing Pu Mat Nature Reserve in Anh Son, Con Cuong and Tuong Duong districts (MARD 1997).

In 1993, FIPI prepared an investment plan for Pu Mat Nature Reserve, which gave the total area of the nature reserve as 93,400 ha, comprising a strict protection area of 83,112 ha and an administration and services area of 10,388 ha. In addition, a buffer zone of 83,000 ha was defined in the investment plan (Anon. 1993a). This investment plan was approved by Decision No. 3355/QD-UB of Nghe An Provincial People's Committee, dated 28 December 1995. At this time, the area of the nature reserve was revised slightly to 91,113, while that of the buffer zone was revised to 86,000 ha (Blazeby *et al.* 1999).

Pu Mat Nature Reserve has a management board, which is currently under the general supervision of

Nghe An Provincial FPD (Grieser Johns ed. 2000). Pu Mat is included on the 2010 list as a 93,400 ha nature reserve. The 2010 list proposes transferring the management responsibility for the nature reserve from the provincial FPD to the FPD of MARD (FPD 1998).

## Topography and hydrology

Pu Mat Nature Reserve is situated in the northern Annamite mountains. Elevations at the nature reserve range between 100 and 1,841 m, although 90% of the nature reserve is under 1,000 m in elevation. The highest points in the nature reserve are found in the south, along the mountain ridge that forms the international border between Vietnam and Laos. A series of steep-sided valleys run perpendicular to this ridge, forming a series of smaller north-south ridges. The steep terrain in most parts of the nature reserve has been an obstacle to extensive clearance of forest (Grieser Johns ed. 2000).

The nature reserve is drained by four main rivers: the Khe Thoi, Khe Bu, Khe Choang and Khe Khang. All four rivers feed the Ca river, which runs from west to east, through a wide valley to the north of the nature reserve.

## Biodiversity value

As part of a European Commission-funded project entitled *Social Forestry and Nature Conservation in Nghe An Province (SFNC)*, a series of baseline biodiversity surveys of Pu Mat Nature Reserve were conducted during 1998 and 1999 (Grieser Johns ed. 2000). These surveys built on earlier work by FIPI (Anon. 1993a) and Frontier-Vietnam (Kemp *et al.* 1995). As a result of these surveys, Pu Mat is among the best studied sites in Vietnam in terms of biodiversity.

To date, 1,144 plant species have been confirmed to occur at Pu Mat, of which at least three are new to science: *Cleistanthus* sp. nov., *Phyllagathis* sp. nov. and *Phrynium pumatensis*. The most widespread vegetation type in the nature reserve is lowland evergreen forest. This forest type is dominated by species in the Dipterocarpaceae (*Hopea* spp. and *Dipterocarpus* spp.), Fagaceae (*Quercus* spp., *Lithocarpus* spp. and *Castanopsis* spp.) and Lauraceae (*Cinnamomum* spp. and *Litsea* spp.) families (Grieser Johns ed. 2000).

At higher elevations, lower montane evergreen forest is distributed. Below 1,500 m, this forest type is dominated by species in the Fagaceae, Lauraceae and Myrtaceae families, although members of the Dipterocarpaceae family are still present. Above 1,500 m, members of the Dipterocarpaceae family are absent, and the forest is characterised by the presence of the conifers *Cunninghamia konishii*, *Fokienia hodginsii* and *Decussocarpus wallichianus*. Undisturbed areas of this forest sub-type occur along high ridges in the north-west of the nature reserve (Grieser Johns ed. 2000).

Pu Mat is probably one of the most important sites for mammal conservation in Vietnam. The SFNC surveys confirmed the presence of three mammal species endemic to Indochina: Saola *Pseudoryx nghetinhensis*, Annamitic Striped Rabbit *Nesolagus* sp. nov. and White/Buff-cheeked Gibbon *Hylobates leucogenys/gabriellae*. In addition, unconfirmed records were made of a further four Indochinese endemics: Giant Muntjac *Megamuntiacus vuquangensis*, Truong Son Muntjac *Muntiacus truongsoneensis*, Indochinese Warty Pig *Sus bucculentus* and Red-shanked Douc Langur *Pygathrix*

*nemaus nemaus*. In addition to these records, the SFNC surveys confirmed the continued occurrence of a number of globally threatened mammals at Pu Mat, including Assamese Macaque *Macaca assamensis*, Dhole *Cuon alpinus*, Tiger *Panthera tigris*, Owston's Banded Civet *Hemigalus owstoni* and Asian Elephant *Elephas maximus* (Grieser Johns ed. 2000).

To date, a total of 295 bird species were recorded at Pu Mat, including 22 globally threatened or globally near-threatened species (Round 1999). Pu Mat is thought to support globally important populations of Crested Argus *Rheinardia ocellata* and Rufous-necked Hornbill *Aceros nipalensis* (Grieser Johns ed. 2000).

The results of biodiversity surveys to date indicate that Pu Mat Nature Reserve preserves one of the best examples of the Annamite mountains ecosystem, and is of international conservation significance. The nature reserve supports one of the largest remaining blocks of natural forest in northern Vietnam, and is linked to other protected areas in Vietnam and Laos by contiguous areas of forest (Grieser Johns ed. 2000).

## Conservation issues

Large-scale illegal timber extraction is taking place along the main river valleys in the nature reserve. This activity is changing the composition of the forest, and threatening the populations of certain tree species, including the globally threatened *Fokienia hodginsii* and members of the Dipterocarpaceae. Widespread rattan and orchid collection is also depleting populations of these plants within the nature reserve (Grieser Johns ed. 2000).

The greatest threat to populations of reptile and amphibian species within the nature reserve is collection by local communities. The majority of these animals enter the wildlife trade. Unless nature reserve management regulations and wildlife trade laws are strictly enforced, populations of turtles, monitor lizards and pythons at Pu Mat are threatened with extinction (Blazeby *et al.* 1999).

Despite the presence of large areas of relatively undisturbed habitat, hunting threatens the populations of many mammal species and some bird species at Pu Mat. The results of the SFNC surveys indicate that at least one globally threatened mammal, Red-shanked

Douc Langur, may have already been eradicated from the nature reserve in the last five years (Grieser Johns ed. 2000).

Other threats to biodiversity at Pu Mat Nature Reserve include clearance of forest for cultivation and gold mining. Clearance of forest for cultivation is only a serious problem in the Khe Khang sector of the nature reserve, where 1,100 people are living. Grieser Johns ed. (2000) recommends that re-location of these people will be necessary in order to address the increasing level of forest destruction in lowland areas of the nature reserve. Illegal gold mining is common throughout the nature reserve, and most common along the Khe Thoi river in the north-west. It is conducted mainly by people from outside the immediate area. The associated destruction of stream banks causes erosion and sedimentation of water (Le Trong Cuc *et al.* eds. 1998).

With the support of the SFNC project, the threats to biodiversity at Pu Mat are currently being addressed through improved enforcement of nature reserve management regulations, supported by the development of alternative sources of income for local communities. In addition, the development of participatory conservation strategies to actively involve local communities in conservation has been underway since mid-1999 (Grieser Johns ed. 2000).

## Other documented values

Forest at Pu Mat Nature Reserve protects the watersheds of four rivers, which, collectively, are the main source of water for irrigation and domestic use for communities in the buffer zone. In addition, the forest at Pu Mat protects part of the watershed of the Ca river, the major river in southern Nghe An province.

## Related projects

The SFNC project is currently being implemented by MARD, in partnership with the European Commission. This project began in May 1997, and is planned to run for six years. The project has a budget of 18.7 million Euro (SFNC 1998). The SFNC project is designed to conserve the forest resources and

biodiversity of Pu Mat Nature Reserve and its buffer zone (Grieser Johns ed. 2000).

## Literature sources

Anon. (1993a) [Investment plan for Pu Mat Nature Reserve, Nghe An province]. Hanoi: Forest Inventory and Planning Institute. In Vietnamese.

Anon. (1993b) Summary management plan of Pu Mat Nature Reserve, Nghe An. Vinh: Nghe An Provincial People's Committee.

Anon. (1997) [Scientific workshop on sustainable development in the buffer zone of Pu Mat Nature Reserve, Nghe An province]. Vinh: Vinh Pedagogic University. In Vietnamese.

Anon. (1998) [Report on monitoring and assessment of biodiversity in the Khe Moi, Khe Kem and Khe Chat areas, Pu Mat Nature Reserve]. Con Cuong: Pu Mat Nature Reserve. In Vietnamese.

Anon. (1998) Elusive mammal captured on camera after six years. Vietnam Cultural Window 9: 5.

Anon. (1998) Minutes of the first annual meeting of the Conservation Co-ordination Working Group, Pu Mat Nature Reserve. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Anon. (1998) Report on butterfly fauna survey in Pu Mat Nature Reserve, Nghe An province, May-September 1998. Unpublished report to Social Forestry and Nature Conservation in Nghe An Province.

Anon. (1998) Strategic research plan for the Pu Mat Nature Reserve. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Baltzer, M. C. ed. (1998a) Technical report on the biodiversity survey of Pu Mat Nature Reserve. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Baltzer, M. C. ed. (1998b) A training manual for biological surveying. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Blazeby, K., Le Nguyen Ngat, Do Quang Thai and Nguyen Quang Truong (1999) An analysis of wildlife trade dynamics around the Pu Mat Nature Reserve. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Cao Van Sung (undated) Pu Mat Nature Reserve. Unpublished report to the Institute of Ecology and Biological Resources.

Chu Van Dung (1998) [Biodiversity of the nature reserves of Nghe An province]. Lam Nghiep [Vietnam Forest Review] November/December 1998: 54-55. In Vietnamese.

Dillon, T. C. and Wikramanayake, E. D. (1997) Parks, peace and progress: a forum for transboundary conservation in Indochina. *Parks* 7(3): 36-51.

Dossche, V. and de Wulf, R. (1998) Comparative study of dendrological composition and structure of three nature reserves in Vietnam. Unpublished report to the Unit of Forest Management and Spatial Information Techniques, University of Ghent.

Grieser Johns, A. ed. (2000) Pu Mat: a biodiversity survey of a Vietnamese protected area. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Grindley, M. (1999) Training for environmental education (TREE) in Pu Mat Nature Reserve, Nghe An province. Unpublished training material prepared by Cuc Phuong Conservation Project.

Grindley, M. E. ed. (1999) Pu Mat Nature Reserve animal fact sheets. Hanoi: Fauna and Flora International-Indochina Programme.

Hayes, B. and Nguyen Quang Truong (1999) A preliminary assessment of the karst of Pu Mat Nature Reserve and its buffer zone with recommendations for management. Unpublished report to Social Forestry and Nature Conservation in Nghe An Province.

Hill, M. (1998) Hawk moths (Lepidoptera: Sphingidae) and emperor moths (Lepidoptera: Saturniidae) of Pu Mat Nature Reserve. Unpublished report to Fauna and Flora International-Indochina Programme.

Hill, M. J. and Monastyrskii, A. L. (1998) Butterfly fauna of protected areas in north and central Vietnam collections 1994-1997. *Atalanta* 29: 185-208.

Hoang Xuan Quang and Nguyen Van Sang (1998) [Survey result: species composition of reptiles and amphibians at Pu Mat Nature Reserve]. Unpublished report to Social Forestry and Nature Conservation in Nghe An Province. In Vietnamese.

John, B. G. (1998) Ecotourism development within the Pu Mat Nature Reserve, Nghe An province. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Kemp, N., Dilger, M. and Le Mong Chan (1995) Site description and conservation evaluation: Pu Mat Nature Reserve, Con Cuong district, Nghe An province, Vietnam. London: Society for Environmental Exploration.

Le Mong Chan (1998) Diversity of plants at Khe Bu area, Pu Mat Nature Reserve, Con Cuong, Nghe An. Hanoi: Fauna and Flora International-Indochina Programme.

Le Trong Cuc, Tran Duc Vien, Dao Trong Hung and Hoang Van Sou eds. (1998) Ca river basin environmental impact assessment. Hanoi: Centre for Natural Resources and Environmental Studies.

Long, B. and Do Tuoc (1999) A participatory conservation strategy for the Khe Bong valley, Pu Mat Nature Reserve, Nghe An province, Vietnam. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Long, B. and Do Tuoc (1999) [A participatory conservation strategy for the Khe Bong valley, Pu Mat Nature Reserve, Nghe An province, Vietnam]. Vinh: Social Forestry and Nature Conservation in Nghe An Province. In Vietnamese.

Nguyen Cu, Eames, J. C. and Lambert, F. R. (1995) [Results of surveys of the Annamese Lowlands, Vietnam and its implication for the conservation of Vietnamese Pheasant *Lophura hatinhensis* and Imperial Pheasant *L. imperialis*]. Pp 264-275 in: Dang Huy Huynh, Nguyen Tien Ban, Vu Quang Con, Nguyen Thi Le, Pham Van Luc, Tran Dinh Ly, La Dinh Moi and Cao Van Sung eds. [Results of research by IEBR] Hanoi: Institute of Ecology and Biological Resources. In Vietnamese.

Nguyen Huu Duc (1998) A wildlife fish and habitat survey of Pu Mat National Biodiversity Conservation Area, Nghe An province, Socialist Republic of Vietnam. Unpublished report to Fauna and Flora International-Indochina Programme.

Nguyen Minh Tam (1998) Rodent diversity: description of a species in Pu Mat natural reserve.

Unpublished report to Social Forestry and Nature Conservation in Nghe An Province.

Nguyen Minh Tam and Cao Van Sung (1999) Distribution and relative abundance of rodents in tropical forests in Vietnam. Unpublished report to the Institute of Ecology and Biological Resources. In Vietnamese.

Nguyen Minh Tam and Ngoc Anh (1998) Third survey on rodents in the Pu Mat Nature Reserve, Nghe An (15th Aug - 14th Sept 1998). Unpublished report to the Institute of Ecology and Biological Resources.

Nguyen Minh Tam and Nguyen Duy Tuan (1998) Survey on rodents at the Pu Mat Nature Reserve, Nghe An. Unpublished report to the Institute of Ecology and Biological Resources.

Nguyen Minh Tam and Vo Huy Thong (1998) Some results on the second survey of small mammals at the Pu Mat Reserve, Nghe An (20th June - 19th July 1998). Unpublished report to the Institute of Ecology and Biological Resources.

Nguyen Nghia Thin (1998) Diversity of flora and vegetation at Khe Thoi area, Pu Mat Nature Reserve, Con Cuong, Nghe An. Hanoi: Fauna and Flora International-Indochina Programme.

Nguyen Nghia Thin (1998) Diversity of plants at Thac Kem-Dot Khe Chat area, Pu Mat Nature Reserve, Con Cuong. Hanoi: Fauna and Flora International-Indochina Programme.

Nguyen Tien Hiep (1999) Some new data on the Pinopsida in the north Truong Son range. Pp 104-108 in: Nguyen Thai Tu ed. [Selected reports on the biodiversity of the northern Truong Son range] Hanoi: Hanoi National University Press. In Vietnamese.

Round, P. D. (1999) Avifaunal surveys of the Pu Mat Nature Reserve, Nghe An province, Vietnam 1998-1999. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

SFNC (1997) Overall workplan and budget 1997-2003. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

SFNC (1998) Annual workplan and budget 1998. Vinh: Social Forestry and Nature Conservation in Nghe An Province.

Tran Dinh Nghia (1998) Vegetation and plant diversity at Khe Be (Pu Mat Nature Reserve). Unpublished report to Fauna and Flora International-Indochina Programme.

Trinh Viet Cuong (1998) [A report on the results of a mammal survey in Pu Mat Nature Reserve, Con Cuong district, Nghe An province]. Hanoi: Institute of Ecology and Biological Resources. In Vietnamese.

Truong Van La (1998) [Results of an avifaunal survey of the Khe Chat area, Pu Mat Nature Reserve, Con Cuong district, Nghe An province]. Hanoi: Institute of Ecology and Biological Resources. In Vietnamese.

Uemura, Y. and Monastyrskii, A. L. (2000) Description of two species of the genus *Ypthima* Hubner (Lepidoptera: Satyridae) from north and central Vietnam. Trans. Lepid. Soc. Japan 51(2): 150-156.