U Minh Thuong Nature Reserve

Alternative site name(s)
Upper U Minh
Province(s)
Kien Giang
Status
Decreed
Management board established
Yes
Latitude
$9^0$31' - $9^0$40'N
Longitude
$105^0$03' - $105^0$08'E
Bio-unit
05a - Mekong Delta

Conservation status

The establishment of U Minh Thuong Nature Reserve was decreed by the government of Vietnam in 1993 (Buckton *et al.* 1999). In the same year, an investment plan for a 8,509 ha nature reserve was approved by the former Ministry of Forestry (FPD 1998). The following year, U Minh Thuong Nature Reserve and Historical Site Management Committee was established to oversee the administration of the site and manage government funding through the national 327 Programme (N. Sage and M. Greve pers. comm.).

The core zone of U Minh Thuong Nature Reserve, which covers an area of 8,509 ha, is currently under the management of Kien Giang Provincial DARD and protected by Kien Giang Provincial FPD. The core zone is surrounded by a buffer zone of 13,291 ha. The buffer zone was defined in 1993, when a government-sponsored land allocation programme resulted in the settlement of nearly 20,000 landless people into area. The administration and development of the buffer zone communities are under the management of the district people's committees (N. Sage and M. Greve pers. comm.).

It is unclear whether the buffer zone is included within the nature reserve or not. The project document for the CARE *U Minh Thuong Conservation and Community Development Project* gives the total area of U Minh Thuong as 21,800 ha, which includes both the core and buffer zones (CARE International in Vietnam 1998). According to Ministry of Forestry Circular 1586/LN/KL dated 13 July 1993, however, buffer zones are contiguous to but outside of Special-use Forests (FIPI and BirdLife International Vietnam Programme 2000).

U Minh Thuong is included on the 2010 list as an 8,509 ha nature reserve (FPD 1998). As of November 2000, however, MARD and FIPI were discussing plans to upgrade U Minh Thuong Nature Reserve to national park status (N. Sage and M. Greve pers. comm.).

Topography and hydrology

U Minh Thuong Nature Reserve is located in An Minh and Vinh Thuan districts, Kien Giang province, 365 km south-west of Ho Chi Minh City. U Minh Thuong Nature Reserve is located in the plain of the Mekong Delta, and the site reaches only a few metres in elevation. U Minh Ha or upper U Minh, is the northern of two extensive peatswamp areas in Kien Giang and Ca Mau provinces. The other peatswamp area, Vo Doi or lower U Minh, is situated 30 km to the south.

U Minh Thuong Nature Reserve is situated in an area of freshwater wetlands, comprising peatswamp forest, seasonally inundated grassland and open swamp. Acid sulphate soils, which oxidise on exposure to air to produce sulphuric acid, cover a large area of U Minh Thuong. Despite the acid sulphate soils, the water in the core zone is almost neutral (pH 6-7) due to the high forest cover. In the buffer zone, however, which has been extensively cleared of forest, the water can be extremely acidic (pH 3-4).

The soil layer is covered by a layer of peat, 1 to 3 m thick. In areas that have recently been burnt, the peat layer has been lost, and the land surface has been lowered, often forming open swamp. In areas which have been cleared for agriculture, the peat layer has been oxidised and reduced in thickness (Safford *et al.* 1998). The core zone of U Minh Thuong Nature Reserve is surrounded by a perimeter canal and dyke system, with a series of gates, which are used to manage the water level. Water is released during the rainy season but, at other times of the year, water is retained. This reduces oxidisation and thinning of the peat layer.

Biodiversity value

U Minh Thuong Nature Reserve supports one of the last significant areas of peatswamp forest remaining in Vietnam, and is recognised as one of the three highest priority sites for wetland conservation in the Mekong Delta (Buckton *et al.* 1999). Tran Triet (2000) has classified the vegetation of the core zone into four types: forest dominated by *Melaleuca cajuputi* on both peat and mineral soils; seasonally inundated grasslands dominated by *Phragmites vallatoria* and *Eleocharis dulcis*; open swamps dominated by *Nymphaea nouchali*, *Pistia stratiotes*, *Salvinia cucullata* and *Typha domingensis*; and natural streams and canals. The vegetation of the buffer zone consists of seasonally inundated grassland, open swamps, *Melaleuca* plantation, agricultural land, fishponds and canals.

U Minh Thuong harbours a diversity of flora, including many rare and endemic species. Tran Triet (2000) has recorded 226 species of non-cultivated vascular plants. Among these is the duckweed, *Lemna tenera*, which is rare throughout its range in South-East Asia but common at U Minh Thuong.

The forest and wetlands at U Minh Thuong support many rare and endangered animal species. With the exception of birds, the fauna of U Minh Thuong Nature Reserve received limited attention prior to a comprehensive zoological survey between October and December 2000 (N. Sage and M. Greve pers. comm.). A preliminary survey conducted in March 2000 obtained evidence of the continued occurrence of the globally threatened Hairy-nosed Otter *Lutra sumatrana* at U Minh Thuong (Nguyen Xuan Dang *et al.* 2000). The survey team also found evidence of Small-clawed Otter *Aonyx cinerea*, Sunda Pangolin *Manis javanicus* and Large-spotted Civet *Viverra megaspila* at U Minh Thuong (Nguyen Xuan Dang *et al.* 2000).

The conservation importance of U Minh Thuong Nature Reserve is further highlighted by the high bird diversity. The first major bird survey of the site was undertaken in 1997 by Safford *et al.* (1998), who recorded 122 species. In 1999, Buckton *et al.* (1999) recorded 92 species. Since 1999, the *U Minh Thuong Nature Reserve Conservation and Community Development Project* has implemented a bird monitoring programme at the site, which has brought the total number of species recorded at the site to date up to 186 (Nguyen Phuc Bao Hoa 2000). These species include eight globally threatened or globally near-threatened species: Darter *Anhinga melanogaster*, Spot-billed Pelican *Pelecanus philippensis*, Painted Stork *Mycteria leucocephala*, Lesser Adjutant *Leptoptilos javanicus*, Black-headed Ibis *Threskiornis melanocephalus*, Greater Spotted Eagle *Aquila clanga*, Grey-headed Fish Eagle *Ichthyophaga ichthyaetus* and Asian Golden Weaver *Ploceus hypoxanthus* (BirdLife International 2001). In addition, the site supports greater than or equal to 1% of the South Asian population of Little Cormorant *Phalacrocorax niger*, and the South-East Asian populations of Glossy Ibis *Plegadis falcinellus* and Purple Heron *Ardea purpurea* (Nguyen Phuc Bao Hao pers. comm.).

Conservation issues

The main threats to biodiversity at U Minh Thuong Nature Reserve can be grouped into four categories: forest fire; peat dry-out; hunting; and tourism

development. The first of these threats is potentially devastating. Because of the flammable nature of the peat layer, any forest fire at U Minh Thuong has the potentially to destroy all the remaining natural *Melaleuca* forest. The most likely cause of a serious fire is hunters camping in the core zone during the dry season. Although only two major fires have occurred during the past 10 years, the nature reserve managers face many challenges in effectively restricting all unauthorised entry into the core zone. A major objective of the CARE project is to strengthen the capacity of forest guards to limit unauthorised access and effectively control potential sources of fire in the core zone (N. Sage and M. Greve pers. comm.).

The second main threat to biodiversity at U Minh Thuong is degradation and decomposition of the peat layer and inhibition of the peat formation process, both of which result from a low water table throughout most of the year. The drying of the peat layer enhances the risk of fire in the peatswamp forest. Therefore, the CARE project has undertaken a series of hydrological research and monitoring activities to formulate a water resources management plan for the purpose of maintaining moist peat soils all year round. Another management objective is to provide an equitable supply of water to buffer zone communities during the dry season, in compensation for the lack of access to fish and forest products within the core zone (N. Sage and M. Greve pers. comm.).

The third major threat to biodiversity at U Minh Thuong is illegal hunting and trapping of mammals, reptiles and birds. These activities are conducted by both local people and organised groups of outsiders. Poverty is cited as the root cause of these illegal activities, although the well developed trade in wild animals and wild animal products is a contributory factor. In addition to exploitation of wildlife, another illegal human activity is the conversion of wetlands in the core zone of the nature reserve to agricultural land (N. Sage and M. Greve pers. comm.).

The final major threat to biodiversity is the planned development of tourism infrastructure in the core zone of the nature reserve. Planned infrastructure developments include building a surfaced road into the centre of the core zone and erecting a monument there. These plans do not incorporate environmental impact assessments as required by law, and the planned activities are in breach of nature reserve management regulations. The CARE project seeks to promote well-planned, ecologically and socially sustainable tourism within the nature reserve, and will engage in an ecotourism planning process with stakeholders at local, provincial and central levels (N. Sage and M. Greve pers. comm.).

Within the north-west corner of the buffer zone is a 1,190 ha area, which is commonly referred to as the "prison forest" or "bird sanctuary". This area is uninhabited and supports one of the most important and largest bird colonies in the Mekong Delta (Nguyen Phuc Bao Hoa 2000, N. Sage and M. Greve pers. comm.). The area is currently under the management of Kien Giang Provincial Department of Police (N. Sage and M. Greve pers. comm.). Buckton *et al.* (1999) recommend that, although it is managed effectively at the current time, the area should be incorporated within the nature reserve to ensure its long-term integrity.

Other documented values

The large area of *Melaleuca* forest in the core zone of U Minh Thuong Nature Reserve plays an important role in maintaining the soil and water quality in the buffer zone by preventing the acidification of topsoil and surface water, filtering ground water, and storing freshwater during the dry season. In addition, at least eight species of economically valuable fish are found at U Minh Thuong. By providing these services, the U Minh Thuong wetlands make an important contribution to the livelihood security of more than 6,300 poor households in the buffer zone (N. Sage and M. Greve pers. comm.).

U Minh Thuong is of great historical value because the area was used as a base by resistance forces during the First and Second Indochina Wars. Due to the almost complete loss of natural forest in the Mekong Delta region, U Minh Thuong is one of the few places where visitors can see the landscape as it was at the time. In addition, archaeological remains dating back to the Oc Eo civilisation have been found in the area.

Related projects

Since December 1998, CARE International in Vietnam has been working in partnership with Kien Giang Provincial DARD to implement the Danida-funded *U Minh Thuong Nature Reserve Conservation and Community Development Project*. The aim of this project is to conserve the existing natural resources and biodiversity of U Minh Thuong Nature Reserve by strengthening the capacity of the nature reserve management, and improving the livelihood security of participating buffer zone communities, thereby reducing their dependency on the natural resources of the nature reserve. In addition, the project seeks to increase local capacity in natural resource conservation research and conservation knowledge, thereby providing a basis for the development of sound and sustainable nature reserve and habitat management practices (N. Sage and M. Greve pers. comm.).

Literature sources

ADB (1999) Draft coastal and marine protected areas plan. Hanoi: Asian Development Bank.

Anon. (1998) Environmental review of proposed sources of growth for sustainable agriculture and biodiversity protection in the U Minh and Plain of Reeds sub-regions of the Mekong Delta. Vancouver: Global Environmental Consultants Ltd.

BirdLife International (2001) Threatened birds of Asia: the BirdLife International Red Data Book. Cambridge, U.K.: BirdLife International.

Buckton, S. T., Nguyen Cu, Ha Quy Quynh and Nguyen Duc Tu (1999) The conservation of key wetland sites in the Mekong Delta. Hanoi: BirdLife International Vietnam Programme.

Buckton, S. T., Nguyen Cu, Ha Quy Quynh and Nguyen Duc Tu (2000) [The conservation of key wetland sites in the Mekong Delta]. Hanoi: BirdLife International Vietnam Programme. In Vietnamese.

CARE International in Vietnam (1998) U Minh Thuong Nature Reserve Conservation and Community Development Project. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

Chandler, G. (1999) Proposals for a community development program. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

FIPI and BirdLife International Vietnam Programme (2000) Guidelines for feasibility studies and investment plans for the designation of Special-use Forests. Hanoi: Forest Inventory and Planning Institute and the BirdLife International Vietnam Programme.

Nguyen Phuc Bao Hoa (2000) Report on the bird monitoring program. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

Nguyen Xuan Dang, Pham Trong Anh and Le Hong Tuyen (2000) Results of otter survey in U Minh Thuong Nature Reserve, Kien Giang province, Vietnam, 1 to 30 March 2000. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

Safford, R. (1999) Biodiversity and habitat survey and monitoring strategy for U Minh Thuong Nature Reserve. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

Safford, R. and Maltby, E. (2000) Habitat and biodiversity monitoring: a manual for U Minh Thuong. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project

Safford, R. J., Tran Triet, Maltby, E. and Duong Van Ni (1998) Status, biodiversity and management of the U Minh wetlands, Vietnam. Tropical Biodiversity 5(3): 217-244.

Scott, D. A. (1989) A directory of Asian wetlands. Gland: IUCN.

Thompson, J. (1999) Hydrometeorological instrumentation manual. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.

Tran Triet (2000) Vegetation of U Minh Thuong Nature Reserve. Unpublished report to the U Minh Thuong Nature Reserve Conservation and Community Development Project.