

Small lakes, ponds and swampy areas occur, some being seasonal whilst others are perennial; these are important wildlife habitats. Limestone sink holes are found; most are only about 20m in diameter and 10-12m in depth, but some are more than two kilometres long, 250m wide and drop as much as 30m depth.

Five types of forest can be distinguished. The highest slopes are covered with hill evergreen forest, while slopes above 600m generally support drysemi-evergreen forest. The rest of the sanctuary supports mixed deciduous and bamboo forest, and dry dipterocarp forest in areas with poor or shallow soil. Areas of swidden agriculture are found, especially in Thung Yai. In moist areas along some rivers and streams, evergreen gallery forest is present. The result is often a patchy mosaic of vegetation types, particularly in valley bottoms.

The fauna of both Thung Yai and Huai Kha Khaeng includes an unusual mix of species with primarily Sundaic, Indo-Chinese, Indo-Burmese and Sino-Himalayan affinities, many of whose ranges do not overlap. Most species are either characteristic of the Oriental/Indo-Malayan region or more specifically associated with the Indo-Chinese province of that region, but with a strong Sundaic element included. A small proportion is Palearctic.

In comparison with Huai Kha Khaeng, Thung Yai has not been comprehensively surveyed, but it is known to support a significant proportion of Thailand's fauna. Species lists have been compiled which include 120 mammals, 400 birds, 96 reptiles, 43 amphibians and 113 freshwater fish. Thirty-four internationally threatened species are also found within the confines of the two sanctuaries.

4. STATE OF PRESERVATION / CONSERVATION

Some 3,800 tribal people live within Thung Yai. There are still four Hmong villages, in the north-east and east although 900 people were moved out of the sanctuary in 1988. There is no resident population within Huai Kha Khaeng.

Management plans have been prepared by a team from Kasetsart University for both sites, and these have been discussed and approved by the Royal Forest Department's Management Plan Committee (ONEB, 1990). In Huai Kha Khaeng, there are ten forest guard stations and a further two are being established. It is expected that five more stations will be established, bringing the total to seventeen. In Thung Yai, four permanent and five temporary guard stations were established in the south between 1982-86 and six more approved for the north in 1988. A further nine are planned, bringing the total to nineteen. There is a commitment to eventually reduce the area of sanctuary per guard station from 214 sq. km to 64 sq. km. The Wildlife Conservation Division maintains a wildlife research station in Huai Kha Khaeng at Khao Nang Rum, and more than 50 research projects have been carried out.

Poaching is a persistent problem, and agricultural development, logging and dam projects to the east and south are facilitating easier access. The construction of the Thap Salao Dam to the east of Huai Kha Khaeng has resulted in deforestation of much of the buffer zone. The most immediate, though indirect threat was from the Nam Choan Dam project, recently revived by the Electricity Generating Authority of Thailand (EGAT) in 1986 but shelved during 1988. The dam would have flooded the valleys of the upper Kwae Yai severing Huai Kha Khaeng from Thung Yai and thereby destroying the integrity of the two sites as a single conservation area.

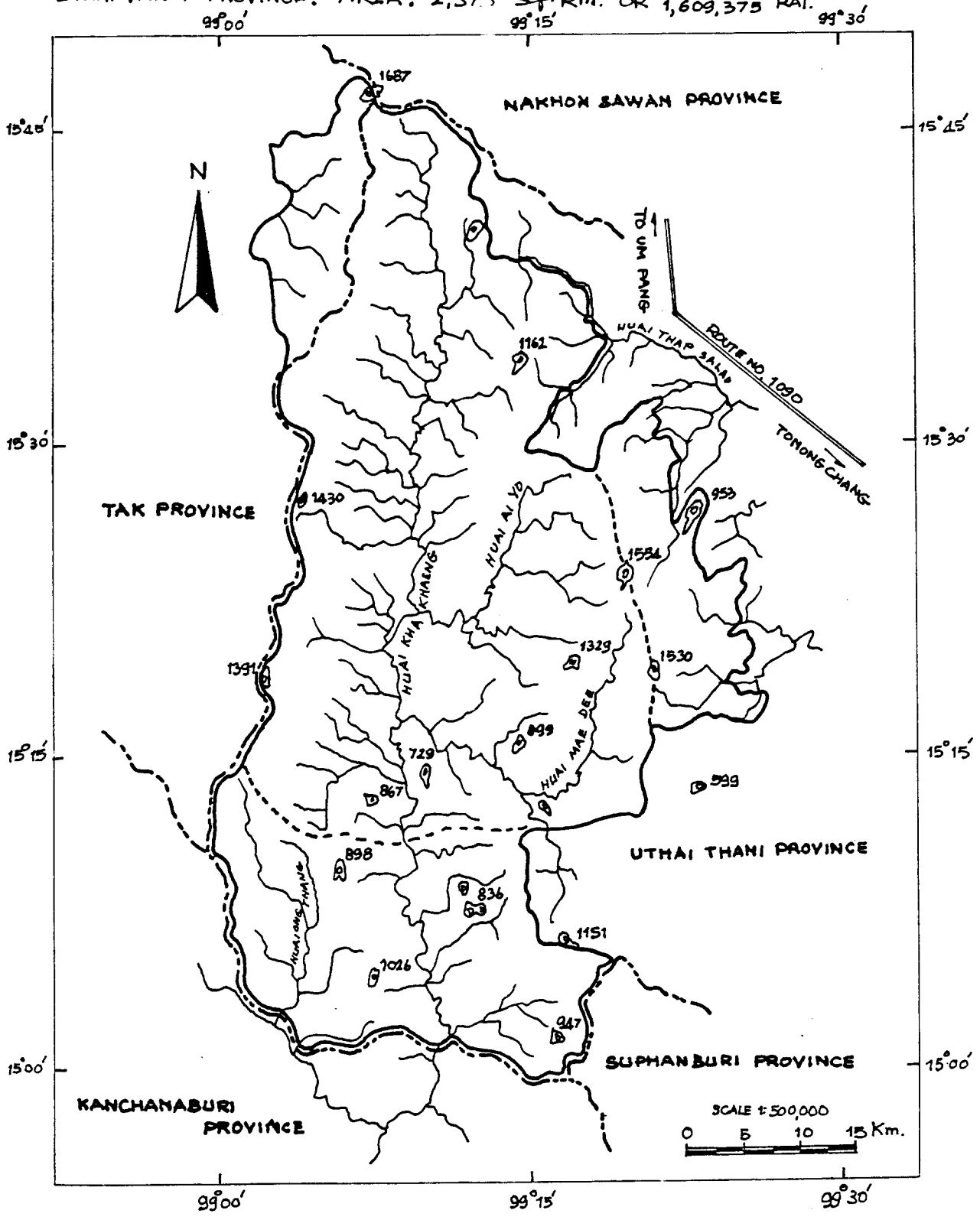
5. JUSTIFICATION FOR INCLUSION ON THE WORLD HERITAGE LIST

The Thung Yai-Huai Kha Khaeng Wildlife Sanctuary nomination, as presented by the Government of Thailand, provides the following justification for designation as a World Heritage property:

D) Natural property

- ii) **Outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment** Thung Yai-Huai Kha Kaeng represents an outstanding and unique biome in mainland South-east Asia, combining Sino-Himalyan, Sundaic, Indo-Burmese and Indo-Chinese biogeographic elements, with flora and fauna characteristic of all four zones. The area nominated is also sufficient to sustain viable populations of flora and fauna. The savanna forest of Thung Yai is the most complete and secure example of Southeast Asia's dry tropical forest.
- (iii) **Contains unique, rare or superlative natural phenomena, formations or features of exceptional natural beauty** The nominated site contains biophysical features of outstanding natural beauty and of great scientific value, including two major watersheds and other natural features.
- (iv) **The most important and significant habitats where threatened species of plants and animals of outstanding universal value from the point of view of science and conservation still survive** Thung Yai-Huai Kha Kaeng supports exceptional biological diversity, with many species reaching the limits of their distributions in the sanctuary. In addition to many regional endemic species and some 28 internationally threatened species, at least one-third of all Mainland South-east Asia's known mammals are present.

MAP OF HUAI KHA KHAENG WILDLIFE SANCTUARY IN TAMBON MAE LA MUNG, UM PHANG DISTRICT, TAK PROVINCE ; TAMBON RA BUM, TAMBON PA OOE, LAN SAK DISTRICT, TAMBON KOK KAWAI, TAMBON KHAN MA KRUU, TAMBON THONG LANG, BANRAI DISTRICT, UTHAI THANI PROVINCE. AREA : 2,573 SQ. KM. OR 1,609,375 RAI.



LEGEND :

- WILDLIFE SANCTUARY BOUNDARY
- PROVINCE BOUNDARY
- ~~~~ RIVER OR STREAM
- ⊙ MOUNTAIN PEAK

FROM THE ROYAL DECREE SPECIAL ISSUE NO 89, SECTION 132, DATE 4 SEPTEMBER 1972, AREA 1,631 KM² AND THE ROYAL DECREE SPECIAL ISSUE NO 103, SECTION 87, DATE 21 MAY 1986, AREA 944 KM²

WORLD HERITAGE NOMINATION - IUCN TECHNICAL EVALUATION

591: THUNG YAI - HUAI KHA KHAENG WILDLIFE SANCTUARY (THAILAND)



1. DOCUMENTATION

- i) IUCN Data Sheet
- ii) Additional Literature Consulted: IUCN. 1991. The Conservation Atlas of Tropical Forests - Asia and the Pacific
- iii) Consultations: Thai Government Officials, J. Mackinnon, C. Santiapillai, P. Ewins, D. Bazely, H. Jungius, R. Dobias.
- iv) Field Visit: January, 1991, J. Thorsell

2. COMPARISON WITH OTHER AREAS

Thailand's system of protected areas includes 55 national parks and 25 wildlife sanctuaries, totalling over 5 mil. ha, or almost 10% of the country. Three biographic provinces converge here - Indochinese rainforest, Malayan rainforest and Thailand monsoon forest. The Thung Yai - Huai Kha Khaeng (TH) complex is found in the first of these as is the second nominated site in Thailand, Khao Yai National Park, 200 km to the east of TH.

TH stands out in comparison with other sites in four aspects: size, linkages to adjacent habitats, species diversity and population sizes / gene pools. Its total size of 622,200 ha make it over twice as large as the second largest protected area in Thailand - Kaeng Krachen National Park and almost 3 times as large as Khao Yai. The closest area in all of mainland South-East Asia in terms of size is Malaysia's Taman Negara National Park at 434,400 ha. TH is also part of a regional complex of protected areas in western Thailand and it is buffered to the north and south by an equivalent amount of protected forests. It also borders on Burma where a further forested expanse (though unprotected) also remains.

Because it still exists in a largely undisturbed state and contains almost all the inland forest formations of continental southeast Asia, it supports the most diverse faunal assemblage of any protected area in the region (including 77% of southeast Asia's large mammals, 50% of its large birds and 33% of its terrestrial vertebrates). It is the only protected area supporting 3 of Asia's 4 wild bovids, all 5 macaques, all 6 hornbills and more carnivores (27) than any other area in the region. It also is home to 22 species of woodpeckers which is more than any other park in the world. The reason for such exceptional diversity is partly due to its status as one of only two evergreen forest refuges during the driest

periods of the Pleistocene glaciations. A second reason is that TH lies at the junction of the region's four principal biogeographic zones and thus combines Sino-Himalayan, Sundaic, Indo-Burmese and Indo-Chinese elements. No other protected area is in a location that blends all four of these zones.

The fourth distinguished feature of TH is the population sizes that the area can support, partially as a result of the above conditions. Few areas in Asia are large enough to support viable populations of large herbivores (e.g. elephants) and predators (e.g. tigers). TH has the largest herd of gaur in Thailand for instance and the most substantial population sizes of many other wild species including elephants (300). According to the Asian Elephant Action Plan (IUCN, 1990) TH "... is perhaps the only area in Thailand capable of sustaining a viable elephant population in the long term."

TH also has two specific features not common in other areas which add to its uniqueness. One is the existence of a large grassland plain and surrounding savanna forest made up of cycads and Phoenix palms, a feature not known elsewhere in the region. The second feature is the existence of Thailand's most extensive riparian forests. Most such habitats in Asia have been logged, settled or dammed and their inclusion here along two intact watersheds is of special conservation importance.

TH is clearly one of the most unique and valuable areas in mainland in South-East Asia. Its distinction derives from its location, its undisturbed nature, and its biological richness.

3. INTEGRITY

Both the legal basis and the boundaries of TH are adequate. Although the two reserves are administered from separate headquarters, they are under the same agency and cooperate in management. There are possibilities for some extensions now being considered (e.g. the adjacent proposed Khao Laem National Park) and these may eventually be worth including in the property. A good system of guard stations is in place but there are serious constraints on the availability of sufficient trained staff and equipment. Management plans have been prepared and a buffer zone project with support from WWF has commenced. There is a policy to remove the remaining illegal settlements in the reserve and several have been relocated to date. There are regular meetings between the reserve staff and local village chiefs to discuss conservation issues and many nearby residents are employed as support staff. A research facility is available, one of only two such field stations in the country.

Despite these positive management initiatives, TH is far from secure. Poaching has been a consistent problem and agricultural development and dam projects to the east and south are facilitating access. Much of the buffer zone has been deforested over the past decade and the existence of several lead mines just outside the west and southern boundaries bring added pressures.

The most serious threat was the proposal for the Nam Choan Dam which has now been shelved after strong public protest. The dam's 75 km long reservoir would have divided the reserve into smaller areas and greatly reduced the long-term survival prospects of many species. Secondly, the reservoir would have flooded a significant amount of lowland riverine habitat which is increasingly rare in southeast Asia and which is particularly critical for such species as otter, peafowl, and white-winged wood duck. Should the prospect of this dam be revived, the area would be clearly a site for the List of World Heritage in Danger.

A second potential threat is the possible construction of a new "security road" along the frontier with Burma. This would certainly impact Thung Yai and further facilitate the removal of timber from the adjacent territory in Burma.

Public support and increased investments in the management of TH are now raising management capabilities to levels commensurate with threats to the area. The WWF project package for the area (\$ 1.5 mil) is a key contribution of this effort and a reflection of international concern for the area.

4. ADDITIONAL COMMENTS

4.1 Being contiguous with the forests of Burma there are longer term prospects for a transfrontier reserve between the two countries. This would greatly add to its integrity as there is cross-border migration of some species (e.g. elephants) and Thai logging concessions in Burma could be reduced. An integrated conservation plan for all of the forests of western Thailand / eastern Burma is a worthy long-term conservation objective.

4.2 The nomination document submitted by Thailand has been especially well done and deserves commendation.

5. EVALUATION

The Thung Yai - Huai Kha Khaeng Wildlife Sanctuary is one of the most important conservation areas of the Indomalayan Realm and meets three criteria for natural World Heritage sites :

- ii) **outstanding example of biological evolution.** TH is a unique biome in south-east Asia combining biogeographic elements from four regions. With its great variation in topography and mosaic of habitats it is one of the world's most important dry tropical forest protected areas.
- iii) **contains unique, rare and superlative natural phenomenon.** TH incorporates two intact major river systems with their associated riverine forests. Its rolling hills, savanna grasslands, karst features all combine to make it an area of high scientific interest and scenic appeal.

- iv) **habitats for threatened animals and plants.** TH has exceptional species and habitat diversity and supports many wild plants and animal relatives of domestic species. It contains 28 species considered threatened - 15 mammals, 9 birds and 4 reptiles and is the region's main stronghold for their long-term survival.

All conditions of integrity attached to these three criteria are met.

6. RECOMMENDATION

Thung Yai - Huai Kha Khaeng Wildlife Sanctuary should be added to the World Heritage List. The Committee may wish to encourage the Thai authorities to accelerate efforts to implement the management plans for the two sanctuaries and to proceed with projects in the buffer zones. It may also wish to complement Thailand for resisting the proposal to construct the Nam Choan dam and to express concern over any associated developments that might affect the integrity of the adjacent Burmese forests which will, hopefully, eventually form part of a transfrontier World Heritage site.

