

Project 3133**Conservation of Large Mammals and their Habitats, Sumatra**

WWF Expenditure 1984/85 — \$152,106

(Total since 1983 — \$167,090)

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Participating Organizations: Directorate General of Forest Protection and Nature Conservation (PHPA).

Objectives: To advise PHPA on large mammal management with particular reference to elephant and rhino ; to assist PHPA in the management of large mammal habitat with particular reference to Gunung Leuser National Park, the Padang-Sugiham Wildlife Reserve and Way Kambas Game Reserve ; to create conservation awareness and generate support amongst local decision makers.

In 1984 and 1985 work under this large-scale project included investigation of the elephant (*Elephas maximus*) and tiger (*Panthera tigris sumatrae*) and conflicts between these animals and the human population. It also included work on the Sumatran rhino (*Dicerorhinus sumatrensis*) and leopard cat (*Felis bengalensis*). The protected areas given special attention were Padang-Sugihan Wildlife Reserve, the Way Kambas Game Reserve, and Gunung Leuser National Park.

The large equatorial island of Sumatra still has extensive areas of both lowland and mountain rain forest, but they are being destroyed relentlessly. Twenty years ago, for example, the forest cover of the southern province of Lampung was 44%. Today it is no more than 17%. Sumatra is one of the target areas for the resettlement of hundreds of thousands of transmigrants from Java, and the population is increasing rapidly, so that the wildlife is under growing pressure.

Elephants: Sumatra is the only island of Indonesia that has elephants, apart from a small herd still possibly surviving in Kalimantan. Recent surveys carried out as part of the WWF-Indonesia Programme indicate that there may be as many as 4500 elephants on Sumatra, living in a series of isolated populations. The problem is that man and elephant are fundamentally incompatible except at very low densities. The Sumatran elephants have been legally protected since 1931, but they are declining because of loss of suitable habitats.

In North Sumatra, for example, viable elephant populations still exist in the provinces of Aceh and Riau, because of extensive forests and relatively low human population. However, elephants prefer lowland to montane forests, and it is the lowlands that logging companies find economical to exploit. This is the threat to the elephants in Riau which is largely flat and is proposed for a number of transmigration schemes.

In South Sumatra, elephant populations are highly disrupted and scattered, separated from each other by intervening agriculture, which has led to

considerable man-elephant conflicts. Because of crop depredation by elephants between May 1984 and May 1985, the PHPA translocated 70 elephants from the Gunung Madu Sugar Cane Plantations to the Way Kambas Game Reserve. This was a highly successful translocation.

Elephants can live in logged forests as they thrive in a sub-climax, secondary vegetation. However, the logging must be carried out within strict limits, with no trees under 50 cm diameter being taken and an interval of 40-60 years between successive exploitation of the forest. Otherwise, management strategies should be directed towards maintaining viable reserves for the elephants, with buffer zones around them.

Tigers: Human population growth has already led to the extinction of the Javan and Bali tigers in Indonesia, and the Sumatran tiger is now down to well below 1000 animals. Because it is solitary, nocturnal and secretive and lives mostly in dense tangled lowland rainforest, reliable data is difficult to obtain. Much recent information comes from the WWF supported studies of Marcus Borner and Raleigh Blouch.

The Sumatran tiger has been fully protected by law since 1972, but it is under great threat from forest clearance, especially in lowland areas, poaching, and poisoning. However, attitudes are slowly changing and some farmers are realizing that the tiger holds in check the number of wild pigs, which are a serious agricultural pest. The tiger preys off a wide range of herbivores, but the two preferred species are the wild pig and the sambar.



The white-winged wood duck (Cairina scutulata) inhabits lowland rainforests in S.E. Asia, and because the lowland forests have been the most seriously depleted of all tropical forests, the white-winged wood duck is now extremely rare. A population was found in Padang-Sugihan Wildlife Reserve on the island of Sumatra in the course of WWF studies there.

Photo: WWF/Gerald Cubitt

Viable populations of tigers need very large lowland reserves with adequate prey populations. On Sumatra, the most suitable protected area is the Berbak Game Reserve in Jambi province.

Sumatran rhino: The Sumatran rhino is one of the most threatened animals in the world, with perhaps 500 or so on Sumatra and other small scattered populations in Malaysia and Borneo. They live in dense forest and are extremely difficult to observe. They are much smaller than the four other rhino species, have two horns and quite a lot of hair on the body. They are threatened both by hunting and by loss of habitat, but live mainly in mountainous areas which are not under such great pressure as the lowlands. A plan for captive breeding is under consideration by the Governments of Indonesia and Malaysia.

Leopard Cat: The leopard cat is widely distributed in India, China and throughout Southeast Asia, but lives in dense forest and is very elusive. On Sumatra, the main threat to its survival is large-scale habitat modification, and it is sometimes captured as a pet.

Padang-Sugihan Wildlife Reserve: In late 1982, over 230 Sumatran elephants (a race of the Asiatic elephant, endemic to the island of Sumatra) were driven into what is now the 75,000 ha Padang-Sugihan Wildlife Reserve in South Sumatra province, under the Indonesia Government's "Ganesha" elephant drive. The success of this drive created a unique situation, a reserve with the highest crude density of elephants of any protected area in Southeast Asia. The WWF/IUCN Padang-Sugihan project aimed to assess the status of the elephants almost three years after the drive, and to gather information on their ecology. As the area's wildlife had never been studied, efforts were made to gather similar information on the reserve's other large mammal fauna.

Field work in the predominately logged-peatswamp forest reserve was carried out by S.V. Nash and A.D. Nash from September 1984 to October 1985 with the help and collaboration of the Directorate General of Forest Protection and Nature Conservation.

Based on faecal deposition counts, a population estimate of about 240 elephants was derived, showing that the original "Ganesha"-drive elephants were still within the reserve's boundaries. A large herd estimated at 86 animals was found to be confined to the northern third of the reserve, and the rest of the elephants were scattered in small groups of two to ten animals, or as solitary beasts. All of the reserve's vegetative habitats were found to be utilized by elephants, and only the large herd displayed a regular cyclical use of certain habitat types. The distribution and movements of elephants were found to be affected by the widespread presence of illegal logging operations, and by boat traffic within the reserve. These factors in particular appeared to be limiting the large herd to but a third of the reserve's area. Apart from indications of possible overbrowsing in the area of the main herd, the food resources of the reserve appeared sufficient to maintain the high total number of elephants.

Other species of large mammals found to inhabit Padang-Sugihan included the Sumatran tiger, fishing and leopard cats, agile gibbons, hairy-nosed and small-clawed otters, and the rare otter civet. During the course of the Padang-Sugihan study a population of the rare white-winged wood duck (*Cairina scutulata*) was discovered residing in the reserve. This is the first known population of the wood duck in South Sumatra province, and is the only population of this species found to reside in peat-swamp forest habitat.

In consideration of the uniqueness of the large concentration of the Sumatran elephant in the reserve, the richness of other wildlife species present, including the white-winged wood duck, and the logging and human-disturbance threats facing the reserve, IUCN's commission on National Parks and Protected Areas has proposed that Padang-Sugihan be added to the list of the world's most threatened protected areas.

Way Kambas Game Reserve: The Way Kambas Game Reserve is situated in the southeastern part of Sumatra and covers an area of 130,000 ha. Besides being one of the large lowland forest reserves in Sumatra, its conservation value is further enhanced by the fact that it also represents the largest freshwater (non-peat) swamp forest in Sumatra. Much of the original dipterocarp forest has largely disappeared through previous logging activities and 70% of the vegetation today is composed of secondary forests and stands of alang-alang (*Imperata cylindrica*) grasslands. The mammal fauna is rich and includes among others, the elephant (*Elephas maximus*), tiger (*Panthera tigris*), and the red-dog (*Cuon alpinus*) all of which are listed as endangered species by IUCN.

Since the tangled vegetation in the secondary forest rarely permits the direct observation of even the large mammals such as elephant, much of the information was gathered through indirect methods. Animal activity was deduced from the occurrence of faeces piles, tracks, trails and damage to vegetation. This was however augmented whenever possible, by direct observation of the animals.

The minimum estimate of the number of elephants in the reserve is 170, which is more than four times the number originally thought to have been present. This gives a mean crude density of 0.13 elephants per sq km. Calves account for almost 10% of the population. Small group size (less than 10 animals) is characteristic of forested areas while larger groupings are more typical of the open grasslands. The largest group that was observed had 66 animals. Six types of woody-plant damage by elephants were observed, of which branch breaking and main stem breaking accounted for about 80% of the total damage. Elephants seem to prefer woody-plants of diameter of 8.0 cm or less. The Sumatran elephant is known to eat about 80 species of plants. Elephant activity was found to be much higher in the mixed grasslands in the vicinity of the river than elsewhere. Mature stands of alang-alang (*Imperata cylindrica*) were hardly utilized by elephants. However, the early growth of this grass is eaten by the animals. Elephants seem to thrive well in a sub-climax vegetation, and their preference for the early successional stages makes it possible to manipulate selected habitats to improve the carrying capacity. Fire and logging

generally are considered to be favourable influences. Prescribed burning of alang-alang vegetation was carried out in small blocks. The elephant activity increased in such areas after the rains. Furthermore, as the provision of mineral licks and their maintenance would be useful management option to prevent the elephants from straying out of the reserve (a constant problem), a salt lick was established in the centre of the reserve.

The lack of a buffer-zone along the southern boundary of the reserve has been the cause of considerable elephant depredations in the neighbourhood. In an attempt to mitigate the crop depredations, the PHPA cut an access road along the boundary and established an electric fence (7 km). However, some bull elephants, with their insulated tusks, were able to prise an insulator off the fence posts. A number of elephants (mostly young animals) have been retrieved from wells into which they had fallen and are being cared for by PHPA. Plans are afoot to establish a training school for these elephants. Two Thai mahouts are already at work training the animals. Attempts are being made to capture bull elephants (mostly solitary animals) that regularly raid crops. Trained elephants could then be used in small scale logging operations and in the reserve (to patrol and transport visitors).

The future work would concentrate on the management of elephants in the wild and in captivity with a view to mitigating the crop depredations. The work would also extend to gathering ecological data on other large mammals in the reserve, especially the tiger.

Gunung Leuser National Park: This Park in northern Sumatra is a key rain-forest conservation area, a vital refuge for the Sumatran rhino, elephant, tiger and orang utan and contains a rich flora. WWF and PHPA have cooperated in research, poaching control and management of the area for over 14 years. The Leuser Park covers an area of about 800,000 ha and includes a wide range of habitat types and ecosystems from lowland swamp forest to alpine scrub, as it extends from sea level to the top of Mount Leuser at 3500 m.

The area has been a national park since 1980, divided into four management units. However, law enforcement is difficult as there is so far no clear legal basis for national parks in Indonesia. Only 517 km out of the 950 km boundary has been demarcated, and it is urgent to complete this work to secure the north and the west of the Park from encroachment, shifting cultivation and illicit timber cutting. Two World Bank missions have visited the Park and recommended buffer zones both to serve the needs of people and to protect the Park, but no action has been taken yet.

Plans for a new Information and Visitor Centre have been drawn up with the help of WWF, and a training course on conservation was conducted for Army and Police officers, civil service officials and youth leaders.

The Research Station at Kerambe has attracted scientists and researchers from all over the world, who have carried out valuable research into the flora and fauna of the Park (see for example Project 3309).