

A survey to assess the status of Sumatran rhinoceros and other large mammal species in Tamanthi Wildlife Sanctuary, Myanmar

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Tamanthi Wildlife Sanctuary in the Upper Chindwin district of Myanmar could be one of the most important remaining sites for wildlife in the country. Until recently, insurgency problems prevented officials of the Myanmar Forest Department visiting the area or carrying out any form of management. Yet the sanctuary is essentially intact and, with the exception of rhino, appears to contain viable populations of most large mammal species known from that part of Myanmar. However, hunting and the collection of forest products in the sanctuary are having negative impacts on the wildlife community. The future survival of the Sumatran rhino in the Upper Chindwin area is doubtful. Other large mammal species, such as the tiger and gaur, may follow the rhino towards extinction in the near future. Tamanthi Wildlife Sanctuary will need to be actively protected and managed to ensure that much of Myanmar's wildlife continues to survive in this area, well into the future.

Introduction

Tamanthi Wildlife Sanctuary, which was established in 1974, is Myanmar's largest protected area (2151 sq km). Situated in the Upper Chindwin district, between the Uyu and Chindwin Rivers (25°26'N, 95°37'E) (Figure 1), this area of tropical evergreen and semi-evergreen forest was protected primarily for large mammals, particularly the Sumatran rhino* (Hundley, 1952). Although rhinos were already considered rare in the Upper Chindwin district by the turn of the century, they were still being reported from the area between the Chindwin and Uyu Rivers (Peacock, 1933; Ansell, 1947; Hundley, 1952). Other large mammal species such as Asian elephant, tiger, leopard, gaur, Malayan sun bear and Asiatic black bear were still considered abundant in the area (Brown, 1911). Until World War II, the Upper Chindwin region was one of the best sites for big-game hunting in Myanmar (Evans, 1911; Peacock, 1933).

By the 1960s, with no more than an esti-

mated 26–30 Sumatran rhinos left in Myanmar (Tun Yin, 1967), the forests around the Uyu River were believed to contain at least 10 rhinos (Talbot, 1960; Milton and Estes, 1963; Hundley, 1981). As poaching and a lucrative trade in rhino parts pushed the Sumatran rhino to the verge of extinction in Myanmar during the 1980s (Uga, 1992), the Tamanthi Wildlife Sanctuary was listed internationally as one of three sites in Myanmar where Sumatran rhinos might still survive (Khan, 1989). In May 1991 rhino tracks in two locations in Tamanthi Wildlife Sanctuary were reported to the Forest Department (Uga, 1992). This renewed speculation that a population of Sumatran rhinos still survived in the sanctuary. Until recently, insurgency problems prevented officials of the Myanmar Forest Department visiting the sanctuary or implementing any form of management.

Myanmar has an estimated 40 per cent forest cover, but only 1 per cent has been set aside as parks or wildlife sanctuaries and 15 per cent as forest reserve land for selective timber extraction. In all these areas wildlife populations have declined steadily over the

* Scientific names of mammals are given in Table 1.

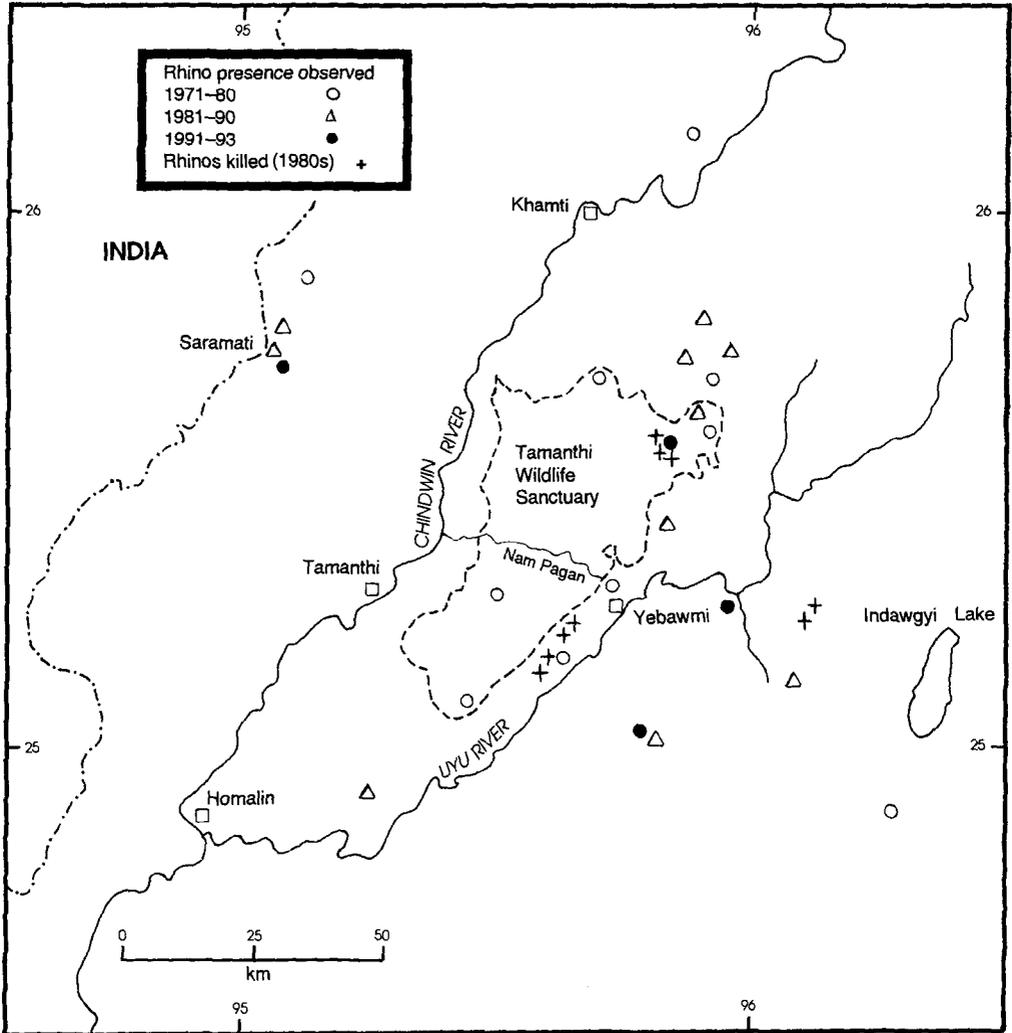


Figure 1. Reports of Sumatran rhino presence in and around Tamanthi Wildlife Sanctuary since 1970.

past few decades, as a result of both legal and illegal hunting (Myanmar Forest Department, 1990; Collins *et al.*, 1991). The Burma Wildlife Protection Act of 1936, amended in 1954, prohibits hunting within wildlife sanctuaries, but allows wildlife to be shot inside forest reserves with a licence (Tun Yin, 1967). Wildlife can be shot in unlimited numbers without a game licence outside forest reserves. Hunting of elephants and gaur requires special permission. Live rhinos are fully protected by law but it is

legal 'to sell rhino blood and other parts as medicine' (Tun Yin, 1967). Our findings in Tamanthi Wildlife Sanctuary indicate that while the forested area and the wildlife community appear relatively intact, hunting and disturbance is adversely affecting the abundance of certain large mammal species – the Sumatran rhino has been almost extirpated from the area.

Table 1. Mammal species identified in Tamanthi Wildlife Sanctuary

Species	Method of identification
Sumatran rhinoceros <i>Dicerorhinus sumatrensis</i>	Local report
Asian elephant <i>Elephas maximus</i>	Tracks/faeces
Tiger <i>Panthera tigris</i>	Tracks/faeces/scrapes
Leopard <i>Panthera pardus</i>	Tracks
Clouded leopard <i>Neofelis nebulosa</i>	Tracks
Gaur <i>Bos gaurus</i>	Tracks
Domestic water buffalo <i>Bubalus bubalis</i>	Visual
Malayan sun bear <i>Helarctos malayanus</i>	Tracks
Asiatic black bear <i>Selenarctos thibetanus</i>	Tracks
Indian wild dog <i>Cuon alpinus</i>	Tracks
Sambar deer <i>Cervus unicolor</i>	Tracks
Barking deer <i>Muntiacus muntjak</i>	Tracks
Wild pigs <i>Sus scrofa</i>	Tracks/diggings
Hoolock gibbon <i>Hylobates hoolock</i>	Visual/vocalization
Rhesus macaque <i>Macaca mulatta</i>	Visual
Pig-tailed macaque <i>Macaca nemestrina</i>	Visual
Langur (possibly Phayre's) <i>Presbytis</i> sp.	Hunter kill
Small-clawed otter <i>Aonyx cinerea</i>	Hunter kill
Common palm civet <i>Paradoxurus hermaphroditus</i>	Hunter kill
Burmese ferret-badger <i>Melogale personata</i>	Tracks
Leopard cat <i>Felis bengalensis</i>	Tracks
Malayan giant squirrel <i>Ratufa bicolor</i>	Visual

Methods

The primary objective of this survey was to investigate the possibility that Tamanthi Wildlife Sanctuary still contained a population of Sumatran rhinos. Given the limited amount of time and restricted access into the area, we were not able to survey thoroughly large portions of the sanctuary. Instead, we traversed the sanctuary along one of its two major waterways in order to look for signs of rhino and other animals. Time spent in local communities was used to interview villagers and hunters about wildlife presence in the area.

The study of indirect evidence is the most practical procedure for assessing the presence of rhinos (Strickland, 1967; van Strien, 1986) and other large mammals (Rabinowitz, 1993a). If rhinos inhabit an area, patrols along ridges and waterways have the greatest chance of finding evidence of the animals (Borner, 1979; van Strien, 1986). Large, wide-ranging mammal species often focus their activities along major waterways, particularly during the drier months. Rhinos make trails along major

ridges, while salt licks or mineral springs, important areas for rhinos, are often close to waterways.

Five days were spent in travel and interviewing local officials and hunters living along the Chindwin and Uyu Rivers before gaining access to the Tamanthi Wildlife Sanctuary. The traverse across the sanctuary was carried out between 2 and 14 March 1994, towards the end of the dry season. The survey started at Yebawmi, a village on the eastern boundary of the sanctuary where there had been recent reports of rhino tracks, and nearly 160 km were covered on foot in 8 days while crossing the sanctuary along Nam Pagan (Figure 1). Larger tributaries (Nam Tanbauk and Nam Kha), side streams, and surrounding ridges were also investigated for animal signs.

Results

Wildlife presence

The survey team verified the presence of 21

medium-to-large mammal species along the survey route (Table 1). No sign of Sumatran rhino was found. Reliable local reports, however, indicated the possible presence of one or two rhinos in the sanctuary. Estimates of abundance of other large mammal species were derived from the perceptions of our local guides and our own experiences.

Sumatran rhino. Although no definitive rhino sign was observed, interviews with local hunters and forestry officials resulted in 33 reported rhino locations spanning the years 1971–93 in the Upper Chindwin River area around Tamanthi Wildlife Sanctuary (Figure 1). These records indicate that a small rhino population existed in the Tamanthi area until the early 1980s. However, with at least nine documented rhino kills (six adult males, three adult females) during the 1980s, poaching has reduced any remnant population in the area to near extinction (Figure 1).

Our guide, a former rhino-hunter, saw rhino tracks in 1991. This and other recent sightings of rhino tracks indicate the possibility of one or two individuals in the north-east corner of Tamanthi Wildlife Sanctuary. Other sightings indicate the possibility of one or two rhinos in the forests between Tamanthi Sanctuary and Indawgyi Lake, and maybe one or two rhinos in the vicinity of Mt Saramati on the Indian border.

Big cats – tigers and leopards. Signs of two or three tigers and at least twice that number of leopards were observed during the survey, all in the eastern portion of the sanctuary. Based on these sightings and a model used for estimating tiger numbers in similar forest types in Thailand (Rabinowitz, 1993b), we estimated approximately 15 tigers within the Tamanthi Wildlife Sanctuary. The confirmed presence of poachers using guns and snares, and the reported killing of at least one tiger within the sanctuary in 1992 indicate an uncertain future for tigers and other large cats there.

Elephants. Fresh elephant signs were encountered infrequently even when travelling along old elephant trails. Most of the elephant signs

were observed along ridge-tops in the eastern half of the sanctuary. Tracks were mostly of lone animals or small groups. Based on signs and discussions with local hunters, it was estimated that there were 50–70 elephants in the sanctuary.

Gaur. Tracks of gaur were found on several occasions, all in the eastern half of the sanctuary. All tracks were of individual animals; there were no signs of groups of gaur. We estimated no more than 100–200 gaur within the sanctuary. The fact that poachers claim to occasionally catch gaur in their snares may make the above estimate overly optimistic.

Deer. Tracks of both sambar deer and barking deer were encountered regularly. While evidence of barking deer was found throughout the survey route, sambar deer abundance seemed greatest in the eastern part of the sanctuary.

Primates. Hoolock gibbons were relatively common throughout the survey route, but other primates – macaques and langurs – were surprisingly scarce.

Bears. Tracks of both Asiatic black bear (once) and Malayan sun bear (twice) were found along the waterways in the eastern portion of the reserve. Claw marks on trees were observed at least twice. Signs of both of these species were uncommon along the survey route. No estimates were made of the abundance of these species.

Other mammals. Tracks of leopard cat and civet species were common throughout the survey route. Tracks of Indian wild dog were seen infrequently and all tracks were of individual animals; no evidence of packs was found. Evidence of wild pigs was surprisingly scarce. Small-clawed otter presence along waterways was patchy. The complete absence of otter from some of the waterways could have been related to poaching activities. Two groups of domestic water buffalo were observed near the western boundary of the sanctuary.

Human presence in the sanctuary

Although the natural forest appeared to be intact, there was substantial human activity in the sanctuary. Fifty-five dugout canoes carrying nearly 200 local villagers were encountered along the survey route. Most of the villagers were collecting rattan, which is forbidden, while some were harvesting large quantities of fan-palm leaves *Livistona* spp. to sell as thatching. Numerous well-worn trails for rattan collection already existed throughout the area. Despite the relatively high price that local people were getting for rattan (10,000 kyats or approximately \$US100 per 1000 pieces), a large pile of cut rattan was found rotting in the forest.

Hunting was occurring in the sanctuary at various levels. A group of three Lisu hunters from Kachin State were encountered carrying six small-clawed otter skins, otter gall bladders and penises, nine steel traps, three large cable snare sets, and one black-powder rifle. A second group of Lisu hunters were reportedly trapping in an adjacent watershed to the north.

The hunters purchased steel traps and wire snares in Mandalay and used this equipment to catch mostly otters, sambar deer, gaur and occasionally young elephant. They were primarily after tiger, which was sold for its bones and skin. Local people claimed that Lisu from Kachin State had been hunting in the sanctuary for several years, sometimes using poisoned animal carcasses to kill tigers. A tiger was reportedly killed by Lisu hunters in 1992.

The local people collecting forest products also hunted wildlife. Rope or vine snares were used for ground-dwelling birds or small mammals; rifles, when available, were used for other wildlife. One local villager who claimed to carry his rifle in the sanctuary 'for protection only', carried special heavy shot to kill tigers. During the survey the remains of a rhinoceros hornbill, a langur, a common palm civet, a turtle, and several unidentified birds were found along rattan trails or at old campsites, apparently killed by humans.

Discussion

We found no evidence that viable populations of Sumatran rhino still exist within Tamanthi Wildlife Sanctuary. Although we covered only a relatively small portion of the sanctuary, rhinos were the only large mammal species whose signs were not seen. While a few individuals may still survive, it is unlikely that they will do so for long.

Apart from the absence of the Sumatran rhino, Tamanthi Sanctuary is an intact tropical evergreen and semi-evergreen forest that contains much of the flora and fauna representative of northern Myanmar. Unfortunately, many of the larger mammal species appear to be at low densities. Tiger and gaur are in danger of being completely eliminated from the sanctuary unless current levels of poaching are controlled.

In addition to poaching, current levels of human disturbance in the sanctuary are affecting the abundance and distribution of many species. The collection of rattan does not appear to be sustainable and collectors are being forced to move further and further into the forest for the rattan they are after. The paucity of signs of large mammals in the western part of the sanctuary may be related to the disturbance caused by hundreds of people moving through the forest. Animals cannot carry out their normal daily activities or rear their young in the presence of constant human disturbance. Under such circumstances animals are forced to shift to alternate areas, decreasing the effective size of the area in which they can live.

While the Lisu hunters were aware of the illegal nature of their actions, most of the local people collecting forest products appeared ignorant that the Tamanthi Sanctuary was protected by law. Some were aware that the area was protected, but did not understand what such protection meant. While the Sumatran rhino in the Upper Chindwin area is unlikely to survive, the active protection and management of Tamanthi Wildlife Sanctuary by the Forest Department can help ensure that much of Myanmar's other wildlife species continue to persist well into the future. Any protection

and management actions should be accompanied by efforts to inform local people of the legal status of the area, erect signs at key access points into the area, and assign local headmen the task of reporting illegal activities.

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References

Ansell, W.F.H. 1947. A note on the position of the rhinoceros in Burma. *Journal of the Bombay Natural History Society*, **47**, 498–505.

Borner, M. 1979. *A field study of the Sumatran rhinoceros, Dicerorhinus sumatrensis Fisher 1814*. PhD thesis, University of Basel.

Brown, G.E.R. 1911. *Burma Gazetteer: Upper Chindwin District*. Vol. A. Government Printing Office, Rangoon.

Collins, N.M., Sayer, J. and Whitmore, T.C. (eds). 1991. *The Conservation Atlas of Tropical Forests: Asia and the Pacific*. Simon and Schuster, New York.

Evans, G.P. 1911. *Big-game Shooting in Upper Burma*. Longmans, Green and Co., London.

Hundley, H.G. 1952. *Working plan for the Upper Chindwin Forest Reserve for the period 1952–53 to 1966–67*. Forest Department, Yangon.

Hundley, H.G. 1981. *Tamanthi Wildlife Sanctuary*. Report to Myanmar Forest Department, Yangon.

Khan, M. 1989. *Asian Rhinos: An Action Plan for their Conservation*. IUCN, Gland, Switzerland.

Milton, O. and Estes, R.D. 1963. *Burma Wildlife Survey, 1959–1960*. Publication No. 15, American Committee for International Wildlife Protection, New York.

Myanmar Forest Department. 1990. *Wildlife conservation in Myanmar*. Ministry of Agriculture and Forests, Union of Myanmar.

Peacock, E.H. 1933. *A Game Book for Burma and Adjoining Territories*. H. F. & G. Witherby, London.

Rabinowitz, A. 1993a. *Wildlife Field Research and Conservation Training Manual*. Wildlife Conservation Society, New York.

Rabinowitz, A. 1993b. Estimating the Indochinese tiger population *Panthera tigris corbetti* in Thailand. *Biological Conservation*, **65** (3), 213–217.

Strickland, D.L. 1967. Ecology of the rhinoceros in Malaya. *Malayan Nature Journal*, **20** (1/2), 1–17.

van Strien, N. 1986. The Sumatran rhinoceros in the Gunung Leuser National Park, Sumatra, Indonesia: its distribution, ecology and conservation. *Mammalia depicta*, Verlag Paul Parey, Hamburg.

Talbot, L.M. 1960. A look at threatened species. *Oryx*, **5**, 153–293.

Tun Yin. 1967. *Wild Animals of Burma*. Rangoon Gazette, Rangoon.

Uga, U. 1992. *Conservation of wild populations of rhinoceros: conservation measures and priorities in Myanmar*. Report at UNEP meeting, Nairobi, Kenya.

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