

Current Status and Threats to the Survival of Large Mammals in North Myanmar

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Introduction

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Situated between the Indian subcontinent and the south-east Asian peninsula, Myanmar contains an unusual diversity of habitats and life forms. While surveys based on Landsat imagery in the early 1980s indicated a total area of closed and degraded forest at more than 40%, more current estimates put this figure closer to 20% (International Union for Conservation of Nature and Natural Resources [IUCN] 1992). Much of the remaining intact forests are in north Myanmar, a geographic region of more than 64,372 sq.km north of 25° latitude, at the eastern edge of the Himalayas. This region contains the country's most important watersheds, and serves as a key reservoir for Sino-Himalayan biodiversity (Collins et al. 1991).

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North Myanmar was described as part of the Sino-Himalayan region by F.K. Ward (1944), who felt that effects of Pleistocene glaciating created a unique floral composition influenced primarily by India, the Himalayas, China, and Malaysia. Up until the 1990s, however, few biological surveys for wildlife had been conducted in the north. In 1931, while searching for the source of the Irrawaddy River (Ward 1932), Lord Cranbrook collected several hundred bird and mammal specimens north of 27° 30'. A few years later, specimen-collecting expeditions were carried out to the Upper Chindwin (Morris 1936), and along the Yunnan border (Stanford 1940). The first attempt at a systematic survey of the status of wildlife and recommendations for their protection throughout parts of Myanmar was in 1959 by Milton and Estes (1963) who got as far north as the Chaukan Pass along the border with Assam.

Recent wildlife surveys

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Since 1994, the authors have conducted seven trips to north Myanmar to survey wildlife, assess the status of protected areas, and investigate new sites for designation as parks or sanctuaries. Until 1996, only two protected areas existed north of 25° 02' latitude in Myanmar. The first, Pidaung Wildlife Sanctuary (25° 15'-25° 35' N, 97° 04'-97° 28' E), was protected in 1913 primarily for large mammals such as elephant (*Elephas maximus*), gaur (*Bos gaurus*), tiger (*Panthera tigris*), leopard (*Panthera pardus* [common leopard]), and bears (*Ursus* sp.). However, between 1939 and 1957, elephants declined more than 75%, while tigers, leopards, and bears declined 83-90% in Pidaung (Estes and Kimlai 1964). When the

authors visited the sanctuary in 1995, and again in 1997, much of the original habitat was degraded and there was no evidence of any large wildlife population remaining in the sanctuary.

The second protected area in the region, Tamanthi Wildlife Sanctuary, was established in 1974 along the Upper Chindwin River, primarily for the protection of Sumatran rhinoceros (*Dicerorhinus sumatrensis*), and other species of large wildlife (Hundley 1952). A survey by the first author there in 1994 found no evidence of rhinos surviving in the sanctuary, and other species of large mammals, such as tiger and gaur, were at unusually low densities due to poaching pressures (Rabinowitz et al. 1995). Between 1995 and 1997, three survey expeditions were conducted in the Putao and Naung Mung Townships (Putao District) above 27° latitude. The most extensive of these trips, in the vicinity of Mount Hkakaborazi, resulted in the discovery of three new large mammal species for the country — blue sheep (*Pseudois nayaur*), black muntjac (*Muntiacus crinifrons*), and stone marten (*Martes foina*), and one new species for science, the leaf muntjac (*Muntiacus putaoensis*) (Rabinowitz and Khaing 1998; Amato et al. 1999; Rabinowitz et al. in press). New range extensions were documented for the golden jackal (*Canis aureus*) and the Malayan sun bear (*Ursus malayanus*).

The discovery of the black muntjac, which had been sought by the Vernay-Cutting Expedition in 1938 but never found, established the presence of the only other sizeable population of this species outside of south-east China, more than 1,609 km away (Rabinowitz et al. 1998). In addition, the survey documented probably one of the largest remaining populations of the rare red goral (Rabinowitz 1999), a species only first described early this century (Pocock 1914). This survey, and a second one conducted a year later in the Naung Mung Township between Putao and the Nam Tamai, indicated that the region north of Putao still contained good populations of most wildlife species, and was a transition zone between the tropical Indo-Malaysian faunal communities of the south and the temperate and alpine Sino-Himalayan fauna from the colder north. The large mammal species that had been extirpated from this area included tigers, elephants, rhinos, and most gaur. The Nam Tamai River seemed to be a natural barrier restricting certain fauna, such as Hoolock's gibbon (*Hylobates hoolock*), leaf muntjac, and sambar deer (*Cervus unicolor*) to the south of the river and black muntjac and red goral (*Naemorhedus cranbrookii*) to the north of the river. Partly as a result of these surveys, the government gazetted Mount Hkakaborazi National Park in 1998; 2,369 sq. km of mountainous area bordered by the Nam Tamai branch of the Mai Hka in the south and the border with China in the north. Mount Hkakaborazi is a true Himalayan park, containing populations of musk deer (*Moschus moschiferous*), red panda (*Ailurus fulgens*), takin (*Budorcas taxicolor*), red goral, black muntjac, and blue sheep. In 1999, an expedition was carried out to the Hukaung Valley, along the old Ledo (or Stilwell) Road between Myitkyina and the border with Assam (26-27° N, 96-97° E). This area, long known for its large wildlife such as rhinos and tigers, was still unadministered and wild as late as 1933. But this changed during World War II when a supply road for the Allies was built through the Hukaung Valley. Today, the road is abandoned and large areas of the Hukaung Valley remain uninhabited, still containing most of the characteristic wildlife species for the area, except rhinos. In September 1999, a 2,500 uninhabited piece of the Hukaung Valley was formally recommended to the government as the Hukaung Valley Wildlife Sanctuary.

Hunting and trade of wildlife in north Myanmar

The loss and degradation of forest habitat has been an important factor in the decline of large mammals throughout central Myanmar (McShea et al. 1999). In north Myanmar, however, it is hunting of wildlife for sale or trade that is the overwhelming threat to the future survival of many wildlife species, particularly large mammals. In all areas visited by the authors, hunters were

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targeting particular species whose parts were valued by traders. In Tamanthi Wildlife Sanctuary, Lisu from Putao Township were encountered hunting otter, tiger, and gaur which they sold to traders from China, or carried across the border themselves (Rabinowitz et al. 1995). In the Hukaung Valley, Lisu were again reported to be the main hunters penetrating some of the more remote areas after tiger and gaur. While most of the different ethnic groups hunt to varying degrees, the Lisu are known as the most dedicated hunters in north Myanmar, and even across the border into China (Ma et al. 1995). Throughout the lower regions of north Myanmar, particularly in the more rugged border areas, tigers, elephants, and gaur still existed only in small pockets and at relatively low densities. Around the town of Putao, and all areas north that were visited, all three of these species were extirpated (Rabinowitz 1998). Even in the Gaoligongshan Mountain region along the Myanmar-China border recent surveys found no evidence of tigers, elephants, or rhino, and evidence of only a possible few scattered gaur in the mountains, all of which were species that had historically occurred in the area (Ma et al. 1995). Our most extensive hunting and trade data came from our expeditions to the Putao District. Table 13 lists 33 mammal species that were found being sold in the Putao markets, or were killed in villages north of Putao for sale to traders. Table 14 lists the range of prices that villagers claimed they would get for particular animal parts desired by wildlife traders. While the most valuable and sought after species were musk deer for its musk gland, bear for its gall bladder, otter for its skin and penis, and pangolin (*Manis pentadactyla* [Chinese pangolin]) for its scales, the most frequently killed species were red goral and barking deer, followed by takin, serow (*Naemorhedus sumatraensis*), and red panda. Leopards and otter were now said to be very rare in the region due to hunting pressures, although one hunter killed and sold a leopard (skin and bones) in 1995 to a trader from Putao for 12,000 kyats*.

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Hunting was carried out by local people using a variety of methods, the most common being a locally made crossbow with arrows dipped in poison from a local plant. Snares were commonly used for deer, while jaw traps brought over from China, or bamboo spear traps, were sometimes used for larger species such as bears. Home-made black powder rifles were rarely seen north of Putao. Hunting was mostly carried out by Rawan and Lisu people and, to a somewhat lesser extent, Myanmar-Tibetans in the far north. However the Rawan were said to be good at trading, while the Lisu were the better hunters. Rawan and Lisu from China also reportedly crossed the border hunting in small groups of 3-6 individuals along the mountainous border areas. In the lower elevation areas between the town of Putao and the border of Hkakaborazi National Park, hunting occurred throughout the year, but the majority was from June through January. The months of February through May were occupied with plantation making, and hunting was mostly restricted around the plantation area. In the higher elevations of Hkakaborazi National Park, hunting usually took place

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* There are 425 kyats to a US dollar.

Table 13: Wildlife species found for sale or killed by local people in Putao markets and in villages north of Putao

Wildlife species	Putao markets	Naung Mung area	Hkakaborazi National Park
CERVIDAE (antlers and skins)*			
Leaf muntjac		X	
Black muntjac			X
Common muntjac	X	X	
Sambar deer	X	X	
MOSCHIDAE (musk gland)*			
Musk deer			X
AILUROPODAE (skin)*			
Red panda			X
HYLOBATIDAE (bones and skin)*			
Hoolocks gibbon	X	X	
CERCOPITHECIDAE (bones and skin)*			
Phayres langur	X	X	
Assamese macaque		X	X
URSIDAE (skins)*			
Asiatic black bear		X	X
Malayan sun bear		X	
VIVERRIDAE (skins)*			
Large Indian civet		X	
Common palm civet		X	
Otter (penis)*			
BOVIDAE (skins and horns)*			
Serow	X	X	X
Red goral	X		X
Blue sheep	X		
Takin	X	X	X
MUSTELIDAE (skins)*			
Back-striped weasel		X	X
Stone marten			X
Yellow-throated marten		X	X
Ferret badger		X	
HYSTRICIDAE (skins)*			
Porcupine	X	X	X
MANIDAE (scales)*			
Pangolin	X	X	
SUIDAE (meat and tusks)*			
Wild boar	X	X	
FELIDAE (skins and bones)*			
Tiger	X		
Clouded leopard		X	
Marbled cat		X	
Golden cat		X	
Leopard cat		X	X
CANIDAE			
Wild dog (dhole)		X	
Asiatic jackal	X		
PTEROMYIDAE			
Flying squirrel			X

*Animal parts in parentheses represent those parts most desired by traders

¹During 1997 survey US \$1 = 163 kyats and during 1998 survey US \$1 = 246 kyats

²1 lb = 27 tical; 1 viss = 100 ticals

Table 14: Trade prices for wildlife products from 1997-1998 survey expeditions to Putao and Naung Mung Townships

Species	Animal part used	Price range	Unit
Musk deer	musk gland	8,000-30,000	kyats/tical
Red goral	Skin	200-1,000	kyats
	Horn	50	kyats
Takin	Horn	3000-8,000	kyats
Red panda	Skin	150-500	kyats
Serow	Skin	1,000-2,000	Kyats
	Horn	100-300	kyats
Barking deer	Skin	200	kyats
	Horn	50-100	kyats
Himalayan black bear	gall bladder	5000-8000	kyats/tical
	Paws	50	kyats
Otter	Skin	10,000-15,000	kyats/foot of skin
Pangolin	Scales	7000-8000	kyats/vis
Sambar deer	Skin	800	kyats
	Antlers	150-200	kyats
Flying squirrel	gall bladder	500-600	Kyats

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from June-September, sometimes extending into October and November. This also corresponded with the period when most of the traders came from China, since the high mountain passes were closed from November through May. Local traders also came from Putao, Naung Mung, and Khaunglanphu Townships, from where many of the wildlife parts are sent into China. While many of the wildlife parts were valued for medicinal purposes, barking deer skins were valued as material for leather jackets, and were often sent to Mandalay.

At the height of the season, as many as 30 traders per month were reported coming through some villages. Local people usually traded wildlife, baskets, and some medicinal herbs for cooking utensils, salt, tea, soap, and clothes. The most sought-after species in the high altitudes of the far north is musk deer. The musk trade dates back centuries (Green 1978) and this animal is considered well on its way to extinction (Oza 1988). Local people have long developed sophisticated methods of trapping this deer with snares made from local materials (Wallace 1913), a practice still reported in north Myanmar. Because of the value of this species, villages in Hkakaborazi National Park claim to have traditional musk deer-hunting areas, which are known and respected among the villages. Since only the males contain the valuable musk, females are killed for their meat. Some villages still claimed an annual off-take of 15-20 musk deer, although all say that musk deer have become scarcer in recent years.

Summary

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The outlook for wildlife in many parts of the Himalayas is grim (Ranjitsinh 1995). The Himalayan fur trade, despite having declined in recent years, still exists (Heinen and Leisure, 1993), while the demand for wildlife parts

used for traditional medicine practices by the Chinese has increased (Rabinowitz 1998). Even in remote regions of south-east Tibet, where there are still extensive forests and relatively low human population densities, hunting pressures have adversely affected most wildlife populations (Jiang and Bleisch 1996). Although Myanmar joined the convention on international trade in endangered species of wild fauna and flora (CITES) in 1997, the trade in wildlife parts within the country and across the border to neighbouring countries continues to thrive (Martin 1997) and is a driving force behind declining wildlife numbers. In a bear bile production centre in China visited by the second author, most of the bears were said to come from Myanmar. Myanmar is becoming increasingly faced with the empty forest syndrome (Redford 1992), where there are large areas of seemingly suitable forest habitat remaining which are devoid of most of the larger wildlife species.

The situation is becoming increasingly desperate because many of Myanmar's neighbours, which have already overexploited their own resources, are now looking to exploit the last remaining pockets of forest and wildlife resources in Myanmar. However, the fact that large areas of north Myanmar are still intact and contain their characteristic diversity of many large mammal species, albeit at lower than normal densities, still gives hope for the future.

Conclusions

North Myanmar is one of the most important and biologically diverse regions of the country. It contains the headwaters of most of the major river systems in Myanmar, and it is a transition zone between the tropical Indo-Malayan fauna and flora from the south, and the temperate and alpine Sino-Himalayan fauna and flora from the north. Much of north Myanmar is still relatively sparsely populated and contains good areas of forest and other habitats. In the newly designated Hkakaborazi National Park, Himalayan species such as takin, musk deer, red goral, and red panda still abound, although in lower numbers than in the past. Still, Hkakaborazi might have some of the best populations of black barking deer and red goral in the world. In addition to the new leaf muntjac that was discovered in the transition zone south of the park, it is likely that the geographic isolation of Hkakaborazi Park will lend itself to more biological discoveries in the future. However, the problem is that hunting is omnipresent throughout this region, particularly by certain ethnic groups like the Lisu, who target particular species and help maintain a thriving trade in wildlife parts to cities like Mandalay and across the border into China. Certain species like tiger, elephant, and gaur are already at critically low numbers in this region because of hunting.

Rhinos appear to be already extinct from the region. Himalayan species within the new Hkakaborazi Park are also being continually hunted for a thriving cross-border trade with China. Existing and proposed protected areas like Tamanthi, Hkakaborazi, and Hukaung Valley are excellent, intact habitats which can preserve much of the region's biodiversity if properly managed and protected. At least several more protected areas should be established in the north, as well as a strategy of buffer zone management for areas outside these protected sites. Above all, the illegal trade in wildlife parts must be stopped, or, at least, brought under government control. In particular, free access across the Myanmar border by Chinese traders should be stopped. The continued degradation of north Myanmar's resources not only threatens the future biological wealth of the country, but could also threaten the abundant water resources that emanate from this region.

Acknowledgements

The field work that contributed to the data in this manuscript was funded by the Michael Cline Foundation in support of the Wildlife Conservation Society. We would also like to thank the Director-General of the Myanmar Forest Department, the Director of the Wildlife Conservation Division, the Ministry of Forestry, and the Ministry of Defence, for their interest and assistance in the wildlife surveys that contributed to this paper.

Bibliography (not necessarily cited in text)

- Amato, G.M.; Egan, A.; Rabinowitz, A. (1999) 'A New Species of Muntjac, *Muntiacus putaoensis* (Artiodactyla: Cervidae) from Northern Myanmar'. In *Animal Conservation*, 2: 1-7
- Collins, N.M.; Sayer, J.A.; Whitmore, T.C. (eds) (1991) *The Conservation Atlas of Tropical Forests: Asia and the Pacific*. London: Macmillan Press
- Green, M.J.B. (1978) *Himalayan Musk Deer in Threatened Deer*. Morges: IUCN
- Heinen, J.T.; Leisure, B. (1993) 'A New Look at the Himalayan Fur Trade'. In *Oryx*, 27: 231-238
- Hundley, H.G. (1952) *Working Plan for the Upper Chindwin Forest Reserve for the Period 1952-1953 to 1966-1977*. Yangon: Forest Department
- IUCN (1992) *Protected Areas of the World: A Review of National Systems, Vol. 1, Indomalaya, Oceania, Australia and Antarctic*. Gland, Switzerland and Cambridge, UK: IUCN
- Jiang, Q.M.; Bleisch W.V. (1996) 'Preliminary Assessment of Large Mammals in the Namcha Barwa Region of South-Eastern Tibet'. In *Oryx*, 30: 37-44
- Ma, S.; Han, L.; Lan, D.; Ji, W. (1995) 'Faunal Resources of the Gaoligongshan Region of Yunnan, China: Diverse and Threatened'. In *Journal of Environmental Conservation*, 22: 250-258
- Martin, E.B. (1997) 'Wildlife Products for Sale in Myanmar'. In *TRAFFIC Bulletin*, 17: 33-44
- McShea, W.J.; Leimgruber, P.; Aung, M.; Monfort, S.; Wemmer, C. (1999) 'Range Collapse of a Tropical Cervid (*Cervus eldi*) and the Extent of Remaining Habitat in Central Myanmar'. In *Animal Conservation*, 2: 173-183
- Milton, O.; Estes, R.D. (1963) *Burma Wildlife Survey 1959-1960*, Special Publication No. 15. New York: American Committee for International Wildlife Protection
- Milton, O.; Kimlai, H.Z. (1964) 'Burma Wildlife Survey Report on the Pidaung Wildlife Sanctuary'. In *Burmese Forester*, 14: 54-68

- Morris, R.C. (1936) 'The Vernay-Hopwood Upper Chindwin Expedition'. In *Journal of the Bombay Natural History Society*, 38: 647-671
- Oza, G.M. (1988) 'The Himalayan Musk Deer: Encashed for Extinction'. In *The Environmentalist*, 8: 301-304
- Pocock, R.I. (1914) 'Description of a New Species of Goral (*Nemorhaedus*) Shot by Captain F.M. Bailey'. In *Journal of the Bombay Natural History Society*, 23: 32-33
- Redford, K.H. (1992) 'The Empty Forest'. In *BioScience*, 42: 412-422
- Rabinowitz, A. (1998) 'Killed for a Cure'. In *Natural History Magazine*, 27: 22-24
- Rabinowitz, A. (1999) 'Notes on the Rare Red Goral (*Naemorhedus Cranbrooki*) of North Myanmar'. In *Mammalia*, 63: 119-123
- Rabinowitz, A.; Amato, G.; Khaing, S.T. (1998) 'Discovery of the Black Muntjac, *Muntiacus crinifrons* (Artiodactyla, Cervidae), in North Myanmar'. *Mammalia*, 62: 105-108
- Rabinowitz, A.; Khaing, S.T. (1998) 'Status of Selected Mammal Species in North Myanmar'. In *Oryx*, 32: 201-208
- Rabinowitz, A.; Myint, T.; Khaing, S.T.; Rabinowitz, S. (in press). 'Description of the Leaf Deer, *Muntiacus putaoensis*, a New Species of Muntjac from Northern Myanmar'. In *Journal of Zoology, London*
- Rabinowitz, A.; Schaller, G.B.; Uga, U. (1995) 'A Survey to Assess the Status of Sumatran Rhinoceros and Other Large Mammal Species in Tamanthi Wildlife Sanctuary, Myanmar'. In *Oryx*, 29: 123-128
- Robinson, J.G.; Bodmer, R.E. (1999) 'Towards Wildlife Management in Tropical Forests'. In *Journal of Wildlife Management*, 63: 1-13
- Ranjitsinh, M.K. (1995) 'Himalayan fauna'. In Lall, J.S, (ed.) *The Himalaya, Aspects of Change*. Delhi: Oxford University Press
- Stanford, J.K. (1940) 'The Vernay-Cutting Expedition to Northern Burma.' In *Ibis*: 679-711
- Wallace, H.F. (1913) *The Big Game of Central and Western China*. Cumbria: David Grayling (republished in 1992)
- Ward, F.K. (1932) *Explorations on the Burma-Tibet Frontier*, pp. 465-483.
- Ward, F.K. (1944) 'A Sketch of the Botany and Geography of North Burma'. In *Journal of Bombay Natural History Society*, 44: 550-574