

CHAPTER 23

Large Mammals in Sabah

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Abstract

Loss and fragmentation of forest habitat in the east-coast lowlands of Sabah poses the single major threat to long-term survival of large mammal species in the state. There is still adequate forested land in this region to successfully reverse the trend, provided that a certain proportion, contiguous with existing Forest Reserves, is added into the permanent forest estate.

Introduction

Amongst mammals, large-bodied species tend to be the most threatened by present-day human activities. In general, the major reason for this is that the larger the animal, the lower is the natural population density of the species and the greater the area of natural habitat required to sustain a breeding population. In direct conflict with these characteristics, major features of modern human activities are that they reduce and fragment natural habitats into small "islands". In the case of those species of large mammals which rarely or never consume animal matter, there is an associated factor: they may be limited in their distribution by the availability of certain minerals (notably sodium, phosphorus and trace elements) which occur in inadequate concentrations in plants and patchily in the natural environment. This has been shown to be the case for large herbivores in Africa (McNaughton, 1988) and to be a likely factor limiting large mammals in Sabah (Davies & Payne, 1982; Payne, 1988, 1990a, b). Furthermore, human hunting pressure on large mammals often tends to be greater than does similar pressure on small mammals when viewed in relation to abundance and reproductive capacity. This last factor is significant only in certain special cases in Malaysia, however, and is generally overshadowed by the loss, fragmentation and degradation of forest habitat.

In Malaysia, Sabah is of particular importance to large mammal conservation at the

present time. This is because the State (a) is large (about 73,620 sq. km.) with a more extensive forest cover than in most parts of Peninsular Malaysia and (b) has a greater diversity and abundance of large mammal species than does Sarawak. Discussion in this paper is limited to those species which, in the absence of deliberate conservation actions, are likely to be threatened with widespread or total extinction during the next century. Two threatened primates – the orang-utan and proboscis monkey – are described in more detail by Bennett (Chapter 21). All the species discussed below are protected by law from hunting, capture and sale of meat or other products (although some may be taken in special circumstances, strictly controlled by the Sabah Wildlife Department). While the terrestrial herbivorous species can obtain adequate food and other resources from partially forested habitats, the long-term survival of all is dependent on the existence of large tracts of legally-gazetted permanent forest estate (PFE), which may incorporate all classes of forest reserves as well as Parks, wildlife sanctuaries and water-catchment reserves.

Data collected by the authors in Sabah, some of which have been compiled elsewhere in published and unpublished documentation (Andau, 1987; Andau and Ambu, 1989; Andau and Payne, 1986; Davies and Payne, 1982; Payne, 1987, 1988, 1989, 1990a, b; Payne and Andau, 1989; Payne *et al.*, 1985; Payne *et al.*, 1989), form the basis of this

paper. Additional information (notably, Ahmad, 1987; British North Borneo Herald, 1883 – 1941; Burgess, 1961; Martin, 1989; Medway, 1977; Mohd. Khan, 1989; Shukor *et al.*, 1989) supplements these sources.

Asian Elephant (*Elephas maximus*)

World and Malaysian Distribution Mainland Asia (notably India, Burma; Laos, Thailand), Sri Lanka and parts of the islands of Sumatra and Borneo. Formerly widespread in the Peninsula but now confined to extensive forested regions. In Sabah (and the northern end of East Kalimantan, Indonesia), but not Sarawak. The Borneo population is now one of the largest remaining concentrations of the Asian elephant in the world, and may be of critical importance to the long-term survival of this species.

Habitats and Distribution in Sabah Occurs in all kinds of lowland and hill forests, but

mainly in flat and gently-sloping lowlands, including (seasonal) swamps. Confined to parts of eastern Sabah, mainly within the catchments of the Kinabatangan and Segama rivers. Distribution (Fig. 1) appears to be closely tied to that of natural concentrated salt sources (Fig. 2), and is similar to that of the orang-utan.

Population Densities and Sizes Believed to be about one elephant per 5.5 sq km in lowland habitats, much lower in hills. The total population size is estimated at between 500 and 2,000 individuals.

Occurrence in the Existing PFE Much of the land supporting high elephant population densities either was alienated for agriculture starting during the 1970's or is stateland under degraded forest. Most of the existing PFE includes forest land only marginal for elephants; it also divides the original popula-

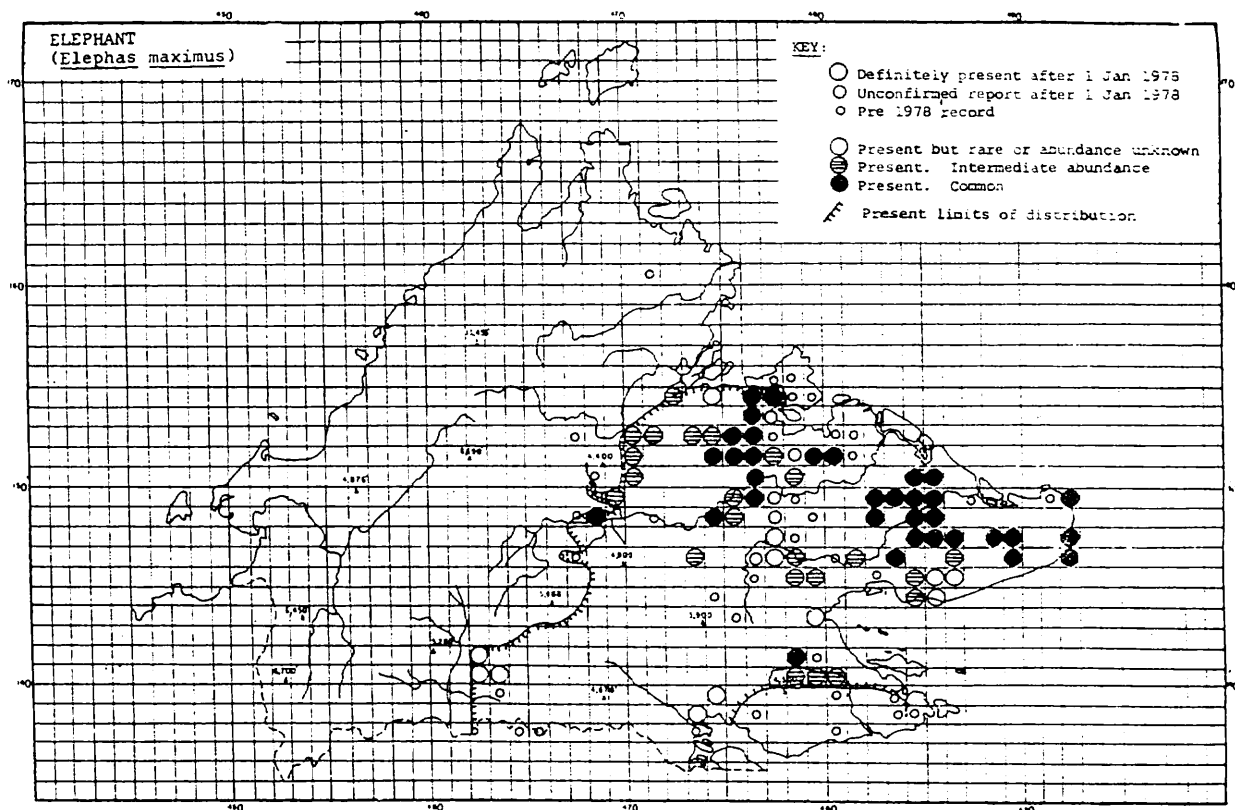


Figure 1. The distribution of the elephant in Sabah. (Source. Davies & Payne, 1982).

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tion into two fairly large groupings (in the upper Segama and Kinabatangan region, and in Tabin Wildlife Reserve) and many smaller ones with inadequate forest for survival.

Major Threats Loss and fragmentation of lowland forest habitats. Hunting, legal and illegal, does occur occasionally, to protect agricultural crops from elephant damage, but this is a symptom of the threat, not a threat in itself.

Conservation Actions Taken Tabin Wildlife Reserve (about 1,220 sq km) was gazetted in 1984, in a large part for elephant conservation. A proposal for a new conservation area in the lower Kinabatangan region, which – if implemented – would contribute greatly to continuity and size of the PFE suitable for elephants, has been submitted to government. The Wildlife Department encourages

use of electrified anti-elephant fencing in oil palm plantations.

Sumatran Rhinoceros (*Dicerorhinus sumatrensis harrissoni*)

World and Malaysian Distribution In scattered parts of mainland South-east Asia, Sumatra and Borneo. Similarly, in Malaysia scattered in parts of Peninsular Malaysia, Sabah and northern Sarawak.

Habitats and Distribution in Sabah Occurs (or formerly occurred) in almost all forest habitats, but mainly lowland and hill dipterocarp forests. The species appears to be tied to the distribution of natural concentrated salt sources (including the sea), and in the past was widespread wherever these occurred. The majority of rhinos now occur in eastern, central and southern Sabah, notably in the upper Segama–Kumut region (incorporating the Danum Valley and

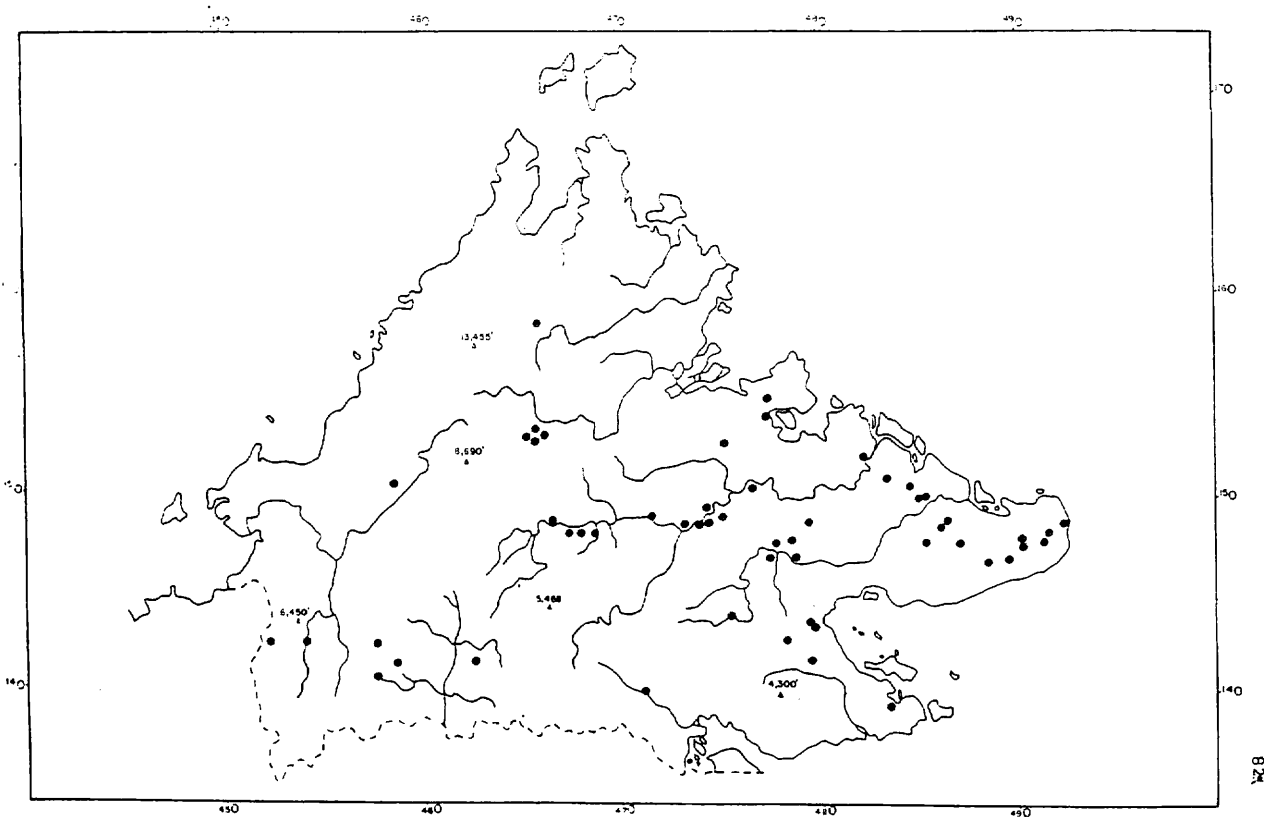


Figure 2. The distribution of natural salt sources in Sabah.
(Source: Davies & Payne, 1982).

Maliau Basin Conservation Areas) and in and around Tabin Wildlife Reserve (Fig. 3).

Population Densities and Sizes A maximum population density of at least one rhino per 10 sq km has been recorded for the Danum Valley area (Ahmad, 1987). In most areas, densities are very much lower. Total population sizes remain unknown, due to the difficulties involved in locating animals in extensive forest.

Occurrence in the Existing PFE Most of the remaining rhinos occupy or use the existing PFE, with potentially viable breeding populations probably only in Tabin Wildlife Reserve and in the upper Segama-Kuamut region (mainly Commercial Forest Reserve).

Major Threats Excessive and prolonged hunting pressure, which appears to selectively eliminate breeding females, has been and

remains the major threat. Rhino parts, especially the horns, are used by Chinese communities throughout Asia as a medicine, primarily with the intention of reducing fevers.

Conservation Actions Taken Tabin Wildlife Reserve (about 1,220 sq km) was gazetted in 1984, primarily for rhino conservation. The Danum Valley Conservation Area and Field Studies Centre (in Sabah Foundation's logging concession, the locations of which were chosen partly because of the presence of rhinos) provide a relatively high degree of safety from hunting. Penalties for hunting rhinos were greatly increased by legal amendments in 1988. Monitoring of and guard patrols for wild rhinos are conducted frequently by the Wildlife Department. Since 1986, the Sabah government has funded a programme to capture doomed rhinos outside the PFE for the establishment

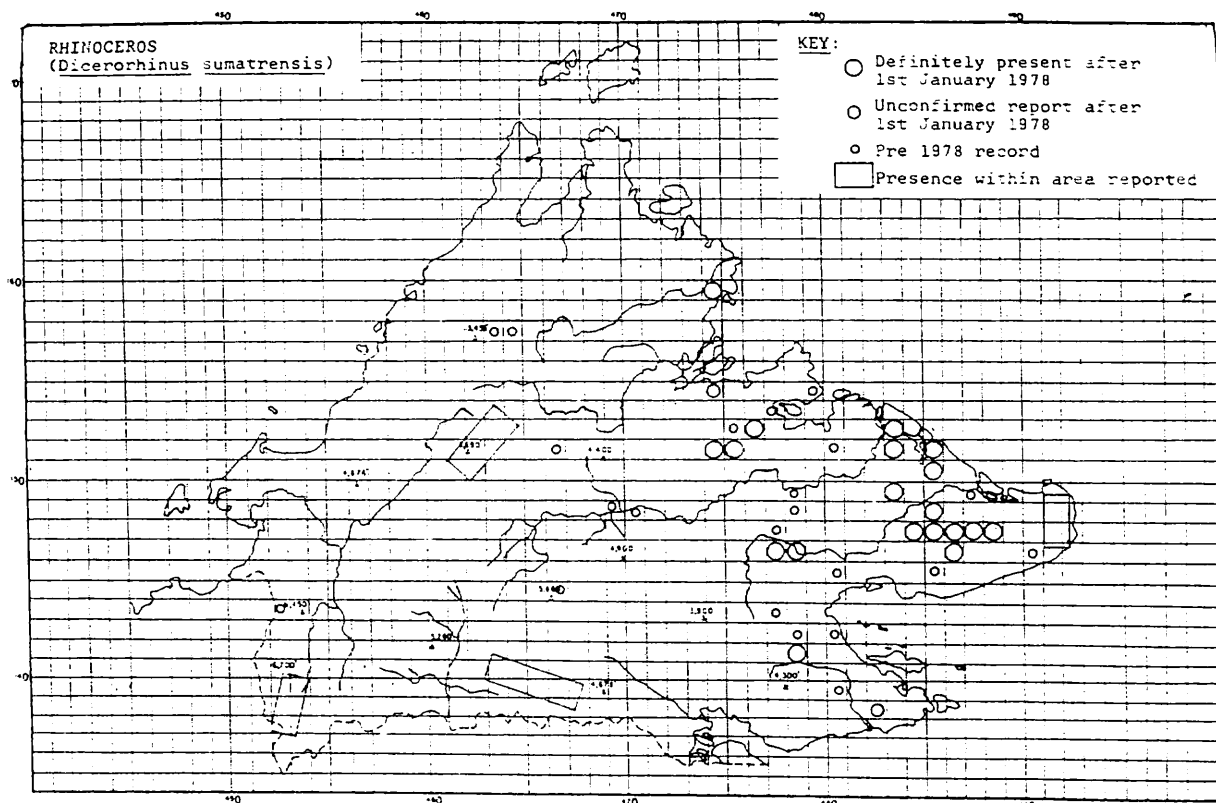


Figure 3. The distribution of the rhinoceros in Sabah.
(Source: Davies & Payne, 1982).

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of a captive breeding population.

Tembadau or Banteng (Wild cattle, *Bos javanicus*)

World and Malaysian Distribution Highly scattered, in parts of mainland South-east Asia (notably Burma, Laos and Thailand), and in parts of Borneo and Java. Formerly in Peninsular Malaysia and Sarawak, but in Malaysia now confined to Sabah.

Habitats and Distribution in Sabah Occurs in most types of forest from sea level to about 1,000 m elevation, but not known from ultrabasic or heath forests. As a grazer, probably prefers non-climax and degraded forests. Distribution patchy, mainly in heavily logged lowland forests and floodplain forests of eastern Sabah, with small numbers in areas of shifting cultivation in the north and south-west. Tembadau seem to be partially limited by availability of salt sources.

Population Densities and Sizes Unknown. Herds of 6–10 are most often seen, but congregations of about 40 animals are reported from the eastern lowlands.

Occurrence in the Existing PFE Fairly high concentrations of tembadau occur in the wildlife reserves and parts of other forest reserves in eastern Sabah. The greatest concentrations are outside the PFE, but these have been decimated by hunting in recent decades.

Major Threats Although remarkably resilient to heavy hunting pressure, illegal hunting is at present a serious cause for concern, especially by groups which slaughter herds and take little of the meat. Since much of this hunting is on land which is being or may be converted to permanent agriculture, the long-term effects remain in doubt. Fragmentation of the east coast lowland forests is probably the greater threat.

Conservation Actions Taken Gazettement of Tabin and Kulamba Wildlife Reserves in 1984 was a major step in reserving forest land of sufficient extent to support breeding populations of tembadau. Anti-poaching patrols are done by the Sabah Wildlife Depart-

ment, with tembadau as a major focus.

Sun or Honey Bear (*Helarctos malayanus*)

World and Malaysian Distribution Mainland South-east Asia, Sumatra and Borneo. Occurs in all parts of Malaysia where suitable extensive habitat remains.

Habitats and Distribution in Sabah Predominantly in dipterocarp forests, but also extends into lower montane and swamp forests. Occasionally enters other habitats. Occurs in all areas of extensive tall forest.

Population Densities and Sizes A provisional population density estimate has been made of one bear per 4 sq km of primary dipterocarp forest, but numbers are likely to be lower in most areas. Highest density of signs of bear have been noted in hill forest poor in commercial trees in the Pensiangan area of south-western Sabah. Total population size unknown.

Occurrence in the Existing PFE The species is believed to occur in most or all extensive areas of PFE.

Major Threats The effects of forest loss and logging on sun bear populations are unknown. A major future threat is likely to be the demand from Japan and South Korea for bear gall bladders (used medicinally); by weight, prices for this item exceed those paid for rhino horns.

Conservation Actions Taken None specifically.

Clouded Leopard (*Neofelis nebulosa*)

World and Malaysian Distribution Widespread throughout mainland South-east Asia, and on the islands of Taiwan, Sumatra and Borneo.

Habitats and Distribution in Sabah Has been recorded in all forest types except heath forest, and in tree plantations, from sea level to above 1,000 m elevation. Appears to occur in all areas of extensive forest.

Population Densities and Sizes A provisional population density estimate has been made of

one clouded leopard per 4 sq km of primary dipterocarp forest, but numbers are likely to be lower in most areas. The density of this species probably depends on the density and productivity of prey animals, which vary from small vertebrate animals to orang-utans and pigs. Total population size is unknown.

Occurrence in the Existing PFE The species is believed to occur in most or all extensive areas of PFE.

Major Threats The clouded leopard is under no existing significant threat, but a combination of forest loss, fragmentation and degradation, with "sport" hunting and over-hunting of the species' prey animals may change its status in the future.

Conservation Actions Taken None specifically; the existing PFE is believed to be large enough to maintain breeding populations.

Discussion

If the orang-utan, proboscis monkey and elephant are to survive as robust wild breeding populations into the middle of the next century it is essential that the existing PFE be enlarged to incorporate extensive areas of forested land in the lower Kinabatangan region of eastern Sabah. The same measure would be beneficial to all the species discussed above, especially rhino and tembadau. Forest to be incorporated should include riverine, swamp and dryland formations, and be contiguous with the existing PFE. In addition, account must be taken of the needs of large mammals in planning the extent and location of future tree plantations in the PFE.

Such steps need not be regarded as locking up land "just" for wildlife. The human population of Sabah is far less than is needed to provide labour even for existing agricultural plantations. And it can be said of cocoa and oil palm, which constitute the bulk of agriculture in eastern Sabah, that neither has as promising future domestic or export markets as do tropical hardwoods. There is no evidence that commercial logging, as practised in Sabah, has significant detrimental effects on the survival of orang-utan,

elephant, rhino, tembadau or clouded leopard populations. Insufficient information is available at present to make such a claim for proboscis monkey or sun bear, and relevant studies are needed on both species. Nevertheless, the majority of forest reserved for large mammal conservation can be used for production of wood, rattan and wild meats, as well as for "biological" tourism. (The highest recorded population densities of orang-utans in Borneo occur in a large-scale rattan plantation developed in regenerating logged forest and swamp forest in the lower Kinabatangan region).

In contrast to the other herbivorous species discussed above, the rhinoceros is not threatened primarily by habitat loss. Although more widespread and numerous than feared in the past, it is the only species in serious danger of extinction. This has come about through excessive and chronic hunting pressure. There is strong evidence that the remaining fragmented "population" is biased in favour of mature males, with females and dependent offspring highly reduced, and in peril from hunters and trappers. Maximising survival prospects for the rhinoceros depends on several actions, including:

1. emphasis of guard patrols/monitoring in and around the main potentially viable wild populations,
2. additional strengthening of legislation against buyers of rhino parts,
3. continuation of captive breeding efforts, and .
4. extension of the PFE.

The sun bear may also become endangered from hunting and trapping in the future if international (illegal) trade in bear parts cannot be controlled.

On a very broad scale, the large mammal species of South-east Asia have shown themselves to be quite tolerant of the natural changes which occurred in the region during the late Pleistocene and Quaternary to date. However, the patchy occurrence of most species, even before modern human activities changed the face of the region, suggest that chance combinations of changes in climate, sea level and forest cover acted to wipe out species locally. In view of this,

all possible measures need to be taken throughout the region to maximise long-term survival prospects of large mammal species.

As far as Sabah is concerned, predicted sea level increases could act to eliminate important orang-utan and elephant habitat during the second half of the next century. Of greater medium-term concern is the possibility of recurrent droughts and large-scale forest fires in the PFE. Up to 25% of Sabah's forest at present in the PFE were thus affected in 1983 (Beaman *et al.*, 1985) and lesser damage was done during 1987 and 1990.

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