

Sarawak

Species Conservation Priorities in the Tropical Forests of Sarawak, Malaysia

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Introduction

Sarawak is the largest of Malaysia's 13 states, occupying 124,450 km² of northwestern Borneo, approximately between 1° and 5° N latitude (Fig. 1). It is bounded to the north by the double enclave of Brunei (5,763 km²) and approximately 2,000 km of coastline. In the south and east it shares roughly 2,250 km of frontier with the Indonesian states of West and East Kalimantan, and a further 125 km with the Malaysian state of Sabah.

Geologically, Sarawak consists largely of relatively young, very deep sedimentary rocks that have been subjected to complex and localized folding; although more ancient formations, even pre-Permian, are found in the extreme west (Fitch, 1960).

Approximately 28,900 km² of the state (23%) lies below the 30 m above sea level contour, forming a coastal plain of varying width, with a number of isolated outcrops. The soils here are mainly gley and peat formations, most of which are poorly drained and naturally covered with various types of swamp forest (Anon., 1968). Above the 30 m contour, skeletal and podzolic soils predominate, being loamy sands to clays and typically very shallow where the land is steep. Much of this area is very rugged hill country, even steeply mountainous in places. The vegetation is chiefly mixed dipterocarp forest, with *kerangas* (heath forest) occur-

ring in areas of coarse, sandy soils (see Whitmore, 1975 and Table 1).

Land above 610 m, with more montane forest formations (20% of the state), is mainly to be found in northeastern Sarawak, culminating in the Kelabit Uplands and the state's highest peak, 2,425 m, named Gunung Murud. Nearby, Gunung Mulu rises to 2,378 m.

In Sarawak's 1980 census 1,294,753 people were counted (Dept. of Statistics Information, Sarawak). The most recent ethnic breakdown of 1970 gives the Malay/Melanau people as comprising 24% of the population, other native peoples as 45%, and the Chinese and non-natives as 31%. The significance of these figures is that the Malay/Melanau and non-native 55% of the population are mainly urban and coastal peoples who do not depend on hunting as a source of protein. The remaining 45%, sometimes referred to as *Dyaks*, are mainly rural people, many of whom practice hunting for food and cultural purposes (e.g., to collect feathers) with shotguns, spears and blowpipes (Figs. 2-3). They include the Bidayuh of western Sarawak, the Ibans, Kayans and Kenyahs of the center of the state, and smaller tribes from the north, such as the Kelabits, Muruts, Punans and Penans. Many of these people dwell in traditional longhouses and practice shift-

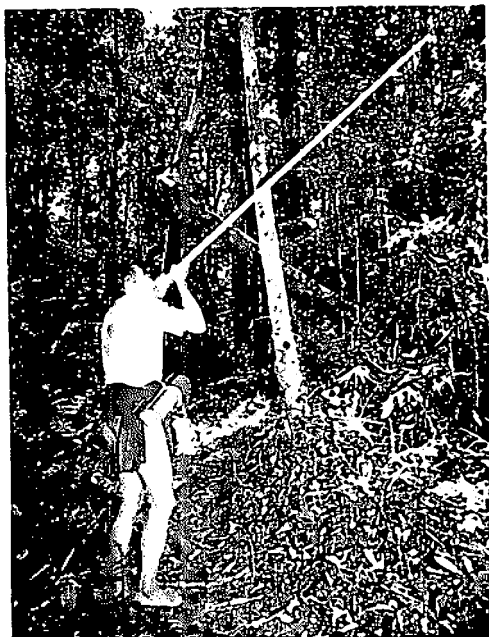


Fig. 1: A penan man using a blowpipe and poison darts to hunt for small game (photo by M. Kavanagh).



Fig. 2: Two Kelabit hunters of Sarawak's Fourth Division skinning a freshly shot Hose's langur (*Presbytis hosei*) (photo by M. Kavanagh).

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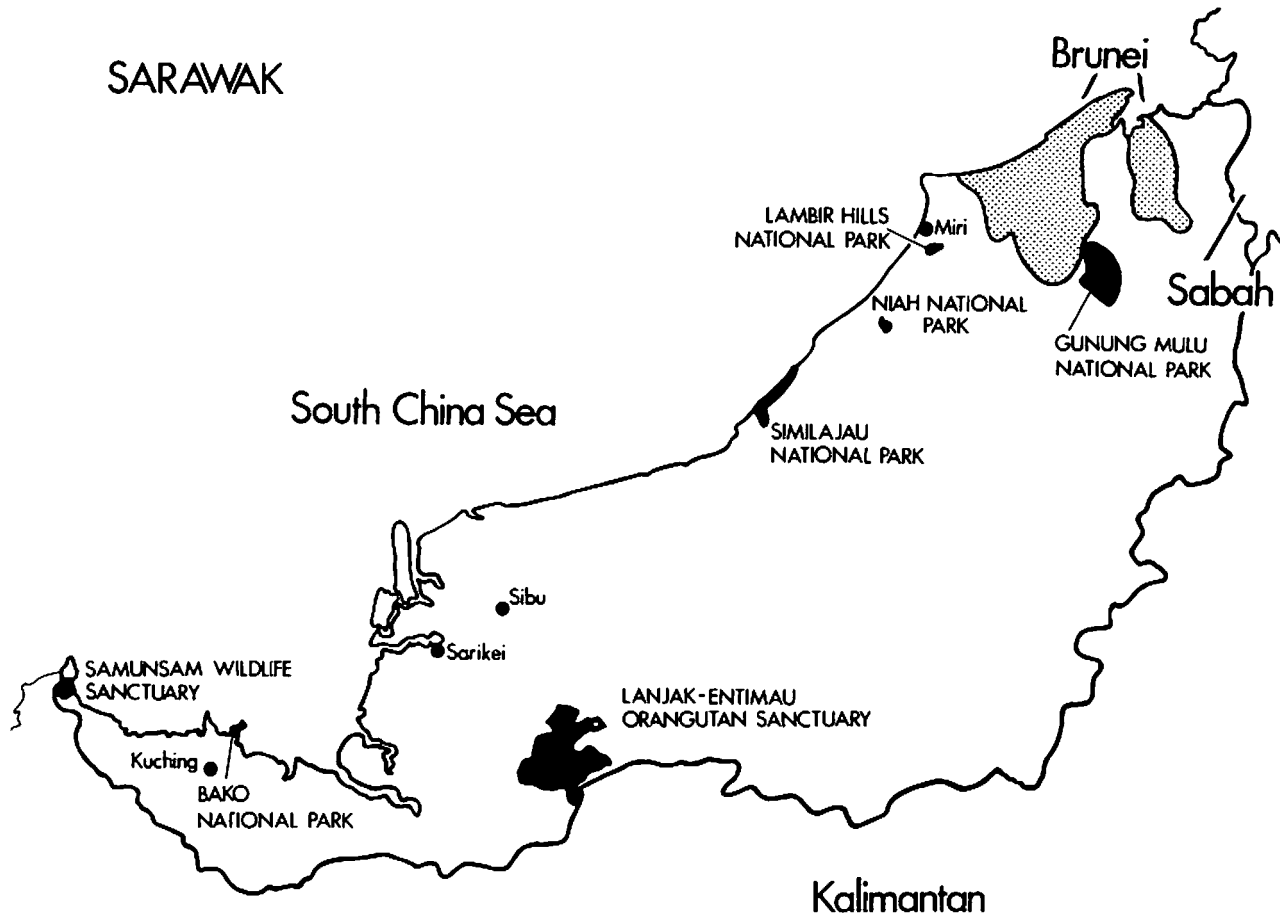


Fig. 3: Map of Sarawak showing the location of National Parks and Wildlife Sanctuaries.

ing cultivation of hill *padi* (with other crops) over wide areas. Nomadic hunter-gatherer groups may still be found among the Punans and Penans.

Throughout the state, the "Dyaks" have the right to practice their shifting cultivation wherever the land is neither specifically owned by some person or organization, nor gazetted as a government reserve. This means that they can farm in more than half of the area of Sarawak. Apart from their right to farm, they also enjoy "native customary rights," whereby they may hunt, fish and collect such forest products as rattan, fruit and timber for their housing. Generally, this is done in the forests fairly close to the longhouses, but it also occurs as much as three or four days journey upriver by non-motorized boat.

The net result of all this is that wildlife conservation is not an easy task. Shifting cultivation and wildlife conservation are often in competition for land; and the government usually has to abrogate or reduce native customary rights — often with extensive compensation — in order to obtain areas for national parks or wildlife sanctuaries. Once an area is gazetted as a park or sanctuary, constant patrolling is necessary against both poachers and encroachment by shifting cultivators.

Sarawak has a very limited road system. A single, largely unpaved trunk road from the extreme west to Brunei is scheduled for completion during 1983. However, the rivers will continue to form the basis of the transportation network for many years to come. A regular air service is available and air travel into the interior is subsidized by the government.

Under the Forest Ordinance of 1954 and its subsequent amendments, the Sarawak Forest Department administers 24.3% of the

Table 1. Principal forest types and other land use in Sarawak

| | Sq. Km. | % of land area |
|---|--------------|----------------|
| <i>Forested land</i> | | |
| Mangrove & nipah swamp | 1,738 | 1.4 |
| Other swamp forests | 14,738 | 12.0 |
| Mixed dipterocarp forests | 74,189 | 60.2 |
| Kerangas (heath forest) | 3,660 | 2.9 |
| | <hr/> 94,325 | <hr/> 76.5 |
| <i>Non-forest land</i> | | |
| Settled agricultural & non-agricultural | 4,730 | 3.8 |
| Shifting cultivation & unused land | 24,198 | 19.7 |
| | <hr/> 28,928 | <hr/> 23.5 |
| Total land area | 123,253 | 100.0 |
| (Water | 1,197 |) |

Source: Anon. (1982).

state as permanent forest in the form of forest reserves, protected forests and communal forests (Table 1). All are intended to be managed on a sustained yield basis. Forest reserves and protected forests, and all that they contain, are the property of the state gov-

ernment and may be exploited for timber under a licensing system. In addition, any inhabitant of Sarawak may enter any protected forest (subject to the control of the Director of Forests) to hunt, fish and collect minor forest products. Communal forests are specifically intended for more local exploitation by the people of the immediately surrounding area. These people have the sole right to utilize the forest, which they normally maintain and control, and which cannot be licensed for commercial timber extraction. It is the case, however, that "minor forest produce" is invariably understood to include wood for domestic use only.

National parks and wildlife sanctuaries are also controlled by the Director of Forests (who doubles as the Chief Game Warden), being administered on his behalf by the National Parks and Wildlife Office of the Sarawak Forest Department. They are the most fully protected areas in the state, the main practical difference between them being that parks are intended to include recreation and tourism. These protected areas, constituted under the National Parks Ordinance of 1956, the Wild Life Protection Ordinance of 1958 and their subsequent amendments, provide for certain hunting and collecting rights to be exercised, if so specified in the Government Gazette. Since there is no legal provision for buffer zones, these must be located within the protected area boundaries if they are to be managed as part of the area. The Wild Life Protection Ordinance also makes provision for the legal protection of listed species (see Table), to be enforced by means of fines and jail sentences.

Species Conservation in Sarawak

The National Parks and Wildlife Office (NPWO) has a staff of 57, of whom only 6 are graduates, plus 3 foreign volunteers. The current emphasis of the office is to administer the existing



Fig. 5: The proboscis monkey *Nasalis larvatus*, a large and striking primate restricted to Borneo (photo by R. A. Mittermeier).



Fig. 4: The proboscis monkey (*Nasalis larvatus*), a large and striking primate restricted to Borneo (photo by R. A. Mittermeier).



Fig. 6: Nipa-mangrove association in the Samunsam Wildlife Sanctuary, one of the main strongholds of the proboscis monkey in Sarawak (photo by R. A. Mittermeier).



Fig. 7: Bako National Park, an attractive national park located near the capital city of Kuching (photo by R.A. Mittermeier).

parks and sanctuaries and to gazette more land under these categories. It is therefore not surprising that a relatively small amount of survey information is available, much of it emanating from joint projects with scientists outside the department (e.g., Anderson, et al., 1982; Kemp and Kemp, 1974; WWF, 1982). Consequently, data on the effects of widespread shifting cultivation are usually conspicuously lacking in wildlife sanctuaries, even in comparison with settled land in Peninsula Malaysia.

Survey information does exist for hornbills (*Bucerotidae*; Kemp and Kemp, 1974) and the proboscis monkey (*Nasalis larvatus*; Salter and MacKenzie, 1981). Of the 8 hornbill species in Sarawak, only the pied hornbill (*Anthracoceros coronatus*) is regarded as vulnerable, as it prefers the coastal habitat. The coastal part of the state is precisely that which has been most cleared for agricultural development. The proboscis monkey (Figs. 4-7) has a disjunct distribution along the coast and a total population that is estimated at about 2,000 animals, far fewer than previously thought (IUCN, 1978), 90% of which are found in areas that are open to human exploitation.

Of the other species listed in the *Red Data Books* (ICBP, 1981; IUCN, 1978, 1982), orangutans (*Pongo pygmaeus*) are found in and around Lanjak-Entimau Orangutan Sanctuary. Although they have yet to be quantitatively surveyed, the available evidence shows that they cover a wide area and suggests that they are present in good numbers (WWF, 1982; NPWO unpublished reports, 1983; *contra* Davies, 1983). Elsewhere, they are found only in highly accessible, disjunct pockets of unprotected forest where they are unlikely to survive for very long. The Bornean tarsier (*Tarsius bancanus borneanus*) appears to be more widespread than previously thought (e.g., Medway, 1977), being present in Gunung Mulu National Park and Lamjak-Entimau (Anderson, et al., 1982; WWF, 1982), as well as, for example, Semenggoh Forest Reserve, Bako National Park and Niah National Park (Niemitz, 1979).

Very little is known about the distributions of the clouded leopard (*Neofelis nebulosa*), marbled cats (*Felis marmorata* and *F. badia*), or the flat-headed cat (*F. planiceps*). The Sumatran rhinoceros (*Dicerorhinus sumatrensis*), relatively common in the 1930's, may well be extinct in Sarawak, and the banteng (*Bos javanicus*) persists only in remote parts of the north and east, if at all.

The most up-to-date information for Sarawak's eight bird species that are listed in the *Red Data Book* may be found in ICBP (1981) and Smythies (1981). Likewise, up-to-date information about threatened reptiles may be found in IUCN (1982), to which it may be added that the false gharial (*Tomistoma schlegelii*) is still hunted, quite legally. A population of false gharials, as yet unsurveyed in detail, would be protected if current plans to establish Sarawak's only lake, Loagan Bunut, as a national park are successful. The first steps in this direction have been taken by the Forest Department.

Conservation education is in its early stages at all levels of Sarawakian society. However, certain species may be occasionally protected by specific customs and taboos. For example, orangutans are not hunted by most of the people of the upper Batang Ai river basin immediately to the south of Lanjak-Entimau. In consequence, they persist there, even in areas of secondary forest adjacent to cultivation where other primary forest species are almost totally absent. The same is not true in nearby areas where orangutans are equally protected by law, but not by tradition (unpublished survey information, NPO/WWF, 1983). For the majority of the people of Sarawak, wildlife conservation is of little or no interest, except where declining yields have become a matter for regret (see Aken, 1982).

With three-quarters of the state still forested, habitat destruc-

tion is not the immediate problem that it is in some other parts of southeast Asia, but this situation is unlikely to persist for long. At the present time, rural people and several development agencies are competing to use forested land, with many legitimate claims that can result in forest degradation and destruction.

Table 2. Protected areas in Sarawak

| | Sq. Km. | % of the area of the state |
|---|---------|-------------------------------|
| Production forests | | |
| Forest reserves | 7,602 | 6.1 |
| Protected forests | 22,536 | 18.1 |
| Communal forests | 55 | < .1 |
| | 30,193 | 24.3 |
| Parks & Sanctuaries (with dates of gazettelement) | | |
| 1. Bako National Park (1957) | 27 | < .1 |
| 2. Gunung Mulu National Park (1974) | 529 | 0.4 |
| 3. Niah National Park (1974) | 31 | < .1 |
| 4. Lambir Hills National Park (1975) | 69 | < .1 |
| 5. Similajau National Park (1979) | 71 | < .1 |
| 6. Samunsam Wildlife Sanctuary (1979) | 61 | < .1 |
| 7. Lanjak-Entimau Orang-utan Sanctuary (1983) | 1,688 | 1.4 |
| 8. Gunung Gading National Park (1983) | 54 | < .1 |
| | 2,530 | 2.0 |

Source: Anon. (1982); WWF (1982).



Fig. 8: Juvenile silver leaf monkey (*Presbytis cristata*) from Sarawak (photo by R. A. Mittermeier).

National parks and wildlife sanctuaries cover only 2% of the state and of those, only one exceeds 1,000 km² (Table 2). Should the existing parks and sanctuaries ever become completely isolated from the surrounding forests, they will certainly be inadequate to conserve more than a small proportion of Sarawak's plant and animal species. Species that naturally occur at low densities (such as many forest trees and large animals) and those which normally experience severe population fluctuations will be most at risk (Diamond, 1975). An additional problem for Sarawak is that swamp forests (about 17.5% of current forest cover) are effectively unrepresented among the existing parks and sanctuaries.

Finally, the state presently lacks appropriate regulations for the enforcement of CITES, to which Malaysia is a party, although the Wild Life Protection Ordinance (Table 3) provides the necessary enabling legislation. Specific proclamations must be gazetted before, for example, the trades in crocodile or pangolin derivatives can be controlled.

Conservation Action Priorities

It is recognized that the management plans for Gunung Mulu

Table 3. Animals listed on the First Schedule of the Wild Life Protection Ordinance

Protected animals:

| | |
|--|----------------------------|
| 1. <i>Nasalis larvatus</i> | proboscis monkey |
| 2. <i>Pongo pygmaeus</i> | orang-utan |
| 3. <i>Dicerorhinus sumatrensis</i> | Sumatran rhinoceros |
| 4. <i>Egretta sacra</i> | reef egret |
| 5. <i>Bulbulcus coromandus</i> | cattle egret |
| 6. <i>Ciconia stormi</i> | Storm's stork |
| 7. <i>Leptoptilos javanicus</i> | lesser adjutant |
| 8. <i>Haliaeetus leucogaster</i> | white-bellied sea-eagle |
| 9. <i>Ichthyophaga ichthyaetus</i> | grey-headed fishing eagle |
| 10. <i>Sterna sumatrana</i> | black-naped tern |
| 11. <i>Sterna anaethetus</i> | bridled tern |
| 12. <i>Ducula bicolor</i> | pie imperial pigeon |
| 13. <i>Chelonia mydas</i> | green turtle |
| 14. <i>Eretmochelys imbricata</i> | hawksbill turtle |
| 15. <i>Dermochelys coriacea</i> | leatherback turtle |
| 16. <i>Berenicornis comatus</i> | white-crested hornbill |
| 17. <i>Anorrhinus galeritus</i> | bushy-crested hornbill |
| 18. <i>Rhyticeros corrugatus</i> | wrinkled hornbill |
| 19. <i>Rhyticeros undulatus</i> | wreathed hornbill |
| 20. <i>Anthrococeros malayanus</i> | black hornbill |
| 21. <i>Anthrococeros coronatus</i> | pie hornbill |
| 22. <i>Buceros rhinoceros</i> | rhinoceros hornbill |
| 23. <i>Rhinoplax vigil</i> | helmeted hornbill |
| 24. <i>Polyplectron malacense</i> | Malaysian peacock pheasant |
| 25. <i>Argusianus argus</i> | great argus pheasant |
| 26. <i>Dugong dugon</i> | dugong |
| 27. <i>Lanthanotus borneensis</i> | earless monitor lizard |
| 28. <i>Tarsius bancanus</i> | Horsfield's tarsier |
| 29. <i>Neofelis nebulosa</i> | clouded leopard |
| 30. <i>Nycticebus coucang</i> | slow loris |
| 31. <i>Hylobates muelleri funereus</i> | Bornean gibbon |
| 32. <i>Hylobates muelleri muelleri</i> | Bornean gibbon |
| 33. <i>Hylobates muelleri abbotti</i> | Bornean gibbon |

Other animals the export of which is forbidden except under licence:

1. Apes and monkeys
2. Bears
3. Deer

n.b. The numbering of the listed animals follows that of the Ordinance but the scientific names have been up-dated where necessary.

National Park and Lanjak-Entimau Orangutan Sanctuary require implementation, and that similar management work is required for the remaining parks and sanctuaries. Work is proceeding in these areas, but an equal priority is to develop a master plan for the statewide conservation of representative habitat types. This will result in recommendations for more protected areas and for the incorporation of other types of permanent forest estate into the system to minimize fragmentation.

In this connection, NPWO is pursuing several concurrent lines of approach, partly in conjunction with WWF Malaysia (Project 3212). Firstly, potential protected areas are being surveyed on an opportunistic basis and proposed, if appropriate. Secondly, work has begun on the overall master plan as a basis for strategy. Thirdly, NPWO is encouraging greater integration of wildlife management practices with production forestry in forest reserves and protected forests (Aken, 1982).

Limited faunal surveys are being conducted as part of the above approach, but large parts of the interior, especially in the almost uninhabited east-central highlands, have yet to be tackled. A habitat-oriented, rather than species-oriented approach is currently most appropriate overall, but Lanjak-Entimau Orangutan Sanctuary was created largely to provide for that particular species, and the need for an area of deltaic mangrove for proboscis monkey protection is an immediate priority. Should a viable population of banteng or even rhinoceros be found in the state, NPWO would take steps to meet the species' conservation requirements, as necessary.

In addition, certain species are widely hunted and require management on a sustained yield basis over as big an area as possible. In effect, this will mean the implementation of closed seasons and perhaps certain hunting and trapping restrictions. NPWO is therefore taking steps to collect the relevant basic information, including quantified data on hunting practices, yields and the reproductive patterns and demography of the species concerned. It is anticipated that the studies will confirm the bearded pig (*Sus barbatus*) as the most hunted animal, with deer (*Tragulidae* and *Cervidae*) also being very important sources of protein in the rural areas.

Revision of the regulations gazetted under the Wild Life Protection Ordinance, especially for the purpose of controlling the wildlife trade, is also a current priority for NPWO, but for technical and constitutional reasons, this may take some time.

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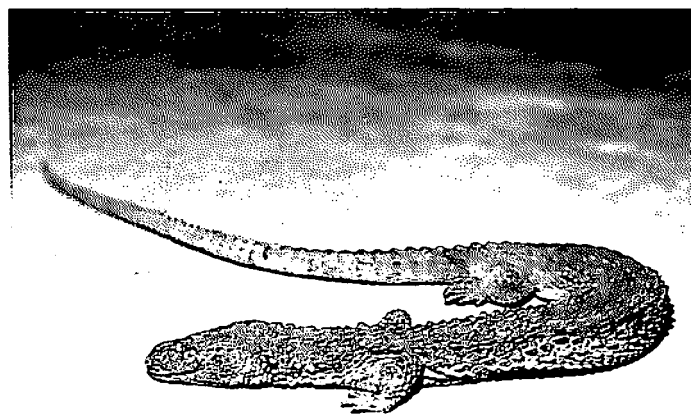


Fig. 9: The Bornean earless monitor (*Lanthanotus borneensis*), a very rare lizard first discovered in Sarawak (photo by R. A. Mittermeier).

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