Peninsula Malaysia

Species Conservation Priorities in the Tropical Rain Forests of Peninsula Malaysia

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Introduction

Peninsula Malaysia (131,582 km²) has some of the oldest rainforests in the world and is home to some of the world's richest and most unique animal and plant treasures. There are some 200 species of mammals, 600 species of birds, 130 species of snakes, 3,000 species of trees, 8,000 species of flowering plants, scores of amphibians and reptiles, and thousands of insects and invertebrate species.

Conservation in Peninsula Malaysia has evolved over periods of plenty and periods of scarcity of natural resources. During periods of plenty laws were lax, resulting in wasteful utilization of wildlife. Up to the time of the first salaried game warden in 1927, wildlife laws were enforced by volunteers or officers of the land office who were involved mainly in the issue of game licenses.

The incredibly low value put on the lives of animals contributed to the tragic extinction of the Javan rhinoceros in 1932 and the precarious situation of the Sumatran rhinoceros, which is still listed as an endangered species together with the tiger and the seladang. Strong and effective conservation legislation was slow in coming into force. Although current laws appear satisfactory to curb losses from poaching and trade in wildlife, the effects of habitat loss have proved to be a very serious cause of mortality. Approaches to the problems have changed from simple emphasis on law enforcement to a combination of research and management, extension programs, and establishment of national parks and wildlife reserves.

The need to expand and strengthen the developing economy has resulted in the clearance of vast stretches of virgin forest. In the last two decades Malaysia's forests have rapidly diminished and been replaced by agriculture and human settlements. Still, approximately 49% of the total land area in Peninsula Malaysia remains forested.

Steven (1968) spent two years in Peninsula Malaysia collecting data for a report on wildlife conservation. He noted the occurrence of mammals at different elevations and concluded that 52% are found below 330 meters, 81% are restricted to altitudes of less than 660 meters, 10% occur at higher elevations, and only 9% appear able to exist at all altitudes. Fifty-three per cent of all mammals are confined to primary forest, 25% live in primary or tall secondary forest, 12% live in primary or secondary forest or can subsist in cultivated areas, and 10% live in cultivated or urban areas.

Burgess (1971) described the effects of logging on hill dipterocarp forests in his study of approximately 40 hectares of average lower hill forest in the state of Trengganu. It was found that in this area only 35% of the stand disturbed by logging activity remained undamaged. Of the rest, 10% was felled for timber and 55% was destroyed in the extraction operation.

The effects of forest clearance on Malaysian mammals were studied by Harrison (1969), who found that the number of species decreased markedly in the transition from primary to secondary forest to scrub to grassland. The decrease in native mammalian diversity was on the order of 30 to 10 to 4 species, respectively.

Species Conservation in Peninsula Malaysia

Sumatran Rhinoceros (Dicerorhinus sumatrensis). Although numbers of Sumatran rhinos appear to have increased by about 30 individuals within Peninsula Malaysia between 1979 and 1982 (Table 1), only two areas, namely Endau Rompin and Tamara Negara (Fig. 1), have large and contiguous populations. It should be noted that the rhinos in Endau Rompin are reproducing, though at a slow rate of one animal every two years. The population has produced at least 3 young during the period 1975-1981. In other areas, rhino populations remain isolated and are threatened with extinction unless they can be translocated to safer areas.

Table 1. Estimated numbers of Sumatran rhinos in Peninsula Malaysia

Region	*Numbers*	
South	*1979*	*1982*
Endau-Rompin	8-15	20-25
G. Belmut	—	2-3
Mersing Coast	—	2-3
North Central		
Taman Negara	4-6	8-13
Ulu Lepar	2-4	3-5
Sg. Depak	2-4	3-5
Kuala Bolah	2-4	3-5
Krau Reserve	—	0-2
Bkt. Gebok	—	1-2
West Coast		
Sg. Dusun	2-4	4-6
Northwest		
Ulu Selama	—	3-5
Ulu Belum	2-4	3-5
Kedah Boarder	—	0-1
	30-50	52-80

Malayan Tiger (Panthera tigris). In 1954, Locke estimated the Malayan tiger (Fig. 2) population to be about 3,500, but it has

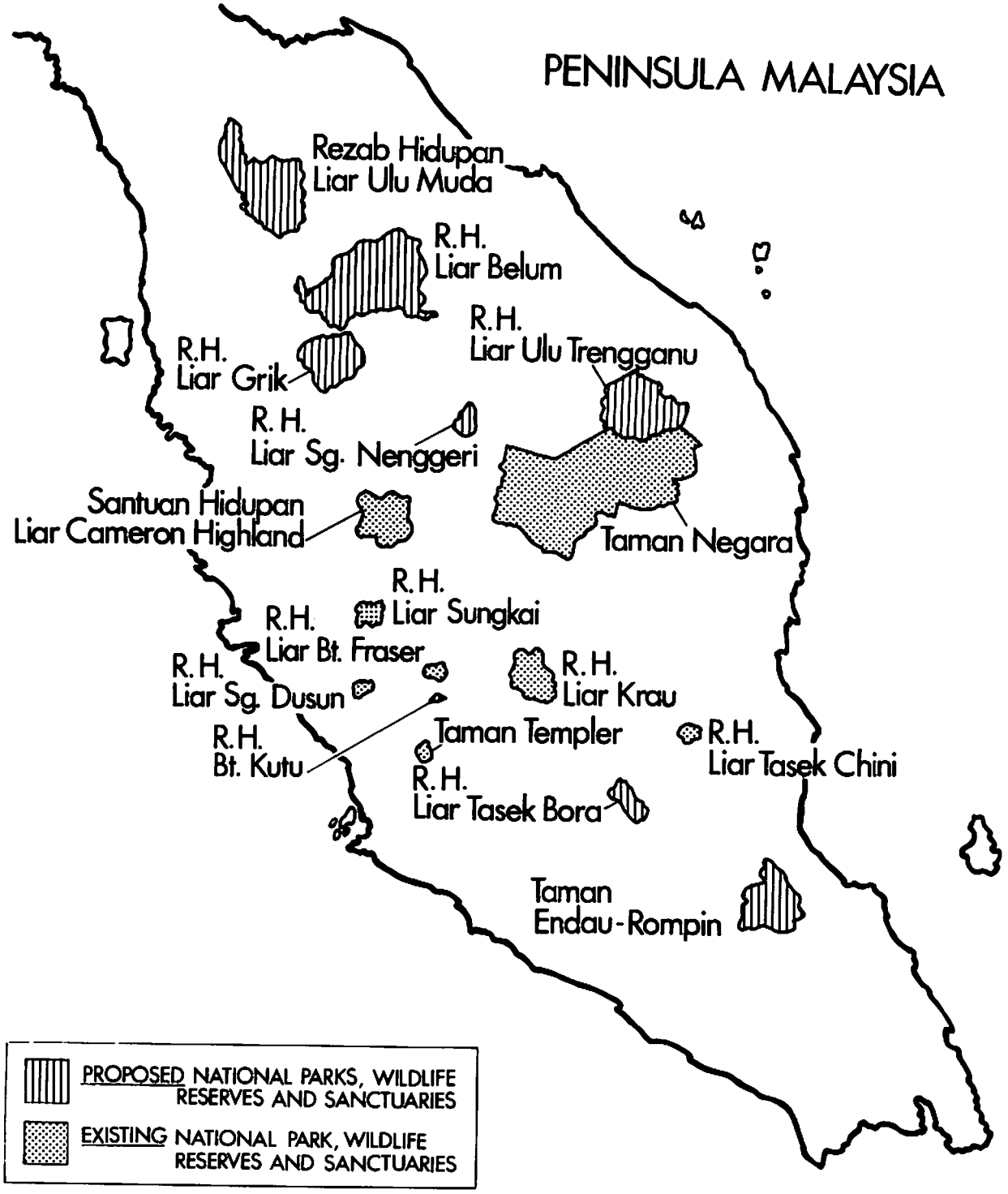


Fig. 1: Map of Peninsula Malaysia showing the location of existing and proposed national parks, wildlife reserves and sanctuaries.

now dwindled to about 250, based on work carried out by the Wildlife Department over the last four years. The tiger, which once inhabited the whole of Peninsula Malaysia, is now mainly found in the existing primary and secondary forest of Perak, Kelantan, Trengganu and Pahang.

Seladang (Bos gaurus). While it is difficult to manage populations of Sumatran rhinoceros and tiger, the situation for the seladang (gaur or wild cattle, Fig. 3) appears more hopeful. Its requirements are relatively simple: pasture, water, minerals and cover. In the last survey by the Wildlife Department in 1980, there was evidence of an increase in the seladang population (Table 2).

Table 2. Seladang population in Peninsula Malaysia as of 1980

	Numbers	
Areas	*1977*	*1980*
National Parks and Reserves	150	150
Ulu Tengganu	25	29
Sungai Nenggiri	40	53
Ulu Lepar	56	96
Maran	—	5
Lepar Hilir	—	10
Endau Rompin	25	25
Ulu Serting	10-12	10-12
Grik Wildlife Reserve	40	40
Belum Wildlife Reserve	60	60
	400	472

A detailed study in Ulu Lepar showed that the seladang preferred riverine habitat, with 70% being found at 0–7 m.

Elephant (Elaphas maximus). Like the tiger, the elephant (Figs. 4-5) once roamed freely throughout Peninsula Malaysia, but is now restricted to remaining forests in the states of Kelantan, Trengganu, Pahang, Perak, Johore and a few areas in Negari Sembilan and Kedah. There are now about 700 elephants distributed in these states, including Taman Negara (Table 3).

Table 3. The elephant populations of Peninsula Malaysia

States	*Numbers*
Kelantan	134
Trengganu	54
Johore	77
Pahang	175
Perak	126
Negeri Sembilan	5
Taman Negara	100
	671

Primates. Southwick and Cadigan (1972) reported on the abundance of non-human primates (Figs. 6-9) in primary and secondary forests of Peninsula Malaysia. An assessment was made of group densities (animal/km²) of each species except the dark-handed gibbon (Table 4). Other source material includes Bernstein (1968), MacKinnon and Mackinnon (1978), Fleagle (1978) and Chivers (1980). The total area of forest still remaining in 1958 was 84%, or 110,308 km².

Table 4. Total population estimates of primates in Peninsula Malaysia in 1958

	Density of species		
Species	*2° Forest*	*1° Forest*	*Total Population*
Macaca fascicularis	1.54	0.37	415,000
M. nemestrina	0.13	- 1	80,000
Presbytis cristata	0.26	- 1	6,000
P. melalophos	2.95	2.22	962,000
P. obscura	0.64	0.74	305,000
Hylobates lar	0.89	1.11	144,000
H. syndactylus	0.51	1.11	111,000

Based on the same densities provided by Southwick and Cadigan (1972), Khan (1978) estimated the populations of the various species and indicated losses in numbers between 1958 and 1975 (Table 5). These estimates are based on 51% of the total land area still being under forest cover at that time.

Table 5. Total losses in non-human primate populations between 1957 and 1975

Species	*Population in 1957*	*Population in 1975*	*Population loss*	*% loss*
Macaca fascicularis	415,000	318,000	97,000	23.37
M. nemestrina	80,000	45,000	35,000	43.75
Presbytis cristata	6,000	4,000	2,000	33.33
P. melalophos	962,000	554,000	408,000	42.41
P. obscura	305,000	155,000	150,000	49.18
Hylobates lar	144,000	71,000	73,000	50.09
H. syndactylus	111,000	48,000	63,000	56.75

Recent studies by Marsh and Wilson (1981) indicate that the distribution of primates in Peninsula Malaysia is similar to that reported in earlier studies by Lim (1962), Medway (1969, 1970), Khan (1970) and Chivers (1974). Langurs *(Presbytis* spp.), macaques *(Macaca* spp.) and gibbons *(Hylobates* spp.) are still widely distributed all over Peninsula Malaysia. Only the slow loris *(Nycticebus coucang)* is thought to be rare.

Birds. An attempt was made to estimate minimum bird populations in 6 different habitats: urban gardens, coconut plantations, mangrove forest, secondary lowland forest, extraction tracks in logged forest and virgin jungle in reserves in Selangor (McClure, 1969; Table 6).

The rich diversity of the forest bird fauna of Peninsula Malaysia was surveyed (Wells, 1971) in Pasoh, Negeri Sembilan, Kuala Lompat, Pahang and Sg. Sat and Sg. Sepia of Taman Negara (Table 7).

Fig. 2: The tiger, which once numbered about 3500, has now dwindled to about 250 (photo by R. A. Mittermeier).

Fig. 3: The seladang, largest of the wild cattle and one of Malaysia's priority species (photo by R. A. Mittermeier). The individual shown is a female.

Fig. 4: The Malaysian elephant population is now thought to number about 700 individuals (photo by R. A. Mittermeier).

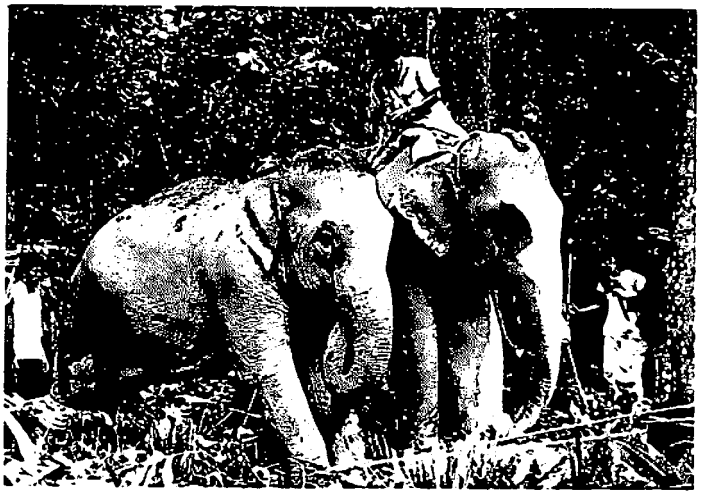


Fig. 5: The elephant catching unit of the Dept. of Wildlife and National Parks at work (photo by R. A. Mittermeier).

Table 6. Population estimates of birds according to habitat type (from McClure, 1969)

Location	*Habitat Type*	*Birds per 40 hectares*
Kuala Lumpur	Urban garden	1100
Subang	Secondary forest	450
Rantang Panjang	Coconut plantation, mangrove	800
Ulu Gombak Forest Reserve	Extraction track in logged forest	400
Ulu Gombak	Virgin Jungle reserve	400

Table 7. Record of species abundance of birds in each area (Wells, 1971)

Location	*Area Size (km²)*	*Study Duration*	*# Species*
Pasoh, Negeri Sembilan	10	2 years	175
Kuala Lompat, Pahang	2	3 days	141
Sg. Sat and Sg. Sepia, Taman Negara	3	6 days	127

Table 8. Density and area needs of hornbills

Species	*Number of birds supported/200 ha (Kuala Lompat)*	*Estimated area needed to support 500 individuals (hectares)*
Helmeted hornbill *(Rhinoplax vigil)*	1	10,000±
Rhinoceros hornbill *(Buceros rhinoceros)*	c. 1	10,000
Southern Pied hornbill *(Anthracoceros convexus)*	2	5,000
Black hornbill *(Anthracoceros malayanus)*	4	2,500
Bushy-crested hornbill *(Anorrhinus galeritus)*	5	2,000

The total number of known lowland forest birds is 241 species. Observations at Kuala Lompat, Pahang, taken over an area of 194 hectares, provided data for estimates of the density of hornbills and of the area needed to support 5,000 individuals (Medway and Wells, 1971; Table 8).

Fig. 6: One of Peninsula Malaysia's two macaque species, the pig-tailed macaque (*Macaca nemestrina*) (photo by R. A. Mittermeier).

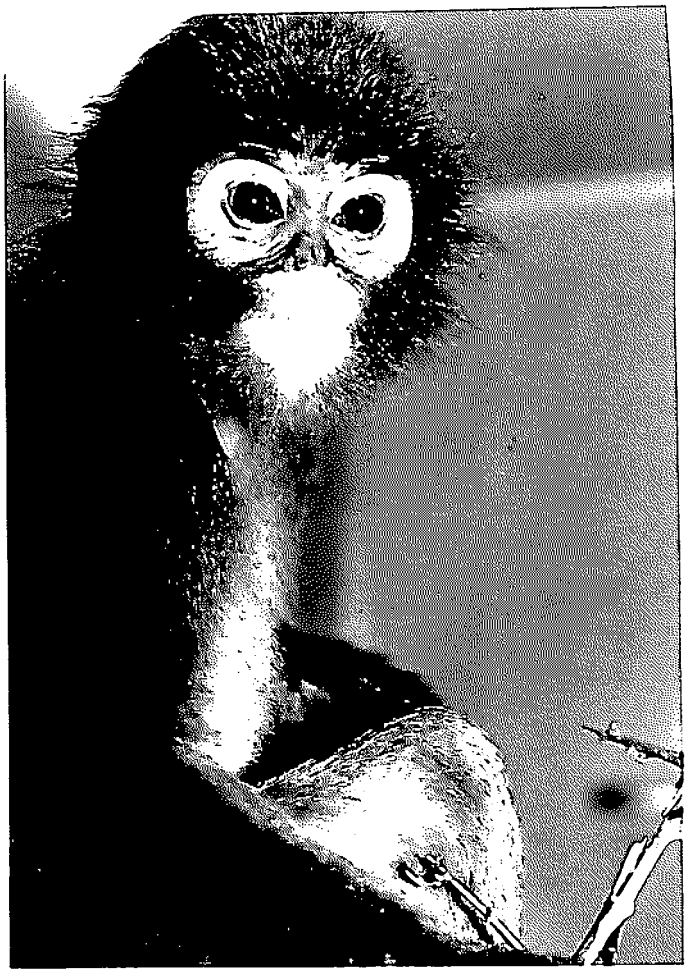
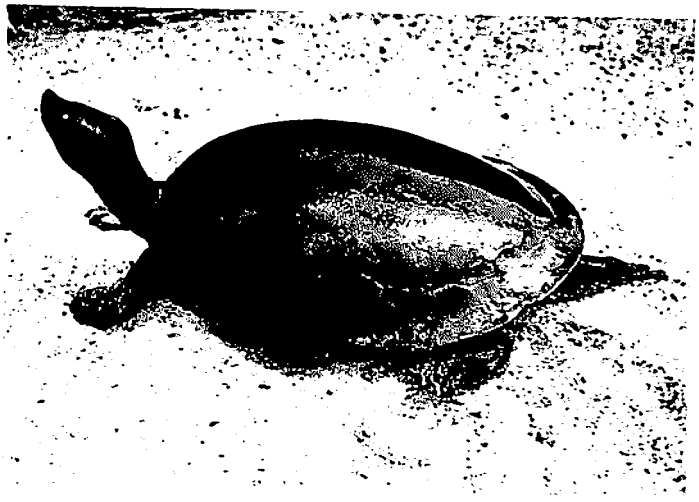


Fig. 7: One of Peninsula Malaysia's three langur species, the spectacled langur (*Presbytis obscura*) (photo by R. A. Mittermeier).

Fig. 8: The siamang *(Hylobates syndactylus)*, largest of Peninsula Malaysia's nonhuman primate species (photo by D. J. Chivers).



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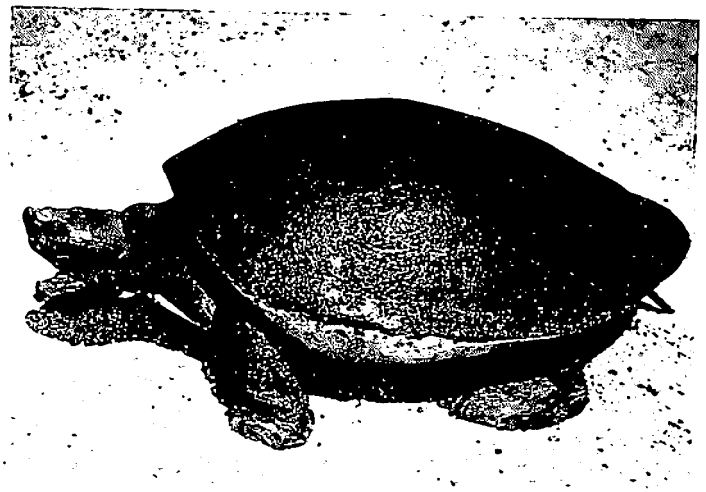

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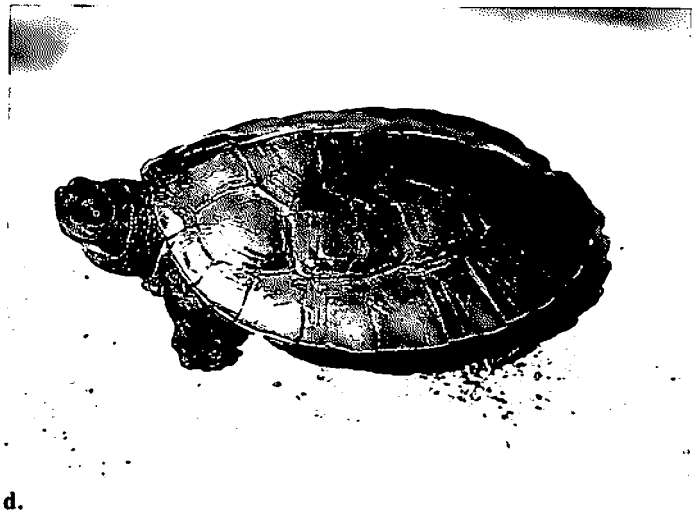

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Fig. 9. The river terrapin (*Batagur baska*) is one of Malaysia's most endangered reptiles. Special hatcheries have been established in Kedah, Perk and Trengganu. These animals were photographed in the hatchery at Bota Kanan. (Photos by R. A. Mittermeier). a. Adult male *Batagur baska* (note the striking white eye). b. Adult female *Batagur baska*. c. Hatchling *Batagur baska*. d. Hatchlings awaiting release. e. Personnel of the Dept. of Wildlife and National Parks with a number of *Batagur baska* hatchlings to be released in the Perak River.

River Terrapin (Batagur baska). Three river terrapin hatcheries were started in the states of Kedah, Perak and Trengganu at a total cost of one million dollars (Figs. 10-14). These projects will hopefully counter the declining numbers of river terrapins due to poaching of adults and the extensive collection of their eggs. More than 20,000 one year old terrapins have been released from such hatcheries since 1967.

Deer. Two deer farms are now also being developed in the Sungkai Game Reserve, Perak and the Krau Game Reserve, Pahang, like the river terrapin hatcheries at a cost of about one million dollars. The deer are raised in a semi-wild state in an effort to produce good breeding stock. From a few locally obtained animals the breeding stock has now increased to about 100 individuals.

Conservation Action Priorities

Wildlife management in a strict sense is a relatively recent phenomenon in Peninsula Malaysia. Formerly, game departments functioned primarily as licensing agencies, while control of hunting and trade in wildlife was given low priority. Wildlife was shot and killed indiscriminately and the incidence of licensees taking more game than the allowed bag limits was high. A number of species have become endangered or extinct, and this is evidence of the absence of sustained conservation efforts.

The large number of firearms in the hands of hunters presents

a serious problem for wildlife conservation. In Peninsula Malaysia, wildlife species may be killed in defense of crops, life or property. Illegal possession of firearms carries the death penalty, but far too many people are currently licensed to carry firearms.

Corruption among enforcement officials is a serious problem. It must be corrected by better income and more attractive prospects in the wildlife service. In addition, close supervision of and legal action against corrupt officers is essential. Violations, no matter how small, should be acted upon. To speed up action, minor offenses may be settled out of court, whereas serious offenses should all go to court and be dealt with accordingly.

Smuggling is serious because of the demand and the high commercial value of many species of wildlife. To curb smuggling, Malaysia became a party to CITES in 1978.

Apart from legislation directly pertaining to the protection of wildlife and national parks there are numerous laws that are not effectively enforced. In Peninsula Malaysia, river terrapins are governed by the river rights laws of each state. In pre-war days, when these laws were strictly enforced, terrapins were abundant. Nowadays, these laws are hardly enforced, which explains why the river terrapin is endangered.

We believe support for conservation to be a top priority. A variety of conservation-oriented programs already exist on radio and television networks, but films on conservation are mainly products of foreign countries. A more direct approach is necessary to illustrate local problems and what is being done in the field of conservation.

A special effort to gain the support of decision makers and politicians is the utmost priority in solving wildlife management problems. This approach is unfortunately slow, short-term results not being easily achieved. The support of the judiciary is indispensable, as it would be meaningless to impose fines which do not deter offenders. An effective system with adequate law enforcement officers equipped to perform their duties with confidence is essential.

The need for political stability routinely takes precedence over the need for wildlife reserves in developing nations. In the face of a rapidly expanding population there is no alternative but to exploit both renewable and non-renewable natural resources, since leaders perceive constraint on raising the standard of living unacceptable. Despite this, the concept of conservation is included in the ASEAN (Association of Southeast Asian Nations) program for the environment, through the actions of high-ranking government officials and ministers. Under conservation the importance of national parks, trade in wildlife, legislation, training, information exchange and wildlife management research are given prominence. Representatives from the Department of Wildlife and National Parks of each country participate in meetings, workshops and field trips, and assistance and advice from international organizations like UNEP and IUCN are sought when needed. In the past, a lack of sound management research has resulted in undesirable decisions, based on incomplete data analyses. This has often had a serious effect on wildlife. For example, improperly scheduled hunting seasons have resulted in heavy mortality of pregnant animals and their young. It is important that management research be increased as most, if not all, conservation action must be based on a thorough knowledge of the biology of animals and their roles in the ecosystems.

Mining activities presently occur in about 1% of the total land area of Peninsula Malaysia, but are not regulated under a general landscape quality program for the entire country due to the prohibitive costs of establishing such a program.

Shifting cultivation presents a serious problem in wildlife management. While it is beneficial to some species of wildlife, it is detrimental to most because of habitat loss. Shifting cultivation, of necessity, is quite extensive in this region. In practice, the first few crops provide good harvests, but declining fertility within only a few years necessitates relocation. It takes several years before an abandoned cultivated area becomes naturally fertile again; which explains why extensive areas are needed for shifting cultivation. While waiting for the crops to be harvested, wildlife and wild plant products take their place.

The elephant problem in Peninsula Malaysia was tolerable before palm oil became a major industry. Continuing loss of habitat, coupled with the elephants' preference for oil palm have resulted in a serious confrontation between this species and man. More research is required to produce an effective means of elephant control. A trapping scheme solved the Bengka crop depredation problem, which at the time was very serious. The scheme is applied in places where there is no available forest for elephants. Electric fences are also being widely used by planters and have proven an effective deterrent.

Wildlife Plan. A Wildlife Plan is essential for Malaysia. Such a plan must consider the variety of species present, their habitat and their potential uses. The species currently being managed are important by virtue of their status as endangered species, economically important species or serious pests. A more comprehensive Wildlife Plan is currently being prepared, aimed at conserving a representative cross-section of the diverse Malaysian flora and fauna. This comprehensive plan will be dependent upon existing governmental policies, yet will allow for appropriate action to be taken promptly in critical situations.

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Fig. 10: The white-handed gibbon *(Hylobates lar)*, one of Malaysia's three gibbon species (photo by D. J. Chivers).