

CONSERVATION OF ELEPHANTS IN LAOS

by

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Introduction

Lao People's Democratic Republic (Lao PDR) is a land locked country with an area of 236,800 km² in the heart of Indo-China (Fig. 1). The principal topographical feature is the Mekong river that flows from Southern China through Laos into Vietnam via Cambodia, forming much of the western boundary between Laos and Thailand. Laos is largely a mountainous country with only about 20–30% of the land area being below 200 m. The highest mountain in Laos is Phou Bia (2,817 m) located about 130 km in the Southwest of Xieng Khuang province. There are two seasons: the rainy season extends from May to October during which the country receives an average of about 1,000 mm of rain (in the Bolovens Plateau it could be much higher - about 3,600 mm) while from November to April the country experiences a much drier climate.

With a human population of about 4 million, Laos is one of the most sparsely populated countries in South-east Asia with an average density of 15 people per km². About 75% of the human population lives in the fertile lowland plains where agriculture is the principal activity and land-use (FAO/UNEP 1981).

Laos is divided into 16 provinces (khueng) plus the Vientiane municipality. There are 147 districts (muong), 900 sub-districts (tasseng) and 11,000 villages (ban) and consists of 68 ethno-linguistic groups (Kingsada 1991). Half the population lives in the lowlands and valleys and they are the ethnic Lao or the Lao Lum - descendants of the Tai people from Southern China who migrated between the 6th and 13th centuries. The rest of the population is made

up of ethnic groups called Lao Theung who live in middle slopes all over Laos, with a concentration in the Bolovens Plateau (Anon 1990). The human population is currently growing at the rate of 1.9% per annum. At this rate of growth the country could double its population in 20 years.

Forest Cover

In the distant past, much of Laos was heavily forested. About 92.5% of the country, according to Sayer (1983a) was covered with "some form of natural, unmanaged vegetation". However, the situation has changed in the recent past owing to the destruction from aerial bombardment during the war and from the exploitation of forests by loggers and shifting cultivators alike. Nevertheless, there are still substantial areas of more or less evergreen forests whose original extent was about 160,000 km² or approximately 70% of the land area (Salter and Phanthavong 1989). Lowland and montane forests covered much of the areas in the north and along the Annamite mountain chain while monsoon forests still occur in areas north and west of the Mekong river and contain valuable stands of teak (Collins *et al.* 1991). Between 1970 and 1981, the forest cover in Laos declined from 70% to 47% (or from 17,000,000 ha to 11,273,000 ha).

The commercially important species of tropical timber species are to be found below 1,000 m in central and southern regions and comprise species such as *Anisoptera cochinchinensis*, *Dalbergia* spp., *Dipterocarpus alatus*, *Hopea* spp. (Fidloczky 1986), *Parashorea stellata* and *Pterocarpus macrocarpus*. According to the latest

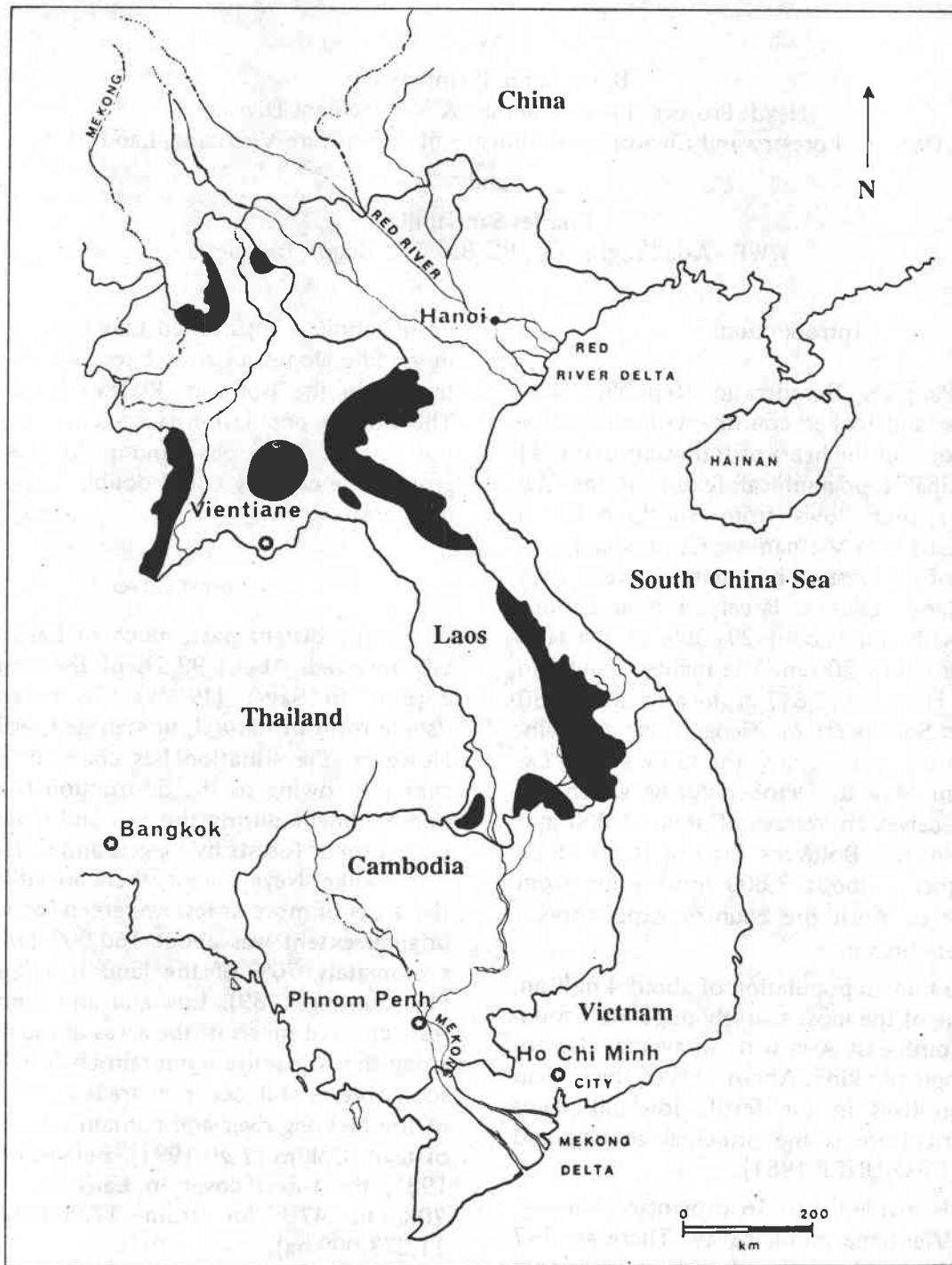


Fig. 1 Map of Indo-China showing the location of Laos. The shaded areas represent a general distribution of the Asian elephant in Laos. (Source: Santiapillai and Jackson (1990)).

Table 1. Estimates of forest cover in Laos

Tropical evergreen forest	3,436,000 ha
Tropical semi-deciduous forest	5,685,000 ha
Tropical deciduous forest	1,664,000 ha
Other forests	488,000 ha
Total forest cover	11,273,000 ha
Fallow land	5,000,000 ha
Source: Kingsada (1991)	

information available, about 18% of Laos (41,970 km²) is covered by undisturbed rain forest, while monsoon forest covers 11% of the area (or 25,810 km²) and the degraded rain forest accounts for 25% of the land area (or 56,820 km²). (Collins *et al.* 1991). Grasslands cover about 8 million ha and are composed of species of *Imperata*, *Andropogon* and *Hyppea-rena*.

Protected Areas in Laos

Laos is one of the few countries in Asia that has no legally established national parks, and never had any areas set aside for the protection of nature (Sayer 1984). Although about 1,280 km² of forest land was set aside in 17 forest reserves in the past, yet protective measures were never implemented (FAO/UNEP. 1981). However, today Laos is seriously considering establishing a number of protected areas that cover 20% of the total land area (Salter and Phanthavong 1989, Anon 1990) with the view to conserving its vast biological diversity.

Status of Elephants in Laos

Laos was once known as **Lan Xang** or the **Land of a Million Elephants** (Olivier 1978, Sayer 1984). Thus there must have been at one time substantial number of elephants both in the wild and in captivity in Laos. Just as in the neighbouring Thailand and Burma, the elephant

Table 2. Extent of forest cover in Laos

Province	Area (ha)	% of land area
Phongsaly	480,000	30
Luang Namtha	441,900	53
Bokeo	278,100	57
Oudomsay	230,000	15
Houaphan	312,000	17
Xieng Khouang	679,000	39
Sayaburi	812,000	50
Louang Phrabang	187,000	10
Vientiane	1,188,000	60
Vientiane municip.	104,900	34
Bolikhamsai	786,800	47
Khammouane	766,300	46
Savannakhet	1,598,000	73
Saravane	840,200	74
Sekong	667,800	87
Champassack	1,041,000	72
Attapeu	850,000	82
Source: TFAP. 1990.		



Fig. 2. Forested areas and grazing grounds utilized by elephants in Laos. (Photo: B. Phanthavong).

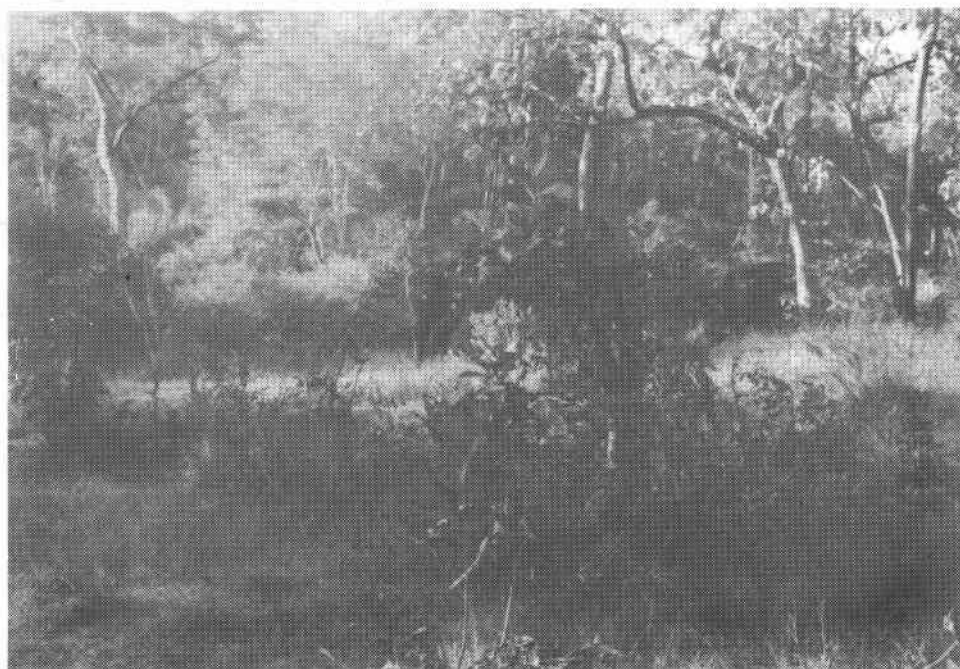


Fig. 3. Elephants in the scrub vegetation in Laos. (Photo: B. Phanthavong).

played a significant role in the country's religion and culture.

The elephant is still of great economic importance in the timber industry (Santiapillai and Jackson 1990). Viable populations of elephant still occur throughout the country and so the animal is not in imminent danger of becoming extinct in Laos (Sayer 1983a). The most serious threat faced by elephant in Laos is poaching for ivory. Many Laotians still move about in the country carrying guns and firearms looking for anything that could be killed and eaten. In Vientiane the bird life is scarce or non-existent! If hunting is allowed to go unchecked, there is a real danger that some small populations of elephants might face local extinctions.

Distribution of Wild Elephants

There has never been a systematic survey to determine the distribution and number of elephants in the wild in Laos. Much of the information currently available has come from few site inspections and interviews with the local communities. From these alone it appears that elephants in Laos are distributed over a wide geographic area but their overall distribution remains discontinuous and patchy (Fig. 4). No doubt, with more surveys the distribution map could be substantially improved.

Elephants are particularly widely distributed in the south where there is still considerable forest cover (Sayer 1983b). In the north, where human land-use has been most intensive, elephant distribution is much less extensive. Significant populations of elephant still occur in the Sayaburi province, west of the Mekong river, in Vientiane Province and in Bolikhamsai and Khammouane Provinces and along the border with Vietnam.

According to the system of protected areas proposed by Salter and Phanthavong (1989), 4,731,887 ha of forest lands will receive some measure of protection. Of these, elephants are known to inhabit a total of 2,585,946 ha (Table 3). Thus, if the system of Protected Areas as proposed by Salter and Phanthavong (1989) is adopted and implemented by Lao PDR, then

Table 3. Proposed Protected Areas with elephant populations

Protected area	Area (ha)
Dong Amphan	162,465
Dong Hua Sao	70,668
Dong Sithuane	75,690
Long Leng	29,652
Muang Khi	118,740
Na Kai Plateau	161,835
Nam Chuane	207,700
Nam Kading	129,400
Nam Khang (?)	76,620
Nam Kong	122,070
Nam Ma	86,853
Nam Poui	147,820
Nam Theun	162,705
Nam Yo (?)	59,838
Pa Sak Sayaburi	124,855
Phou Dene Dinh	222,932
Phou Xang He	75,315
Phou Xiang Thong	95,355
Xe Bang Fai	102,870
Xe Bang Nouane	126,280
Xe Kong Pine forest	82,491
Xe Plane	143,792

it would automatically protect 55% of the habitats inhabited by the elephants in Laos. Thus a conservation programme along the lines of the successful **Project Tiger** in India, but based on the elephant in Lao PDR alone would mean the protection of 2,585,946 ha or 11.2% of the total land area in Laos. This in itself must provide a strong impetus for launching a massive conservation programme focused on the Asian elephant in Laos.

Number of Elephants in the Wild

The number of elephants in the wild in Laos is currently estimated to be in the order of 2,000–3,000 (Venevongphet 1988). The largest number - estimated to be more than half the total population - occur in the south, below the 16° N latitude. Large numbers are also believed to occur in scattered locations across Central

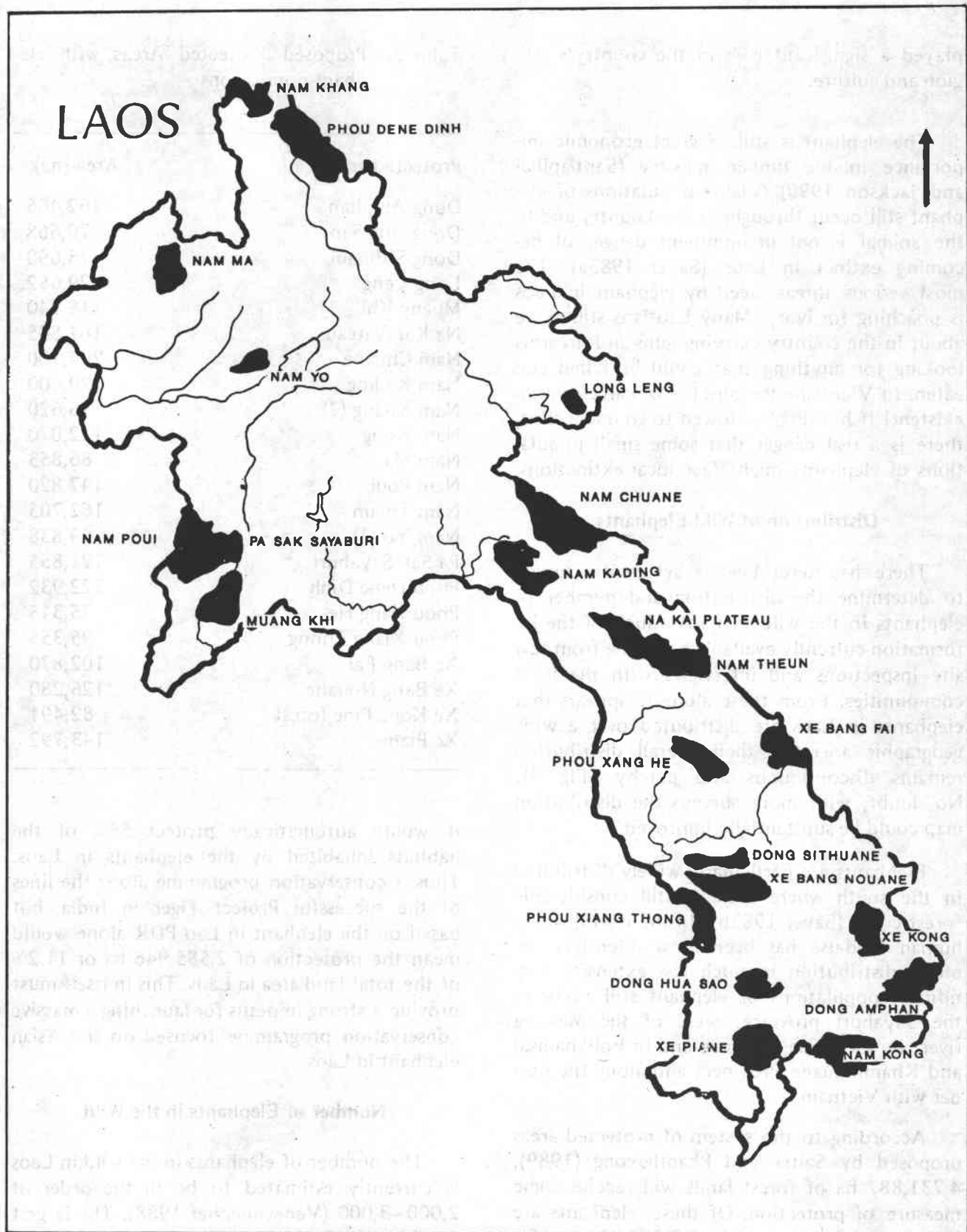


Fig. 4. Distribution of known elephant populations in Lao PDR.

Laos - perhaps 400–500 west of the Mekong river in Sayaburi Province; 200–300 in Vientiane province; and 150–300 on the Nakai Plateau (Santiapillai and Jackson 1990). Elephants although once inhabited the Phou Khao Khouay proposed protected area (200,000 ha) are now feared to have moved out owing to disturbances caused by logging in the area. These numbers are unreliable as they are not based on any serious assessments and so should be taken only as an indication.

Conservation Problems

Although Laos is a large country with a small human population of only about 4 million, more than 60% of the population lives in the fertile Mekong plains in the Luang Phrabang, Vientiane, Bolikhamxai, Khammouane, Savannakhet and Champassack provinces. As a result the riverine grasslands which are among the most preferred elephant habitats throughout Asia have long been converted to agriculture.

Extensive areas of forest especially along the border with Vietnam were devastated by aerial bombardment by USA during the Indochina war between 1965 and 1975. It is estimated that the US Government dropped over 2 million tons of bombs on Laos, which is more than what it dropped in the World War II (White 1987). Ironically, the war may have reduced the activities of the shifting cultivators and thus allowed for the growth of secondary vegetation favoured by large herbivores (Sayer 1984).

The conversion of forest to other land-use is one of the main conservation problems facing South-east Asia in general and Laos is no exception. It is estimated that currently closed forests are being converted to grasslands, bamboo forests and savannas as a result of shifting cultivation, logging and uncontrolled forest fires in Laos at an annual rate of 100,000 to 200,000 ha (FAO/UNDP 1981).

The cause of much forest destruction in the recent past in Laos has been blamed on shifting cultivators. Shifting cultivation in its classical form is the "only self sustainable system of agriculture in the tropical rain forest" (Ross

1984). In Laos, 253,000 families are known to be engaged in shifting cultivation and about 300,000 ha of land is under this form of agriculture in any year. But in all about 1.5 million people may depend on rain-fed shifting cultivation (Salter 1989). Surprisingly, about 25% of the 1.5 million tons of rice produced annually in Laos comes from the activities of shifting cultivators!

Not all shifting cultivation is detrimental to the land. The system of shifting cultivation practiced by Lao Theung (at mid-elevations) is ecologically stable as it promotes the regeneration of trees (Collins *et al.* 1991). The Lao Loun (at lowlands) and the Lao Soung (at higher elevations) practice shifting cultivation that is basically unstable and destructive.

Two other causes of conservation problems in Laos are timber extraction and generation of hydropower, both of which are not mutually exclusive. Timber and Hydroelectric power are the nation's two top foreign exchange earners accounting for about 33% and 28% of the total earnings respectively. As such they are important for the economic prosperity of the people. But both activities if not carefully controlled, could spell ecological disaster in the years to come. Already in the Selabum power generating station, the anticipated of the halving of the life of the Nam Ngum reservoir to 60 years is a preview of what could go wrong in other proposed dams. (Poole 1991) writes, . . . "The Pa Mong multipurpose dam across the Mekong . . . will flood more than 6,000 km² (of land), forcing the resettlement of up to 60,000 people. The most serious and far reaching effect, however, will be the disruption of the annual flood cycle downstream, where one of the world's largest inland fisheries and some of Asia's most productive agricultural lands are dependent upon the river's yearly inundation".

Laos has a high potential (about 22,000 MW) for hydropower but at present only 153 MW of electricity is produced of which 80% is exported to Thailand. Per capita consumption of electricity is low in Laos (about 325 KW) and 85% of it being consumed in Vientiane alone.

With the imposition of total ban on logging in Thailand on 10 January 1989 by the Thai Government, timber barons in Thailand have extended their activities into neighbouring Laos and Myanmar (Burma). Annual production of timber in Laos is estimated to be 282,000 cu. m. but illegal extraction may add another 300,000 cu. m.

Poaching is widespread and the lack of trained manpower makes law enforcement extremely difficult. Elephants are still being killed for their ivory. In the Nun Theun Nakai plateau (one of the proposed protected areas), 9 elephants were killed by poachers in June 1991. In Vientiane province eleven elephants were poached in July 1991. In the past, elephants were also smuggled out into neighbouring Thailand from Sayabouri province and sold for use in timber extraction. But this seems to have stopped after the imposition of a ban on logging in Thailand.

Human-elephant conflicts are also on the increase. In the Xam Tai district of Huaphan province, there are already reports of elephant depredations on cultivated areas. The number of elephants involved is small (perhaps about 3 animals) but their effect on the poor farmers is considerable.

Laos is not a signatory to the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES).

Recommended Actions

Fortunately, Laos is a late starter in economic development. This gives it an advantage to learn from and thus avoid the mistakes of other Asian countries that have suffered enormous environmental damage as a consequence of rapid economic development.

The basis of elephant conservation must be the maintenance of forest cover over large areas uninterrupted by human settlements and roads, where remoteness, difficulty of terrain and density of cover provide natural protection. This is still possible in a vast country such as Laos where the human population is small.

Restricting road building is one of the surest ways to maintain conservation areas as far away from human settlements and to contain deforestation in Laos. Particularly adverse would be the building of new roads near the proposed system of protected areas.

Elephant conservation, if it is to succeed in Laos as elsewhere in Asia, must be integrated in such a way as to confer some benefit to the people living in the vicinity of elephant reserves. It would mean resolving the conflicts between man and elephant; it would mean providing the people access to the forest and forest produce on which they had subsisted from time immemorial; it would mean recruiting local people as guards in the protected areas; it would mean provision of land tenures in the surrounding areas to landless peasants; it would mean improving the agricultural practice of the people to derive maximum benefit year round from a patch of land; it would mean the maintenance of society, tempered by tolerant Buddhist philosophy to look at nature not as something outside but as a part of being. These are difficult issues but they need to be addressed if conservation is to succeed in Laos.

International financial assistance is badly needed to implement the proposed system of protected areas in Laos. If this is not forthcoming, the international conservation community will have no strong moral ground from which it can exhort the country to protect its elephants and their habitat on meagre resources. It has been shown in Africa that the rates of decline in elephants (and rhinos) are related directly to conservation effort and spending (Leader-Williams and Albon 1990). To succeed, conservation schemes must be adequately funded, or resources must be concentrated in small parts of large reserves, if local extinctions are to be avoided. Therefore it is imperative that international conservation organizations such as World Wide Fund for Nature (WWF) and World Conservation Union (IUCN) and aid agencies focus their efforts and resources into providing much more investment in park infrastructure and its effective protection. Otherwise the excellent network of protected areas that has

been proposed by Salter and Panthavong (1989) for Laos would amount to little more than "paper parks". If the IUCN National Park requirement of 1 man for 50 km² (Parker 1984) is adhered to, then the effective policing of the 22 elephant conservation areas listed in Table 3 would call for about 500 guards. At present there is not even a tenth of this number available as guards. In Africa, the investment per guard recommended by R.H.V. Bell (in Parker 1984) is US\$ 8,000 per head. Even if a sum of US\$ 1,000 per head is to be taken as the basic minimum for Laos, it would mean a total investment of US\$ 500,000 which must be found in the budget of the Department of Forestry and Environment. It is most unlikely that the Department of Forestry and Environment will have such a budget to provide this assistance annually. Hence the need for outside assistance.

Finally, elephant conservation as advocated here should not be seen simply as a preoccupation with a single though magnificent species. It should be regarded as a means for enhancing the country's overall conservation programme. The Asian elephant is a flagship species. As such they have an enormous appeal worldwide, and arouse strong emotions, and attract strong support from the public. They are also economically valuable and play a decisive role in structuring habitats and maintaining biological diversity. Being a large species with a wide geographic distribution in Laos, the elephant is an ideal species whose conservation alone would benefit directly millions of hectares of forest that provide the habitat to several other species of wildlife.

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mammalian species. Between the two subspecies there is not only a genetic distance of the same order as that between two subspecies of Japanese macaque monkeys, but also a complete allelic substitution at the tetrazolium oxidase (To) locus. This gives added support, from modern techniques, to the subspecies status of each of these two elephant populations. It also points to the possibility of confirming or refuting, by such techniques, the validity of the subspecies *E. m. vilaliya* Deraniyagala), the supposedly massive, rare and tuskless 'swamp elephant' which was 'restricted to swamps in the flood plains of a few rivers of the Eastern Province of Ceylon'^{7,8}.

I would like to emphasize that the potential significance for evolution of a trinomial, or subspecies, however inadequately described and named, should always be recognized. The subspecies, of variety, can after all be an expression of an incipient species, which is what Darwinian evolution is basically about.

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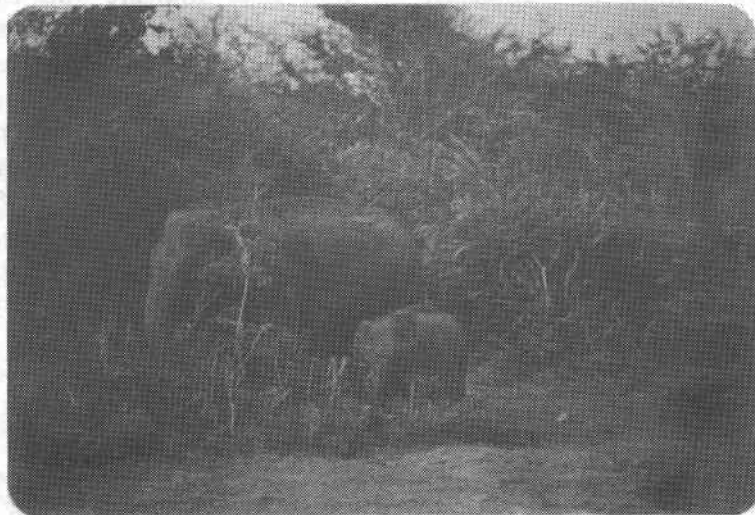
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An adult female elephant and its calf browsing in the thorn scrub. Ruhuna National Park, Sri Lanka. (Photo: Charles Santiapillai/WWF).