

Status of Tigers in the Lao People's Democratic Republic

Introduction

The Indochinese tiger still occurs widely across the Lao People's Democratic Republic (Lao PDR), but little is known about the details of its current patterns of distribution and abundance. While extensive scientific surveys have been conducted across Lao PDR to establish the status of wildlife in this country, no comprehensive scientific survey has been made of the tiger's conservation status. Preliminary data (Salter 1993) suggests the species may be in decline across much of the country. Much of the supporting evidence for this assumption, however, has been extrapolated from interviews with local officials and villagers, and from the above mentioned general biological surveys. Long term trend data are unavailable.

This summary of current information on the status of the tiger in Lao PDR has been compiled from a variety of sources including unpublished technical and trip reports, personal conversations with members of teams conducting national biological surveys, and from published scientific articles. While conducting this review special attention was placed on direct references to tiger presence/absence and on potential threats to the continued survival of tigers in Lao PDR.

The information presented in Table I is a compilation of data gathered from surveys conducted between 1987 and 1997. The data in this table shows whether or not tiger sign were detected during strip censuses along a predetermined survey route. We have not extrapolated these data to determine presence/absence over larger areas, as is done by some authors. While with a wide-ranging species like the tiger detection will usually indicate presence over a much larger area than that of the survey, the infrequent occurrence of tiger sign, and the relatively small number of reports of tiger presence in an area, necessitates a more prudent approach. While this summary is based on preliminary information, certain trends are evident:

- *The widespread expansion of hunting for local use and commercial trade is depressing the availability of tiger prey. Control of hunting and market sales of ungulates is a priority.*
- *Predation of livestock results in persecution of tigers by local villagers. Long-term solutions developed and managed at both the local and national level are required.*
- *Trans-national trade in endangered wildlife, and in tiger skins and body parts in particular, occurs across the Thai and Vietnam border, and perhaps into China. Collaborative, trans-national efforts must be made to reduce and eliminate this trade if tigers are to survive in the Lao PDR.*
- *National legislation need to be clarified and enacted to allow support of conservation activities.*
- *Support must be found to allow the Lao PDR to accede to CITES and to fulfill the requirements for membership in the Convention*

Habitat Protection and Management

Recognizing the need to improve land-use and wildlife management practices, the Government of Lao PDR (GoL PDR) began planning for a protected areas system in 1989, with technical assistance provided by the IUCN under Lao-Swedish Forestry cooperation. As part of this program, a new framework for protected areas was conceived, the National Biodiversity Conservation Areas (NBCAs). Initially, eighteen NBCAs covering an aggregate area of 2.5 million hectares (Berkmuller *et al* 1995) were established with the intention of refining boundaries and implementing management guidelines once the biological diversity and conservation priorities of each had been assessed. By 1998, a total of 20 NBCAs were established covering 3.0 million hectares.

The long term management goal for each NBCA is to create a zoning system that allows for regulated subsistence activities in specified multiple use areas, as well as protected core zones off limits to human disturbance (Berkmuller *et al.* 1995). Two key objectives are to reduce the amount of extractive activities taking place now, and to prevent further immigration into the NBCA boundaries. These first NBCAs were selected because they encompass the widest variety of habitat types in Laos, meet minimum size criteria and represent the best remaining large tracts of forest in the country (Berkmuller *et al.* 1995). Detailed information on the selection criteria, planning process and legal status for these NBCAs can be found in Phanthavong (1989) Salter *et al.* (1991) and WCS (1996).

In gazetting the protected areas, the GoL PDR made a concerted effort to address the problem of habitat loss and degradation. While initial accomplishments have been significant, more remains to be done before the NBCAs can be considered functional protected areas: rudimentary management guidelines only exist for some of the NBCAs; legally designated core zones have not been established for any NBCA and on-the-ground management needs further development. The GoL PDR is constrained by a lack of resources and limited experience in management of protected areas, but is working closely with a number of international and regional NGOs to remedy these constraints.

More work needs to be done to increase the awareness of local communities as to the existence of the NBCA, and to promote an understanding at the local and provincial level of their purpose and the legal ramifications of NBCA status. Without further efforts at the local level, unregulated extractive activities will continue to fragment and degrade the NBCAs, reducing their potential to support wildlife, especially species requiring large tracts of habitat like tiger. Some NBCAs contain large human populations (IUCN 1995), and settlements tend to occur along slow moving waterways. The presence of villages and concomitant agricultural practices threaten riparian habitat, and may block important seasonal resources important to the survival of both tiger and its prey (Siedensticker 1986, Rabinowitz 1993).

The GoL PDR recognizes that in order to mitigate the negative consequences of habitat insularization and allow for ranging patterns of wildlife, an appropriate measure would be to establish corridors between neighboring NBCAs. These corridors should be given at

least provincial protected area status, and where possible, connect core zones. Additionally, since most of Laos's remaining large tracts of forested land suitable for protection are already included in the NBCA system, these corridors would be an effective means to increase the amount of habitat under some form of protection and create complexes of protected habitat across the country.

Hunting

Hunting is an enjoyable past time for many Laotians and constitutes a part of their cultural heritage. In recent years, under a free-market oriented policy, it has become a significant source of income. Increased trade across international borders and expansion of the development sector has precipitated change in the structure of local and regional markets. Subsistence hunting is quickly being transformed into a commercial trade in wild caught meat.

Hunting can be both selective and non-selective, depending on the manner in which the animal is taken. A variety of methods are employed by hunters including crossbows, pit traps, snares, sling shots and guns (Chazee 1990). Already in the north of the country, hunting has seriously reduced wildlife populations (Chazee 1990).

Survey reports indicate that hunting is widespread and pervasive throughout the protected areas system, and densities of important prey items for tigers appear depressed. Salter (1993) found that the most sought after prey for human hunters, medium to large sized ungulates, are also preferred by tigers. The consequences of competition between humans and tiger for a similar prey base are unknown, but Karanth (1995) demonstrated that tigers are dependent upon medium to large sized prey items to meet their energetic requirements, and tiger density and home range sizes are strongly correlated with prey biomass (Sunquist 1981)

Tigers are also targeted by villagers in retaliation for depredation on livestock. Reports of domestic cattle and pig loss are heard across the country, and villagers have plied fresh carcasses with explosives to exterminate the offending animal. This is occasionally done with the permission of provincial authorities (P. Davidson pers. comm.). Tigers may be turning to livestock to compensate for a depleted prey base.

To mitigate the conflict between tigers and villagers, compensation schemes may be instituted as an interim solution, but long-term, economical solutions involving local participation would be a more logical approach. It is questionable that fiscally constrained provincial governments will have the monetary resources to provide adequate compensation over time, and it does not address the problem directly. A possible alternative may be the development of improved, low cost animal husbandry methods that could be integrated into existing practices. Additionally, it is important to understand the factors driving tigers to depredate livestock as a necessary step in reducing tiger/human conflict.

Trade in Tiger Parts

Selective hunting (poaching) for tiger is evinced by skins and other body parts being openly sold at markets around the country and in the capital city of Vientiane (Martin 1992, Srikosamatara *et al.* 1992). A significant trade across the Vietnamese border for tiger and other wild game is reported by Davidson *et al.* (1997), and armed Vietnamese have also been observed to cross into Laos illegally. Wildlife which is exported to Vietnam may be re-exported to China for use in the medicinal trade in that country. A survey by Srikosamatara and Suteethorn (1994) found that the Thai-Lao border supported a robust trade in endangered species, including tiger. Owing to their high cost, it is probable that most tiger products are being purchased for export.

Given that the annual per capita income in Laos is just under \$350 US, the enticement to supplement this meager income through the illegal trade in tiger parts is considerable and will be difficult to curtail. However, it is apparent by the number of individuals offering tiger parts for sale, and the relatively open atmosphere in which business is conducted, that existing laws governing the trade and sale in endangered species are not comprehensive or adequately enforced.

Conservation Legislation

Conservation efforts have, in part, been hampered by unclear and uncomprehensive legislation and limited ability to enforce legislation for the protection of wildlife and habitat. A framework for legal protection exists, but it is unable to cope with emerging economic, social and biological trends that are rapidly changing the landscape of Lao PDR. Wildlife is considered property of the state, and the responsible agency is the Ministry of Agriculture and Forestry.

Of the two existing categories of protection, tigers fall under the first category which prohibits killing or capture, unless for research purposes or to protect human life. If an exception is granted for either of the above reasons, it must be approved by official decree. However, the law does not specify at what level permission must be obtained. Trade in their parts is also illegal. The second category is less restrictive. Hunting is strictly prohibited during critical seasons (rainy). Hunting inside of NBCAs is illegal, as is hunting by indiscriminate means such as poison or explosives.

Existing legislation covers a wide range of issues pertinent to wildlife conservation, but details for individual statutes are lacking and terminology is often unclear. A positive step forward, which the GoL PDR has initiated, is a revision of the existing system that will clarify and augment wildlife law. Key areas to address are levels of protection for wildlife within and outside of protected areas, species lists for each level of protection, hunting regulations including methods and limits (seasonal, quota etc.), trade and penalties for violations.

The Government of Lao PDR also recognizes the importance of international trade and conservation conventions in regulating the illegal flow of wildlife products regionally and internationally. As such, efforts are being made to develop a proposal for Lao PDR to join the Convention on the International Trade of Endangered Species of Flora and Fauna (CITES). While the Government is interested in acceding to CITES, support is required to develop the required infrastructure to implement the terms of treaty membership.

Conclusion

Despite Laos proximity to some of most dynamic economies in Asia, it is just now emerging from a long period of economic and political isolation which has left it among the poorest nations of the world. Without sufficient infrastructure to promote and sustain a diversified economy, the Government of Lao is dependent upon the country's natural resources to generate foreign exchange. Lao's people, who have long maintained an integral relationship with their environment, are now pushing beyond its limit to support a growing population that is increasingly willing and able to exploit the local resources. This has led to a decline of forested land and wildlife.

Although we have a better knowledge of potential tiger habitat (see Dinnerstein *et al* 1997), this approach, while providing a base, does not consider other factors which may influence tiger presence (Rabinowitz in press). In synthesizing data that does exist, preliminary results suggest that a depleted prey base from indiscriminate, un-controlled hunting is the principal threat to tigers in Lao PDR. The role of habitat degradation and loss is just now being understood, and may have differential effects on tiger ecology. Poaching for trade in tiger parts does occur, but too little has been documented to understand the gravity of the situation.

Without these types of data, development and implementation of a tiger management plan will be difficult and, perhaps, of limited value. While a general strategy for the conservation of tigers in Lao PDR would be useful, conservation efforts and financial resources should be focused on providing the agencies responsible for protected areas and wildlife with the technical and administrative expertise required to implement present laws, and develop appropriate legislation to protect wildlife in general.

Detailed, field based scientific data on the conservation status of tigers in the Lao PDR is urgently needed to provide a baseline against which new conservation actions can be measured. Forestry staff should receive training in the latest biological methods for censusing and monitoring tiger and prey populations, and directed surveys should begin immediately. Once distribution and relative numbers have been determined, a sequence of actions for protecting important tiger populations and habitat should be enumerated.

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Site	Protection Status	Detected	Undetected	Possibly Present	Reference
Boloven Plateau	Proposed NBCA				WCS 1995
Dakchung Plateau	None	x		x	Showler et al. in prep.
Dakchung Village Area	None		x		Schaller 1995
Dong Ampham	NBCA	x			Davidson et al. 1997
Dong Ampham	NBCA			x	Salter 1993
Dong Hua Sao	NBCA			x	Duckworth et al. 1994
Dong Hua Sao	NBCA	x			Boonratana 1998, Evans et al. 1996
Dong Kahnthung	Proposed NBCA	x			Wolstencraft in prep.
Him Namno	NBCA	x			Timmins and Khounboline 1996
Hinboun Plain	None			x	WCS 1995
Hongs Special Zone	None			x	Bergmans 1995
Hou Thauing	None			x	Berkmuller et al. 1995
Kaleum Village Area	None		x		Schaller 1995
Khammouan Limestone	NBCA	x			Rabinowitz 1996
Nadee Limestone Area	None		x		WCS 1995
Nakai Nam Theun	None-Proposed Corridor to NBCA	x			Rabinowitz 1996
Nakai Nam Theun	NBCA	x			Timmins and Evans 1996
Nakai Nam Theun	PPA-Proposed Extension to NBCA	x			Tizzard 1996
Nakai Nam Theun	PPA-Proposed Extension to NBCA	x		x	Tobias 1997
Nakai Nam Theun	PPA-Proposed Extension to NBCA	x			Tobias 1997
Nakai Plateau	NBCA	x			WCS 1995 and 1996
Nam Chat Valley	None	x			Schaller 1995
Nam Et	None	x			WCS 1995
Nam Ha	NBCA				Berkmuller et al. 1995
Nam Ha	NBCA	x			Tizzard et al. 1997
Nam Kading	NBCA	x			WCS 1995
Nam Kong	PPA				Schaller 1997a
Nam Kong	Proposed Extension to PPA	x		x	Schaller 1997b
Nam Pan Valley	None	x			Schaller 1995
Nam Phui	NBCA	x			Boonratana 1997
Nam Poun	NBCA			x	Salter 1993
Nam Xam	NBCA			x	Berkmuller et al. 1995
North Xieng Khouang	None				Schaller and Robichaud 1996
Phou Dene Dinh	NBCA	x			Robichaud and Sounthala 1995
Phou Dongwin	None			x	Schaller 1997a

Site	Protection Status	Detected	Undetected	Possibly Present	Reference
Phou Kathong	PPA	x			Davidson <i>et al.</i> . 1997
Phou Khao Khouay	NBCA (Western)			x	Salter 1993
Phou Khao Khouay	NBCA (Eastern)		x		WCS 1995
Phou Loey	NBCA			x	WCS 1995
Phou Xang He	NBCA (Northern)			x	Duckworth <i>et al.</i> 1994
Phou Xang He	NBCA (Southern)		x		Salter 1993
Phou Xiang Thong	NBCA	x			Boonratana 1998, Evans <i>et al.</i> .1996
South Xiang Khouang	None		x		Schaller and Robichaud 1996
Xe Bang Nouan	NBCA	x			Timmins and Bleisch 1995
Xe Khampho	PPA			x	Berkmuller <i>et al.</i> 1995
Xe Plane	NBCA (Western)	x			Duckworth <i>et al.</i> 1994
Xe Plane	NBCA (Eastern)			x	WCS 1995
Xe Sap	NBCA	x		x	Showler <i>et al.</i> in prep.

Abbreviations for Table

PPA: Provincial Protected Area

NBCA: National Biodiversity Conservation Area

Terminology

Detected: Tiger sign encountered along survey route

Undetected: Tiger sign not encountered along survey route

Possibly Present: Tiger reported in the area by local officials or villagers