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Abstract: This document is a report on the status and threats of tigers throughout their range, divided by subspecies. Most information is given for India. The report is based on replies to a questionnaire circulated to officials and non-officials of the 14 Asian countries with tiger populations in 1993. For each subspecies habitat, tiger reserves, poaching pressure, legal protection, adequacy of protection and requirements for improvement of conservation are listed.

IUCN
The World Conservation Union

SPECIES SURVIVAL COMMISSION
CAT SPECIALIST GROUP

The Status of the Tiger in 1993

by Peter Jackson
Chairman, Cat Specialist Group
Species Survival Commission

The Status of the Tiger in 1993 and Threats to its Future

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Executive Summary

There are between 4,400 and 7,700 tigers in the wild today, according to figures provided by government officials and independent tiger specialists. The figures are largely "guestimates" because naturally secretive tigers are difficult to count in their home forests. In India, which has over half the world's tigers, and Malaysia, there have been attempts to obtain a reasonably exact figure by census. In the absence of reliable estimates from earlier times it is impossible to provide a clear overall picture of tiger decline. However, the following illustrates the status of the eight recognized subspecies in ascending order of numbers:

1. Bali tiger *Panthera tigris balica* - disappeared in the 1940s.
2. Caspian tiger *P. t. virgata* - no sign since the early 1970s.
3. Javan tiger *P.t. sondaica* - no confirmation since about 1980.
4. South China tiger *P.t. amoyensis* - virtually extinct, with scattered individuals thought to number fewer than 50.
5. Siberian tiger *P.t. altaica* - 250-400, almost all in the Russian Far East, severely threatened by poaching.
6. Sumatran tiger *P.t. sumatrae* - 400-500 threatened by loss of habitat and poaching.
7. Indo-Chinese tiger *P.t. corbetti* - status unclear, but may number 800-1,400. Threatened by poaching and habitat loss.
8. Bengal tiger *P.t. tigris* - 3,000-5,300, mostly in India. Threatened by poaching and habitat loss.

Poaching for bones and other products, of which there is evidence throughout tiger range, is a major threat to the species. Bones, penises and other tiger parts are in demand for Chinese medicine, while there are indications that skins are being smuggled to many parts of the world.

In most of the 14 range countries the tiger has adequate legal protection, but enforcement is deficient. International commerce in tigers and their products is banned under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). However, only six of the 14 tiger range countries are Party to CITES. Inadequate infrastructure, funds, personnel and equipment illustrate the low priority given to nature conservation in most countries. Only Malaysia has reported adequate staff, training, equipment and funds.

The tiger is reproducing well and is clearly in its evolutionary prime, its numbers limited only by human action: killing and destruction of habitat.

The future of the tiger depends on the following:

1. International and national commitment to conservation.
2. Effective implementation of existing international and national laws.
3. Upgrading of the tiger's legal status, wherever necessary.
4. Strict implementation of CITES by all 14 tiger range countries.
5. Cooperation between range countries in combatting poaching and trade in tiger products.
6. Strenuous efforts to protect existing tiger populations and their habitat.
5. International support, moral and financial, for conservation in tiger range countries.

Introduction

This report is based on replies to a questionnaire circulated in May 1993 to officials and non-officials of the 14 Asian countries with tiger populations, and on information collected at various times by the Cat Specialist Group.

The countries questioned were Bangladesh, Bhutan, Cambodia, China, India, Indonesia, North Korea, Laos, Malaysia, Myanmar, Nepal, Russia, Thailand and Vietnam. No responses were received from Cambodia, China, Indonesia, North Korea, and Laos. However, recent information is available from Indonesia.

Overview

Establishing tiger numbers is extremely difficult because they are naturally secretive, forest-dwelling animals, ranging over large areas of often rugged terrain. Only in India and Malaysia have attempts been made to establish a reasonably exact number of tigers in the country by means of a series of censuses. The methodology and implementation of the Indian census, based on the existence and individual identification of pugmarks (footprints), have been the subject of controversy, and the results have been questioned on the grounds of human error and manipulation. Details are not known of Malaysian census methods.

In some other places, estimates of tiger numbers have been made by extrapolating the results of studies of tiger density to the known range. Other estimates have been based on anecdotal reports by forest guards and local people.

The result is a broad range of estimates, from a low of 4,400 to a maximum of 7,700 for the total world tiger population. All the estimates show that over half the world's tigers live in India.

There is little doubt that tiger numbers have declined in the past 50 years, but the lack of trustworthy estimates of numbers precludes any calculation of the rate of decline. Human populations have increased (for example, by 50% in India in the past 20 years), leading to extensive loss of habitat through deforestation and conversion of land to human use, which itself would have caused a decline in tiger numbers (the increase in India is due to the removal of previous hunting pressure).

Seven of the eight subspecies were included in the first edition of the IUCN Red Data Book in 1964. The Bengal tiger *Panthera t. tigris* was added in 1971 following alarm about the obvious decline resulting from hunting for sport and for skins. The alarm led to the launching by the World Wildlife Fund (now the World Wide Fund for Nature) of Operation Tiger to raise US$1,000,000 to support conservation. In 1973, the Government of India initiated a comprehensive tiger conservation programme called Project Tiger, based on total protection of the tiger and conservation of selected areas of habitat as reserves managed primarily for tigers.

While there were no specific tiger conservation programmes in other countries, most range states provided legal protection and tigers existed in protected areas, although some of these areas lacked protection on the ground.

The first pugmark census in India in 1971, admitted to be incomplete and to involve some double counting, produced a baseline figure of 1,800 tigers. Official figures for subsequent censuses have shown tigers increasing to 4,334 in 1989. Doubts have been expressed about the accuracy of this figure, with many Indian specialists suggesting that it is exaggerated. Results from an all-India census in 1993 are awaited.

Although it is generally agreed that other tiger subspecies have declined, data are generally lacking. This makes it difficult to provide a clear picture of the evolution of the world tiger population in the past 20 years. If the extent of the increase in Bengal tigers in India is valid, it is likely to have counter-balanced declines elsewhere, so that there might be little difference in the overall number of tigers in 1973 and 1993. In the ultimate analysis, all depends on the authenticity of estimates of the tiger population in India. As will be seen below, non-official estimates suggest that there may be barely more than half as many tigers in India as officially reported. If this proved to be even nearly true, then a dramatic decline in tiger numbers in the past 20 years would be established.

Poaching and trade in tiger products

Poaching and illegal trade in tiger products are widespread throughout tiger range. By their clandestine nature, they are are difficult to detect. Unless there are sufficient forest guards, tiger carcasses are unlikely to be found and soon vanish. Poachers may bury remains, including skins, if

bones are the target. While skins can be easily identified, only a handful of experts can identify bones, which can be readily transported and mistaken for other (legitimate) animal bones, in which there is normal trade.

The instances of poaching that come to light can be considered just the tip of the iceberg, which suggests that at least five or six times as many tigers are poached as instances known. Furthermore, the damage from poaching is not limited to the single animal involved. The killing of a tigress may mean the loss of up to four young cubs, as happened in Russia in 1992 (Quigley 1993). In this case, the cubs were recovered, but two died and the other two were necessarily kept in captivity. The death of a male tiger may lead to territorial battles between other males, resulting in infanticide and poor cub survival for even two years. This has been documented in Nepal's Chitwan National Park (Smith and McDougal 1991). Where a few tigers survive in an isolated population (a situation which exists in many places) the loss of just a few individuals, especially if they are females, could push the population below the survival level.

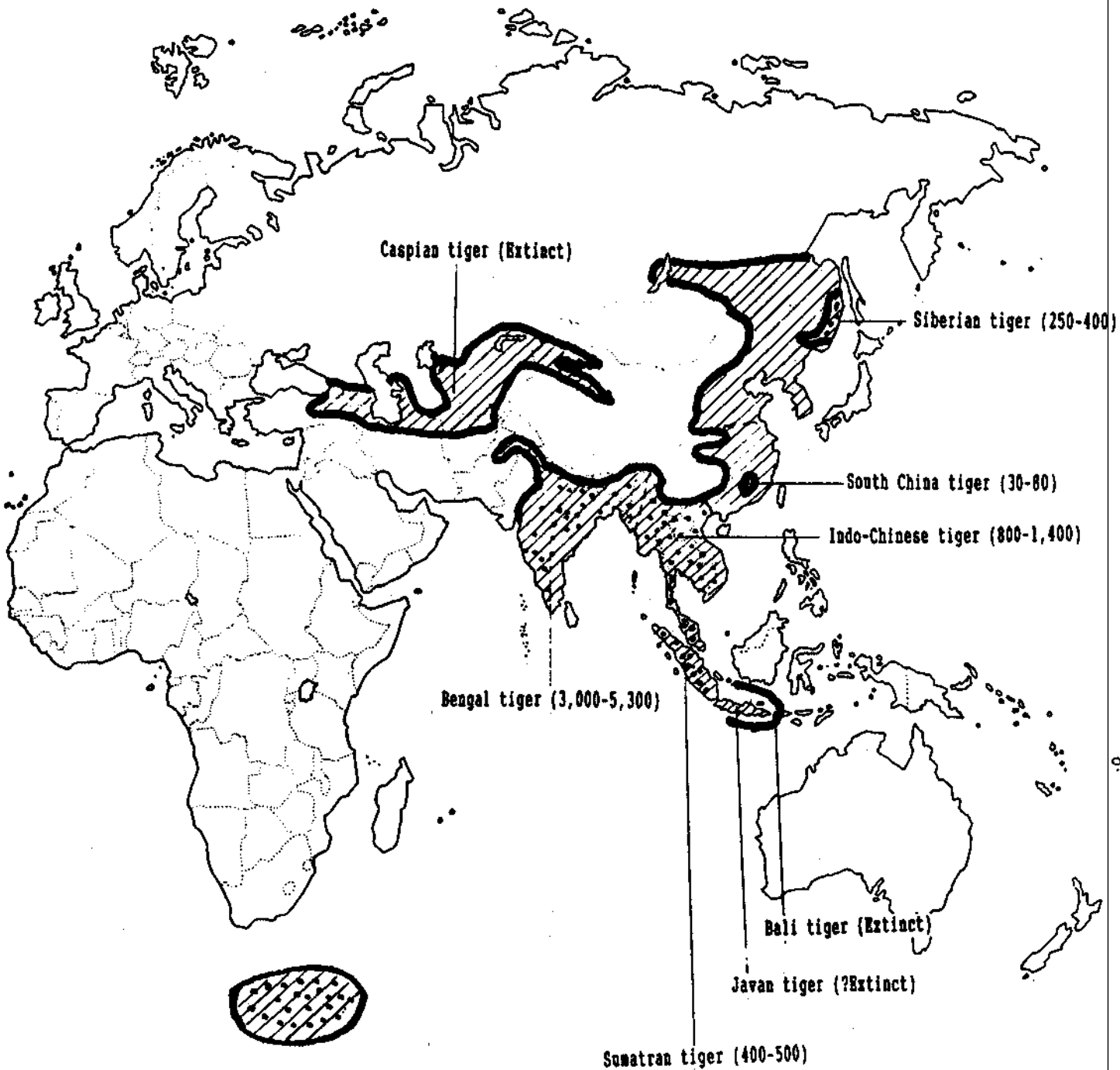
Little documentation of recovery of skins or bones is available, but V. Thapar (1993 pers. comm.) has collected preliminary information from Indian wildlife preservation authorities in 12 of India's 24 states and Delhi Territory showing 76 skins or skeletons recovered between 1988 and 1992. This figure could indicate the loss of up to 400 tigers in the period. In Nepal, a number of seizures of tiger bones have occurred, including sacks of bones in a post office (Martin 1992; C. McDougal pers.comm.). Tiger products have been found in markets in Laos (Martin 1992), Vietnam (IPPL 1992; P. Lawton, pers.comm.) and Thailand (Rabinowitz 1992).

Outside tiger range countries, large numbers of bones and other tiger products have been found in Taiwan (Nowell 1993) and South Korea (J. Mills 1993). Medicinal plaster, labelled as containing tiger bone, has been found in Geneva (P. Jackson, pers. comm.) and Rome (M. Pani, pers.comm.); tiger bone wine in London (Nicholson 1992); and a tincture in a Birmingham supermarket (Times 1992). Some of these products, however, have been found by the US Fish and Wildlife Forensic Laboratory to contain no bone of any kind.

Six of the 14 tiger range countries are not Parties to CITES: Bhutan, Cambodia, North Korea, Laos, Myanmar and Vietnam. Implementation varies in strength among those that are Parties, but in none is it adequate to stem a considerable level of illegal international commerce. This is due largely to low political and administrative priority for wildlife conservation, insufficient staff, lack of training, equipment and financial support, as well as long and difficult border terrain where smuggling is relatively easy.

Not all the range countries provide adequate legal protection. Even where legal protection is comprehensive, enforcement is inadequate.

Tiger Range in 1900 and in 1993



Questionnaire status survey of Tiger *Panthera tigris* (Linnaeus 1758), 1993

Tiger sub-species	Minimum	Maximum	Authority
BENGAL (INDIAN) TIGER *P.t. tigris* (Linnaeus 1758)	2,970	5,279	
Bangladesh	300 479	300 479	Khan/Choudhury. Forest Dept 1993
Bhutan	20	50	Forest Dept/ WWF rep. 1993
India	2,500	4,500	Project Tiger/ Ind experts 1993
Nepal	150	250	Wildlife Dept/ IUCN Rep. 1993
CASPIAN (~~HYRCANIAN~~/TURAN) TIGER *P.t. virgata* (Illiger 1815) Formerly Afghanistan, Iran, Chinese and Russian Turkestan, Turkey	EXTINCT 1970s	---	
SIBERIAN (AMUR/USSURI/NORTH-EAST CHINA/MANCHURIAN) TIGER *P.t. altaica* (Temminck 1844)	>250	>400	
China	present		Tan 1992
Korea (North)	?	?	?extinct
Russia	250	400	Pikunov/Smirnov/ Miquelle 1993
JAVAN TIGER *P.t. sondaica* (Temminck 1844):	?EXTINCT 1980s	---	Tiger sign report being checked 1993
SOUTH CHINA (AMOY) TIGER *P.t. amoyensis* (Hilzheimer 1905): China	30	80	Tan/Lu/Shen 1986
BALI TIGER *P.t. balica* (Schwarz 1912)	EXTINCT 1940s	---	
SUMATRAN TIGER *P.t. sumatrae* Pocock 1929	<400	<500	Tilson 1993
INDO-CHINESE TIGER *P.t. corbetti* Mazak 1968	806	1,400	
Cambodia	present		
Laos	present		
Malaysia	500	600	Wildlife Dept 1993 (census)
Myanmar	present		Forest Dept 1993
Thailand	106	500	Rabinowitz 1993/ Sci/Tech Res. Inst. 1991/ Mahidol Univ.
Vietnam	200	300	Vo Quy 1993
TOTALS	>4,456	7,659	
ROUNDED TOTALS	4,400	7,700	

Note: Estimates for *P.t. corbetti* in Myanmar also include *P.t. tigris*.
Table compiled by Peter Jackson, Chairman, Cat Specialist Group.

BENGAL TIGER *Panthera t. tigris*:

Range: Bangladesh, Bhutan, India, Myanmar, Nepal. (Note: Myanmar is within the ranges of both Bengal and Indo-Chinese tigers. For the purposes of this document, Myanmar tigers are treated with the Indo-Chinese subspecies.)

Population estimates: 3,000-5,300 (rounded), based on census and impressions in India; reports by Divisional Forest Officers in Bangladesh and sightings and impressions in Bhutan and Nepal.

Bangladesh:	479 (Forest Dept)
	300 (Khan)
Bhutan:	40-50 (Forest Dept)
	20-25 (WWF Representative)
India:	4,334 (Director, Project Tiger: 1989 census)
	4,000-4,500 (Director, Wildlife Institute of India: based on 1989 census)
	2,500 (Valmik Thapar, non-official member, Project Tiger Steering Committee)
	2,800-3,200 (Sanjoy Deb Roy, Retired Inspector General of Forests (Wildlife) and non-official member, Project Tiger Steering Committee)
Nepal:	150-200 (Dept. of Wildlife and National Parks)
	250 (IUCN representative)

Reserves with tigers: Bangladesh 3; Bhutan 9; India over 100; Nepal 4.

Habitat: shrinkage and fragmentation outside reserves reported by all respondents.

Poaching: Skins and bones seized in all its range countries, except Bhutan.

Existence of organized poaching: TRAFFIC India has located one network, and another has to be investigated in Calcutta (Kumar 1993).

Local use of tiger products: None reported, but tiger bone plaster from China have been found in India. The compiler has been informed of use of tiger (and lion) fat for treatment of rheumatism, and has seen whiskers clipped from a tranquillized tiger to treat a cold. Local products made from bones and skins are occasionally available in markets in Bangladesh (Khan 1993)

Legal protection:

Bangladesh: CITES 1984. Bangladesh Wild Life Preservation Act 1974. Third Schedule of Protected Animals.
Bhutan: Not a Party to CITES. Incomplete protection is given by the Bhutan Forest Act 1969.
India: CITES 1976. Wildlife Protection Act, 1972. Schedule I.
Nepal: CITES 1975. National legislation.

Adequacy of protection forces: All respondents said protection forces were inadequate, usually lacking in manpower, equipment and funding. However, the 19 special tiger reserves in India were said to have reasonable conditions.

Requirements for improved protection: All countries require more manpower, equipment and funds. The Director, Wildlife Institute of India, has calculated that protecting 75 reserves containing tigers, but outside the Project Tiger network, would require US$200,000 each a year, making a total of $75 million for five years (Panwar 1993). A. Khan (1993) estimates that Bangladesh would require US$50,000 a year.

SIBERIAN TIGER *P.t. altaica*

Range: Russia, China, ?Korea

Population estimates: 280-430 based on earlier censuses and impressions.

Russia: 250 (Dimitriy Pikunov Principal investigator, Russo-American tiger ecology project, Sikhote Alin, Primorsky Krai. Based on censuses he led in 1978-79 and 1984-85)
300-400 (Dale Miquelle and Yevgeny Smirnov, field investigators, Russo-American project. Based on impressions.)

China: 30 (Ma Yiqing, Institute of Natural Resources, Heilongjiang. 1988 estimate.

Korea: (Only anecdotal reports for several years of a possible 5-6 tigers, which have never been confirmed.)

Reserves with tigers: Russia 2; China ?

Habitat: Shrinkage and fragmentation in some areas.

Poaching: At least 60 tigers lost in Russia in 1992 (Miquelle and Smirnov 1993). The estimate includes three confirmed killings within or close to Sikhote Alin Reserve and four cubs removed from the reserve when their radio-collared mother was poached.

Existence of organized poaching: Evidence exists. In Plastun, police informants were promised up to 10 tiger skins; a government wildlife official was caught attempting to sell a tiger skin; and there are reports of trafficking in skins and bones, including offers of skins in Vladivostock newspapers.

Local use of tiger products: Most products are sold abroad to China, Korea and Japan. Tiger based drugs are imported from China (Pikunov).

Legal protection of tigers: Law of the Russian Federation on Environmental Protection and Management, 1992. However, there is no mechanism nor finance for execution (Pikunov). Permits are still issued in Moscow for capture of cubs, apparently for sale to zoos. The law provides for imprisonment for up to three years and a fine of 3,000 roubles (currently equal to US$3.00) for poaching. (Note: tiger skins have been reported to fetch $10,000). Trial of wildlife official is pending. No other cases known.

Adequacy of protection forces: Insufficient manpower and inadequate funds.

Requirements for improved protection: There is a need for manpower and equipment to establish five anti-poaching groups, at a cost of $10,000 each a year. Rewards should be instituted to encourage forest guards.

South China tiger *P.t. amoyensis*

Range: Southern China

Population estimates: 30-80. No replies were received to the questionnaire.

30-80 - Estimates in 1986 (Tan Bangjie, Lu Houji and Shen Helin).
Tigers present, but no estimate - (Status survey in 1991 by G. Koehler and Chinese specialists who saw no tigers, but found tiger sign, including of cubs, and had reports of tigers from local people.)

Reserves with tigers: Twentyone reserves within presumed tiger range are listed, but this does not indicate known tiger presence (Gui Xiao Jie 1993).

Poaching: There are anecdotal reports of poaching and occasional press reports of tiger products and live cubs being offered for sale.

Local use of tiger products: Tiger bones and other products have long been important ingredients of traditional medicine in China. In the absence of an important tiger population in China in the past 20 years, the assumption must be that raw tiger products are being illegally imported. Medicines from China, said to contain tiger bone, have been found in many countries in Asia, Europe and North America. However, some have been found by the US Fish and Wildlife Forensic Laboratory, to contain no bone of any kind.

Legal protection of tigers: CITES 1981. Wild Animal Protection Law of the People's Republic of China, 1988: Category I.

Comment: The South China tiger was common 40 years ago and has been estimated by Lu Houji and Shen Helin (1986) to have numbered about 4,000. It was declared a pest and hunted down during the 1950s and 1960s and over 3,000 skins were accounted for. This virtually wiped out the subspecies. The few survivors are scattered over a large area within and around the borders of Hunan Province and the prospect is poor for re-establishment of a viable population.

SUMATRAN TIGER *P.t. sumatrae*

Population estimates: <400-<500

No responses to the questionnaire were received, but information is available from a workshop in Sumatra in November 1992 organized by the Indonesian Dept of Forest Protection and Nature Conservation (PHPA) and attended by Indonesian and international tiger specialists. The consensus was that were fewer than 400 tigers in five reserves and fewer than 100 present in other areas.

Reserves with tigers: 21, of which five are of principal importance.

Habitat: Human population growth, plus people relocated from Java to Sumatra, are causing a decline in tiger habitat and deterioration of habitat quality at the edges of protected forests. Habitat is fragmented even within the best reserves.

Poaching: There is evidence of poaching. Officials at the workshop gave estimates of about 14 tigers lost each year from seven reserves by poaching or removal of problem animals, but this was considered an under-estimate by some other participants.

Local use of tiger products: Tiger products are used by Chinese communities, which exist in Indonesia. There is no information about use by Indonesians, although the tiger has an important role in folklore.

Legal protection of tigers: CITES 1979. Wildlife Protection Ordinance, 1931 and Wildlife Protection Regulation, 1931.

Adequacy of protection forces: No specific information, but the Director General of PHPA stated at the workshop that, even with well-organized customs enforcement, it would be inherently extremely difficult to control, let alone eliminate, illegal international trade.

Requirements for improved protection: No information

INDO-CHINESE TIGER *P.t. corbetti*

Note: Myanmar (Burma) is within the ranges of both Bengal and Indo-Chinese tigers. For the purposes of this report, the tiger population is treated as wholly Indo-Chinese.

Population estimates: >900->1,100 (rounded)

Cambodia: Present
Laos: Present
Malaysia: 500-600 (Wildlife Dept 1993).
Myanmar: Present (Forest Dept)
Thailand: 140 in protected areas of over 100 km^2 (Rabinowitz, A. 1993. Estimating the current abundance of the Indo-Chinese tiger in Thailand. Biological Conservation 65(3): 213-217.)
500 (1991 estimate by the Ecological Research Dept of The Thailand Institute of Scientific and Technological Research quoted by the Forest Dept).
106 (estimate ?1993 by the Center for Conservation Biology, Mahidol University quoted by the Forest Dept)
Vietnam: 200-300 (Professor Vo Quy, Univ. of Hanoi).

Reserves with tigers

Cambodia	Not known
Laos	Not known
Malaysia	Six. Present in seven of nine states (Wildlife Dept 1993)
Myanmar	Alaungdaw Kathapa NP and in Wildlife Sanctuaries and Reserved Forests (Forest Dept)
Thailand	20 (Rabinowitz 1993)
Vietnam	7 (Vo Quy 1993)

Habitat

Cambodia	Extensive deforestation and disturbance known.
Laos	Shrinking and disturbed.
Malaysia	Shrinking (Wildlife Dept 1993).
Myanmar	Shrinking and disturbed (Forest Dept 1993)
Thailand	Shrinking and fragmented (Rabinowitz 1993; Forest Dept 1993). Seven inter-connected protected forest complexes of over 2,000 km^2 (Rabinowitz 1993)
Vietnam	Shrinking and fragmented (Vo Quy 1993)

Poaching

Cambodia	Heavy poaching (Thai Forest Dept 1993)
Laos	Heavy poaching (Thai Forest Dept 1993). Tiger products in markets (Martin 1992)
Malaysia	Three cases since 1992. Poachers successfully prosecuted.
Myanmar	Many incidents and some seizures known, but there are no records. Tiger parts are taken across the border to China and Thailand (Forest Dept 1993)
Thailand	Poaching has decreased due to stricter law enforcement, but there is illegal trade along borders (Forest Dept 1993). Tiger products are found in markets (Rabinowitz 1991)
Vietnam	Poaching goes on for local use and smuggling to China, Hong Kong and Thailand (Vo Quy 1993)

Local use of tiger products

Cambodia	Presumed
Laos	Presumed
Malaysia	None (Wildlife Dept 1993). Possibly by Chinese community.
Myanmar	None (Forest Dept 1993). Possibly by Chinese community.
Thailand	Possibly by Chinese community.
Vietnam	Tiger parts used for medicines (Nguyen Xuan Dang and Pham Trong Anh 1991)

Legal protection of tigers

Cambodia	Not Party to CITES
Laos	Not Party to CITES. No specific protection law.
Malaysia	CITES 1978. Protection of Wildlife Act, 1972/76.
Myanmar	Not Party to CITES. Protected (Forest Dept 1993). However, the tiger is not specifically mentioned in a summary of the Burma Wild Life Protection Act, 1936 (Fuller et al. 1991).
Thailand	CITES 1983. The tiger is not specifically mentioned in a summary of the Wild Animals Preservation and Protection Act, 1960 (Fuller et al. 1991).
Vietnam	Not Party to CITES. Legal protection (Vo Quy 1993). No details given.

Adequacy of protection forces

Cambodia	No information, but presumably inadequate.
Laos	No information, but presumably inadequate.
Malaysia	Adequate staff, training, equipment and funding (Wildlife Dept 1993).
Myanmar	Inadequate funds and equipment. Funds needed for vehicles, monitoring and management (Forest Dept)
Thailand	No information, but probably inadequate.
Vietnam	Inadequate funds. US$50,000 required (Vo Quy 1993).

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Mingma Norbu Sherpa, WWF Representative in Bhutan

Cambodia - None

China - None

India - Arin Ghosh, Director, Project Tiger.
Hemendra Singh Panwar (Director, Wildlife Institute of India).
Valmik Thapar (Non-official member, Project Tiger Steering Committee).
S. Deb Roy (Retired Inspector General of Forests, Wildlife, non-official member, Project Tiger Steering Committee).
Ashok Kumar (Director, TRAFFIC India).

Indonesia - None

Korea, N. - None

Laos - None

Malaysia - Jasmi bin Abdul, Director of Research, Dept of Wildlife and National Parks

Myanmar - Thein Lwin, Deputy Director General, Forest Dept.

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