PART 5: RATIONALE FOR A NATIONAL TIGER ACTION PLAN FOR MYANMAR

Potentially tigers are recoverable to their former abundance across their range in Myanmar. In practice however, full recovery is unlikely. This section describes a Plan for recovering tigers to a semblance of their former abundance in key parts of their range where they still exist, and restoring areas where tigers have been lost so that natural recolonization might in future occur in those places. Broadly, the Plan will work towards increasing tigers, prey and habitat, which are "measurable currencies" for tiger conservation (Ginsberg 2001).

The Plan will be implemented over a 5-year period between 2003-2007. This will allow a number of targets to be achieved over spatial scales relevant to tiger conservation (Ginsberg 2001);

• Site (an area containing at least several breeding female tigers) e.g. Htamanthi Wildlife Sanctuary is a tiger site.

• Landscape (a larger area containing several populations of females and habitat connections between the populations) e.g. the Hukaung Valley, and forest reserves in Taninthayi Division are tiger landscapes.

• Tiger Conservation Units (TCU's) (areas encompassing several landscapes) e.g. the Northern Triangle TCU (60) which contains Hukaung Valley, Huai Kha Khaeng'– Thung Yai Naresuan TCU (73) which includes Taninthayi Division.

The targets for tiger conservation will vary according to timeframes and spatial scales but fit into the general framework given in Table 4. By the end of the implementation period, the short-term targets should be realized. An annual review of progress is suggested with a comprehensive review of progress towards achieving the short-term goals at the end of 2007. Success at reaching the short-term targets will set the stage for meeting the longer-term (10 – 20 years) targets. Important to recognize is the fact that efforts to save tigers in Myanmar are part of a larger global effort to save the species. The recovery of tigers in Myanmar will contribute towards the larger goal of species recovery across the range.

The Plan addresses the key threats to achieving these goals for tigers in Myanmar, described in section 3 (above); (a) Hunting for commercial trade in tiger products, (b) Prey depletion, (c) Habitat loss, degradation and fragmentation, (d) Harassment and displacement, (e) Illegal trade in tiger products, (f) Genetic erosion, (g) Protected Area management, (h) Social perception.

Specifically, implementation of the Plan will reduce the key threats by,
1. Suppressing all killing of tigers, and the illegal trade in tiger products.
2. Reducing killing of tiger prey species, suppress associated illegal trade.
3. Improving forestry management to stop further loss of tiger habitat and to restore degraded habitat.
4. Improving forestry management to reduce intrusions of local people into tiger habitat, and improve planning to avoid development in tiger critical areas.
5. Establishing protected areas, ecological corridors and priority management areas to protect wild tigers and their habitat.

6. Improving international cooperation and establish cooperative management of contiguous protected areas along borders to maintain connectivity of tiger habitat across international boundaries.
7. Monitoring the status of the tiger and prey population to assess the effectiveness of conservation efforts.
8. Improving public awareness of the importance of tiger conservation to increase support from local people.
9. Defining roles and responsibilities of personnel responsible for tiger conservation.

Table 4. Targets for tiger conservation with various time and spatial scales (*adapted from Ginsberg, 2001*).

	Targets	
	Short Term (2-5 years)	**Long Term (10-20 years)**
SITE (An area containing several breeding females)e.g. Htamanthi Wildlife Sanctuary, forest reserves in Taninthayi Division	• Maintain occupancy of tiger habitat • Define critical areas within sites • Stabilize present tiger populations • Prevent loss of tigers	• Maintain potentially breeding populations of tigers at maximum density • Maintain expanding population (at r>1) • Strictly protect core areas
LANDSCAPE (A larger area containing several populations of breeding females)e.g. Hukaung Valley, Taninthayi Division	• Maintain potential for dispersal between sites	• Maintain ecologically functioning viable tiger populations • No human intervention required to achieve stable/ growing populations • Recolonization of empty habitat
TIGER CONSERVATION UNIT (An area containing several landscapes)e.g. the Northern Triangle TCU (60), Huai Kha Khaeng – Thung Yai Naresuan TCU (73)	• Maintain integrity of intact habitat • Maintain sufficient prey base • Maintain multiple landscapes including transboundary landscapes in each TCU • Coordinate establishing protected areas across boundaries • Promote tiger friendly conservation in each country in TCU	• Re-establish connections between sites and landscapes to ensure genetic exchange • Maintain heterogeneity of ecoregion

Specific issues and action items for achieving the targets of tiger conservation in Myanmar are detailed as follows. For ease of reference the action items are also listed in Table 1 along with a proposed timetable for their implementation, and responsible agencies.

5.1 Suppressing all killing of tigers and the illegal trade in tiger products

5.1.1 Key issues

a) The trade in tiger products is part of the illegal trade in wildlife worth an estimated US$7 billion annually (Bennett and Rao 2002).
b) Myanmar is one of the countries supplying the tiger trade and has a well-developed network involving poachers, middlemen and trafficking routes to move tiger products from forest to market (Bennett and Rao 2002).
c) The hunting of tigers to supply the trade has been the ultimate cause of extirpation of wild tigers from multiple forest and nature reserves e.g. Alaungdaw Kathapa, and entire regions e.g. northern Myanmar (Rabinowitz 1998).
d) Knocking off the top predator can have destabilizing effects at lower trophic levels in tropical ecosystems (Seidensticker 2002).
e) Tiger populations that exist today are being decimated by hunting and face certain extirpation in the short-term if action is not taken (Kenney et al. 1995; Seidensticker et al. 1999).

5.1.2 Key actions

a) Amend the Protected Wildlife and Protected Areas Law (SLORC, 1994) to enable the enforcement of international laws within Myanmar.

This would include laws prohibiting the sale or purchase of products suggesting or implying content of tiger bone, hair, organs, blood, teeth, claws or hide. Completion date: December, 2003

b) Impose heavy fines for offenders and use partial proceeds towards implementing international legislation. Completion date: December, 2003
c) Conduct wildlife conservation and awareness training for 100 government personnel, including military, customs, police, immigration and local administrative staff in Yangon, Mandalay, Myitkyina and other internal transit points for wildlife. This would include basic training in identifying wildlife protected by domestic and international legislation, and knowing their protection status. Completion date: December, 2003
d) Conduct wildlife conservation and awareness training for all protected area staff. Completion date: December, 2003
e) Recruit local government staff to help identify tigers in trade and encourage them to report their observations to relevant authorities. Completion date: December, 2003
f) Create a Wildlife Investigations Unit to investigate and suppress crime against wildlife, including trade, trafficking, illegal killing and capture, habitat destruction, and other persecution. The unit will enforce domestic and international legislation. The unit would include staff of the Ministries of Home Affairs, Forestry and Tourism and would report directly to the Minister of Forestry. Completion date: June, 2004
g) Train and recruit government staff to join the Wildlife Investigations Unit. Form mobile units to suppress wildlife crime across the country. Completion date: June, 2004

5.2 Reducing killing of tiger prey species and associated trade.

5.2.1 Key issues

a) "Tigers cannot survive where they lack access to ungulate prey that is at least about half their own body mass because of mass-specific energy needs.""(Seidensticker 2002)
b) Because tropical forests support ungulates at relatively low densities, the killing of prey has been the proximate cause of the decline in tiger populations in Mainland Asia (Karanth and Stith 1999).
c) Few if any ethnic communities rely on large mammals as a subsistence source of protein but trade in wild meat, horns, fur, hides and other products is part of a massive illegal trade in Myanmar, and is well developed in border areas where enforcement is difficult (Rabinowitz 1998; Martin and Redford 2000).
d) The commercial farming of wildlife provides a potential legal mechanism for the poaching of wild individuals to supply the trade and may contribute to the extirpation of some species.
e) Evidence suggesting that hunting can be sustainably managed exists for only a few tropical wildlife species but evidence that wildlife harvest is unsustainable exists for a vast number of species (Robinson and Redford 1994; Robinson, and Bennett 1999).
f) Protected areas are currently understaffed and ill equipped to prevent the loss of wildlife to poachers (Bennett and Rao 2002).
g) The presence of forest guards in sufficient numbers can mitigate against hunting of wildlife (Bruner et al. 2001).
h) Outside of protected areas, laws governing wildlife are difficult to enforce because staffing is low and capacity is low.

5.2.2 Key actions (in addition to those described above for tigers but are generally relevant)

a) Amend the Protected Wildlife and Protected Areas Law (SLORC 1994) to enable the enforcement of international laws within Myanmar. Modify Chapter V, Article 15 to recognize the international classifications of wildlife species, and their associated protection status. Completion date: June 2003.
b) With the view to protecting tiger prey species, allow the commercial farming of only selected wildlife species only in facilities designated by the Forest Department. Completion date: June 2003.
c) Allow thw hunting of wildlife species only when scientific evidence proves it can be done sustainably. Completion date: June 2003.
d) Take action to stop all killing of prey species at places where tigers are currently or potentially found. Completion date: December 2007.
e) Train all government staff at Hukaung Valley and Htamanthi, in anti-poaching and anti-trafficking techniques. Where possible involve local military personnel as instructors. Completion date: December 2003.
f) Recruit teams of EcoRangers whose sole responsibility is protection. Numbers of EcoRangers should at least 3 guards/100 sq. km for effective management. Provide EcoRangers with necessary equipment, and salary incentives to motivate them to combat poaching. Completion date: June 2004.
g) Develop systematic patrolling inside all protected areas using EcoRangers. Make patrolling a mandatory management activity with a monthly schedule and budget. Completion date: December 2004.
h) Update the Wildlife Law to include protection for wildlife outside protected areas, and empower government staff to enforce the legislation. Completion date: December 2004.

i) Outside protected areas, study patterns of hunting and consumption of wildlife to determine its sustainability, especially for prey species. Completion date: December 2005.
j) In the List of Protected Animals (Ministry of Forestry, 1994), promote the following tiger prey species from Protected status to Completely Protected status; Wild water buffalo (*Bubalus bubalis*). Completion date: June 2003.
k) In the List of Protected Animals (Ministry of Forestry, 1994), promote the following tiger prey species from Seasonally Protected status to Protected status; Hog deer (*Axis porcinus*) and Common barking deer (*Muntiacus muntjak*). Completion date: June 2003.
l) Wildlife conservation and awareness training for all wildlife offenders. Completion date: June 2003.
m) Impose fines for wildlife offenders in tiger areas with proceeds towards supporting tiger conservation activities. Completion date: June 2004.

5.3 Improving forestry management to stop further loss of tiger habitat and to restore degraded habitat

5.3.1 Key issues.

a) Extraction of non-timber forest products, fuel wood collection, shifting cultivation and livestock grazing disturbs tigers, damage tiger habitat, and depletes prey resources (Rao et al. 2002).
b) Clear cutting of plantations, and cutting of other economically valuable hardwoods may seriously compromise tiger habitats (Rao et al. 2002).
c) There exist no economic incentives for conducting environmentally sound forest use practices.

5.3.2 Key actions

a) The National Code of Forest Harvest Practice involves 30-year cutting cycles, and use of elephants for removal of logs reduces environmental damage over other practices. Apply this traditional method of forest harvest effectively in all concessions in the country. Completion date: December 2005.
b) Ban the hunting of wildlife in forest harvest areas. Completion date: June 2004.
c) Provide wildlife conservation awareness education training to timber harvest staff. Completion date: December 2004.
d) Define Strict Conservation Zones for Hukaung Valley and Htamanthi where no human use of natural resources is allowed. Create buffer areas to allow restricted use by local people including extraction of non-timber forest products, fuel wood collection, and livestock grazing. Ban shifting cultivation and hunting of all kinds in the buffer area. Use EcoRanger patrol teams to enforce the restrictions. Completion date: December 2003.

5.4 Improving forestry management to reduce intrusions of local people into tiger habitat, and improve planning to avoid development in tiger critical areas

5.4.1 Key issues

a) Plantations and mines open up forest areas (Rao et al. 2002), encourage markets that wipe out tiger prey, and allow tigers to be hunted more easily.
b) Permanent camps and settlements seriously compromise tiger habitat (Rao et al. 2002).
c) Road construction internally fragments and damages tiger habitat, facilitates intrusions by poachers, and opens up remote areas to wildlife trade (Bennett and Rao 2002; Rao et al. 2002)..

5.4.2 Key actions

a) Reclaim plantations and revoke all mining licences in Hukaung Valley and Htamanthi Wildlife Sanctuaries. Completion date: December 2007.
b) Consider the location of government camps and permanent settlements outside of these reserves. Completion date: December 2007.
c) Ban the construction of roads in protected areas and forest reserves. Completion date: December 2004.
d) Close or limit access along logging roads in Taninthayi Division to reduce the risk of collisions with tigers. Completion date: December 2005.
e) Include wildlife assessment in land development programs for Taninthayi Division. Completion date: December 2003.
f) Develop education programs to improve awareness about wildlife for local people living in and around forest reserves in Taninthayi Division. Completion date: December 2004.

5.5 Establishing protected areas, ecological corridors and priority management areas to protect wild tigers and their habitat

5.5.1 Key issues.

a) The minimum area required to support a genetically viable population of large predators would be the area that supports 300 breeding females (Barbault & Sastrapradja 1995).
b) If female tigers in Myanmar have home ranges the size of Nepali tigers (10-50 sq. km; (Smith 1987)), the area required would be 3,000 – 15,000 sq. km.
c) Landscapes of this size exist in Myanmar but most are not yet protected for wildlife. The largest intact forest expanses in Myanmar are in Kachin State, Sagaing and Taninthayi Divisions.
d) Tigers may use forest reserves as movement corridors between the Hukaung Valley and Sumprabum, and possibly as far east as Kaunglamphu; within Taninthayi Division, and across the Thai-Myanmar border, and; between north-eastern Sagaing Division and western Kachin State.
e) There is a lack of landscape level planning and analysis for wildlife conservation in Myanmar (Rao et al. 2002).
f) Management plans for sites containing tigers do not specifically define actions necessary to conserve tigers.

5.5.2 Key actions

a) Revise or create management plans for the Hukaung Valley and Htamanthi to include specific actions for conserving tigers, including recommendations in 5.2.2, 5.3.2, and 5.4.2, and below. Completion date: December 2003.
b) Expand Htamanthi Wildlife Sanctuary to increase its size to at least 3,000 sq. km to ensure long-term survival of tigers. Completion date: December 2004.
c) Create a dedicated tiger reserve including the Hukaung Valley and adjacent forest reserves. The reserve will serve to link tiger populations in India with those in Myanmar. Expand the eastern border of Hukaung Valley Wildlife Sanctuary to protect potential tiger habitat in the Sumprabum area. Completion date: June 2004.
d) Establish limited human use zones (buffers) that will "soften" the edges of Hukaung Valley and Htamanthi reserves reducing the risk of mortality for tigers. Completion date: June 2004.

e) Create new protected areas or special tiger management zones in the Taninthayi Division, including the Lenya River, Greater and Lesser Taninthayi River catchments. These sites will protect tigers and their habitats and allow limited human use of natural resources around the reserves in a manner complementary to tiger conservation. Completion date: December 2007.
f) Use existing GIS capabilities in the Forest Department to identify and demarcate special management zones and corridors for tigers. Completion date: December 2003.

5.6 Improving international cooperation and establish cooperative management of contiguous protected areas along borders to maintain connectivity of tiger habitat across international boundaries

5.6.1 Key issues

a) Trade and trafficking in tiger and other wildlife products is often associated with the trade in drugs and arms (Bennett and Rao 2002).
b) In Myanmar the trade is concentrated in areas with weak enforcement, especially along the border with China and Thailand (Bennett and Rao 2002). The trade is fuelled by the disparity in economies between neighbour countries, creating an underground economy and a drain on Myanmar's wildlife.
c) Local government officials in border areas are unaware of the Wildlife Law or the importance of wildlife, and sometimes supplement their incomes from wildlife trade.
d) Local militias effect law enforcement in border areas but National laws are only weakly enforced or not enforced at all.

5.6.2 Key actions

a) Conduct wildlife conservation and awareness training for 100 government personnel, including military, customs, police, immigration and local administrative staff, stationed near or on country borders. This would include basic training in identifying IUCN and CITES protected wildlife species. Completion date: December 2003.
b) Hold internal 2 workshops involving local government officials to discuss transborder issues including trade, trafficking and wildlife, and develop plans to suppress the trade. Completion date: December 2003.
c) Recruit local government officials on both sides of the Thailand border to suppress transborder wildlife trade at Mawdaung-Prachuap Kiri Khan, Kaleinaung-Ban I Tong, Kawthaung-Ranong (especially Tha Htay Island), Myawaddy-Mae Sot, Three Pagoda Pass, and Tachileik-Mae Sai, and prevent access by professional poachers from Thailand. Completion date: December 2004.
d) Create a tiger reserve in Taninthayi Division opposite Thailand protected areas that support large populations of tigers, Western Forest Complex and Kaeng Krachan National Park. Completion date: December 2004.
e) If possible expand the reserve or create new reserves to form a corridor between these two Thai reserves. Completion date: December 2007.
f) Develop a spatially explicit tiger conservation database for the Huai Kha Khaeng – Thung Yai Naresuan TCU (Level I TCU 73). Completion date: December 2005.
g) Where possible coordinate antipoaching patrols and/or wildlife surveys on both sides of the Thailand-Myanmar border.. Completion date: December 2004.

5.7 Monitoring the status of the tiger and prey population to assess the effectiveness of conservation efforts

5.7.1 Key issues

a) The success of the Plan will need to be assessed by monitoring tiger and prey populations.
b) The Hukaung Valley landscape will be a target for an extensive monitoring program.
c) Landscapes not yet protected but containing tigers e.g. Taninthayi Division, should be targets for medium intensity monitoring.
d) Sites where tigers were not found but are suspected to occur (Table 3) should be targets for low intensity monitoring (Karanth and Nichols 2002).
e) Specific methods used for monitoring will depend on the level of knowledge available for tigers (Karanth and Nichols 2002)(Table 5).

5.7.2 Key actions

For Hukaung Valley;

a) Identify critical habitats and core areas for tigers and prey across the landscape. Completion date: June 2003.
b) Estimate numbers of female tigers within the landscape and ascertain that there is a reproductively viable population of tigers. Completion date: December 2003.
c) Document the current threats, demographics, and range of human activities that must be taken into account if the proposed landscape is to be successful and sustainable in the long term. Completion date: June 2003.

For forest reserves in Taninthayi Division;

d) Create a GIS map and database to show current land use patterns, possible future land use trends, and tiger and prey source areas. Completion date: December 2003.
e) Train local foresters how to identify tiger and prey via sign surveys, in use of camera-traps for wildlife survey, and methods for making observations and recording data. Completion date: December 2004.
f) Determine occupancy of habitats in accessible sites across the landscape, including Myintmoletkat and Lenya River areas, which away from sites where tigers are known. Completion date: December 2005.
g) Determine prey abundance using line transect sampling. Completion date: December 2005.
h) Determine tiger abundance using double-sided camera-trap sampling. Completion date: December 2005.

For sites in Paletwa and Kaladan river catchment, Sumprabum, Khaunglanphu, Paunglaung, Momeik-Mabain, Central Bago Yoma, Rakhine Elephant Range and Saramati Taung area;

i) Train local foresters how to identify tiger and prey via sign surveys. Completion date: June 2003.
j) Determine occupancy of habitats at the sites using sign surveys. Completion date: December 2003.
k) Establish a logbook to record observations of tiger and prey, and encourage use of the logbook. Completion date: December 2003.

5.8 Improving public awareness of the importance of tiger conservation to increase support from local people

5.8.1 Key issues

a) Local government officials encourage local people to hunt tigers and split profits from the sale of wildlife products.
b) Professional hunters and hill tribal people (Kachin, Lisu, Naga, Khanti Shan) who consume wildlife live in villages adjacent to the Hukaung Valley, and pose a threat to wildlife.

c) Little public information exists about wildlife in Myanmar.
d) Wildlife education essentially does not exist in schools.

5.8.2 Key actions

a) Develop wildlife education programs to discourage hunting by local people in and near tiger reserves. Where possible recruit local people, especially ex-hunters to help implement these programs. Completion date: December 2004.
b) Involve 50 local people in wildlife survey and research activities to make positive use of their local or indigenous knowledge. Completion date: December 2003.
c) Collaborate with authorities in charge of development projects to include wildlife conservation as a component of those projects and resolve any potential conflicts between the needs of people and wildlife. Completion date: December 2003.
d) Produce a documentary about tiger conservation in Myanmar and broadcast it on National television. Completion date: June 2004.
e) Dub existing wildlife documentaries about Myanmar into Myanmar language and broadcast. Completion date: June 2003.
f) Adapt WCS education materials about tigers into Myanmar language and implement a special training program for schoolchildren at selected high schools in Yangon, and adjacent to tiger reserves. Completion date: June 2004.

5.9 Defining roles and responsibilities of personnel responsible for tiger conservation

5.9.1 Key issues

a) Wildlife conservation is hampered by a lack of understanding of roles and responsibilities of government staff.
b) The efficiency of protected area management can be improved by defining tasks and expectations for staff.
c) Park managers need leadership training to be able to perform their jobs successfully, and to direct human resources to effect conservation.

5.9.2 Key actions

a) Provide special training for managers of tiger reserves in management techniques, including leadership skills, decision-making, planning, protection, use of information and technology, and personnel management. Completion date: December 2003.
b) Invite managers of tiger reserves to observe the day-to-day operations in selected tiger reserves in India and Thailand. Completion date: June 2004.
c) Define roles for junior staff in Hukaung Valley and Htamanthi Wildlife Sanctuaries, and for Taninthayi Division junior forestry staff, and staff and in other areas in conducting field monitoring of tigers and prey. Completion date: December 2003.

Table 5. A guide to research methods for tiger conservation

Knowledge Base	Goal	Technique
No information	Determine occupancy	Sign surveys for tigers[1]
	Determine occupancy but sign survey inappropriate	Camera trap surveys for tigers
	Potential carrying capacity (K) for tigers	Line transect for prey Dung surveys for prey
Tigers present	Determine occupancy	Sign surveys for tigers
		Camera trap survey for tigers using single camera sets
	Determine tiger and prey abundance	Camera trap survey using single camera sets
		Line transect sampling for prey/dung
	Determine abundance of tigers	Camera trap survey for tigers using double camera sets
		DNA population estimation
	Determine K for tigers	Line transect sampling for prey/dung
Abundance/distribution data available	Habitat analysis	GIS to extend results of intensive habitat surveys
	Monitoring	Camera trap monitoring of tigers
		Calibrated sign surveys
	Ecological Studies	Radio telemetry
		Diet studies
		Demographic studies
		GIS

[1] 'for tigers' implies that sampling is designed to maximize the probability of encountering tigers