PREFACE

Indonesia formerly had three of the world's eight sub species of tiger , however two of these the Javan Tiger and Balinesse Tiger are now extinct, the former in 1980's (Seidensticker dkk. 1999) and the latter in the 1940's. Currently there remains one sub species The Sumatran Tiger, which survive in a habitat increasingly fragmented, with populations becoming isolated. Sumatran Tiger is only found in Sumatra and is recognized as a distinct sub species, and the smallest in size of surviving tiger sub species (Kitchener, 1999). The male Sumatran Tiger generally measures head to tail up to 220 cm, with the body weight of around 90 kg (Photo 1 : Save The Tiger Fund 2007)

Since 1996 Sumatran Tiger has been categorized as critically endangered by IUCN (Cat Specialist Group, 2002). In 1992 it was estimated that only 400 individuals remain in 5 national parks, 2 wildlife sanctuary, and 100 more outside of these 7 protected areas (PHPA 1994. It is suspected the Sumatran Tiger population is showing a continous decline in those protected areas. The minimum population estimated on the basis of surveys and researches by various organiziations is 250 adult individuals.

Although 18 forest blocks in Sumatra are believed to have Sumatran Tiger population, only 8 of these areas have been fully surveyed and the remaining 10 do not yet have population estimate. Although population estimates are based upon similar survey methodology, approaches are sometimes different, therefore a caution intepretation should be considered.

Conservation has provided us with powerful evidence that this species is adversely affected by forest degradation and fragmentation, which may be caused by logging activities, slash and burn agriculture including rubber, oil palm, and pulp production, mining, and also the construction within forested areas. To conserve sumatran tiger, Indonesia has initiated conservation efforts for tigers including the establishment of protected areas. Some key protected areas in Sumatra contribute to the ongoing survival of the Sumatran tiger. In order to ensure long-term viability of tigers in Indonesia, however, protected areas supporting tigers need to be expanded further and intensive wild tiger population management implemented by Directorate General of Forest Protection and Nature Conservation (PHKA). Just to highlight, in the last two years Indonesia gazetted 3 new national parks (Batang Gadis, Tesso Nilo and Sembilang) which are very important for the protection of tiger habitat. Meanwhile, we are also in the process of improving the management of large-sized reserves by spending more manpower and resources. Meanwhile, in dealing with captive tigers, following the Tiger GCS recommendations in July 1992, Indonesia was the first tiger range country to develop a coordinated regional program. In 1994, Indonesia released the first ever Sumatran Tiger Action Plan. There are four general categories of recommendation that comprise the Action Plan. Following such an action plan, various conservation efforts have been taken place in Sumatra by various institutions over the past decade.

And now this huge initiative was followed by many actions, the latest one is publishing the revised Indonesian Sumatran Tiger Conservation Strategy. To

implement Resolution Conf 12.5 regarding Conservation of and trade in tigers and other Appendix-I Asian big cat species and to fulfill some recommendations of the CITES Tiger Missions Technical Team, Government of the Republic Indonesia in collaboration with some NGO's (Sumatran Tiger Conservation Program (SCTP) the Wildlife Conservation Society (WCS) , World Wildlife Fund (WWF), Zoological Society London (ZSL), Program Konservasi Harimau Sumatera (PKHS) and Flora Fauna International (FFI) and submit reports on such efforts have been done to conserve Sumatran tiger (Panthera tigris sumatrae)

HABITAT AND POPULATION

In 1978, the Sumatran tiger population was estimated to be 1,000 individuals, based on responses to a questionnaire (Borner 1978). In 1985, 26 protected areas were found to contain tigers, and the estimated population at these sites was about 800 tigers Santiapillai and Ramono (1987). In 1992, the Indonesian Directorate General of Forest Protection and Nature Conservation (PHPA) estimated that about 400 Sumatran tigers were living in five National Parks and two Wildlife Reserves, and another 100 in unprotected areas that could soon be lost to agriculture. Occurring in Way Kambas National Park, Bukit Tigapuluh National Park, within the large Gunung Leuser and Kerinci-Seblat National Parks and and Bukit Barisan Selatan National Parks. The largest population is estimated to be about 110 tigers in Gunung Leuser National Park.

The latest information available on tiger population in overall Sumatra is shown in Table 1.

HABITAT

Currently several key protected areas and other isolated habitats contribute to the ongoing survival of the Sumatran tiger in the island. In order to ensure long-term viability of tigers in Indonesia, protected areas supporting tigers need to be expanded further and intensive wild tiger population management implemented by Directorate General of Forest Protection and Nature Conservation (PHKA). Before 2000, there were only 5 national parks in the main island of Sumatra covering a total of more that 3.1 million hectares. The commitment of the Government of Indonesia to conserve Sumatran tigers has been shown by the establishment of 5 new national parks since 2000. These new parks add a total of more than 550 thousand hectares to the existing parks. However, these parks are extremely isolated one another.

The global priority setting for tigers *Setting Priorities for the Conservation and Recovery of wild tigers: 2005-2015* designates 2 sites in Sumatra as tiger conservation landscapes (TCL I). Among them, two sites has been categorized as the global priorities, 2 sites as the regional priorities (TCL II), 5 sites as the long-term priorities (TCL III), and 3 sites as insufficient data (TCL IV). These areas consist of a total of 8. 8 million hectares, of which 5.8 hectares (65.91%) of them are identified as the core habitat of Sumatran tigers. Among TCL IV, Gunung Leuser National Park has been categorized as 'lacking sufficient data to properly categorize', but described the region as being "of no doubt, some of the best habitat available for Sumatran tigers" and strongly urged initiation of status and distribution assessments.

Tabel 1. Tiger Conservation Lanscape in Sumatera and the latest population survey result (1998-2007)

Tiger Conservation Lanscape (TCL)							Population estimation data				
No	**Lanscape**	**Location code on map**	**Priority**	**Width**	**Habitat width**	**Habitat width to TCL**	**Location of studying population**	**Area width (ha)**	**Population estimation**	**Density estimation (/100 km2)**	**Source**
1	Kerinci Seblat	5	I	2,816,200	1,965,300	69.79	Kerinci Seblat National Park	1,399,320	136	0.05 -11.25	Linkie 2005
2	Bukit Tiga Puluh	7	I	710,600	541,700	76.23	Bukit Tiga Puluh National Park	144,223	n/a[b]	n/a	ZSL Indonesia 2007
3	Kuala Kampar - Kerumutan	9	II	983,500	489,500	49.77	Kerumutan	n/a	n/a	1.27 - 5.5	WWF, PHKA, VA Tech (Sunarto dkk.)
4	Bukit Balai Rejang Selatan	4	II	388,400	267,000	68.74	Bukit Balai Rejang Selatan Forest Complex	388,400	n/a[b]	n/a	WCSIP 2007
5	South of Bukit Barisan Selatan	3	III	210,700	111,500	52.92	Bukit Barisan Selatan National Park	365,000	40-43	1.6	O'Brien dkk. 2003
6	West of Rimbo Panti - Batang Gadis	11	III	148,600	88,900	59.83	Batang Gadis National Park	108,000	18-62	1.1 – 3.9	Wibisono dkk. 2007

Tiger Conservation Lanscape (TCL)							Population estimation data				
No	**Lanscape**	**Location code on map**	**Priority**	**Width**	**Habitat width**	**Habitat width to TCL**	**Location of studying population**	**Area width (ha)**	**Population estimation**	**Density estimation (/100 km2)**	**Source**
7	East of Rimbo Panti - Batang Gadis	12	III	289,000	171,300	59.27	n/a	n/a	n/a	n/a	
8	Tesso Nilo	8	III	233,200	112,100	48.07	Tesso Nilo Forest Complex	233,200	n/a	0.64 -1.4	WWF, PHKA, VA Tech (Sunarto dkk.2006)
9	Bukit Rimbang Baling	6	III	439,500	229,800	52.29	Rimbang Baling Lanscape	n/a	n/a	0.92 - 4.03	WWF, PHKA, VA Tech (Sunarto dkk.2006)
10	Berbak	10	IV	254,300	160,400	63.08	Berbak National Park	162,700	n/a	n/a	
11	Leuser Ecosystem	14	IV	2,231,900	1,600,000	71.69	Gunung Leuser National Park	1,094,692	n/a[b]	n/a	WCSIP 2007
12	Sibolga	18	IV	129,200	85,600	66.25	n/a	n/a	n/a	n/a	
13							Bukit Duabelas National Park	60,500	1[c]	n/a	ZSL Indonesia 2007
14							Way Kambas National Park	125,621	36	1.6 - 4.3	Franklin dkk. 1999

Tiger Conservation Lanscape (TCL)							Population estimation data				
No	**Lanscape**	**Location code on map**	**Priority**	**Width**	**Habitat width**	**Habitat width to TCL**	**Location of studying population**	**Area width (ha)**	**Population estimation**	**Density estimation (/100 km2)**	**Source**
15							Dangku Wildlife Sanctuary	21,752	3[c]	n/a	ZSL Indonesia 2007
16							Ulu Masen Ecosystem	750,000	n/a[b]	n/a	WCSIP 2007
17							Sungai Meranti - Sungai Kapas	67,000	2[c]	n/a	ZSL Indonesia 2006,2007
18							Senepis - Buluhala	106,000	21 - 42	2 - 4	Wells 2007

LEGAL PROTECTION STATUS AND CONSERVATION EFFORTS

The first national legislation in protecting tigers in Indonesia in the form of a Ministerial Decree was issued in 1972. Indonesia enacted the Act/Law of the Republic of Indonesia on Conservation of Living Resources and their Ecosystems (*Undang-undang No. 5 Tahun 1990 tentang Konservasi Sumber Daya Alam Hayati dan Ekosistemnya*) in 1990. It is used as the legal basis for the conservation of wild species, including fully protected species, such as tiger. Following up this Act, in 1999 the Government of Indonesia also passed the Governmental Regulation No. 7 on the Preservation of Wild Plans and Animals and Governmental Regulation No. 8 on the Utilization of Wild Plants and Animals.

The agency responsible for implementing and enforcing these Act and Regulations is the Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry.

Under these Act and Regulations this agency has the authority to seize and confiscate specimens of protected wild plants and animals involved in violation.

Under the Presidential Decree No. of 1978, Indonesia ratified CITES and became a Signatory to this convention on 28 December 1978, which came into effect on 28 March 1979. This Presidential Decree also states that the Directorate of Forest Protection and Nature Conservation is the Management Authority which is responsible for the implementation of CITES.

The tiger is listed on Appendix I by CITES which prohibits any commercial trade of live tigers or their parts and derivatives. All CITES shipments have to be inspected in cooperation with the Indonesian Custom and Quarantine Authority prior to export.

The new regulation related to the Administration on Harvesting or Capturing and Trafficking of Wild Plants and Animals (*Tata Usaha Pengambilan atau Penangkapan dan Peredaran Tumbuhan dan Satwa Liar*) is the Forestry Ministerial Decree No. 447/Kpts-II/2003 that was passed on 31 December 2003.

Part One, Article 113, Chapter VII (Disposal of Confiscated (Seized) Specimens) states that all confiscated specimens of protected species listed in CITES Appendix I will be used for scientific or educational purpose. If these do not have value for scientific or educational purposes, they have to be destroyed.

To support the tiger protection in the field, the Directorate General of Forest Protection and Nature Conservation has a quite large number of Forest Police (*Polisi Hutan* formely also known as *Jagawana*) working at the Regional Natural Resources Conservation Agency (*Balai Konservasi Sumber Daya Alam/BKSDA).* The responsibility of this force includes to enforce the laws and regulations on forest protection including to tackle poaching (illegal logging) and other forms of wildlife crime.

In some National Parks/*Balai Taman Nasional* or Regional Natural Resources Conservation Agency/ *Balai Konservasi Sumber Daya Alam/BKSDA*), such as Kerinci Seblat National Park, Bukit Tigapuluh National Park, Balai KSDA Jambi, some Tiger Monitoring/ Protection Units have been established.

Led by a Forest Police and with the members from the related stakeholders including NGO and local communities, these Tiger Monitoring/Protection Units play very important role in protecting tigers in the field.

PROBLEMS AND THREATS

A. Habitat loss, Degradation, Fragmentation

Deforestation in Sumatra poses a significant threat to the region's biodiversity, especially for wide ranging species such as Sumatran tigers. A considerable rate of forest loss in the region over the past decade has made tiger habitats are now extremely isolated. It was estimated that almost 6.7 million hectares (26%) of forest covers have been disappeared from the island between 1985 and 1997 (Wolrd Bank, 2001). Other study estimated about 6.5 million hectares (28%) have been degraded over the same period (Achmaliadi et al. 2002). Further more, the Sumatra's low land forests, the most suitable habitat for tigers, suffers the highest rate of deforestation, mainly due to land conversion. It was estimated that more than 3.3 million hectares (61%) of low land forests have been disappeared from the island between 1985 and 1997 (Achmaliadi et al. 2002).

Table 2. Lowland Forest Cover Changes in Sumatra 1985-1997 (World Bank, 2000)

Assumed Forest Cover in 1900 (Ha.)	Forest Cover in 1985 (Ha.)	Forest Cover in 1997 (Ha.)	Estimated Loss 1985 - 1997 (Ha.)	Estimated Loss 1985 - 1997 (%)
16,000,000	5,559,700	2,168,300	3,391,400	61

B. Poaching / Illegal Hunting, Incidental Killing of Tigers

Poaching or illegal hunting has been considered the most urgent threat to the survival of the Sumatran tiger since early 1990s. The threat can come from direct hunting of tiger as well as from the hunting of tiger's prey. The results of this illegal activity is a potential source of supply of genuine tiger products seen in the markets, especially skins, bones, etc.

These following methods/equipments are used by the poacher/illegal hunter to hunt tigers:

- Snares : spring loaded leg-hold snares and neck snares
- Poison
- Rifles or homemade guns
- Pit traps
- Box traps

Many poachers or illegal hunters set snares to catch other species such as sun bears (which are also very valuable for traditional Asian medicine), and also ungulates, prey species of tigers (which humans also like to eat). Since where there are tiger

prey species, there are likely to be tigers, these snares can also kill tigers, unintended by the hunters.

Ironically, tigers that also can play an important role in controlling crop-raiding animals such as deer and wild-pigs, are killed by snares placed near agricultural area to catch these animals.

C. Illegal Trade

In *the TRA*FFIC *Species in Danger Report* (Judy A. Mills and Peter Jackson, August 1994) it is reported that South Korea customs data indicate that Indonesia supplied the majority of its imported Tiger bone from 1970-1993. Of the 3994kg reportedly *exported* (smuggled) from Indonesia, at least 2619 kg were probably exported after the country became a CITES party in 1979. Other data indicate Indonesia exported Tiger bone to Taiwan in 1984 and imported Tiger medicines from China in 1991 and 1992.

In 2002 TRAFFIC carried out surveys recording 484 observations from souvenir shops, gold shops, precious stones vendors, antique shops, traditional Asian medicine shops and wildlife market in 24 towns and cities of 8 provinces in Sumatera. The results of the surveys indicated that only 7 towns did not have tiger parts for sale.

TRAFFIC did it again in 2006, but only in 22 towns and cities of 7 provinces (Aceh not included). It found out that 9 towns/cities were found not to have tiger products for sale.

Tiger part	2002 results	2006 results
Claw	175+	43+
Canine	102+	84
Whisker	80+	2
Whole skin	24+	1
Piece of skin	20	37+
Bone	8	32 kg
Stuffed tiger	5	0

Table 3 : Surveys on trade of tiger products (TRAFFIC SEA, 2007, unpubl)

D. Human – Tiger Conflicts

Tigers can cause a threat to humans as well as their livestock. Many areas in Sumatra have high levels of human-tiger conflict, situations in which large numbers of people as well as tigers have been killed.

Tigers frequently prey on livestock and, as a result, villagers often seek to have the attacking tigers killed. Actually the villagers are encouraged to report to the Regional Natural Resources Conservation Agency/*Balai Konservasi Sumber Daya Alam/BKSDA*) to enable this unit to rescue and remove the problem tigers from the area. The survey carried out by TRAFFIC in 2002 found that at least 35 tigers were killed or removed as a result of human-tiger conflict from 1998 – 2002.

Sample of some activities in and around National Parks in Sumatera Province, conducted in 2006 – 2007, in collaboration with Directorate General of Forest Protection and Nature Conservation, some NGO' s works in and around National Parks in Sumatera Province as follows :

1. Kerinci-Seblat National Park

FFI's effort for Sumatran Tiger Protection & Conservation Programme in Kerinci Seblat National Park

Program Purpose in Brief

- Minimize poaching and trafficking of Sumatran tiger and tiger prey species in Kerinci Seblat National Park and surrounding area, through field activities, primarily patrols led by KSNP forest rangers.
- Conduct investigations to identify poachers and traffickers, disrupt wildlife trafficking networks and obtain evidence for subsequent enforcement action.
- Implement law enforcement and support the legal process
- Intervene to mitigate human-tiger conflict and raise local awareness of causes of human-tiger conflict and the status of Sumatran tiger.
- Raise the capacity of suitable National Park personnel to protect Sumatran tiger, habitat and prey species through practical involvement in programme activities and by example.
- Work with other NGOs, conservation programs and institutions to share information and responses and to win support for tiger conservation and protection.

Activities Conducted

1. Patrols

Routine field patrols were conducted in ten districts around the National Park with a total patrol distance (walked) of 3856 Km and resulted in 126 separate records of Sumatran tiger presence (excluding records of three Sumatran tiger cubs). Patrol schedules were disrupted by a series of time-consuming wildlife emergencies in February, April and May 2007 and by major earthquakes in September 2007.

A total of 48 snares specifically set for Sumatran tiger were found and destroyed by TPCU rangers, 10 of these recovered from one site in Bungo district, Jambi as a result of

information secured by team investigators. In all but two cases, the individuals placing these snares have been identified.

The number of ungulate snares recorded overall reduced in areas regularly patrolled but team investigations indicate that in some areas poachers have moved to use of illegal firearms rather than snares when hunting ungulates.

WCS also observed clear evidence of 'displacement' of threat with hardcore/professional poachers seeking to monitor TPCU activities and seeking areas where ranger units patrols cannot or do not yet conduct field patrols.

TPCU rangers worked under Surat Perintah Tugas (Letters of Instruction) issued monthly by the Director of the National Park Authority and under the authority of the director of the NPA and are led by national park rangers operating under the direction of young national park managers on secondment to the program.

2. Intelligence and Information Collection

Accurate information is crucial to understanding the *modus operandi* and reach of the wildlife crime syndicates that drive tiger and other high-value-species poaching, to directing patrols to areas of suspected active threat, the identification of wildlife criminals and securing evidence of a crime for subsequent law enforcement.

More than 300 reports were logged ranging from information on identities of suspect individuals and their associates and *modus operandi* through to reports on possible poaching incidents, trafficking and possession.

It is now relatively rare for team investigators to encounter entirely "new names" in the course of an investigation, i.e. to identify a previously unknown individual suspected of tiger poaching or trafficking - in the 8 districts where activities are focused.

Where this occurred in 2007, further investigation almost invariably revealed that the 'new' suspect was an associate of previously identified individuals or was already known to the team, but was usually active in another district or province.

Since the programme was established team have sought to disrupt tiger trafficking networks in this area of central Sumatra and destroy the relationship between buyer and seller of wildlife products in particular through 'sting' operations and 'black propaganda' such as 'planting' stories that a number of Sumatran tigers in KSNP have had radio transmitter chips implanted in their skins for monitoring by satellite.

In August 2007 one team member had the pleasure of overhearing a conversation in a Padang City hotel lobby between two men from the eastern Sumatran province of Riau in which they complained, volubly, that it was proving almost impossible to buy tiger skins in some districts of West Sumatra because hunters were frightened of 'sting' operations and subsequent law enforcement. Both men were quickly identified and one proved to have been already known, by name, to a programme investigator as an associate of a suspected tiger dealer in Solok District, West Sumatra.

At professional poacher and district-level dealer level, hunters and dealers still active continue to form increasingly secretive and complex trans-provincial syndicates intended for their protection. One consequence of this is that tiger skins are now almost never offered for sale outside of the syndicate or in park-edge districts.

Both local level dealers and poachers now routinely seek to transport skins and bones long distances to provincial capitals where they believe they are 'safe' from law enforcement. This trend must be addressed but requires specialist action in key provincial capitals of Sumatra against the provincial-level dealers or '*penampung*' who drive the tiger and other illegal wildlife trade and who have high-level protection.

We also found that tiger skins/bones sold to dealers of Chinese descent (Tionghua) were invariably sold within that dealer's network whereas dealers of Melayu descent appear to be less likely to operate within a closed syndicate.

Palembang continues to be major destination for tiger products in this area of Sumatra however Lubuklinggau and, increasingly, Jambi city, are major transit points.. Two transactions in which tiger skins were sold to buyers in Jakarta were recorded but there is a strong likelihood that the main market for tiger products is now an overseas country given that Palembang is known to be an export point

We observed that rogue members of the security forces (police and army) are no longer a major end-user market for tiger skins although some rogue officers continue to protect tiger dealers or to buy tiger skins as middle men, apparently mainly as gifts for superior officers

There is a growing market for tiger skins as "off-cuts", mainly as 5-cm squares rather than for sale as an 'entire' skin.

This may be due to falling demand for entire tiger skins, in which case education and awareness campaigns in Indonesia and overseas are beginning to take effect, or because poachers and dealers believe, possibly correctly, that rangers and police are psychologically less likely to want to act against a 'little man' selling 'a couple of bits" of tiger skin and so this method of trafficking is perceived as "safer."

Financially, this change in 'marketing' technique makes sound sense, one poacher advised an undercover TPCU ranger that he could make up to Rp 16million (US$1,777) by selling a tiger pelt in 5cm square 'off-cuts', but was most unlikely to make more than Rp 8m (US$888) if selling the skin 'entire'.

To tackle this change in trafficking will require socialisation both to police and judiciary as well as to forest rangers and others. Care must also be taken to ensure that skin 'off cuts' are indeed of tiger, careful examination of alleged 'off-cuts' of tiger skin frequently lead to the conclusion that the 'tiger' skin is from *Presbytis* monkeys, muntjak and even goats and the stripes have been painted.

Intelligence records confirm that demand for tiger bone remains high, possibly peaking in the second quarter of 2007, and a majority of proposed or reported transactions reported in the course of investigations over 2006-7 related to the sale of tiger skins only and the bones had already been sold. As previously reported (2005-6), at provincial dealer-level a tiger's bones may now be as valuable or more so than its skin and one Bengkulu poacher claimed to have sold tiger bone, in May, at US$105 per kg to a South Sumatra-based dealer.

Tiger bone was almost invariably recorded as being sold through networks trading to cities on the eastern seaboard of Sumatra and, in particular, the South Sumatra provincial capital of Palembang where the trade in tiger bone (and Malay pangolin *manis javanica*) appears to be concentrated. There remains a very strong connection between the illegal trade in tiger products and that in Malay pangolin: we also noted that buyers of pangolin and tiger bone

frequently are also buyers of deer *(Cervus unicolor)* antlers which are sold by the kilogram (Rp60,000 per kg in November 2007: Kerinci, Jambi)

Although this programme is focused primarily on the protection and conservation of Sumatran tiger, we advise that a CITES decision earlier in 2007 to allow a temporary relaxation on the international ivory trade to allow sales of culled ivory from Southern Africa has resulted in an explosion in the price of poached Sumatran ivory, which is now fetching as much as Rp8 million (US$880) per kg for a pair of tusks totalling 30 kg or more in weight for a pair compared with approximately US$270 per kg reported in May/June 2005.

3. Law Enforcement

Five arrests for poaching and dealing in Sumatran tiger were made during the period 2006-2007 and the seven men arrested were all prosecuted and their cases passed through the judicial process.

Coffee wholesaler 'Ujang' *aka* Arifliani (dealer) and Acil *aka* Amsir (poacher) both received goal sentences of 10 months following trial at Arga Makmuir, capital of North Bengkulu district following their arrest early in 2006 in relation to the attempted sale of the skin of a young Sumatran tiger and the bones of a second individual which had been killed some months earlier.

Khoiri (dealer) was was sentenced to six months in prison following his arrest in Curup, Rejang Lebong district of Bengkulu while transporting the skin of a juvenile Sumatran tiger and 5Kg of bones from a total of three different individual Sumatran tiger.

Poacher Suhaimi was arrested in July 2006 in Bangko, Merangin district of Jambi in possession of the skin of an adult Sumatran tiger, the animal's bones were subsequently surrendered to the PHS team after the arrest.

Suhaimi was sentenced to a one year gaol term at Bangko, Merangin district court.

In late December 2006, following long-term surveillance, a Merangin District, Jambi businessman. Herman aka Si Er, suspected, since 2003, of dealing in or facilitating the sale of tigers and other highly endangered wildlife was arrested while transporting the skins of two (sub-adult or young adult) Sumatran tiger to Bangko.

These two animals are believed to have been killed in logging forests approximately 120 Km east of KSNP. The arrested man had previously admitted to the FFI team member that he had dealt in Sumatran tiger bone for export between 1988-1994 (he advised he had ceased trading in tiger bone due to a collapse in the price of tiger bone), and also Sumatran rhino horn. At the time of his arrest, Herman was the head of the Jambi provincial association of gaharu (agarwood or *Aquilaria sp)* dealers and exporters. It is unlikely that he was acting alone and is notable that the animals' bones had already been sold. The suspected buyer of the tigers' bones, a major dealer in reptiles, is known to have provided financial assistance to Sir Er during his gaol term.

This case proceeded smoothly to a legal judgement at Merangin District Court and the suspect was sentenced to an 18 months custodial sentence with two months 'off' to account for his period in police custody before the judgement.

In September 2007, following a long running investigation into tiger poaching in KSNP and other forests in the Solok Selatan area of West Sumatra two men were arrested, with

support from Kerinci District Police, in possession of the skin and entire skeleton (minus the hyoid process*) of an adult female tiger killed approximately four days earlier.

The professional poacher Maidi and his accomplice had earlier boasted to undercover TPCU rangers of having killed more than 10 tigers in the past two years in and around the Hutan Lindung Batanghari, although it is likely, that the word 'harimau' also refers to Island Clouded leopards *Neofelis diardi* and Asiatic golden cat, *Catopuma temminki.*

Unfortunately these two men received very light custodial sentences of only 3 months.

In March 2007, PHS rangers were supported by Kerinci district police to conduct the arrest of two men from southern Bengkulu province who were proposing to hunt elephant in forests in KSNP.

The hunters, a local military commander (Babbinsa) and his brother-in-law were arrested as they entered the forest and their case has been passed to Military Police prosecutors in South Sumatra Army Command. The status of this case is unknown however it was subsequently learned that the rogue army officer had previously been arrested by Rhinoceros Protection Unit rangers in Bukit Barisan Selatan National Parks, again on elephant poaching charges.

- ❖ It should be noted that in no case since 2000 when this program became active, has a seizure of tiger bone included the hyoid process known, in Bahasa Indonesia, as the 'tulang berani'. Neither have seizures included the penis and these two body parts appear to be sold separately and through other trafficking networks.

2. Bukit Barisan Selatan National Park

WCS's effort in saving wild tigers in Bukit Barisan Selatan National Park

Wildlife Conservation Society's Indonesia Program (WCSIP) in collaboration with the Republic of Indonesia's Department of Forestry (PHKA, formerly PKA) has monitored tigers and their prey in Bukit Barisan National Park (BBSNP) in Sumatra since 1998. Such a long-term monitoring program showed three clear findings: 1) the BBSNP tiger population is surviving but is showing a downward trend, 2) twenty-eight percent of tiger habitat in the park have been converted into agricultural land since 1985, and 3) the low density of tiger and prey populations appear to be related to high human population around the park. Based on such findings, WCSIP has implemented an integrated conservation strategy including the establishment of tiger protection units in 2000, wildlife crime unit in 2002, and wildlife response unit in 2005. While a collaborative management CANOPI (Conservation, Action and Network Program of Indonesia) initiated in 2003 has enforced stakeholders to work together in conserving tiger population in the park through various collaborative activities, such as regional planning and policy, park zonation, education, wildlife-human conflict resolution, capacity building, awareness, and public campaign. Such conservation interventions have shown their own successes that make conservation efforts in BBSNP to be the most comprehensive efforts ever in the island dedicated for Sumatran tigers. In addition, we have achieved much in the way of building a long-term tiger conservation program in BBSNP through information-building, data collection and dissemination, capacity-building, and development and implementation of integrated management.

The ultimate aim and measure of success of WCS's program is to increase the tiger population. Our strategy to protected tigers has been three-fold: Addressing human-tiger conflict and tiger and prey poaching through an integrated '*ex situ*' Wildlife Crime Unit (WCU) and an '*in situ*' Mobile Village Tiger Patrol (also known as the Wildlife Response Unit, or WRU); Studying the ecology and habitat requirements of tigers to direct out interventions and evaluate their success; and, habitat protection by means of a multi-level approach to addressing park and buffer zone management.

Mitigating human-tiger conflict

A crucial first step to effectively addressing conflict and crime around the park was to establish an effective information network. With support from USFWS-RTCF we augmented our existing informant network by selecting and appointing 'Community Organizers' in known conflict and crime hotspots around BBSNP.

The existing network of informants was also expanded through the creation, publication and distribution of a hotline phone number in villages around the park. Community Organizers were trained in basic monitoring and village patrolling activities and in the use of reporting forms. In parallel, a village patrol and rapid response 'flying team' formed to conduct regular patrolling of BBS, visiting each Community Organizer and all contact people once per month. In addition to this routine patrolling the patrol/response team also responded to reports of conflict or crime received from the information network. In most cases the team was able to mitigate the conflict through village meetings promoting safe conflict mitigation techniques and by the shared-cost construction of tiger proof livestock enclosures, each constructed with matching funds provided by the respective village. This work appears to have been highly effective: between 2004 to 2005 we received reports of nine incidents of tiger conflict that resulted in the deaths of three villagers. Following the initiation of the USFWS-RTCF funded village patrol team and community organizer network we responded to eight incidents none of which resulted in deaths of tigers or people. We plan to expand the community organizer and patrol network to include priority areas in the Bukit Balai Renjang Selatan Landscape to the north of BBSNP.

Stopping illegal hunting of tigers and their prey and other protected wildlife

Since 2003 WCS has operated a 'Wildlife Crimes Unit' (WCU) in Lampung Province. This is a collaboration of WCS, local NGOs, journalists, police and the Lampung Office of Conservation and Natural Resource Management (the 'BKSDA'; operated by the Department of Forestry and the prime agency responsible for the enforcement of wildlife law regionally). The strength of WCU is its collaborative nature. The vast majority of activities have been conducted by members of other NGOs within the alliance, the Forestry Department and an army of willing volunteers.

During the last 18 month, with support from USFWS-RTCF for the last six under the first phase of this project, we have integrated the work of the Wildlife Crime Unit with that of the conflict patrol/response team and information gathering network. Through this combined information network and through the operation of the hotline

phone number we were able to record 29 reported cases of wildlife crime and illegal logging in Lampung, South Sumatra, and Bengkulu in the last six months alone. A complete summary of arrests and subsequent convictions of Tiger poachers since 2003 is shown in Appendix 1. This table omits cases where evidence was seized but no arrest could be made on grounds of insufficient evidence to link the material to a hunter/dealer. The wildlife crime team, backed by the wildlife response unit has also investigated 13 cases of illegal prey poaching (typically sambar deer). These have resulted in nine seizures and/or arrests and currently six cases are being prosecuted with legal and technical support from the Wildlife Crime Unit. In the future we plan to establish an inter-province joint operation team (quarantine, police, BKSDA, WCS) between Bengkulu, South-Sumatra and Lampung provinces.

Raising conservation awareness

WCS has been highly successful in raising the awareness and profile of tiger conservation in the region. Through collaboration with local NGOs and local journalists we have conducted educational and awareness events during the last 18 months to 15 elementary schools in conflict/crime hotspots and 25 elementary school in Bandar Lampung city by the tiger education program. This has included a series of events in each school such as a tiger puppet show, games, distribution of a tiger songs cassette, films, poster, leaflets, stickers, story book, and knock down puppet stages. Almost 10,000 such awareness items have been distributed, many bearing the hotline telephone number to report conflict or crime. The village patrol team, supported by USFWS-RTCF, conducted 12 all-village meetings conflict hot-spots and the Community Organizers held events at a further nine sites. A total of 681 villagers attended. At each meeting information was presented on the safe handling of human-wildlife conflict and the legality of hunting and logging activities. Information distributed at these meetings, and at a further 21 sites visited by the patrol teams, included details of protected wildlife species and the law regarding them, leaflets, posters and newsletters, again bearing the hotline telephone number to report crime and conflict. In the future we plan to continue to produce and distribute leaflets and posters with information on protected wildlife to a target audience of 10,000 villagers; we will also distribute 1,000 pocket books on legal and law enforcement apparatus to agencies in Lampung, Jakarta, and South Sumatra.

Investigating ecology and habitat requirements

The Wildlife Conservation Society has monitored tigers and their prey in BBSNP since 1998. In the period 1998-2006 this monitoring was conducted using the camera trap method described in O'Brien *et al.* (2003), yielding over 2,800 trap days. As this sampling was nearing completion WCS began to evaluate our results and reconsider the methodology we were using. Some discussion had been initiated among many stakeholders in tiger monitoring and conservation, both within Indonesia and beyond. A technical workshop held in Bogor in October 2006 attended by all major stakeholders came into a conclusion of a more effective and cost-efficient survey method using sign-occupancy techniques and analysis. The method is now formally adopted as the basis for a collaborative Sumatra-wide large Mammal Survey.

As part of the process of replacing the old method with the new WCS was committed to a full analysis of existing data collected under the old method. This analysis is currently underway and subject to peer review will hopefully form the publication: Brickle, N. W., Gaveau, D.L.A., & Wibisono, H. (in prep) '*Multi-season occupancy analysis of tigers and their prey in Bukit Barisan Selatan National Park, Sumatra*'. Data on sambar deer based on occupancy analysis revealed that as altitude increases that probability of initial occupancy decreases and the probability of both extinction and colonization increases, while as distance from forest edge increases the probability of extinction falls marginally while a relatively flat relationship exists to the probability of colonization and initial occupancy. Using this method to extrapolate to all areas of the park, including unsurveyed areas, suggests a park-wide decline in Sambar Deer occupancy of 14%. In the case of Wild Pig, it can be seen that as altitude increases that probability of initial occupancy raises slightly while the probability of extinction rises more steeply and the probability of colonization falls, while as distance from forest edge increases the probability of initial occupancy falls but the probability of colonization rises. The probability of extinction has an almost flat relationship to the covariate 'distance to forest edge'. Using this method to extrapolate to all areas of the park, including unsurveyed areas, suggests a park-wide decline in occupancy of 4%.

Tiger occupancy change was then analyzed at a larger spatial scale as a function of sambar deer and wild pig occupancy dynamics. It can be seen that initial occupancy of tigers rises as the initial occupancy of both pigs and deer rises, perhaps somewhat more steeply in the case of deer. As the change in temporal occupancy of pigs and deer moves from a decline in occupancy to stability or an increase, the probability of extinction of tigers falls and the probability of colonization rises. Deer occupancy change appears to have a more pronounced (steeper) relationship on tiger extinction while pig occupancy change has a more pronounced relationship with tiger colonization. A strong relationship between the change in both deer and pig occupancy and that of tiger occupancy is shown in Figure 2. Where pigs and deer have declines the most, tigers have declined the most. Where deer have declined the least, and pigs have *increased* in occupancy, tigers have shown a rise in occupancy in some cells. Using this method to extrapolate to all areas of the park, including un-surveyed areas, suggests a park-wide decline in occupancy of 24%.