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Cover: Sand cat Felis margarita in the Sahara. Photo: Alain Dragesco-Joffé

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Contributions, papers, press cuttings etc. about wild cat cats are welcome.
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Wild Cats – the Book

Wild Cats: Status Survey and Conservation Action Plan, the result of the collaboration of members of the Cat Specialist Group and many other experts, has now been published by the World Conservation Union (IUCN). Compiled and edited by Kristin Nowell and Peter Jackson, this 382-page work, contains data and distribution maps for all 36 species of wild cat. There are colour photos of all species and some distinctive sub-species. Discussion chapters, with black and white illustrations, tables and graphs, cover habitat issues, management of big cats, research, trade, captive breeding and reintroduction. Taxonomy and genetics are discussed by leading experts, and problems of disease, such as the recent canine distemper epidemic among Serengeti lions, are covered. There are 105 projects listed as priorities for cat conservation in the 1990s.

Kristin and I see the book as a working document, a challenge to all interested in conservation of wild cats to build on the information provided. The research carried out showed how little we know about most cats, their biology, natural history, and even distribution. Although some lesser cats are still numerous – the leopard cat in Asia and the jaguarundi in Latin America, for example – and have adapted to the degradation of their natural habitat through the spread of human pressure, long-term threats remain.

Wild Cats includes a method of assessing the natural vulnerability of all species. It is based on the number of habitats used, the extent of geographical range, and body size (large cats are more vulnerable than small cats because they live at lower densities). A scoring system indicated that the Iberian lynx Lynx pardinus is the most vulnerable cat, with a fragmented population of 1,000-1,200. But, if the Iriomote cat, recently classified as a subspecies of leopard cat Prionailurus bengalensis iriomotensis, is taken as a full species, as it was described in 1967, then it is by far the most vulnerable cat, with only about 100 living on the small Japanese island of Iriomote, 200 km east of Taiwan.

Tiger and snow leopard are seriously threatened, falling into Category 2 in the 1-5 scale; cheetah, lion and jaguar in Category 3; and puma and leopard are in Category 5 (the least naturally vulnerable). However, all the large cats are actively threatened by killing because they are seen as threats to livestock, and even human life.

We have copies of most of the 1,600 documents listed references, as well as many others relative to cats and conservation. They are being put into Reference Manager, a bibliographic management programme developed by Research Information Systems of Carlsbad, California. They are available for researchers.

All members of the Cat Specialist Group and those who contributed data will receive a free copy of Wild Cats. It will also be provided free to wildlife institutions in Third World countries. This, as well as actual production, has been made possible through generous grants by WWF International and WWF Netherlands, to whom Kristin and I, the Cat Specialist Group, and the Species Survival Commission express our gratitude.

The postage cost of this 1.5 kg book is high, and so most copies will have to be sent by surface mail, which means they will take several weeks to arrive – please be patient.

Peter Jackson

How to Order Wild Cats

Wild Cats: Status Survey and Conservation Action Plan, compiled and edited by Kristin Nowell and Peter Jackson, IUCN, Gland, Switzerland (ISBN 2-8317-0045-0), price US$40/$26.75, can be ordered from the following services:

IUCN Publications Service Unit
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Asian Cooperation to Save the Tiger and its Ecosystem

Representatives of 11 Asian countries attended the Second International Conference and Geographic Information System (GIS) Workshop to Assess the Status of Tigers, held in Thailand on 24-31 January 1996 to continue a process of regional cooperation to conserve tigers and the ecosystems in which they live.

The meeting followed an earlier conference in Thailand in October 1994 at which the first steps were made towards mapping the distribution of tigers across their range, based on preliminary reports by the participants. The maps produced showed the hypothesized distribution of tigers. But it was clear that a major effort would be required by field personnel in each country to establish tiger population distribution with the spatial resolution needed to make specific land-use decisions that are necessary to conserve the land base of tigers.

The tiger range states represented were Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Malaysia, Myanmar, Nepal, Thailand and Vietnam. In addition, tiger and geographic information system (GIS) specialists from the USA, World Conservation Monitoring Centre and the IUCN Cat Specialist Group, the World Wide Fund for Nature, and observers from SWAN, a Taiwanese non-governmental organization, attended the meeting.

At the first session in Khao Yai National Park, national representatives from the participating countries (except Indonesia and Malaysia) prepared recommendations in five areas.

Poaching and illegal trade in tiger products

Poaching is a threat to the survival of the tiger. Although it has always existed and contributed to the decline of tiger populations, the impact became extremely serious in the 1990s, especially in India, Nepal and Russia. In the wake of world-wide concern expressed through resolutions of the Standing Committee of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), China, Taiwan and South Korea banned import and trade in tiger products. But some governments have still to follow suit. Poaching has continued, with strong evidence in India and Nepal in the form of seizures of contraband tiger products, and elsewhere in local markets. Strict control measures are therefore necessary. The following steps are recommended:

1. creation of awareness among all concerned with control of poaching and illegal trade of the essential role of the tiger in natural ecosystems, which are the foundation of human welfare. It is particularly important to convince senior government officials, wildlife authorities, police, customs agencies, border control forces and the judiciary so that they initiate and support field and legal action. Equally important is the education of local people in tiger areas.

2. field personnel should be trained in methods of identifying poaching incidents and tracking trade links.

3. equipment should be provided e.g. vehicles, camping equipment, clothing and, where necessary, weapons, for anti-poaching and illegal trade control units.

4. wildlife officers should be trained in presentation of poaching prosecutions.

5. local people should be recruited to assist the program.

6. the current legal situation in Asian tiger range and consumer countries should be reviewed and, if necessary, improved. There should be exemplary punishments for wildlife offenses.

7. adequately staffed and equipped organizations should be established to track down illegal traders, and the personnel should be trained in investigative techniques, presentation of prosecutions, and identification of tiger and other wildlife products.

8. funds should be created to reward those who provide information leading to conviction of offenders.

9. regional cooperation should be established through exchange of information and holding joint workshops on anti-poaching methods, illegal trade networks, and animal forensics.

Education and public awareness

The objective is to inspire a change in human values, behavior and attitudes towards the tiger in order to conserve it in the wild. It would be appropriate if this could be achieved by 1998, which is the Year of the Tiger in Asian calendars. To this end efforts must be directed towards:

1. persuading the traditional oriental medicine community to suspend prescribing and using medicines containing tiger bones and other tiger parts.

2. halting and reversing the loss of the tiger’s forest habitat.

3. encouraging the military and the police, wherever and whenever appropriate, to assist in protecting of the tiger.

4. enabling rural communities to develop a stake in protecting the tiger.

5. requesting decision-makers to formulate policies which give the tiger the highest legal protection, and ensure enforcement of the law.

6. requesting decision-makers to allocate adequate budgets and other resources to support tiger conservation through education and public awareness.

7. the following groups should be targeted as the highest priority for protecting the tiger in the wild: decision makers; rural communities; the military and police; educators; the traditional oriental medicinal community; and protected area managers.

8. these groups should be reached through the following means: broadcast, print and electronic media, direct communication; training institutions, such as military institutes and teacher training colleges; charismatic and influential personalities; religious and spiritual leaders; education and information resource material; environmental awareness curricula.

Human dimensions of tiger conservation: the needs of local people

The survival of the tiger cannot be compromised, but understanding human needs is a vital component in the protection of tigers and ensuring their survival. Site-specific efforts, in association with forest communities, are necessary to minimize both conflict and dependence on natural resources, and to conserve tigers, their prey and their habitat. It is recommended that:

1. Forest departments in all tiger range countries should enter into regular and frequent dialogues with forest communities in an effort to work with them to protect natural systems.

2. An advisory council should be immediately initiated in all forests in tiger range states consisting of representatives of adjacent villages to evaluate management initiatives and provide inputs for protection and anti-poaching measures.
3. The needs of people in the buffer area around protected areas and outside should be addressed and discussed to explore alternatives that minimize the use of natural resources.

4. Ecological development of areas outside of protected areas are needed. These efforts must be devised and carried out by local people.

5. Land-use policy in and around tiger habitats should be formulated, instituted and translated into practice by every tiger range country in order to prevent abuse and degradation of forest lands which are vital for the survival of the people and tigers.

6. The vital importance of both the buffer zones and existing corridors that connect different forests must be recognized. Buffers that are managed by wise land-use policies can be effective shock absorbers by minimizing negative impacts on the core areas of protected areas and preventing fragmentation. In order to protect buffer zones and corridors, it is vital that initiatives with local people be prioritized without delay.

7. Conversion of forest land into agriculture, industry, tourism, mining, etc. threatens the tiger’s future. Such conversions result in land speculation and can cause severe fragmentation of habitat, leading to the gradual degradation of the area. This process must be stopped.

8. Illegal felling and renatification of forest lands for large dams, mining, major highways and resorts etc. throughout tiger range has led to serious depletion of tiger habitats and has caused widespread problems for local people, who watch in anguish at their forest being torn apart. It is suggested that stringent measures be undertaken to prevent any activities that destroy the heart of our forest systems. Political will must prevail in the effort to ban this activity.

9. Strict rules should be imposed on tourism in all tiger habitats in order to minimize disturbance.

10. There should be strict control and regulation of traders who exploit valuable vegetation in protected areas for medicine and herbs, since much damage has been caused and a sharp decline has taken place in the biodiversity of these areas.

11. In order to harmonize the needs of the tiger and the needs of local people, which is the biggest challenge in any effort to save the tiger in the future, population and development pressures must be balanced with strategies to conserve wild tiger populations. It is strongly suggested that all tiger range countries take an ecosystem approach to conservation so that large blocks of habitat are preserved for tigers, while meeting local peoples’ needs in areas surrounding protected areas.

Global Tiger Forum

The acting secretary of the Global Tiger Forum explained the structure, objectives and methods of establishing the forum, which was created at a meeting of 11 range states in New Delhi on 4 March 1994, subject to initial ratification by five of the states present.

It was recommended that a meeting of range state representatives should be convened to discuss the draft statutes in the light of the need for early ratification.

Geographical Information System (GIS) Workshop

The first GIS Workshop on Mapping Tiger Populations was held at the Royal Forest Department of Thailand in Bangkok. Specialists participated from Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Malaysia, Myanmar, Nepal, Thailand, USA and Vietnam, and from the World Conservation Monitoring Centre and the IUCN Cat Specialist Group.

Data used in the 1996 workshop were the 1995 updates of the regional forest and protected area coverage provided by the World Conservation Monitoring Centre. These were distributed to each country. In addition, Landsat TM images of Nepal and the border region between Thailand and Myanmar were analyzed and integrated into a GIS modelling exercise.

Protected Area and forest cover for Thailand, and the country’s large mammal database were used for demonstration and as a basis for exercises. Participants were given data sets for their own countries prepared by the World Conservation Monitoring Centre.

Tiger Toll in India,

Indian authorities seized 14 tiger and 64 leopard skins between January and the end of April 1996, according to the Wildlife Protection Society of India (WPSI). No bone seizures were recorded.

The seizures occurred in Delhi, Uttar Pradesh, Himachal Pradesh, Madhya Pradesh and Maharashtra. In addition more than a dozen fake tiger skins were seized in Uttar Pradesh, where there have been reports of large numbers in circulation.

In Agra, Uttar Pradesh, one tiger skin, one leopard skin, 10 kg of tiger bones and six kg of leopard bones were seized from a dealer. Interrogation led officials to Sawai Madhupur, next door to the famed Ranthambhore Tiger Reserve, where four leopard skins, 9.5 kg of leopard bones and claws of two tigers were recovered.

Two leopards were found with their paws chopped off near Bombay. Another was found in a trap in Panna National Park, Madhya Pradesh. It was not seriously injured and was released by a scientist from the Wildlife Institute of India (WII).

Other seizures included 84 skins of jungle cats Felis chaus. Illegal trade experts consider that seizures represent only the tip of the iceberg and that they could indicate the deaths of five or six tigers as many tigers, leopards and other cats. In addition, death of a female is likely to lead to deaths of cubs unable to support themselves.

In 1995, tiger skins and bones seized by the Indian authorities were estimated to account for about 73 tigers, which might represent between 300 and 400 tigers actually killed.

Nepal

In neighbouring Nepal, there were eight seizures of tiger bones, mostly complete skeletons, around Chitwan National Park in 1995, reported tiger specialist Charles McDougal, who has calculated that the park area holds only about 50 breeding animals. However, some of the bones may have come from India.

Vietnam

Elizabeth Kemf, a WWF expert on Vietnam, reports two tigers killed recently; one was killed in A Laos District in March where villagers had complained of loss of livestock. The pelt, meat and bones were sold for about US$1,120. The hunters were arrested and fined.

Another tiger was killed in KonTum province after it attacked a hunter, whose friends killed it.
**Myanmar**

The border between Thailand and Myanmar has been reopened. Thai TV showed stalls in the market in Tachileik, on the Myanmar side. This town had been notorious in the past for the open sale of wildlife products. A viewer said there were the usual stalls selling cat products, with a tiger and a clouded leopard skin immediately obvious. It is understood that Thailand proposes to build a CITES authority booth on the border.

**Tibetan antelope wool shawls**

New Delhi wildlife officers seized about 170 “shahtoosh” shawls made from the extra-fine wool of the Tibetan antelope or Chiru *Panthelops hodgsoni*. The WPSI said this could represent 320 antelopes. It added that shahtoosh shawls were still available in many other locations. The wool was often traded for tiger bones along the Indo-Nepal and Indo-Tibetan borders.

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**Status of Tiger Conservation in India**

The following is an extract from an article by S. Asad Akhtar, Conservation Officer, Bombay Natural History Society, in *Hornbill* 1995(1):

"Besides trade in tiger parts which has sustained poachers, the sorry plight of the species has been brought about by several factors which came to light after a survey initiated by the Ministry of Environment and Forests and published in a recent issue of *India Today*. The survey revealed that 80% of reserves do not have an armed strike force, which was mooted a year and a half ago to combat the well-armed poachers. Lack of vehicles has also hampered the work of this strike force, wherever it has become operational. Basic anti-poaching equipment like vehicles, guns and wireless sets are inadequate or inequitably distributed.

"Most of the tiger reserves have not been properly demarcated. A final notification of most of these reserves is still pending. This gives enough leeway to unscrupulous elements for exploiting the legal definition of such protected areas. The survey also reveals that almost two-thirds of the reserves do not receive their operational funds on time, which hampers their long-term planning and strategy.

"A lack of manpower has crippled most of the tiger reserves as far as fieldwork and research activities are concerned. This shortage of manpower hampers the daily monitoring of the tiger population as each forest beat is about 22 km², to be patrolled and monitored by an individual forest guard, which is physically impossible on a daily basis. Sufficient staff should be available to monitor each beat.

"Almost half of the Field Directors of the tiger reserves are not in effective control of their buffer areas, which is crucial for an effective protection of the species. The buffer area helps to check undesirable elements and activities from getting too close to the core area of the reserve, but, in the absence of a clear jurisdiction, the Field Director becomes a mute spectator.

"Intelligence gathering is handicapped due to a lack of funds, which is essential to ferret out hard information. Most of the reserves lack legal aid. This is essential to come up with a fool-proof case against the offenders, who are well organised for such eventualities.

"It has also been noticed that several reserves lack a format for inquiring into tiger deaths, which, under the currently grim scenario, is essential. Most of the tiger reserves were found to be lacking the infrastructure for scientific procedure, viz. forensic examinations to establish the cause of death. Without such data, the defendants can always turn the tables on the prosecution.

"It is time we took notice of the glaring lacunae in the management of the reserves and other protected areas of the country. Naturalists and all concerned individuals should also come forward with their views. It is high time that we spoke up for the Forest Department, especially its Wildlife Wing, which in spite of severe constraints has been doing its best to save this magnificent animal from extinction."

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**The Decline of a Once-rich Tiger Habitat**

by S. Deb Roy*

The forest areas of Shahdol, Umaria and some of the adjoining areas in Madhya Pradesh State in Central India, adjoin Bandhavgarh National Park and Panna National Park, and almost reach Panna National Park to the north. This area of forest maintained a link even with Kanha National Park and through Surguja to Sitanadi and south to Achanakmar and Indravati areas.

Shahdol district alone was recorded as holding 36 tigers in the census records of 1993. Naturally such an area is considered to be very important for the future viability of the tiger, although it is not in the protected area system. Such areas are important because protected areas alone are not able to ensure the future viability of the species as most of the protected areas are not independently capable of holding minimum viable populations of tigers.

The Shahdol areas have a long history of containing excellent forest cover, mainly sal (*Shorea robusta*) of class 1 quality and some mixed deciduous forests. These areas were also famed for supporting a high prey biomass and high concentrations of tigers and leopards. Many of these areas also supported the now extinct cheetah. The Bandhavgarh-Kanha area is still considered to be one of the major (almost) contiguous forest areas capable of holding viable populations of the tiger.

But a brief visit to the area disillusioned me completely. Not only was the target species of my survey, the tiger, conspicuous by its absence from most areas, except in the immediate vicinity of the protected areas, but I found hardly any wild prey base to sustain a tiger population. Moreover, the quality of the forest stand seems to have undergone severe deterioration. The sal stand appeared to me to be at best 2nd class in most areas. Mature trees are extremely rare to come by and the areas contain mostly pole crop to middle-aged crops; this has certainly affected the natural crown density which may be only rarely above 0.5%.

The composition of the mid-understorey, the understorey and the ground cover is also severely depleted in most areas through over-exploitation and overgrazing by domestic stock.

On enquiry, I was told that selection system of operation for sal is prevalent, but the exploitable girth has been reduced from six feet in earlier days to five feet, which may be a pointer to the ever-exploitation that has taken place during the past. Obviously, exploitation of "sustainable yield" has been sacrificed for the
sake of higher yield and corresponding revenue, which has probably affected the biomass regeneration capacity.

All the areas visited were under tremendous biotic pressure. Collection of firewood, small timber, other non-timber forest products, such as tendu (Indian ebony *Diospyros melanoxylon*) leaves on a commercial basis, and bamboo for papermills. Heavy grazing and lopping of trees is prevalent almost all over the forests. Such human activities are putting immense pressure on the natural ecosystems, far beyond the principles of forestry management on a sustainable yield basis. Large areas have been modified by the creation of plantations, which have transformed the natural ecosystems to the disadvantage of indigenous fauna.

To cap it all, very heavy incidence of poaching seems to have badly decimated the wild fauna. This was learnt by talking to various people of the area and was also admitted even by some of Forest Department field staff. It appears that poaching of animals for the pot is widespread and the Forest Department does not have the scope, resources and, above all, the will, to stop or control this rampage. They are too busy with works relating to revenue generation, plantation etc.

During the pinch period, in April-May, there is feverish activity in the Department for arranging tendu leaf collection (to make Indian cigarettes), when almost every other interest is temporarily given up. Extensive ground fire completes the woe of the fauna.

Another aspect deserves mention; there are a large number of mines, mainly coal, dotting these areas, with extensive road networks criss-crossing many areas and encouraging small to large human settlements, which are spreading like cancerous growths with all the evil effects that such mining brings to undermine ecological interests.

Lastly, poaching of tigers, particularly during the last five to six years has been reported quite widely, especially in the vicinity of the protected areas. Away from these areas, tigers are reported only very occasionally. Records/reports of such tigers have always been six months to one year or more old. There is only one report of the presence of a tigress and her young cubs (about one year old as reported) in this large area; this mother and cub are near the Bandhavgarh National Park. Nowhere else is there any report of any tigress who had cubbed during the past year, although there are a few older reports of tigers breeding in some parts of these forested areas.

The overall status of the tiger in this large tract appears to be extremely grave. There is no wild prey base left to sustaintigers. There is enough domestic stock roaming these areas, but reports of cattle lifting by large carnivores seemed few and far between. It is probable that the troublesome carnivores (tiger in particular) have been eliminated by poisoning, which butressed the bone trade, and common people have been at best indifferent, if not supportive, of such elimination of the tiger. Old ethnic reverence for the tiger god amongst indigenous people is on the wane and their sentiments towards the tiger appear to be fading fast. The changing life style of these people has already induced consumerism, drawing them away from the lifestyle of the “ecosystems people” who were their ancestors.

The tiger is really in dire straits outside protected areas. Their required prey base is all but gone; every square inch of their home range is under rampage; and, worse still, the species is being systematically annihilated for its pelt, bones and all other parts. The natural extent of home range of the tiger in such areas, with the natural ecosystems intact, has become far too small to support it. It has to wander much larger tracts to obtain its food requirements, which I suspect must have brought about some change in its habits and behaviour. It has to be extremely wary and more or less continuously on the move in order to survive.

Though individualists in their lifestyle and basically lone rangers, yet tigers do have a social life. In their own way they communicate between themselves, especially during breeding and in establishing superiority amongst males, which is linked up with maintenance of genetic diversity and ultimately the viability of the species. Naturally there is some minimum density of tiger in any area for successful propagation and viability of the species. But I am pretty sure that the number of tigers in the area under survey has fallen much below this minimum required density. Besides, tiger census results almost everywhere in Madhya Pradesh State show that the male population is much in excess of the natural sex ratio recorded during the 70s. All this points to only one possibility – a serious breeding depression in this and other similar areas. All the reports suggest the same.

In the wild we have now an utterly harassed, vagrant population of tigers who are trying desperately to survive. The indications clearly suggest that these animals are unable to live the normal life of their species – their social life is completely shattered and breeding is a definite improbability unless some miracle takes place.

The protected areas still have breeding populations of tigers, and some of these newly-bred animals do disperse into the adjoining areas. Sometimes old animals may also come out of the protected areas seeking new areas or having been expelled by younger and stronger contenders. But the chances of survival for these animals for long periods and probable breeding is extremely remote against the insurmountable odds present there. Loss of any individual of the vagrant population may bring an end to the future presence of the species in that locality. Loss of any of these few tigers is unlikely to be restored as regularly happens in protected areas with adequate wild animal populations and controlled biotic influences.

By interviewing various villagers, particularly those who work in forest farms and graze domestic animals in the forest, and also some of the field staff of the Forest Department, one can form an idea that tigers were quite common even in the recent past. But now they are not seen, nor is there evidence of their presence, except in a few patches in this large tract, With time, records of such evidence of tiger’s presence are becoming much scarcer. Already in many areas, there have been no tigers for half a decade, or even more.

In other areas it may not be that bad, but the definite indication is that the tiger in most areas is on the run. I do not see any reasonable chance of the tiger breeding in these areas unless the situation is improved very considerably. But the conditions prevailing certainly do not permit such hopes to flicker, The tiger seems to be going out of the area very fast and maybe quite unnoticed. This has happened earlier in most parts of tiger range in this country and I myself have been a witness to the elimination of tiger in certain parts of its range in north-east India.

However such sweeping observation relating to an area known as the hearthland of the Indian tiger, especially without the support of some systematic scientific observation, would not be easily acceptable on the basis of my quick survey and assessment. Therefore two researchers were engaged to survey these areas in much more detail and to simultaneously collect all available information relating to the tiger, habitat and natural prey base etc.

Reports of poaching of tiger are rampant and even the protected areas are not untouched, although official reports would suggest a different picture. There are a number of reports about poaching in and around Bandhavgarh, Panna and Panpatha areas. But these reports from local sources (sometimes even supported by forest officers, who for obvious reasons want to remain un-
named) are either denied credence or are not acted upon by the authorities. This attitude of the authorities is actually causing much more damage than other causes.

Mining Projects Threaten Indian Wildlife Habitat

Many of India's finest wildlife habitats sit on rich deposits of minerals, such as coal, lignite, iron ore, bauxite and mica. Inevitably, mineral resources have to be exploited for the benefit of the country, but conservationists are concerned that it is happening with little regard for India's famed wildlife heritage, as well as for the surviving indigenous tribal societies.

Bulu Iman, representative of the Indian National Trust for Art and Cultural Heritage (INTACH) in Dibrugarh, has reviewed the impact of a massive World Bank-supported coal project in North Karanpur would have in the districts of Palamau, Chatra and Hazaribagh in the upper watershed of the Damodar River, well known for tiger, leopard, bear and elephant. He contends that the project violates the International Convention on Biodiversity.

In a lengthy and detailed report, Imam declares that the project "is fit to be declared illegal if viewed in the extent of total and long-term damage through a network of two dozen open-cast mines, dams and super thermal power stations in what is now a pristine forested and agricultural environment".

"Human and wildlife societies will be massively displaced; prime agricultural lands destroyed, water levels drastically reduced and pollution increased. Palaeo-archaeological and rare archaeological sites will be forever destroyed; cultural and social losses will be extreme. The true economic loss to the future India is incalculable. Forced evictions, which are gross violation of human rights will go unnoticed in the escalating paradigms of disaster.

"Enclosure of habitats will wipe out tigers and gaur Bos gaurus. Escalating elephant populations in Palamau and the Gola-Peterbar area require a connecting length of forest to migrate annually to the Hazaribagh Plateau. The new mines will destroy these connecting forests for ever, and neither the forests, nor the wildlife, can ever again be replaced."

A former hunter, Imam looks back nostalgically at the area: "These are the best tiger forests Hazaribagh ever had. Heavily forested, sloping hills threaded with myriad sandy and pebbled streams form a wild and pristine carpet of heavy jungle, not only on both sides of the Damodar River, but into the huge tracts of wilderness which flank the 600 ft (200 m) of gently rolling hills that accompany the river and lose themselves in dozens of hidden valleys which nestle between the shoulders of the Mahadeva Range."

The World Bank has delayed a $425 million loan to expand India's coalmines until after the general elections taking place at the end of April 1996.

An Interpress newsagency report (20 June 1995) said the bank estimated that the mining projects would involve resettlement of 18,257 people.

In a report in the New Scientist (26 Aug. 1996), Sanjay Kumar said the Gujarat State Government had denotified 40% of the Narayan Sarovar Sanctuary in Kutch following a Department of Mining report that the sanctuary contained huge deposits of lignite, limestone, bentonite and bauxite, and the ban on mining was holding back development of the local economy. Kumar said the sanctuary now consisted of 16 disjointed patches no more than an eighth the size of the original. The State Assembly maintained that the new area of 444 km² was more than adequate for the population of 1,200 gazelles Gazella bennetti, but wildlife officials said the number was declining because of destruction of habitat. Applications were being made to set up cement factories, Kumar said.

He quoted Chhatrapati Singh of the Centre of Environmental Law as saying: "There seems to be a general trend now to reconsider conservation under the liberalised economy. More than 40 national parks and sanctuaries face the threat of invasion from commercial interests."

Kumar pointed out that part of Sariska Tiger Reserve in Rajasthan was denotified in 1992 to allow mining, and one third of the Melghat Tiger Reserve in Maharashtra was turned over to forestry and dam construction. The Radhanagri Sanctuary for gaur Bos gaurus is threatened by a project for bauxite mining.

Problems in India's Buxa Tiger Reserve

Forest staff in Buxa Tiger Reserve in North Bengal have been warned to act cautiously, and equipment, such as fire-arms and radios, has been withdrawn following concern about the presence of armed political militants, according to the reserve newsletter (Vol. I[4], July-Sept 1995).

The newsletter said that militants from the Bodo community raided a bank last May and escaped through the reserve. One of the gang was arrested by forest staff and handed over to police.

No information about damage to forests and wildlife has been reported, but there have been reports of militants being involved in timber smuggling, the newsletter said.

The Indian army carried out joint patrolling of the reserve in August and demolished six hand-saw mills which were operating illegally in the forests and nearby tea estates. The army has promised all possible help to the Buxa Reserve, the newsletter added.

The Bodo community, which makes up about one-third of the population of Assam State, has been campaigning for autonomy for several years. Militants attacked the Manas Tiger Reserve, killing staff, burning buildings and stealing equipment. They are still present in the 2,800 km² reserve, rated as one of the richest in Asia. There have been reports that the population of about 80 great one-horned rhinos Rhinoceros unicornis has been virtually wiped out; and that tigers and timber have been poached.

In another report, the Buxa newsletter said that the reserve was threatened by a power and irrigation project proposed by the Indian government on the Santos River in neighbouring Bhutan. Though still to be approved, the project would involve a 120 metre wide canal through the core area of the Buxa reserve, as well as through the Gorumara National Park and the Jaldapara Wildlife Sanctuary, the newsletter declared.
Tiger-Human Conflict in South-Eastern Tibet
by Ming Jiang Qiu*

In recent years, Bengal tigers Panthera t. tigris in northern Motuo (Medog) in south-eastern Tibet have come into increasing conflict with local people, especially at Gedang, Jareas and Bangxin. (Editor: this area is to the east of the 7,756 m. peak Namcha Barwa, where the Yarlung Tsangpo River starts a U-turn to become the Brahmaputra in India).

In the past three years the situation has become desperate for both the tigers and the Tibetans, who moved from the windswept Chamdo upland into the forested Chimdro Tsangpo valley on the southern slope of the Himalayas during the Tibet crisis in the 1950s.

Loss of lowland forest to agriculture, and unregulated hunting in the main Yarlung Tsangpo valley, caused tigers to move up the tributaries in search of prey. The lack of prey has resulted in heavy losses of livestock in Tibetan villages. At Gedang, between 1 October 1993 and 31 July 1995, 302 horses, mules, cattle and yak were lost to tigers.

Tigers have been driven to cover long distances in search of prey. For example, a solitary tiger tracked by myself and a colleague moved up a valley from a kill site at 2,100 m, crossed the 4,570-m Chimdro La pass and descended on to the northern slopes of the Himalayas, where no tigers had been reported previously and very few large prey could be found because of habitat deterioration. Within a few days the animal re-crossed the same pass and returned to its normal range.

Patterns of sequential and altitudinal occurrence and disappearance of tigers in the mountains in Motuo suggest that the tigers that prey on livestock are migrants from the lower valleys. Fifteen years ago tiger signs were considered common near lowland Beibeng and the town of Motuo, but occur there no longer. Ten years ago, hunters living at 1,500 m at the mouth of Chimdro Tsangpo, a major tributary of the Yarlung Tsangpo in northern Motuo, reported that the trails near their villages were "full of tiger tracks"; today the tracks and livestock killed by tigers are mostly found between 1,900 and 3,500 m in the upper Chimdro Tsangpo, which was not frequented by tigers 10 years ago.

Despite the fact that some tigers come into the villages, mauling of people is likely to occur only when someone walks at night and accidentally encounters a tiger. To date, no man-eater has been produced, which is fortunate for both tigers and humans. Mauling or killing humans would undoubtedly increase the Tibetans’ animosity towards the tiger. In the past six years, five tigers have been killed in the Chimdro Tsangpo and adjacent valleys.

Conservation of this tiger population is going to be very difficult. Although Motuo has been officially declared a nature reserve, management of the forests and wildlife is still in its infancy. The remoteness of the area and lack of roads have helped to preserve the forests, but have also made management extremely difficult. Predation occurs year-round and the tigers apparently live to a large extent on cattle and yak, on which Tibetans depend for milk and butter, and on mules and horses, which the Tibetans use to carry essential supplies across the Himalayas. A resource manager is faced with the reality of guarding a prey base for the tigers while protecting the lives and property of local people.

In order to reduce tiger-human conflicts, the Forest Department of the Tibetan Autonomous Region is considering resettling some villages outside the tiger’s range. This is believed to be essential if the tiger population is to survive. Once domestic livestock are removed, tigers are going to find it hard to survive, even if the population declines of the tigers’ natural prey — takin Budorcas taxicolor, red goral Nemorhaedus cranbrooki and serow Capricornis sumatraensis — are halted. The opinion is that they will have a chance but would have to spend a considerable amount of time hunting.

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US Government Support for Logging in Amur Tiger Range

Forty-seven US and Russian environmental groups have expressed their alarm about the negative environmental consequences of growing US federal financing of private companies logging Russia’s primary forests, particularly in Siberia and the Russian Far East.

In a letter to Vice President Albert Gore, they said: "US taxpayers are now financing several private joint ventures in Siberia and the Russian Far East through the Overseas Private Investment Corporation (OPIC), the Trade and Development Agency (TDA), the Export-Import Bank, and several government-supported enterprise funds. The activities of these private timber ventures could destroy unique forest habitats. They could also undermine and contradict important biodiversity conservation programs currently underway in the Russian Far East, programs which are backed by your office, and which are being implemented by other US federal agencies (USAID, US Forest Service, etc.) and non-profit groups such as some of our own."

The letter pointed to the Gore-Chernomyrdin (Russian Prime Minister) Commission’s Joint Statement on Sustainable Management and Conservation of Natural Resources (1995). “Both sides recognize the necessity of conservation and sustainable management of natural resources. Further, the two sides recognize the importance of all ecosystems, including riverine, marine, and forest ecosystems, to the overall health of global systems.” It acknowledged that Gore supported several important Russian-American government and NGO initiatives to conserve forests and wildlife in the Russian Far East, including habitat of the endangered Siberian tiger.

"Yet, at the same time, OPIC, TDA and other US government agencies are funneling millions of public dollars into private joint timber ventures that will liquidate forests in the same regions, often in the very areas targeted by conservationists for biodiversity conservation or formal protected-territory status.”

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“For example, TDA is providing $500,000 to the Global Forestry Management Group (GFMC – a private consortium of U.S. sawmills) to carry out a feasibility study to log in the Khor watershed and elsewhere. When allocating this funding, TDA neglected to consider the fact that the Khor’s intact forests are vital for the survival of native Udege people and the endangered Siberian tiger. Moreover, USAID, World Wildlife Fund, the Hornocker Wildlife Research Institute, PERC, and others are working together with Russian government officials, NGOs and native Udege leaders to design new protected territories within these same forests in the Khor watershed.”

The letter gave other examples of US financial support for logging and declared: “These federally-backed plans will transform Siberia and the Russian Far East into a massive whole-log export colony. Taken together, they greatly contradict the conservation goal contained in your Join: Statement on Sustainable Management and Conservation of Natural Resources”. It said environmental impact assessments were not being made available as they legally should, adding: “The actions of the above-described US agencies to secretly grant public money to private joint ventures for large-scale logging and whole log export casts ambiguity and even the appearance of duplicity on the US’s environmental policy for Siberia and the Russian Far East”.

The signatories to the letter included officials of the Pacific Environment and Resources Center, Earth Island Institute, World Wildlife Fund US, National Audubon Society, Sierra Club, and Greenpeace International in the US. Russian organizational signatories represented Socio-Ecological Union, Wildlife Foundation (Khabarovsk), Biodiversity Conservation Center, Center for Russian Environmental Policy, Greenpeace Russia and Zov Taigi Center for the Defense of Wild Nature.

As a follow-up, the people of Krasyiy Yar, the principal centre of the Udege people in the Bikin watershed, sent a letter to Gore pointing out that indigenous peoples of the Russian Far East and representatives of other nationalities “rely upon the natural riches of the Sikhote-Alin bioregion. We trap, fish and gather non-timber forest products in its watersheds, and these land-based activities are essential to our economic survival in the region”.

“The natural resources within the Sikhote-Alin bioregion are, however, at risk. For instance, in the Bikin River watershed there are efforts to mine its gold. And as we write, both national and international organizations are attempting to acquire a timber base in the headwaters of the Bikin. At a public meeting on November 11, 1995, the people of Krasyiy Yar told representatives of the South Korean firm Hyundai that timber harvest in the headwaters of the Bikin River is unacceptable. We feel that the Bikin should be part of a protected territory system and we continue to lobby for land tenure in the Bikin watershed, this in the form of a Territory of Traditional Natural Resource Use (TPU) that begins at the village of Krasyiy Yar and extends to the headwaters of the watershed.”

“For the indigenous peoples of the Russian Far East, the central Sikhote-Alin is more than just a source of natural resources. It is our spiritual homeland, a landscape that forms the traditional background for our culture and ways. Aggressive resource development in this bioregion, however, represents a direct threat to our existence and to the future of our children”.

The letter described several US-government sponsored programmes to promote sustainable development in the Bikin, adding: “But, as the letter sent to you clearly states, there is a grave danger that other US government projects could compromise the efforts stated above, and severely limit the current efforts of people in the Bikin, Khor and Samarga watersheds to develop sustainable resource use programs that meet the needs of local peoples.”

NGO representatives subsequently met an aide to Vice-President Gore and representatives of federal agencies. William Eichbaum of WWF US said the meeting had been useful and positive. He explained that the NGO representatives asked for more open procedures, and for Environmental Impact Assessments to be made available for review. The Russian forests should be used for the benefit of Russia.

**International Tiger Information Centre**

Minnesotta Zoo has established an International Tiger Information Centre on the World Wide Web: [http://www.stigers.org](http://www.stigers.org)

Ronald Tilson, the Zoo’s Director of Conservation, states that the centre is designed to provide the public, scientific and conservation communities with an international forum for exchanging information relevant to the conservation of tigers across Asia and in zoos worldwide. It provides multiple levels of information ranging from the general to the scientific, and is continually updated to provide the most up-to-date information about tigers available. It is sponsored by Exxon Corporation and the US National Fish and Wildlife Foundation.

Currently the Stigers Web site includes the following information categories:

- distribution and status of the five remaining tiger subspecies, natural history and behaviour of tigers, and threats to tigers.
- conservation organizations and programs, with hypertext links to some of the organizations, such as the IUCN Cat Specialist Group ([http://www.iucn.org/themes/ssc-cats_home.html](http://www.iucn.org/themes/ssc-cats_home.html)).
- field projects – currently included are the Siberian tiger project, Sumatran tiger project, Ranthambhore project and Tiger Tops monitoring project.
- scientific publications, including the Sumatran Tiger Population and Habitat Viability Analysis report, the South China Tiger Masterplan, the Indochinese Tiger Masterplan for Thailand, and the Management and Conservation of Captive Tigers.
- bibliography, including sections on conservation, ecology, genetics, husbandry, hunting, medical, art and miscellaneous.
- meetings and conferences, travelogues and newspaper abstracts of tiger-related articles.
- information and games for kids, including a section where kids get to email in their own questions.
- email links to International Tiger Information Centre employees which allow the public to ask questions and receive responses.

Contents under development include:

- expanded coverage of conservation organizations and field projects, including WWF, TRAFFIC, IUCN Cat Specialist Group, and conservation organizations in India.
- expanded travelogue sections, including updates of research done by the Sumatran Tiger Project.
- book reviews of recently published works.
- tigers in art, religion and culture.
- video reviews and selected footage, e.g. a tiger giving birth.
Tigers: How Much Do People Know?
The plight of the tiger has received considerable media attention for several years, along with general coverage of wildlife conservation problems. How much impact has it had? A revealing study has been carried out in preparation for a special tiger exposition at the Smithsonian’s National Museum of Natural History in Washington DC.

The evaluation of public knowledge was carried out by Randi Korn and Associates. Its researchers questioned visitors to the Mammal Hall at the museum, whose very presence there would suggest some direct interest in wild animals. They reported:

"1. Although they demonstrate much concern and respect for animals, visitors have little more than a very basic knowledge of animal conservation. Nearly one-quarter of visitors (adults and children) were unable to provide any definition of animal conservation, but all of these visitors were able to define endangered animals. Those who could define the term talked about protecting species and protecting habitats. Although these two concepts are central to animal conservation, visitors spoke about these fairly simply and in little detail.

"Visitors have even less knowledge about tigers, their lives and survival needs. The one characteristic of tigers that visitors could state with confidence was that tigers are carnivorous animals. But respondents often confused tigers with lions and other mammals and frequently guessed when they were asked details of tigers’ lives. Most visitors think first about tigers’ physical appearance. Although 11 people mentioned tigers as an endangered animal, only six thought of endangered status when they thought about tigers initially.

"Many people, though, can identify reasons why animals become endangered. Loss or destruction of habitat was identified by more than three-quarters of respondents, and hunting and poaching practices were named by half of visitors. The visitors who discussed habitat loss tied this idea to development and rising human population. Museum audiences are thus likely to be aware that certain animals are endangered and the general causes of this status. In addition, visitors expressed an overwhelming sense that human beings are responsible, either directly or indirectly, for endangering animals.

"Most respondents could name two or three endangered animals, although they were not generally specific about species or subspecies. Tigers were one of the animals named most frequently by visitors, along with pandas and eagles, but no animal, including tigers, was named by more than one-quarter of respondents. No consensus on endangered species emerged in the data.

"2. Visitors do not associate Asia with animal conservation or tigers.

"They associate animal conservation closely with Africa, rain forest regions and the United States, likely because of the popular and political attention focused there. Similarly, visitors connect tigers more with Africa than any other region, although most seemed unsure of where tigers are naturally found.

"3. When visitors were asked how animal conservation issues affect their lives, many people spoke only about an indirect connection. While they have a respect and appreciation for animals, they do not feel the issue affects them personally. Several visitors talked about the need to preserve animals for future generations and a few spoke about not wearing furs or makeup tested on animals, but their numbers were relatively small.

"4. Visitors were asked to rate three statements about tigers to uncover what angle of the tiger story would strike a responsive chord in most visitors and motivate them to action. Of the three statements, the highest mean rating was for the statement that read: Soon there may be more tigers living in captivity than in the wild. This finding suggests that the idea of tigers living in captivity is likely to be understood by visitors and to have an impact on them. The two statements that focused on more complex issues—the decline in tiger population linked to rising human population, and to the use of tiger parts in folk medicine—received the lowest mean ratings and are less likely to have an impact on visitors’ daily lives."

Jaguar Prey and Tracks

The collared peccari *Tayassu tajacu* is the preferred food of the jaguar, according to studies carried out by Marcelo Aranda* in Mexico (Aranda 1994a).

In a paper in Acta Zoologica Mexicana, Aranda reported that the collared peccary made up 42% of the jaguar’s mammal prey, compared with 18% coati *Nasua narica*, and 12% armadillo *Dasypus novemcinctus*. He found that jaguars also feed on birds, which make up 20% of its total prey. Reptiles for 4%.

The studies were carried out on scats collected in Calakmul Biosphere Reserve, in Campeche State, between 1989 and 1993. Aranda said that the situation was similar in other localities, and he proposed that peccaries were important prey species for the jaguar in almost all its geographical range.

Aranda pointed out that the jaguar and the collared peccary had similar historical ranges from Argentina to the southern USA.

In a separate note (Aranda 1994b), Aranda proposed criteria for distinguishing jaguar and puma tracks. The most useful, he
said, were the more pointed toe prints and better defined lobes in the pads of the puma.

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**North African Cheetah**

Representitives of Algeria, Egypt, Morocco and Tunisia and of the IUCN Secretariat and the Cat Specialist Group participated in a workshop in Rabat on 2-4 April 1996 to coordinate efforts to conserve cheetahs in North Africa. The participants were:

- **Algeria** – Dr Bouredjji Hachemi Amir, Agence Nationale pour la Conservation de la Nature.
- **Egypt** – Dr Mustafa Saleh, Dept of Zoology, Al Azhar University. Project Coordinator.
- **Morocco** – Dr Brahim Haddane, Parc Zoologique National de Rabat.
- **Tunisia** – Dr Mohamed Ali Abrougui, Association Tunisienne pour la Protection de la Nature.
- **IUCN** – Francis Parakati.
- **IUCN Cat Specialist Group** – Peter Jackson.
- **Libya**’s representative, Dr Husni, Technical Centre for Environmental Protection, was unable to attend owing to a last-minute minor car accident.

The cheetah project is a component of a North Africa Biodiversity Programme sponsored by the IUCN and funded by the Swiss government. The programme involves five major activities in 1995-96:

1. conservation of centres of biological diversity;
2. conservation and sustainable use of medicinal plants;
3. conservation of the cheetah;
4. biodiversity conservation education;
5. translation into Arabic of the IUCN Guide to the Biodiversity Convention.

North Africa’s natural resources are especially vulnerable, in particular because:

- life is distributed very unevenly over the region, with large areas of uninhabited desert;
- the population is growing rapidly;
- in the northern fringe, where most of the people live, desertification is a constant threat;
- much land is being converted to agricultural use, and much existing agricultural land suffers from salinization;
- the growth of industry and of human settlements is putting pressure on natural resources;
- land, sea and inland waters are being polluted by dangerous and hazardous chemicals;
- most biotic and abiotic resources are not effectively managed; and
- there is a need for greater institutional development to tackle environmental and sustainable development issues.

At the Rabat workshop, Peter Jackson reviewed the world cheetah situation. He said that the total population was estimated at 9,000-12,000, almost all in sub-Saharan Africa. In North Africa, cheetah were known to survive in very small numbers in Algeria and Egypt, and possible Morocco. In Asia, the cheetah was considered extinct, except for a population of fewer than 100 in Iran.

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**References**


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**Conservation Workshop**

The main concentrations of cheetah are in Namibia (about 2,500) and East Africa (about 3,000). In Namibia, where 95% of the cheetahs are found on livestock farms, the Cheetah Conservation Fund is conducting a major programme to study the ecology of the animal, and to assist farmers in managing and protecting their livestock to reduce predator, which has led to extensive killing of cheetahs.

Dr Saleh, who has been appointed Regional Coordinator for the cheetah project, said that specimens collected in the past showed that cheetahs in North Africa were only two-thirds the size of those in sub-Saharan Africa, and had tails with spots rather than rings. Thus it represented something unique to North African countries and could be used as a “flagship” species for nature conservation in the region. Cooperation between the five countries was essential. It was important to involve local people. Former cheetah habitats needed to be identified for possible re-introduction in due course e.g. 20 years time.

**National Reports**

**Algeria**

Dr Bouredjji Hachemi Amir presented two documents on “Conservation of the Cheetah in Algeria” and “Programme for the Rehabilitation of the Cheetah in Algeria”. Two sites in southern Algeria have been selected for investigation in the light of credible reports of cheetah presence. They are in the vicinity of the Ahaggar National Park, and Tassili N’Ajjar.

**Egypt**

Dr Mustafa Saleh said that the Western Desert had an extremely arid climate. Potential cheetah habitats were scattered spots. During recent field expeditions he had found that places where he had found cheetah sign in the past appeared to have no cheetahs now.

**Libya**

In the absence of Dr Husni, Dr Mohammed Ali Abrougui explained that there was no information about cheetah in Libya since the publication of Libyan Mammals (Hufnagl 1972). He considered it possible that cheetah might be found near Libya’s eastern frontier with Egypt.

**Morocco**

Dr Brahim Haddane reported that cheetah tracks had been found in the past five years along the Draa River in southern Morocco. Cuvier’s gazelles Gazella cuvier were present in the area in small numbers. Surveys were planned in the area. Southern Morocco (former Spanish Sahara), where cheetahs had been reported in the past, was a closed military zone and it had not been possible to enter the area, where cheetahs had been reported in the past. However, collaboration with the Forest Department could lead to permission to carry out surveys.
Tunisia

Dr Mohammed Ali Abougui said a survey needed to be carried out on the eastern border with Libya, but this was a restricted military area. Permission had been sought for work to be carried out in collaboration with the Ministry of Agriculture, which had relations with local people in the area.

During the period April 1996 to March 1997, the North African countries will carry out field surveys to establish the status of cheetahs, prey species (especially gazelles and hares), and habitats.

On the basis of the results of the surveys, a detailed plan for the protection of the cheetah in its natural habitats will be prepared. The plan will include recommendations for legal, administrative and enforcement requirements for the effective and immediate protection of the animal in its present range. The involvement of the local bedouins and authorities will be of key importance in this respect.

The plan will also include the selection of a suitable area (or areas) to be declared as a special cheetah reserve conforming to the requirements of the United Nations List of National Parks and Reserves, and the preparation of an initial management plan.

Dr Saleh said the aim should be to collect information of value to management. The services of wildlife biologists, plant ecologists, botanists, desert guides and expert trackers was required. Equipment should include a Global Positioning System (GPS). During surveys, the general ecology should be studied, and traps used for capture/release studies of potential cheetah prey species, such as hares Lepus spp.

Reference

Conservation of Namibia's Cheetahs and Lions

The southern African state of Namibia has more cheetahs than any other country, estimated to number between 2,000 and 3,000, about one-third of the total world population. But 90% of them live on farmlands, where they pose a threat to livestock and therefore suffer persecution. Laurie and Daniel Marker-Kraus, directors of the Cheetah Conservation Fund, suggest that more than 10,000 cheetahs may have been killed on farms or exported to zoos and captive breeding centres in the past 20 years, reducing the Namibian population by around 50%.

There are many fewer lions – 320-340 in 1994, according to government biologist Hu Berry – and they are found mainly in Etosha National Park, with a small number in Khaudam National Park. But some stray into farmlands and cause the same problem as cheetahs. They too are killed in large numbers – about 1,000 were destroyed between 1965 and 1994, according to records kept by the Etosha Ecological Institute.

In February 1996, farmers were able to explain their problems to wildlife specialists, including biologists, managers and veterinarians, at a Population and Habitat Viability Assessment workshop organized by the Namibian Ministry of Environment and Tourism and the IUCN Conservation Breeding Specialist Group (CBSG). The farmers said they did not want cheetahs to be exterminated, but costly losses of livestock, and also valuable wildlife on game farms, had to be reduced by new management techniques. Ways were needed to make cheetahs a valuable asset for farmers to compensate for economic losses. Research was required on the farmlands to help farmers and conservationists, who needed to be brought together to discuss disagreements.

With regard to lions, the farmers main desire was that they should be kept out of the farmlands. They complained that the wildlife authorities were failing to maintain game fences, which were broken by erosion and warthogs. But they recognized that lack of government funding and staff shortages handicapped the authorities.

The conservationists felt that inadequate range, and fragmented populations, as well as conflict between humans and predators, were major problems, along with insufficient funding for conservation of lions and cheetahs. Predators were being killed, and habitat lost, while there was no incentive to conserve. Climatic fluctuations (lengthy droughts interspersed with rainy periods) affected cheetah and lion populations, and there were problems of disease and genetic dangers.

The scientists admitted that there were gaps in their knowledge of lion and cheetah survival and conservation, as well as of appropriate sustainable land-use systems to benefit wildlife and private landowners. In particular, they expressed concern about the long-term survival of the limited lion population.

Officials said the impact of removals on lion and cheetah populations was a critical problem. There were also incompatible land-use objectives within the ranges of the big predators. Financial and human resources to maintain effective communications with other stakeholders were lacking.

The workshop divided into specialist groups to consider the problems and to draft proposed solutions which would maintain viable populations of lions and cheetahs. The proposals, which will be presented to the Namibian government, stress the importance of better communication and collaboration between all concerned with the country's lions and cheetahs; increased efforts to limit livestock losses through better management of both livestock and predators; and scientific research to provide improved data for decision making.

Veterinarians reviewed a range of diseases, including rabies, canine distemper and anthrax, which have struck, or could affect, the lion and cheetah populations and urged research and monitoring, along with training of Namibians. They noted that the Etosha lions appeared to be free from Feline Immunodeficiency Virus (FIV), which is widespread among lions elsewhere. They urged further tests to confirm whether the virus is indeed absent. At the same time it was pointed out that, if the lions had evolved without the virus, they could be vulnerable if it arrived.

Geneticists called for assessment of the genetic diversity of Namibia's lions and cheetahs. In particular, they pointed to the possible consequences of small founder populations of lions on game farms/reserves. It was proposed that a Genome Resource Bank for the lions and cheetahs be established. This would allow for germ plasm from wild stocks to be introduced into captive populations without removing animals from the wild, as well as for use to reinforce diversity in wild populations by capture and artificial insemination of wild females.

Management plans for captive populations of lions and cheetahs in Namibia were recommended by captive breeding specialists. They proposed the establishment of an FIV-free captive lion population, which would require a breeding group of 25-30 animals.
Livestock and Predator Issues on Namibian Farmlands

The Cheetah Conservation Fund (CCF), which was established in Namibia in 1990, has produced a report on a survey conducted on Namibian commercial farmlands from June 1991 through August 1993. The objectives were: to identify the important components of farmland ecosystems necessary to sustain a healthy cheetah population; to identify farm management practices that reduce livestock loss from predators; and to suggest conservation management plans beneficial to both the cheetah and farmers.

The following are some extracts from a summary of the report:

**Background to Namibia’s harsh farmland ecosystem**

Namibia’s harsh farming conditions are underscored by the fact that 16% of the country’s total area is hyper-arid (true desert), where agriculture of any kind is excluded. Furthermore, 49% of Namibia’s land is classified as arid, 32% as semi-arid and only 3% as sub-humid.

- Droughts are frequent and unpredictable in Namibia. The recent drought cycle has lasted over 15 years.
- Commercial livestock is kept on more than 7,200 fenced farms, of which 51% are cattle farms covering 49% of Namibia’s total area.
- As much as 70% of the huntable game species and 90% of the cheetah occur on commercial farms.

Europeans began farming livestock commercially in 1884, and during the past 100 years cheetah numbers have been affected by farming practices and natural disasters, such as droughts and disease.

Nature’s diversity (biodiversity) on farms has been drastically altered by excessive removal of game and predators, over-grazing by livestock, extensive fencing, constant water points, and natural disasters, which all have encouraged severe bush encroachment. The bush encroachment over the last 30 years has significantly decreased the productivity of nearly one-third of Namibia’s livestock farmlands.

Two natural disasters occurred simultaneously in the early 1980s, negatively affecting the cheetah population: the “drought of the century” and a rabies epidemic in kudu *Tragelaphus speki*, a primary prey for the cheetah. Due to the denuded pastures from the drought, farmers reduced game populations by 60% to save the pastures for livestock. This in turn also reduced the natural prey for the cheetah.

The farmers’ negative perception of the cheetah peaked during this time and approximately 800 cheetah were removed from the farmlands per year, even though a large percentage of livestock loss was due to natural causes and farm management practices.

Additional pressure on cheetah developed in the early 1980s with game farming, when game-proof fences were erected and exotic wild herbivores were introduced.

In 1983, due to the conflict between farmers and cheetahs, the Directorate of Nature Conservation and Tourism initiated an intensive research project to investigate the causes of conflict. This three-year project concluded the following:

1. the farmers had strong opinions and attitudes about the cheetah;
2. the cheetah was perceived by farmers as the worst problem animal, allegedly responsible for large financial losses;
3. the sighting of cheetah or spoor (tracks) led to a natural reaction ascribing livestock loss to cheetah predation;
4. a large percentage of calf loss was due to natural causes (i.e. disease, poor nutrition, stillbirths, etc.) and not cheetahs; and
5. further research was necessary.

In 1992, CITES allowed limited trade in Namibian cheetah (annual quota of 150) in an attempt to reduce indiscriminate removal of cheetah.

In 1994, the Namibian Professional Hunters Association (NAPHA) developed a special sub-committee called RASPECO (Rare Species Committee) to develop guidelines and programs which will support the sustainable utilization of rare species such as the cheetah, to the enhancement of the species. As a part of RASPECO, NAPHA members were asked to sign a compact for the management of cheetah on their farms.

**Cheetah problems**

It is difficult to define a “cheetah problem”, because livestock loss specifically due to cheetah may be unknown and farmers’ perceptions of predation may differ. Many farmers accept losing one or two calves a year, while others find any loss an economic hardship.

- Seventy-five percent of the farmers in the survey were not having cheetah problems at the time of the survey.
- Farms that reported problems with cheetah had a lower ratio of game to cattle than farms with no cheetah problems.
- In the survey area, loss of cattle to cheetah comprised 33% of all predation, while loss of smallstock to cheetah comprised 22%.
- The average of the calves lost to cheetah was 4.4 months, with 51% of the total under three months of age. Few calves older than six months of age were killed by cheetah.
- Corralled smallstock, if not sufficiently protected, can suffer high losses, as once a predator approaches, their panicked movements stimulate the predators’ killing instinct.

Farmers said they experienced more problems with black-backed jackal *Canis mesomelas*, caracal *Caracal caracal*, and leopard *Panthera pardus* than with cheetah. However, cheetah were blamed for more livestock loss than leopard and were removed in higher numbers.

Additional livestock losses were due to baboons *Papio ursinus*, snakes, aardvark *Orycteropus afer* burrows, poisonous plants, droughts, disease and stock theft.

Game losses to cheetah, especially loss of exotic wildlife on game-fenced farms, caused 49 game farmers to remove 1,280 cheetah, representing 45% of the total cheetah removals for the survey area during the two-year survey period. The majority of loss to cheetah in game-fenced areas is exotic species.

**Management techniques**

Many methods of stock protection have been used by the farmers. The most prevalent technique used to prevent livestock loss was a calving camp. This technique was used by 43% of the farmers surveyed.

Farm camp numbers did not appear to influence predation pressure on livestock; however, farms with more camps tended to practice more intensive livestock management, thus reducing predator conflict.

Calving seasons varied between farmers, but the peak calving months were November, December, and January. Heifers, which usually calve first, suffered greater calf loss than experienced cows, in particular when calving in the winter months.

Brahman, Brahman crosses and Afrikaner cattle are more protective of their calves and are better adapted to the Namibian environment. However, due to the differences in farm manage-
ment practices and inaccurate reporting of livestock loss, it was unclear whether farmers raising particular breeds had lower rates of predator loss.

Donkeys were used successfully as guard animals accompanying a calving herd to deter predators. Likewise, the use of guard dogs, baboons and herders for smallstock was found to reduce loss.

Electric fencing was found to be worth the investment in the long-term to protect especially valuable game.

Cheetah removals

During the past 20 years perhaps more than 10,000 cheetah may have been removed from farms.

Sixty-five percent (157) of the survey participants reported removing a total of 2,845 cheetah (1980-93) from the survey area. Yet, when removals were compared to specific losses, there was an indication that removal of cheetah was not in response to specific loss of livestock.

There was a large discrepancy between the reports to CCF in its farm survey and both the Directorate of Veterinary Services and CITES figures on the number of cheetah removed from the farmlands. This indicates a vast variation in the number of cheetah removals reported, and questions the accuracy of official reports.

CCFs survey found that a few farmers removed a large number of the cheetah. An interesting point was that those farmers who removed large numbers of cheetah did not observe cheetah more frequently on their farms, again representing an attitude versus an actual problem.

More male than female cheetah were removed from the farmlands.

Farmers with cheetah "playtrees" tended to remove more cheetah than farmers without playtrees, even though they had no higher incidents of problems with cheetah, possibly due to the fact that cheetah are easily caught at playtrees.

When cheetah are removed from an area, the territory is opened up, which encourages new cheetah to move into the area. Cheetah activity may increase on a farm until the territory is re-established.

Removal of cheetah is a short-term solution. Without re-evaluation and restructuring of management techniques, the predator problem can reoccur.

Source


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Lions in Namibia

by Hu Berry*

Past and present distribution status

Prior to Shortridge (1934), who recorded lion in most of the northern half of the country and partly in the east, west and south, there are no quantitative records of lion numbers in Namibia. The earliest record of lion numbers in Etosha comes from a 1926 census, when 200 lions were said to occur there and 10 in neighbouring Owambo (Berry 1960). Figures for the rest of the country are not available. Joubert and Mostert (1975) estimated the country's lion population at 500, of which 90% occurred in Etosha National Park. Subsequent estimates are:

- 1980: 700
- 1985: 600
- 1990: 510 to 580
- 1993: 370 to 430
- 1994: 320 to 340

Lions were hunted for sport and destroyed when they threatened humans or domestic animals. Anecdotes exist about the size of lion prides in Namibia: W. Rusch is said to have photographed an aggregation of 42 lions at Agab water-hole in Etosha (Gaerdes 1975). A similar group totalling 37 lions was seen on the 19th Latitude road and 28 lions were recorded at Leeubron water-hole, both in Etosha (Berry unpublished data). An analysis of records (Berry 1981) kept at the Etosha Ecological Institute (n=356 observations on 2,562 lions) showed that mean pride or group size was 7.2 (range 2-37, SD 4.5). Mean number of cubs in a litter (n=126 litters) was 2.7 (range 1-5, SD 1.0) (Berry et al. 1981).

Only adult and sub-adult lions were considered for population estimates.

Five Etosha lion prides were monitored from 1981-88 (Berry unpublished data). This was during a dry phase. They had a mean territory of 582 km² (range 420-960 km²). Etosha is 22,270 km² minus 5,990 km² barren salt pans equalling 16,280 km² of habitat theoretically suitable for lions. Assuming a mean pride territory of 582 km², then Etosha can accommodate approximately 28 prides of seven lions each, which would give a theoretical population of 196 lions in a dry phase.

The 1994 estimate of lion numbers in Etosha was 180-200, which tallies closely with the calculated population. Presuming that lion pride territories become smaller during a wet phase (when primary production and consequently prey numbers increase), then Etosha's lion population would increase accordingly. During 1974-78, a wet phase, between 285-400 lions were estimated to inhabit the plains system of Etosha (Berry 1981). The number of woodland lions was then unknown, but estimated in 1989, a dry phase, to be 191-266 (Stander 1991).

Future of lions in Namibia

Having become classified in 1995 as "Protected Species" under the Nature Conservation Ordinance (No. 4 of 1975), all lions destroyed must be reported within 10 days. The Ministry of Environment and Tourism (MET) should for the first time be able to monitor the number of lions killed annually. During the 30-year period 1965-94, at least 1,000 lions were reported destroyed on farmland bordering Etosha (Etosha Ecological Institute records). The number may have been considerably higher than this because, prior to 1995, farmers were not legally obliged to report the killing of lions.

Rainfall appears to be a primary determinant of lion cub survival and therefore of future population potential. Namibia has proven to be an arid to semi-arid country where rainfall is as yet unpredictable and highly variable, with droughts being common and good rainfall years the exception. Moreover, at present, only Etosha (22,270 km²) and the Khaudum Game Reserve (about 4,000 km²) have viable lion populations in the long term. Etosha's lions are virtually isolated, whilst Khaudum's lions still have access to lions in Botswana. It appears that free-living lions in Namibia have little chance of surviving outside these two conservation areas - as long as Etosha and Khaudum are secure.
Seen in relation to the rest of the continent, Namibia has probably less than 1% of the total lion population of Africa (not more than 350 lions in Namibia) out of estimates ranging from 30,000 (Nowell and Jackson 1996) to 89,000 (Cousins and Ferreras 1995 in prep.).

Namibia is now at the south-western periphery of Africa’s lion distribution, with Etosha’s population virtually isolated. Why then are Namibia’s lions so important? Firstly, to Namibia they are a major attraction to the tourists visiting Etosha, where lions form an invaluable and irreplaceable asset in terms of the Park’s spectrum of wildlife (280,000 tourists visited Namibia in 1993, generating about N$500 million (US$167 million), and 120,000 of these visitors went to Etosha). Secondly, Etosha lions are one of the few, if not the only free-living population in Africa which is, up to the present, free of Feline Immunodeficiency Virus (FIV). This makes them invaluable as a reference for future veterinary and biological studies.

References


Reintroduction of Lions and Cheetahs in South Africa

by Luke Hunter*

In southern Africa, the increasing popularity of ecotourism has resulted in the establishment of wildlife reserves in areas formerly used for intensive livestock and crop farming. These projects are laudable in their attempts to re-establish the indigenous wildlife of the region, but the understanding of the parameters necessary to make such ambitious ventures successful are often poorly understood. At the beginning of 1992, the Phinda Resource Reserve, a privately-owned wildlife reserve of 18,500 ha, began a large-scale project to attempt the reintroduction of lions (Panthera leo) and cheetah (Acinonyx jubatus) into northern Natal, South Africa, a region from which both species had been absent for many decades.

In conjunction with the University of Pretoria’s Mammal Research Institute, an intensive research project was implemented at Phinda to monitor the progress of reintroduced felids in an effort to establish criteria for success in this sort of manipulation of wildlife communities. This article presents a brief summary of the project’s success to date and the management implications involved in the reintroduction of large felids. Greater detail of the behaviour and ecology of reintroduced lions and cheetahs will be presented in a series of papers currently in preparation.

Phinda authorities released 13 lions and 15 cheetahs between 1992-1993. All the animals were wild-caught and upon their arrival at Phinda were kept in an 80 metre x 80 metre boma for 8-10 weeks. This period of captivity prior to release seems to be very important when translocating carnivores. Experience from earlier translocation efforts indicates that carnivores released without the pre-release captivity period leave the release area and often head for the capture site which may be hundreds of kilometres away. At Phinda, all released felids remained in the reserve and established stable home-ranges within a few months of release. During this process the “conditioning” of animals to electrified fences was important. At Phinda, the entire reserve is enclosed by a 2.2 metre high electric game-fence. The holding boma had an internal electric fence so that animals’ initial efforts to escape the boma resulted in being shocked. When released, lions and cheetahs appeared to “respect” the fence and have not crossed it, despite the temptation of livestock and game on neighbouring properties.

In addition to radio-collaring some individuals (Telonis, Arizona™), all animals brought to Phinda have been implanted with subcutaneous Trovan™ transponder identification chips and tattooed on the gum above an upper canine tooth, ensuring positive identification should animals leave Phinda boundaries. After three and a half years, all transponder chips are still working and have proved to be an excellent method of marking animals. By now, however, the gum tattoos are unrecognisable or have disappeared.

Mortality of released felids in the first three years has been high; illegal human activity in the reserve being the single greatest factor. Wire-snare poaching at Phinda has killed five lions and two cheetahs. In the case of the lions, disruption of stable social groups resulted in the loss of five cubs, deaths which would probably not have occurred if not for the initial losses of pride males by snaring. Three lions were destroyed when they killed a tourist, and a female cheetah with three yearling cubs born at Phinda left the reserve when an entrance gate was inadvertently left open. These animals were not recovered and moved into farmland where they were almost certainly shot. Deaths of cheetahs also occurred as a result of territorial clashes (two male deaths) and encounters with lions (two male deaths). These natural deaths aside, the influence of human activity on the success of such projects cannot be underestimated. When reintroduction of large predators is to be attempted, reserve managers need to allocate resources wisely to control issues such as movements of people and poaching within the reserve.

Nonetheless, the project has been successful in initiating the re-establishment of these two species in the area and Phinda is now one of the finest reserves in South Africa in which to view these animals. Both species have bred quickly and survival of the litters has been high. Populations of both lions and cheetahs are approaching 30 individuals and a long-term management plan is underway to exchange individuals of both species with other reserves in South Africa. In small areas such as Phinda, where low numbers of individuals make up founders of a reintroduced
population, inbreeding remains one of the greatest long-term problems. Active management of the population in the early stages of these projects is vital if it is to be successful in the long run.

* Mammal Research Institute, University of Pretoria, South Africa.
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Eighth International Snow Leopard Symposium

Snow leopard specialists from 10 range countries met in Islamabad, Pakistan, from 12-16 November 1995 at the Eighth International Snow Leopard Symposium to facilitate cooperation for snow leopard and biodiversity conservation in Central Asia. The range countries represented were Bhutan, China, Kazakhstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan, Turkmenistan and Uzbekistan. They were joined by specialists from Britain, Canada, Switzerland and USA.

The symposium was organized by the Seattle-based International Snow Leopard Trust and WWF Pakistan. The following resolution was approved unanimously:

"Realizing the endangered status of the snow leopard and its importance as a flagship species for biodiversity in the mountain ecosystems of Central Asia, the participants...resolve that:

Effective and do-able programmes must be initiated in the snow leopard range states to address issues of livestock predation by snow leopards through testing of various compensation models involving local herder and pastoral communities, and helping them to be aware of the need for better care of their livestock, and to have programmes which indirectly compensate them for loss of livestock through socio-economic development. Such programmes have already been initiated in Pakistan, Mongolia and Nepal and will be replicated in Kazakhstan and Tajikistan.

Key conservation areas for snow leopards must be identified through mutual agreements, both within the range countries and across their international boundaries, and measures adopted to protect them from degradation and fragmentation, including the development and implementation of management plans. Pakistan has already developed a management plan for the Pakistani part of the transboundary parks of Khunjerab and Central Karakorum in the northern areas, which needs to be implemented and extended to China. Other countries with transboundary reserves, such as Kazakhstan (Zailisskiy Alatan National Park), Uzbekistan (Gisserskiy Reserve), Tajikistan (Cooperation Lake), Kyrgyzstan (Peak Pobeda) and China (Tomur Nature Reserve) should follow this example.

Much important information regarding the snow leopard and its linkages with its prey and habitat being lacking, scientific studies should be initiated to cover aspects that help in the conservation of snow leopards.

Poaching, fur trade and the use of certain parts of snow leopards being direct threats to the existence of the snow leopard, range countries must implement CITES or, if they are not Parties, join the Convention. The symposium also urges the extension of bans on use of tiger products to cover products of other threatened wild species, including snow leopards.

Support should be given to efforts to work with the traditional medicine communities to encourage sustainable use of wildlife products, including finding alternatives for products from rare species.

Education programmes should be developed for snow leopard areas, and shared between range states, that address the issues of the trade in snow leopard pelts and other products, and cover various target groups, from local communities to the policy makers, in different range states.

The International Snow Leopard Trust (ISLT) should determine ways and means to satisfy the feasible needs of range countries in terms of support for training their staffs, helping them identify new key snow leopard areas and in managing the existing critical habitats and corridors.

ISLT should monitor the progress made in implementing these resolutions and report successes and failures to the next symposium.

"Details of these recommendations, actions and activities are contained in the attached Annexe.

Annexe

Partcipants in the Eighth International Snow Leopard Symposium, held in Islamabad, Pakistan, 12-16 November 1995, present the following resolutions as recommendations to the Board of Directors of the International Snow Leopard Trust, WWF Pakistan and other concerned organizations for approval and implementation.

1. Predation on livestock
1.1. encourage local communities to improve the management and protection of their livestock from predation by snow leopards and other large predators.
1.2. provide better veterinary services for livestock to improve survival rates.
1.3. introduce ways whereby local communities can earn alternative income in order to reduce their dependence on livestock, and thereby reduce the size of livestock herds.

2. Habitat fragmentation and conservation of prey species
2.1. identify snow leopard "hotspots" and corridors for immediate conservation action.
2.2. encourage the preparation of management plans for conservation of sustainable prey populations.

3. Scientific studies
3.1. International collaboration to identify critical transboundary snow leopard areas.
3.2. Establish a genetic survey of snow leopard populations, initially using easily available materials from zoo animals and existing scientific collections.
3.3. Study snow leopard ranging behavior in both isolated, low-density populations, as well as high density populations.
3.4. Study snow leopard prey species population trends and their relationship to on-going changes in pastoralism in the region. Target areas where there is little information for status surveys on snow leopard prey.
3.5. Acknowledge the initiative of Mezhkombank (Russia) in sponsoring a study to determine snow leopard status in Russia and the development of measures toward effective conservation of this species.

4. Poaching and fur trade
4.1. encourage countries with snow leopards which are not Parties to CITES to join the Convention and implement its provisions.
4.2. initialization by the ISLT of dialogues with the World Trade Organization on the problems arising from trade in wildlife products.
4.3. train wildlife staff responsible for enforcement of wildlife laws in snow leopard range countries.
4.4. encourage snow leopard range governments to enact legislation to give adequate institutional strength to wildlife conservation.
4.5. train wildlife staff in presentation of cases before courts.
4.6. encourage snow leopard range countries to seek training from CITES in enforcement procedures.
4.7. use local cultures and traditional values to prevent trade in snow leopard and other threatened species products by empowering local communities.
4.8. explore the value of a system of rewards for information about wildlife offences.
4.9. urge China to extend the ban on tiger products in the State Council decree of 29 May 1993 to cover substitutes from other threatened species, including the snow leopard.
4.10. support efforts to work with traditional medicine communities and encourage sustainable use of wildlife products, including finding alternatives for rare wildlife species.

5. Capacity building
5.1. train local professionals, especially in the Central Asian Republics.

5.2. disseminate scientific literature to countries lacking current material.
5.3. enhance the capacity and role of local NGOs.

6. Environmental education
6.1. carry out education programmes on the need for conservation of wildlife and natural habitat in snow leopard areas.
6.2. make use of traditional leaders, such as monks, for conservation education.
6.3. develop a mechanism for sharing educational material between snow leopard range countries.
6.4. identify high exposure, cost-effective programs e.g. zoo displays for use in snow leopard range countries.

7. Other issues
7.1. disseminate symposium resolutions to policy and decision makers, including national planning commissions, in snow leopard range countries.
7.2. follow-up by WWF Pakistan of discussions between participants in the symposium with the Chairman of the Environmental Council.

Snow Leopard Smuggler Indicted in US


US Fish and Wildlife Service (FWS) and Customs agents arrested Zadran on 18 July 1995 following a 15-month undercover investigation into his activities involving the illegal importation and sale of protected wildlife, including retail marketing of the highly endangered snow leopard (Panthera uncia). Zadran reportedly had access to about 150 leopard hides (Panthera pardus), which were apparently smuggled into the United States from Pakistan.

On 9 July 1994, Zadran sold a leopard hide for $3,500 from his own business on Madison Avenue in New York City, and over the following 12 months sold five more leopard hides, including one on 25 August 1994 for $3,750, two on 15 December for $9,000, and two snow leopard hides on 13 March for $8,800.

During June and early July 1995, Zadran negotiated with FWS undercover agents to sell four snow leopard hides for $15,000. He was arrested by federal agents on 18 July 1995 at a highway rest stop in Darien, Connecticut.

If convicted of the Lacey Act violation, Zadran faces up to five years' imprisonment and a $250,000 fine. Violation of the Endangered Species Act carries a maximum sentence of one year's imprisonment and a $100,000 fine on each count.

(CITES Update No. 37, August 1995)

The Mystery of the Formosan Clouded Leopard

Little is known about the clouded leopard Neofelis nebulosa anywhere in its extensive range in the forests from Nepal throughout south-east Asia and southern China. But skins turn up in local markets and there are even reports of the cat being served in Chinese restaurants. Even more mysterious is the status of the subspecies N.n. brachyurus, found only on Taiwan, and known by the island's former name as the Formosan clouded leopard.

In order to bring together as much information as possible and consider possible conservation action, the Taiwan Council of Agriculture convened a Population and Habitat Viability Assessment (PHVA) workshop in Taipei in October 1995 with the help of the IUCN Conservation Breeding Specialist Group (CBSG).

The workshop concluded that the Formosan clouded leopard may be extinct because of habitat destruction and exploitation. Only three sightings have been recorded in the past 40 years, the most recent record being a small skin in 1989. Questionnaires and hunter surveys in the past 10 years have yielded no results.

The PHVA report states that, aside from the fact that possible suitable habitat stretches from Chatien Mountain in the north to Tawu Mountain in the south, there is a complete lack of other information and knowledge of general biology.

"The Formosan clouded leopard has many potential threats, including habitat encroachment, human interference, non-target hunting, and a reduced prey base. As a consequence of differing attitudes among people towards the use of this species, a diverse spectrum of viewpoints exists regarding the approach necessary for its conservation, leading, in turn, to varied policies among governmental agencies. The clouded leopard is sacred to the Lukai tribe and other aboriginal groups also have positive attitudes towards the species", the report said.

Among the recommendations of the workshop were the following:

- conduct a large-scale biological survey at the suspected distribution sites to determine if the clouded leopard still survives in nature in Taiwan.
- develop a captive management programme and conduct detailed assessments of all clouded leopards in private hands.
- build mass support for clouded leopard conservation through environmental education.
- consider if reintroduction is required following investigation into whether the clouded leopard still exists, and, if so, which subspecies should be used.
Norwegian Lynx Hunt

Norwegian hunters shot 84 lynx, thought to be nearly 20% of the total population in the country, during authorized hunting in February and March 1996. But the hunters did not achieve the total authorized quota of 104 lynx.

Norway’s lynx population was estimated before the hunting at 400-500.

The hunt was authorized and continued despite protests from Norwegian conservation organizations and by international organizations contacted via the Internet (http://lynx.uio.no/jon/lynxform.html).

The matter was also raised with the government by the Secretariat General of the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), which requested information in the light of statements by the Norwegian-based Bellona Foundation that the quota was too high and the exploitation not sustainable.

Status and Conservation of the Alpine Lynx

In the 1970s, lynx were translocated from the Carpathian mountains in Slovakia for reintroduction in the Alps. Projects were started in Austria, Italy, Slovenia and Switzerland. Not all of them were successful, but small lynx populations developed and survive today.

In December 1995, European lynx specialists met to review the current status and conservation of the Alpine lynx. The meeting was held in Engelberg, close to the area where lynx were introduced to the Swiss Alps.

Leading Swiss specialists Urs and Christine Breitenmoser and Simon Capt reported that the most dynamic introduced population was in Slovenia, but it was over-harvested and its vitality diminished. In the Swiss Alps, the lynx spread over a large area, but expansion to the east stagnated for at least 10 years. In the west, the Swiss lynx spread into the Valle d’Aosta in Italy and into Haute Savoie in France, but its status to the south was unclear.

They reported that the lynx population in Austria was dwindling, never having been as dynamic as the populations in Switzerland and Slovenia.

The experts said that lynx were suffering high losses from hunting, illegal killing and traffic accidents, while reproduction seemed to be reduced. There was no evidence so far of genetic problems due to high inbreeding, but the situation had to be watched.

Looking to the future, they said that the existing Alpine populations must grow and link up if they were to survive in the long-term. If they did not do so by themselves, further translocations would have to be considered, either to re-stock existing populations or establishing new nuclei to bridge gaps.

The lynx disappeared from the Alps during the 19th century, except in France and Italy, where it survived into the first decades of the 20th century. Direct persecution was the main reason for the lynx’s eradication, but ecological changes, mainly deforestation, decline of wild ungulates and the consequent predation by lynx on livestock, which led to persecution, were also responsible. Now the forests have recovered and wild ungulates are abundant, but the ecosystem lacks large predators.

Hunting quotas for lynx are authorized by 11 county governors in Norway. In 1995 they allowed a quota of 54 lynx, and 47 in 1994, according to the Bellona Foundation.

Sheep owners are the principal enemies of the lynx in Norway, claiming heavy losses. However, the Bellona Foundation states that, although 5,460 sheep were listed as killed by lynx in 1994, about 116,000 sheep died on grazing land. Compensation was paid for the lynx kills, as well as for 9,270 sheep killed by other predators, such as bears and wolverines. Reindeer herders also kill lynx, although the toll of reindeer is low.

At government request a project is underway in Norway to summarize available options for reducing predator-livestock conflicts. The idea is to provide politicians, and others, with a comprehensive worldwide literature review of the extent of the problem in various parts of the world, and the solutions attempted.

Country reviews

Austria

Nine Carpathian lynx were translocated to Styria between 1977 and 1979 to reintroduce the species to the Austrian Alps. In five years the lynx spread as far as 120 km, but observations were few and seldom confirmed. Reports became scarce during the 1980s and the reintroduction seemed to have failed, but in 1989 a series of sheep kills in Carinthia re-activated public interest in the lynx and more observations were reported. There is no established lynx population in Austria at present. The most regular and reliable observations occur in the region of the original releases and from southern Carinthia, where lynx immigration from Slovenia may sustain the Austrian population.

(Thomas Huber and Petra Kaczensky, Institute of Wildlife Biology and Game Management, Agricultural University of Vienna, Peter-Jordan-Str. 76, 1190 Vienna, Austria)

France

The lynx disappeared from the French Alps around the beginning of the 20th century. Its recovery in France is due to its reintroduction in Switzerland between 1971 and 1976. From 1974 to 1994 there have been 70 records, the first in Chablais. More regular records were around the Aravis mountains. Over 20 years, a southward expansion of about 200 km has been observed, but no continuous distribution area has been established by the survey. If the presence of lynx south of Grenoble in the Vercors, and in the Hautes Alpes department is confirmed, expansion of the population over the whole south-east of France would be possible.

(P. Stahl and J.M. Vandel, Office National de la Chasse, 01330 Birieux, France)

Germany

The lynx had been eradicated from the German Alps by the mid-19th century. Attempts to initiate reintroduction have been made since the early 1970s, but none could be carried through because of the still very controversial attitude towards the lynx.
and competition between institutions. Natural recolonization of
the German Alps should be expected sooner or later from the
Swiss or Austrian lynx populations. There are lynx in some parts
of Germany other than the Alps, but no monitoring is being
carried out. Active management and intensive public education
will be necessary to obtain and secure public acceptance of the
lynx.
(Petra Kaczensky, Linderhoferstr. 7, 82488 Ettal/Graswang,
Germany)

Italy
Records of lynx presence totalling 150 were collected in the
region of Friuli Venezia Giulia in the far south-eastern Alps from
May 1968 to May 1995. The first lynx were believed to have
immigrated to the northern part of the study area from Austria,
and signs of presence indicate a southwesterly expansion. The
area is important as a corridor between the Alps and Balkans,
where a reintroduced lynx population exists which would be able
to support the Alpine lynx population. The trend in the Julian Alps
and Pre-Alps is also increasing.
(Paolo Molinari, Via A.Diaz 38, 33018, Tarvisio, Italy)

Slovenia and Croatia
The lynx disappeared from Slovenia and Croatia at the beginning of
the 20th century. In 1973, six lynx from the Carpathian
mountains were translocated to Koceje in southern Slovenia. In
this densely forested region, where prey animals are plentiful, a
core population developed immediately and spread over Slovenia
and Croatia. In 1984, the first lynx reached the Julian Alps and
crossed to Italy in 1986/87. By 1978, the population had increased
sufficiently for hunting to be permitted; since then, 229 lynx have
been shot, and 48 deaths for other reasons have been recorded.
The intense harvest hindered further expansion of the population,
especially re-colonisation of the Alps. In recent years, the hunting
season and quota have been reduced, and in Slovenia hunting is
restricted to the core area.
(Janez Cop, Verovskova 43, 61000 Ljubljana, Slovenia)

Switzerland
From 1970 to 1976, at least 14 lynx were translocated from the
Carpathian mountains to the Swiss Alps. Another reintroduction
took place in the Jura mountains bordering France, but the two
populations are not linked. Scientific studies of the lynx populat-
began only in 1980. Not all the releases were successful. Those
in the northern and western Swiss Alps founded a popula-
tion that covered some 4,000 km² by 1981 and now covers about
10,000 km², of which 50% is suitable lynx habitat. The popula-
tion is estimated to include some 50 resident lynx. Population
pressure seems to be too weak at present to allow for further
expansion of the population, and recruitment seems hardly capa-
cable of compensating for losses among the residents because of
traffic accidents and illegal killing.
(Urs and Christine Breitenmoser and Simon Capt, Swiss Lynx
Project, 3074 Muri, Switzerland)

Lynx: New Data from the Eastern Pyrenees
by Luc Chazel*, Muriel Da Ros** and Jean Pierre Pompidor***

The Department of the Eastern Pyrenees is linked with the story
of the lynx in this mountain range. Two specimens were killed
here in the Canigou massif in 1917, and these were considered by
many authors to have been the last in the French Pyrenees and the
last in France.
In 1992, we published an article indicating that the lynx still
survived in the French Pyrenees, in three populations located in
the Western, Central and Eastern Pyrenees.
From 1990 to 1994, we were responsible for an inventory of
mammals in the three Natural Reserves of Nohèdes, Conat and
Jujols, all located in the Madres-Coronat massif. Since February
1995, L. Chazel has been the conservator of Jujols Natural Re-
serve.
Over the past five years, we have found lynx tracks and signs.
The result is clear: lynx still occurs in the massif. Tracks in the
snow and droppings were the main findings; claw marks on trees
were found only once in the Massif. But such marks have been
collected in the eastern part of the Pyrenees in Canigou massif.
Prey was rarely found, since we did not use specialised dogs
to follow the tracks and do not have radio-tracking material which
would involve catching a lynx and equipping it with a radio-
collar.

Study area
All the following information has been collected in the Madres-
Coronat massif, located in the eastern part of the French Pyrenees
between the regions of Capcir and Conflent. The study area
covers 20,000 hectares. The geographical limits are the North
Madres massif in the north, the Jau pass and Castellane valley in
the east, Northwest and Southwest Madres in the west, and the
Tet valley in the south.
Results for the period between December 1989 and January
1995:
- 10.12.89 – One dropping collected in Southeast Madress at
  1700 m (Chazel).
- 30.03.90 – Two tracks in snow found in West Coronat at 1650
  m. The sizes of the tracks were similar for the two lynx (7 cm)
  (J.P. Pompidor).
- 01.04.90 – One dropping, including many hairs, in North
  Coronat at 1,200 m (Chazel).
- 13.05.90 – One track in snow in West Coronat, with jumps of
  more than two metres, at 1,700 m (J.P. Pompidor).
- 29.01.91 – One dropping, with many hairs, in Southeast
  Madres at 1,500 m (Chazel).
- 18.04.91 – One dropping in Northwest Coronat at 1,760 m (J.P.
  Pompidor).
- 16.02.92 – One dropping in East Madres at 1,200 m (Chazel).
- 10.03.92 – Tracks of two animals in snow with indications of
  mating activity at 1,700 m in Southeast Madres (J.P.
  Pompidor).
- 15.03.92 – Track in snow at 1700 m in East Madres (Chazel)
- 15.08 to 30.09.92 – Eight sheep killed during a period at a
  month and a half, between August and September at 2,000 to
  2,400 m. We found a distance of 27 mm and 32 mm between
  the two canine marks. East Madres (Chazel)
- 05.03.93 – One track on snow at 870 m. in North Coronat
  (Chazel, Da Ros, Letscher)
- 09.05.93 – One track on snow at 1,700 m in Northeast Madres
  (Chazel, Da Ros, Borrut).
First analysis

We have studied 21 reports considered as certain. We do not refer to other cases which are uncertain. These reports are the only material concerning the lynx in the massif. They cover a large geographical area extending over nearly the whole eastern part of the Pyrenees. It seems that the lynx also occurs in the Canigou massif, but investigations have not begun there.

The average number of tracks and signs collected was 3.69/year.

The average number of observations reported was 0.46/year.

Fourteen records were collected during the period December-April, which is the most important. The snowy period is, of course, the best for finding tracks or signs, and also droppings. The rut period is included between these dates, and one of its effects is to increase local densities. Information collected during summer is rare, but occurs constantly.

Preliminary conclusions

The presence of the lynx in the Madres-Coronat massif is shown through more than 35 reports since 1985, the cases described here being the latest found. The information is linked with reports made during the period 1970-1980.

The lynx, a very elusive species, is largely unknown in our mountains and the creation of the lynx group, a local branch of the Eurasian Lynx Group, is the first attempt to study it so as to conserve it.

* Member of the Eurasian Lynx Group and head of the Pyrenean Lynx Group.
** Member of the Pyrenean Lynx Group, First Conservator of the Jujols Natural Reserve.
***Member of the Pyrenean Lynx Group, studying marmots at Jujols Natural Reserve.

Taxonomic Status of the Iberian Lynx

by Juan F. Beltrán*, John E. Rice and Rodney Honeycutt**

The Iberian lynx, Lynx pardinus, is considered the most vulnerable cat in the world, yet its taxonomic status and relationship to other lynx species is controversial (1,2). Given that the Iberian lynx is listed as "Endangered" and its populations are highly fragmented (3), an understanding of its relationship to other taxa of Lynx is important for the development of an effective conservation plan. Here, we report the first detailed molecular phylogenetic assessment of Lynx relationships. These data provide support for the Iberian lynx being a distinct species relative to its European and North American counterparts.

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Fig. 1. Phylogeny derived using a maximum parsimony analysis (branch and bound option) of aligned sequences. The single most parsimonious tree had a length of 410, CL of 0.670 and RI of 0.791. Bootstrap values (1000 replicates) are shown along branches, with the number of extra tree lengths needed to collapse a node separate by a slash (/). All specimens are unrelated individuals, and the Iberian lynxes are from two different populations in Spain. Specific details of primers and experimental procedures are available from the authors upon request.
Mutant Leopards from India

by Divyabhanusinh*

Among the large felids, partial albinism is not an uncommon phenomenon. Though there are no records of such aberrations among Asiatic lions Panthera leo persica in India, instances of albinism have been reported from South Africa (McBride 1977). There were as many as 17 instances of “white” tigers in India between 1907 and 1933 (Gee 1954) and there was the famous Mohun from Rewa and his progeny of a later day which are too well known to require elucidation. There is also one instance of a “white” cheetah Acinonyx jubatus from Central India, the only one recorded anywhere (Divyabhanusinh 1987).

As far as leopards are concerned, the phenomenon appears to be extremely rare and very few records exist. I have consolidated here all the instances I have come across which should be of interest to readers of the Journal.

1. In 1905 there was a report of a light coloured animal from Central India: “One leopard (tandra) of sandalwood (sandli) colour was killed at Jhinna [near Ajaigarh, Panna District, M.P.]. It was a very large leopard. Such a sandalwood coloured leopard has not been seen or heard of and its skin still exists today” (Ajaigarh 1914, p.47).

2. In c.1910 a white leopard was reportedly shot in Durnaon in Bihar, of which there are no details (Musselwhite 1933, p.104).

3. In 1937, there was a “likely” report of a police officer having shot a white leopard in Durnaon; there is no skin in existence of this specimen (Musselwhite 1933, p.104).

4. In 1940 a white female was shot by a Boris Lissenovitch 15 miles from Sarasaran (sic) near Durnaon. “When shot the eyes were sky blue – there was no trace of pink in the eye – and the tail shows just a suggestion of the original leopard. The animal is white at the sides and cream towards the centre with pale brown spots.” There is a picture of a white leopard in the same report (presumably the same animal) which was six years old and was 6'6" between pegs (Musselwhite 1933, pp.97, 104). The book from which three of the above records are cited was published in 1933 and nowhere in it are a subsequent edition and date mentioned. Yet, its text gives the date as February 1940 of the white leopards at number 4 above. This is clearly an error and the correct date could well be 1930. If so, the dates of the animals referred to 2 and 3 above would be different as well.

5. There is yet another instance of a male white leopard, about 6'9" in length, with sandalwood coloured light spots on its body, which was shot by a villager c.1965 in village Arangamg of Ajaigarh tehsil of Panna district, Madhya Pradesh. This is not very far from Jhinna mentioned in 1 above. The skin was acquired by the late Raja Bahadur Kaushalendra Sinhji and the mounted trophy is in the Ajaigarh Palace (Vansda, pers. comm. 1984).

6. M/S Van Ingen & Van Ingen of Myser have recorded receiving a white leopard skin from Tikanggar near Orcha in Madhya Pradesh (Van Ingen, pers. comm. to Vansda, 1967). The Maharaj of Orcha informed he has been unable to find any information regarding this specimen (pers. comm. 1991).

7. One skin of a leopard from Hazaribagh in which “the ground colour is much paler than usual, almost cream and the pattern is tan” is preserved in the British Museum, London (Pocock 1939, p.224).

8. A “white (albino) leopard” was recorded by Buchanan-Hamilton according to one source (Lydekker 1907, p.318), while another states that “Blanford cites a figure of a white one [leopard] in Buchanan-Hamilton’s drawings” (Finn 1929, pp.84-85).

9. One “skin which was normal except for having the spots light brown instead of black” has been recorded but no further details are available (Finn 1929, p.85).

From this examination it may be observed that three instances are from Durnaon and one from Hazaribagh, both in Bihar, and three are from Ajaigarh and Orcha in Madhya Pradesh.

Incidentally the only recorded white cheetah, nearly 400 years ago, belonged to the Raja of Orcha, and it is likely that it came

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from the same locality. It is noteworthy that all the instances from the Indian subcontinent which can be ascribed a locality, are from these two pockets only. However, no conclusions can be drawn from this as other instances of mutant leopards could have gone unrecorded on the one hand and on the other, mention of such instances in vernacular literature or for that matter in English literature could have gone unnoticed by me in spite of my having examined all available sources of the latter.

In addition to the instances from India, a white leopard has been reported from Rhodesia (Zimbabwe) and R.I.Pocock ‘saw one purely white skin, apparently from East Africa, in which spots were only visible in reflected light’ (Guggisberg 1975, p.220).

I would be glad to receive additional information on the subject.

I am grateful to Maharawalji Shri Digveerendrasinhji of Vansda for drawing my attention to the Ajaigarh and Orcha instances.

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Source

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Observations on the Skull of an Asian Lion

by Andrew Kitchener*

In January 1995 the Zoological Society of London donated the carcase of an adult male Asian lion. Panthera leo persica, to the National Museums of Scotland. The skin and skeleton of “Arfur”, as he was known in the popular press, are registered in the collections of the National Museums of Scotland, NMSZ 1995.005. At the time of his death, “Arfur” was approximately six years old, having been caught as a year-old cub with his mother on 1 March 1990, just outside the Gir Forest Sanctuary, and loaned to Sakkarbaug Zoo, Junagadh, India. On 22nd December 1990 he was sent on breeding loan to London Zoo until his death on 9th January 1995.

The post-cranial skeleton is normal, but the skull has two unusual features. The infraorbital foramina are characteristically divided into two in P.L. persica, either on both sides or one side of the skull (Pocock, 1939). This feature has been used to distinguish it from African lions. For example, Pocock (1939) found that 11 out of 13 skulls of persica had this character. Therefore, undivided infraorbital foramina are rare, but not unknown in the Asian lion.

The second, more striking feature of the skull is that it is severely warped. The snout has been twisted to the right-hand side and slightly downwards with respect to the cranium. This has resulted in a shortening of the right-hand side of the skull. For example, the condylobasal length is only 287 mm on the right, compared with 290.5 mm on the left. The distortion of the skull has resulted in a misalignment of the mandible, so that the lower right carnassial has moved laterally (buccally) in order to maintain alignment with the right fourth upper premolar.

It is unclear what has caused this warping of the skull. There are three possible causes, but it is not clear which is responsible for this abnormality; metabolic bone disease (N.B. the rest of the skeleton is apparently normal); trauma during early growth; or possibly a genetic defect. A genetic defect is possible, given that the population of lions in the Gir Forest went through a severe bottleneck in the early 20th century, so that deleterious genes may be prevalent in the current population.

The incidence of skeleton abnormalities in the European population of Asian lions will continue to be monitored through the Asian lion EEP (European Zoo Breeding Programme).

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Reference

“Tigers” Found to be Leopard Cats

A newsagency report that Hong Kong customs had seized 500 tiger skins exported from China sent shock waves through the conservation community – it could have represented 10% of the surviving tiger population. But the skins turned out to be of leopard cat Prionailurus bengalensis, the most numerous cat in Asia. Nevertheless, the seizure was sensational because it consisted not of 500 skins, but 500 “plates”, each made up of a number of skins. The total of skins could be 4,000-5,000.

According to Hong Kong officials, no import permit was produced, although the skins had tags labelled “Chinese CITES Management Authority” with CITES logos and serial numbers. The Chinese authorities have been asked whether an export permit had been granted.

The leopard cat, as a species, is on Appendix II of CITES, which permits licenced trade. This covers the two subspecies found in China: P.b. bengalensis and P.b. chinesis, which the Chinese say number 1.5-2 million in the country. P.b. chinesis is preferred by the trade because of its superior pattern. However, the populations of this subspecies in India, Bangladesh and Thailand are on Appendix I, which bans trade.

Cat News 24 – Spring 1996
Chinese export of leopard cat skins was suspended in April 1993 at the request of CITES pending a survey of the status of the leopard cat in China and the institution of a management programme. At the time, the Chinese authorities declared a stockpile of 803,052 skins, and they said that there had been no legal taking of leopard cats from the wild since 1989.

In a notification dated 31 August 1995, the CITES Secretariat said the suspension was lifted as it was satisfied that China "has taken or initiated the action necessary". China's CITES Management Authority had stated that no exports of skins or products not already held in stock would be permitted until the field survey had been completed and a management programme established on the basis of it.

The notification described the official tag to be attached to each trade item.

Taxidermist Gets Two Years Gaol and Large Fine

A Dutch taxidermist has been sentenced to two years gaol and a £18,500 fine ($27,775) in the UK on eight counts of illegally importing and exporting some of the world's most endangered species, including the skull of a Siberian Tiger Panthera tigris altaica, Great Philippine Eagle Pithecophaga jefferi and Babirusa Babiroussa babiroussa.

These select charges against the taxidermist, Nicolas Peter Peters, followed the discovery and seizure of more than 500 wildlife specimens, many from highly endangered species, from his remote home in Wales during August 1995. Peters, who operated a large-scale import and export taxidermy business, is not expected to be sentenced until late April. Under UK law, he could face a maximum sentence of seven years' imprisonment and unlimited fines.

TRAFFIC, the wildlife trade monitoring programme of the World Wide Fund for Nature (WWF) and The World Conservation Union (IUCN), assisted in the seizure. The raid followed an investigation by UK Police and Customs, with the assistance of TRAFFIC and the Royal Society for the Protection of Birds.

The find of the Siberian Tiger, Philippine eagle and Babirusa skulls were of particularly great concern. Tigers may number as few as 5,000 today. The Great Philippine Eagle, formerly known as the Monkey-eating Eagle, is one of the world's most endangered birds of prey, with as few as 50 remaining in the wild. The forests of the Sierra Madra mountains in Luzon are its last remaining stronghold. The Babirusa is one of Indonesia's most endangered animals, occurring only in wildlife reserves and national parks in Sulawesi. Its exact population is difficult to determine because of its timid nature, but was estimated to number only 500-1,000 in 1978. All three of these animals are banned from international trade under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Peters admitted to illegally exporting the skulls of the Siberian Tiger and Babirusa and illegally importing the skull of the Philippine eagle.

Peters also pleaded guilty to illegally exporting an Allen's Swamp Monkey Allenopithecus nigriviridis, two Crab-eating Macaques Macaca fascicularis and a Stump-tailed Macaque Macaca arctoides as well as the skulls of a Ring-tailed Lemur Lemur catta; five Squirrel Monkeys Saimiri sciureus; five Rhesus Macaques Macaca mulatta; one Senegal Bushbaby Galago senegalensis; five Common Marmosets Callithrix jacchus; a Humboldt Penguin Spheniscus humboldti; and three Lesser Flamingoes Phoenicopterus minor. In addition, he pleaded guilty to illegally importing 42 skins of 15 species of Philippine birds.

All of the specimens involved in these charges are prohibited or regulated in international trade under CITES. The specimens were among hundreds of others found packed into rooms and freezers at Peters' home near Newtown, Powys, Wales – a find that TRAFFIC's Enforcement Assistance Officer characterised at the scene as a "roll call of endangered species".

Peters has been released on bail pending sentencing.

Meanwhile, Belgian authorities raided Peters' property in Dessel and seized 300-500 skins, 700-900 skulls, and over 100 deep frozen animals and other specimens. The haul included tigers, snow leopards, and ocelots. Peters faces trial.

London Seizure of Chinese Medicines

London Metropolitan Police seized several hundred traditional medicines purporting to contain endangered species from a warehouse in west London on 30 November 1995.

The illegal medicines, displayed in a press briefing at Scotland Yard, included products claiming to contain tiger bone, rhinoceros horn, saiga antelope horn, pangolin and tortoise shell.

A business was also raided in Hong Kong, where two packets of medicines claiming to contain tiger derivatives were found.

In the UK, the sale of endangered species medicines is illegal, even if these products cannot be proved to contain genuine derivatives but claim to do so. In addition, international commercial trade in derivatives from tigers, rhinos and some species of orchids and totoises is prohibited by CITES.

The UK seizure is part of an ongoing, multi-agency initiative, code-named Operation Charm, to stop the trade in medicines containing endangered species in the UK. In February, the operation involved raids of 132 oriental pharmacies and supermarkets in three UK cities, with TRAFFIC's assistance. Among items seized were half a rhinoceros horn, bones labelled as genuine tiger bone, gall bladders assumed to be from bears and hundreds of illegal medicines. At least six of the shopkeepers have since been prosecuted, receiving fines ranging between £50 and £3,000.

Operation Charm was initiated in response to an undercover TRAFFIC investigation on the illegal trade in these medicines in 1994. The probe revealed that medicines claiming to contain tiger bone, rhino horn and bear bile were being stocked and sold in Chinese pharmacies, supermarkets and craft shops in four major cities. Such products were found in 50% of the shops visited by TRAFFIC investigators.

Cloude leopards seized in Nepal

Acting on a tip-off, Nepali officials discovered three clouded leopards Neofelis Nebulosa and one leopard alive in the house of an Indian animal dealer. According to TRAFFIC Bulletin, he claimed the animals had been brought from Patna in India's Bihar state (editor: which far from known clouded leopard habitat). It was suspected that the animals were to be sold for export to China.

Source: TRAFFIC International
US Public Warned of Possible Dangers in Tiger Medicines

The US Fish and Wildlife Service (FWS) in Los Angeles, California, is conducting a public education program to inform US citizens that certain products for sale in Asian medicine shops may contain parts of endangered or threatened wildlife, as well as toxins potentially harmful to human health. FWS chose Los Angeles as the focus of the pilot project because the city is home to one of the oldest and most diverse Asian communities in the United States.

Recognising that the world’s wild tigers and rhinos are perilously close to extinction, the outreach project was a joint effort among federal, state, and non-governmental agencies to provide new information to consumers and to clarify US law enforcement responsibilities for protecting endangered species.

The Endangered Species Act and CITES prohibit the importation of products containing rhino and tiger parts into the United States. However, international illegal trade continues to grow to satisfy the huge demand for traditional Oriental medicines in Asian communities all over the world.

Several non-governmental organizations, including TRAFFIC USA, WWF, the American Zoo and Aquarium Association, the Environmental Security Network, the Wildlife Conservation Society, and the Humane Society are developing complementary awareness programs.

FWS is working in close collaboration with the Los Angeles Unified School District, the Los Angeles Zoo, TRAFFIC and WWF to develop a curriculum that will be offered to middle schools and adult education programs and workshops. These groups are preparing materials that will provide Asian students and their families with a greater understanding of wildlife conservation and product use. Teachers will receive training enabling them to explain the health risks associated with the use of Oriental medicines, the laws protecting endangered species, and the reasons that possession and sale of products containing parts of endangered species are illegal.

Many believe that Oriental medicines containing tiger bone or rhino horn have therapeutic powers imparted from the animals’ vigor and strength. Upon examination of a sampling of medicinal products purporting to contain tiger or rhino parts, the Clark R. Bavin National Fish and Wildlife Forensics Laboratory reported that, although no measurable amounts of either endangered species were present, a number of foreign substances and potentially toxic levels of poisons, such as arsenic and mercury, were found in the products.

For many years, law enforcement agents from FWS and the US Customs Service have worked together at ports throughout the United States to halt the entry of illegal wildlife products into the United States. Now, FWS and the US Food and Drug Administration (FDA) are forging a partnership to formalize their working relationship in monitoring and regulating the importation of parts and products of wildlife. FDA is responsible for ensuring that these products do not contain harmful substances, filth, or mislabelled or unidentified ingredients. The partnership will add a new dimension to the effort to safeguard public health and combat the use of endangered species in consumer products. California’s Food and Drug Branch is also working with FWS to alert consumers to the potential toxicity of certain Asian medications.

(U.S. Fish and Wildlife Service press release, 19 October 1995)

European Union Again Postpones Leghold Trap Ban

The European Union has postponed for the second time a proposed ban on the use of leghold traps in the Union and the import of pelts and manufactured goods from wild species from countries which use such traps. Canada lynx Lynx canadensis and Eurasian lynx L. lynx are among the species which would have been covered by the ban.

Originally due to be in force from 1 January 1995, the ban was postponed to 1 January 1996. But with the new date looming, the EU Commission again postponed the ban, this time indefinitely. It said that, because a technical committee of the International Standards Organization (ISO) had halted development of international humane trapping standards, the Commission, together with Canada, the USA and Russia (the principal countries affected) had established a working group to develop them. The proposed import restrictions were therefore postponed indefinitely to allow the standard development process.

The Commission added that it was appropriate to see that the interests of indigenous peoples were not negatively affected because exploitation of fur-bearing animals formed an important part of their traditional way of life and economy.

Cat Specialist Group on the World Wide Web

The Cat Specialist Group now has a home page on the World Wide Web. Find it at

http://www.iucn.org/themes/ssc-cats_home.html

The page gives details about the Cat Specialist Group; Cat News; Manifesto: Saving the Wild Cats; and a summary of the contents of Wild Cats: Status Survey and Conservation Action Plan, compiled and edited by Kristin Nowell and Peter Jackson (IUCN 1996).

Species data sheets from Wild Cats will be posted. It is planned to put up the complete contents list of Cat News, starting with issue no. 1 (July 1984), and possibly the full issues in due course.

Have a look too at http://www.Stigers.org put up by the Minnesota Zoo with support from the EXXON Tiger Fund.
Red List Status of Marbled Cat and Texas Jaguarundi and Ocelot

The marbled cat was omitted in the report on the new Red List categories for wild cats in some issues of Cat News 23 (p.21). The co-authors of *Wild Cats: Status Survey and Conservation Action Plan*, compiled and edited by Kristin Nowell and Peter Jackson (IUCN 1996) have recommend it be classified as “Data Deficient”.

**Marbled cat, Pardofelis marmorata Svertzov 1858**

<table>
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<tr>
<th>Old Red List</th>
<th>Insufficiently known</th>
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<tr>
<td>New Red List</td>
<td>Data deficient</td>
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**Justification**

Almost no data exist on the marbled cat, which lives in tropical forests in south-east Asia. It appears to favour moist forest, and has been recorded in logged and secondary forests. There are few records on which to base a distribution map, and it must be considered rare. It was photographed for the first time in the wild in Thailand’s Huay Kha Khaeng Wildlife Sanctuary in 1993. Deforestation poses a threat to the cat. Although some opportunistic hunting may occur, skins are seldom seen in local markets.

**Distribution**

- India; Nepal; Bhutan; Myanmar; China; Thailand; Cambodia; Laos; Vietnam; Malaysia (including Sabah and Sarawak); Indonesia (Sumatra and Kalimantan).

Following consultations with field specialists, Texas jaguarundi and Texas ocelot have been classified as “Endangered” instead of “Data Deficient”.

**Species**

- *Texas jaguarundi Herpailurus yaguarondi cacomiti*
  - Red List: Endangered

**Justification**

- Probably fewer than 100 in Texas and rare in north-east Mexico. Habitat fragmented and dwindling (Teweis, pers.comm.).

**Distribution**

- Southern Texas, north-east Mexico

**Species**

- *Leopardus pardalis albescens*
  - Red List: Endangered

**Justification**

- Estimated to number 80-120 in Texas with fewer in north-east Mexico. Habitat fragmented and dwindling (Teweis, pers.comm.).

**Distribution**

- Southern Texas, north-east Mexico.

**Correction**

In the summary of Red List categories, the Texas ocelot was erroneously put in the genus *Lynxchilurus*. It should be *Leopardus*.

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**Book Reviews**

The End of a Trail: The Cheetah in India
by Divyabhanusinh
Banyan Books, New Delhi

One evening late in 1947, the Maharajah of the State of Korea in central India spotted three cheetahs in his headlights. He picked up his rifle and shot them all — with two bullets. They were the last physical evidence of cheetahs in India, although a handful of sightings were reported into the 1950s. The Maharajah was proud of his exploit and asked for it to be recorded in the Bombay Natural History Society Journal. It was; but the Editors declared that they were “so nauseated by the account of this slaughter that their first impulse was to consign it to the waste-paper basket. Its publication here is intended in the nature of an impeachment.”

Three hundred years earlier the Moghul Emperor of India, Akbar, had a collection of 1,000 cheetahs, and his son, Jehangir, wrote that Akbar had owned 9,000 during his lifetime. They were used for hunting blackbuck antelopes and gazelles. It was the cheetah’s heyday, but Divyabhanusinh notes that the demand for cheetahs by the Moghul rulers took a heavy toll on the wild population. Hunting with cheetahs, on a less lavish scale, continued in the first part of the 20th century, but then often with imported African cheetahs.

Divyabhanusinh has devoted long years to research on the history of the cheetah in India. Starting with prehistoric cave paintings, where the cheetah was among many animals depicted, even bees and scorpions, he has gleaned references to cheetah-like animals in Sanskrit and Classical Greek and Roman literature. Early Muslim invaders, who established their rule in India, knew the cheetah from Persia. Accounts from the time of Muhammad Ghori around 1200, mention the *yuz*, Persian for cheetah. A few years later, references indicate that hunting with cheetahs was known to the invaders. But it was with the establishment of the Moghul dynasty in the 16th century that the cheetah became celebrated. Akbar was given a cheetah in 1555, when he was 13. He became passionately interested in hunting with cheetahs, and captured them himself in the wild.

Akbar’s son, Jehangir, was also an enthusiastic hunter with cheetahs, and a keen naturalist. He provided the first record of successful breeding by cheetahs in captivity: “It is an established fact that cheetahs in unaccustomed places do not pair off with a female, for my revered father once collected together 1,000 cheetahs. He was very desirous that they should pair, but this in no way came off. He had many times coupled male and female cheetahs together in the gardens, but there, too, it did not come off. At this time, a male cheetah, having slipped its collar, went to a female and paired with it, and after two and a half months three young ones were born and grew up. This has been recorded because it appeared strange.”

Divyabhanusinh notes that there are no other records of cheetahs breeding in captivity until African cheetahs had young in Philadelphia Zoo in 1956.

Illustrated manuals on catching, training, and caring for, cheetahs were produced in India. One produced by the Baroda Court in 1924 distinguished the Indian cheetah as having a black tip to its tail, compared with an African cheetah’s white tip. Cheetahs in 67 out of 89 Moghul period paintings have black tips. White tips appear in later illustrations, although recent photos of Iranian cheetahs examined by the author showed black tips. He concludes that most Indian cheetahs had predominantly black-tipped tails, with the possibility of a very small white or light yellow patch at the very end.

Cat News 24 — Spring 1996
For hunting, trained cheetahs, collared and with their eyes hooded, were taken out on bullock carts. When close enough to a herd of antelope, the hood was removed, and the cheetah streaked off for a kill. It would be rewarded with a ladle of blood. The technique survived into the 20th century, when motor vehicles sometimes replaced the carts.

The British in India apparently had little interest in hunting with cheetahs, although there are some interesting accounts. But they did sometimes shoot them and spear them from horses.

With the coming of the 20th century, the Indian cheetah was very rare and Indian princes began to import African animals for coursing. Divyabhanusinh calculates that about 200 were imported between 1918 and 1945. But with the end of the Second World War, British withdrawal and the integration of the princely states into independent India the sport died out – as did the Indian cheetah.

Divyabhanusinh is one of many Indian wildlife enthusiasts who dream of reintroducing the cheetah; he reviews the options and concludes that it could be done if sufficient protection were provided. However, under existing laws only the government could undertake a project, and Divyabhanusinh doubts the existence of the political will. In fact, the then Director of the Wildlife Institute of India, H.S. Panwar, and the resident FAO wildlife expert, Alan Rodgers, declared in a review of protected areas: "There are no suitable areas to reintroduce cheetahs into a 'wild' situation in this zone (Indian desert) or elsewhere in India. A viable 'wild' cheetah population of 50 animals would need some 400 km² of grassland/scrubland habitat with a relatively dense prey base (chinkara gazelle etc.) and no domestic stock. Such areas no longer exist and so reintroduction on this scale is clearly not possible."

Tables and appendices in this book provide extensive background information and data about the cheetah in India. Special mention must be made of the magnificent illustrations: cave drawings, Egyptian murals, Moghul paintings, drawings from cheetah books, and historical photos.

India lost the cheetah, but it remains the world's richest country in wild cats, with 15 species still to be found there. Given the human pressure on India's wild places, this is remarkable. But with the population rapidly approaching one billion and little sign of deceleration, one fears for the future.

Peter Jackson

The Tigers of Trengganu
by A. Locke
Monograph No.23
Malaysian Branch of the Royal Asiatic Society
Kuala Lumpur, Malaysia
ISBN 967-9948-05-6

There are many book about tigers in India, but there have been very few about the tigers of south-east Asia. The Tigers of Trengganu (a State in north-east peninsular Malaysia) is one of the few, and the only one for at least the past half century. It was published in 1954, but has long been out of print and virtually unobtainable. My own copy disappeared. But one day a good friend mentioned that one of his favourite books was about tigers in Malaysia. I asked to borrow it – yes, it was mine. I did not have the heart to tell him, and so I just made a photocopy and reluctantly handed it back.

Now we must be grateful to the Malaysian Branch of the Royal Asiatic Society for republishing Locke's book as a monograph, making it available to all interested in tigers.

In 1949, Locke was appointed a District Officer of Kemaman in Trengganu. He soon realized that he had to do something about heavy livestock predation by tigers, which had increased in number during the Japanese occupation. Furthermore, Malays were not permitted to hunt because of the war going on between the British administration and communist militants, and farmers were suffering considerable losses.

Locke set out to learn what he could about tiger behaviour, visiting kills and spending hours discussing tigers with local people.

"Eventually, I became so engrossed in these absorbing animals that the opportunity to study them assumed greater importance than the need to shoot them, although shoot them I did when I must...I have rarely shot a tiger without a pang of regret that another courageous, strong and graceful creature has died."

Malay District Officers organized an intelligence system to inform him about tiger movements and kills, and Auxiliary Policemen volunteered to provide him with protection from communists in the forest.

Locke found the tiger extremely difficult to study – "he is evasive as a shadow, particularly during the hours of daylight... one could only learn of his habits by piecing together scattered, sometimes meagre, facts collected patiently over a period of time."

Inevitably, Locke was asked how many tigers there were in Malaya. He replied that with a year's leave, sufficient funds and complete freedom of movement he would guarantee an answer that would be 50% accurate. Nevertheless, without these facilities, he spent an evening trying to assess the number. He came up with a total of nearly 3,000, which he declared "astonishing". He estimated tiger range in the peninsular as 50,599 m² (131,000 km²). At that time, forests were little disturbed. Today, there are about 600 tigers, according to the Wildlife Department, and although there is no recent estimate of tiger range, much of the lowland forest which was tiger habitat has been cut.

Locke has a lengthy chapter on superstitions and legends concerning the tiger. In it he discusses the use of tiger bones and other parts for medicine, not only by Chinese residents, but also by Malays. Whiskers and claws were in demand as charms, and Locke had to wrap the heads of tigers he shot to prevent the whiskers being immediately taken. He quotes from various works on the uses of tiger parts, and states that for Malayan hunters tiger bones had great saleable value.

Of course, Locke tells exciting tales of his tiger hunts. Most were to destroy livestock killers, but he also had to go after man-eaters, which he declares as infrequent. His account of ending the career of the Jerngau man-eater is in the Jim Corbett tradition. In all, he shot 22 tigers between 1949 and 1951.

When Tigers of Trengganu was published, Malcolm Macdonald, then Britain's Commissioner-General in Southeast Asia, said it was likely to become a Malayan classic – it is.

Peter Jackson

Of Tigers and Men: Entering the Age of Extinction
by Richard Ives
Nan A. Talese/Doubleday
ISBN 0-385-47816-x

"Only hopeless romantics can now possibly believe that after another ten to fifteen years have passed, the wild tiger will be anything more than a memory". Richard Ives may exaggerate the shortness of the time left for the tiger, but few of those knowledgeable about the current situation would disagree that it is critically endangered. The tiger's habitat is being increasingly
fragmented, degraded and often destroyed, and the tiger is intensively poached for its bones and other parts for oriental medical systems.

Few tiger populations now number more than 100-200 and many reserves contain only a few dozen. Since the big cat continues to reproduce well, it could bounce back, if given the chance. That means cracking down on poaching and illegal trade in tiger parts, and ensuring the conservation of habitat and its biodiversity. Despite many peoples' commitment to saving the tiger, and the availability of considerable financial aid, conservation efforts on the ground are far from adequate. Unless rigorous efforts are made by tiger range countries, the tiger is bound soon to reach a stage from which recovery is impossible. The five remaining subspecies may linger on in the dwindling forests for several decades, as the South China tiger has done, despite attempts to exterminate it in the 1950s and 1960s. But they will indeed be doomed.

Ives bases his prediction on quotations from a draft text by a mysterious, tiger-obsessed Indian businessman he calls "my informant". This gentleman has certainly delved into tiger literature, but his declaration that there are only 700 tigers left in India today cannot be taken seriously; even the gloomiest of the real tiger experts puts the total at about 2,500.

Furthermore, the informant states that India's Project Tiger produced inflated tiger population figures because it was "primarily financed by international organizations" - wrong; the Indian government invested the rupees equivalent of over $30 million in the project, and the only international aid was $1 million from WWF. Census figures were undoubtedly subject to some exaggeration, but the pressures responsible were domestic, not international.

Ives is a good descriptive writer, and, reading his text, one can re-live the pleasures and trials of travelling in the wild in Asia. But he indulges in odd diversions which have nothing to do with his overall theme; for example, several pages on the strange history of the rulers of the former Bharatpur State in India. One surprising error for a nature tour leader is to describe the nilgai, the biggest antelope in India, as the "four-horned antelope", a diminutive species.

While it cannot be rated as one of the great books on tigers, it has received impressive reviews in North America and Britain. Hopefully, it will get the message about the perilous plight of the tiger to a larger audience than that usually achieved by wildlife books.

Peter Jackson

Snow Leopard Survey and Conservation Handbook
by Rodney Jackson and Don Hunter
International Snow Leopard Trust (ISLT), Seattle, USA

One of my favourite animal books during my childhood in the 1930s had a picture of a snow leopard in a zoo. The caption said it was threatened with extinction. Fifty years ago, I still have the book, and, happily, the snow leopard still roams the high mountains of Asia. The 1930s writer had little information on which to base his assessment, which was probably based on the difficulty of finding snow leopards, and the inaccessibility of most of their habitat. Even in the 1960s and 1970s, the early IUCN Red Data Books could only suggest that there might be a mere 250 in the 2,500 km-long Himalayas, with only scattered reports from elsewhere, usually of skins in markets.

The snow leopard remains an elusive, haunting image in the icy mountains, but we are better informed about it, thanks to the dedicated work of the International Snow Leopard Trust (ISLT), based in Seattle. Under the banner of this most active field conservation organizations, an expert team of wildlife biologists has been working for years in most of the countries in the range to produce a solid database. They have worked in close cooperation with wildlife departments and specialists from Afghanistan, Bhutan, China, India, Kazakhstan, Kyrgyzstan, Mongolia, Nepal, Pakistan, Russia, Tajikistan and Uzbekistan.

The ISLT has throughout placed emphasis on promoting snow leopard conservation by providing technical assistance and training. The "Snow Leopard Survey and Conservation Handbook", has been prepared by two biologists of unmatched knowledge and experience - Rodney Jackson and Don Hunter - with input from local specialists. In their foreward, they stress the importance of the snow leopard as an indicator of the health of high altitude ecosystems, which support a unique flora and fauna. But increasing human encroachment threatens biodiversity throughout the region - and the snow leopard.

The Handbook is essentially a working manual, starting with a review of the general ecology and status of snow leopards and their habitat. The body of the work consists of detailed instructions, with diagrams, tables and illustrations, for surveys. It explains how to identify tracks, scats, scrapes and other sign of snow leopards and associated animals; carry out transects; describe terrain; assess habitat condition; and provides formats for reports. Conservation and management methods are explained, including anti-poaching action. There is a valuable 10-page list of references.

The data collected will be fed into the Snow Leopard Information Management System (SLIMS) computers, which are being provided to all the range countries by the ISLT.

The cat still has a potential range of over three million km², but a mere 180,000 km² is protected - and that largely nominally. The authors reckon that good snow leopard habitat (with greater than 30° slope, and away from human disturbance) covers only 550,000 km². All available habitat is increasingly fragmented, and the snow leopard is poached for pelts, bones, and other body parts, and killed by pastoralists in retribution for attacks on livestock. At the same time, its natural prey base of bharal or blue sheep (Pseudois nayaur) and ibex (Capra ibex) is dwindling rapidly.

Meanwhile, he and his wife, Sophy, founded the Tiger Trust in Britain to raise funds for anti-poaching brigades in Russia and other tiger conservation projects.

Peter Jackson

Fight for the Tiger
by Michael Day
Headline, London
ISBN 0-7472-1548-0

The name "Michael Day" has become well-known among those involved with tiger conservation, a dapper figure at conservation meetings pressing the tiger's case. Day has written a swashbuckling book about his efforts to uncover and publicize the trade in tiger bones, penises and other parts for Oriental medicines, which threatens to drive the tiger to early extinction. They led him through Thailand, Taiwan, China, the Russian Far East, India, often posing as a buyer, while secretly filming the negotiations and the products offered. Then on to meetings of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), where he displayed his findings to support demands for stronger measures to halt the deadly trade.
In these circumstances, combined with increasing human population and ecological degradation in the mountains, it is clear that the snow leopard must be declining in numbers, even though there are no data-based earlier estimates. Indeed, the suggested current population range of 4,500-7,500 is far higher than thought barely 20 years ago.

Peter Jackson

Cat Specialist Group

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*Cover: Sand cat *Felis margarita* in the Sahara. Photo: Alain Dragesco-Joffé*