# CAT NEWS 13
## July 1990
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Cover: Ocelot by Marcelo Aranda

(Editor: Initial mailings of CAT NEWS 12 wrongly credited the cover picture of a Siberian tiger in Lazovsky Reserve, USSR, to Kaplanov. It was taken by Dimitrey N. Mesentsev)

CAT NEWS is the newsletter of the Cat Specialist Group of the IUCN Species Survival Commission. It is published twice a year, and is available to subscribers to FRIENDS OF THE CAT GROUP. The current subscription is SF30 or US$30 p.a., payable to The Chairman, IUCN/SSC Cat Specialist Group, World Conservation Centre, 1196 Gland, Switzerland. Contributions, papers, press cuttings etc. about wild cats are welcome. CAT NEWS is produced with financial assistance from WWF and Friends of the Cat Group.
Editorial

Conserving the Amur Leopard

The plight of the Amur leopard and proposals for conservation action are occupying many minds these days. In this issue of CAT NEWS Alan Shoemaker, International Leopard Studbook Keeper, reviews the situation, while Roland Wirth expresses the concern about the purity of the captive population as a result of the heavy representation (more than 70% according to Shoemaker) of studbook #2 and #3 held at the Frankfurt Zoo in Germany. Taxonomist Colin Groves judges from photographs of an offspring that #2 has genes of the Nepal leopard Panthera pardus ssp nigrum. Clearly then the Russian project managers are right in deciding that so-called Amur leopards from zoos should not be used for any release programmes. However, Shoemaker reports that they have suggested that the zoo-born animals be used for training and release technology at a site in Ussuriyek. Whatever the merits of this proposal, it is essential that possible hybrids should not be kept in any facilities, or used in any circumstances, where they might escape into the wild.

Tigers: Good News and Bad News

Human face-masks on the back of the head continue to deter the famous Sundarbans man-eating tigers. Only three men with masks out of thousands working in the Sundarbans have been killed by tigers in the past three years. In one case the tiger attacked from the side, while it is not certain that the other two were wearing their masks. Not surprisingly, the cheaply produced masks have become popular among those going into the mangrove forests, according to Pranabes Sanyal. A possible problem is careless use born of a growing sense of security.

The bad news is the stoppage of an important tiger research programme in southern India by the Karnataka State Government. Five tigers were found dead in a few weeks earlier this year in Nagarhole National Park. One of them had been radio-collared as part of a study of carnivores by Ullas Karelin and Melvyn Sunquist. It had been specifically recorded as old and crippled when caught and its early death predicted. The others died of natural causes. However, the Karnataka Forest Minister, Mr B. Basavalingappa, blamed the researchers for all the deaths and stopped the project, despite protests from the central government’s Minister for Forests and Wildlife, Mrs Maneka Gandhi, and Indian wildlife biologists. The Minister’s decision represents a setback for wildlife research programmes which are so urgent in India. Efforts are continuing to restart the project, in which four tigers and three leopards have been radio-collared so far as part of a carnivore study following on from Karanth’s research on ungulates in Nagarhole.

Generally speaking, the situation of wildlife and forests in India has become increasingly critical in the face of the rapidly increasing human population and political factors. And there is some anxiety about Nepal in the light of recent political changes. Both countries are of major importance for wildlife conservation, and have had impressive records in the past two decades. It would be a tragedy if their achievements were destroyed.

A gloomy view of the tiger’s future was taken by Ronald Tilson in an article in NEWSDAY, which is reproduced here. Tilson is planning a second international tiger symposium as a follow-up to that held in 1986 in Minneapolis-St Paul. The aim is to develop a Global Tiger Masterplan.

Cat Action Plan

Paul Joslin has become Director of Wolfhaven in Washington State. Along with congratulations on his appointment, we have to express regret that his duties mean he can no longer continue as senior compiler of the Cat Action Plan. Paul and Gail Foreman, the Cat Group’s Research Librarian, have virtually completed literature surveys, many of which have been circulated for comment, and other group members have been working on plans for their species. Responsibility for the compilation of the plan has been taken over by - Yours Truly

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Cat News N° 13, July 1990
Keeping an Eye on Maneaters

The annual toll of men killed by tigers in India’s Sundarbans Tiger Reserve fell to only 12 in 1989, reports Pranabes Sanyal, Assistant Chief Conservator of Forests, West Bengal.

This compares with 30 in 1986 before the introduction of human face masks for workers to wear on the back of their heads. Only two men who had masks were killed in 1989. However, it is not always known whether the person attacked was actually wearing a mask at the time.

Sanyal says that the rubberized plastic masks, which were introduced in 1987 as an experiment to deter the notorious Sundarban maneaters, have become very popular and their use is now compulsory.

About 8,000 men receive permits to enter the tiger reserve each year to collect wood and honey and for fishing. A 1987 study by Vinod Rishi, then Field Director of the reserve, reported that tigers, which normally stalk and attack prey from the rear, had been seen tracking men wearing masks, but did not attack them. In that year 22 men were killed and 11 injured by tigers, but only 2,500 of the 8,000 who entered the reserve had masks. In 1988, when use of masks was more widespread, the toll fell to 16 dead and one injured. None of them was wearing a mask.

Figures for the death toll in the neighbouring Bangladesh Sundarbans, where the masks have not yet been introduced, were not available at the time of writing.

After tiger hunting was banned in the early 1970s India’s Project Tiger authorities launched a major effort to control the maneating problem in the Sundarbans. Following speculation by German biologist Hubert Hendrichs that drinking the saline water of the delta region might account for the abnormal aggressiveness of the tigers, ponds were dug to provide fresh water, but the tiger toll in India in 1975 was still 63. It then dropped to 40 in 1976, 37 in 1977, rose to 48 in 1978 and 52 in 1979. In that year a ban was put on collection of phoenix palm Phoenix paludosa, which forms a dense vegetation ideal for concealing tigers. Since then there has been a downward trend. Electrified human dummies draped with human-scented clothes were introduced in 1984 to shock attacking tigers and create fear of people.

Tiger Prey in the Sundarbans

Sanyal disputes the suggestion by Arjan Singh in CAT NEWS 12 that Sundarbans tigers become maneaters because there is insufficient natural prey. He states that scat analysis indicated that wild boar Sus scrofa formed 40% of tiger prey, and deer Axis axis 35%. Water monitors Varanus salvator, crabs, fish and turtles accounted for 17.5% and lesser cats 1.5%.

During his six years as director of the reserve Sanyal calculated from pugmark records of maneating incidents that about five per cent of the tigers were maneaters. (Editor: according to the 1989 census there were 269 tigers in the Indian Sundarbans).

Sanyal says that a year-long population survey of herbivores on stratified sample islands produced a spotted deer biomass of 580 kg/km². Deer hoofmarks are very frequent along the muddy banks of narrow creeks, he declares, adding that it is incorrect to judge population density of deer and pigs only from the vicinity of the very few sweet water ponds.

Sanyal further states that the Sundarbans creeks act more like firelines in forest rather than as barren areas for wildlife. Since tigers in the area are semi-aquatic, it is a misunderstanding to deduct the water area from the total area of the Sundarbans.

Self-help Medical Treatment by a Tiger

An injured tiger in India’s Kanha National Park was seen to make a paste of clayey-loam soil with its saliva and roll in it to apply it to an unreachable wound, according to A.S. Parihar, the reserve director.

In a note in the Bombay Natural History Society Journal, Parihar said he saw the tiger’s injury above the left shoulder, just below the vertebrae, when it was mating. It scratched the wound with its left rear paw, apparently aggravating it. Parihar said he followed the tiger to the vicinity of a waterhole, where it appeared to be eating something. It rolled over and got up. Parihar saw the dark coloured paste on its lips. The tiger then took water from a second water hole, moved to some open ground and started chewing the soil. The tiger then spat out the paste and rolled in it so that it was applied to the wound.

Parihar notes that tigers often lick wounds, or apply saliva with the front paws, thus cleaning the wounds and keeping away flies. He speculates that tigers treat unreachable wounds, not by eating soil as one of his friends had suggested, but by applying soil in a paste mixed with saliva.


Tiger Studbook 1989

There were 669 Siberian or Amur tigers (Panthera tigris altaica) registered in the International Tiger Studbook at the end of 1988. The total included 296 males and 373 females. The studbook, prepared by Dr Siegfried Seifert, Director of the Leipzig Zoological Garden and Mr Peter Müller, Assistant Director, also lists 162 (78.84) Sumatran tigers P.t. sumatrae; 143 (69.74) Bengal tigers P.t. tigris; and 51 (33.18) South China tigers P.t. amoyensis.
Results of Tiger Census in India

The 1989 census of tigers in India produced a total of 4,334 compared with 4,005 in 1984, according to R.L.Singh, Director of Project Tiger.

1,327 tigers were accounted for in the 18 tiger reserves, which cover an area of 28,017 km² (core areas 12,633.6 km²). Singh says that about 50,000 officials of the State Forest Departments and equal number of non-officials, including college students and voluntary organisations, took part in the weeklong census.

The 18th tiger reserve was established in January 1990 on the northern border of Bihar state. Named Valmiki Tiger Reserve, it covers 840.26 km² adjoining the Royal Chitwan National Park in Nepal. The reserve has the legal status of a wildlife sanctuary, but the Bihar government has announced its intention to upgrade it to national park status. Valmiki Tiger Reserve contains shorea robusta forest; moist, mixed deciduous forest; Barringtonia swamp forest; cane brakes; and alluvial grasslands.

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Totals 28,017 4,334 4,005 3,015 1,827

Reserves 28,017 1,327 1,121 711 605 318

Source Project Tiger
Tigers and Leopards in Thailand

The future of tiger and leopard populations in Thailand is threatened by lack of comprehensive planning and forest management, according to Alan Rabinowitz of Wildlife Conservation International. He says that rapid and large scale loss of forest, as well as hunting pressure, have restricted large cat populations to a limited number of forest pockets.

"The future is particularly precarious for the tiger, since forested riverine habitat is often the first area to be encroached upon or inundated by reservoirs, and large ungulates are often the first species to be hunted out of an area," he says. "If Thailand wishes to conserve its remaining large cat populations, comprehensive forest management and protection must be implemented to maintain the integrity of wild riverine areas and complete mammalian assemblages."

Rabinowitz notes that of the six species of deer that have occurred in Thailand in recent times, four are extinct or very rare - Fea's barking deer Muntiacus fea, hog deer Axis porcinus, Eld's deer Cervus eldi and Schombrugh's deer Cervus schombrugki.

Rabinowitz completed a two-year study of the density and behaviour of large cats in dry tropical forest in Huay Kha Khaeng Wildlife Sanctuary in March 1989.

During his study Rabinowitz radio-collared and tracked three leopards, and followed two more, as well as a tiger by spoor. The male leopards had slightly overlapping home ranges of 27-37 km², while female ranges were 11-17 km². The tiger ranged over a minimum area of 33 km², encompassing the range of a male and female leopard. Major prey of both the tiger and the leopards was barking deer Muntiacus muntjak, but they also took wild boar Sus scrofa, sambar deer Cervus unicolor, porcupine Hystrix hodgsoni and Atherurus macrourus and hog badger Arctonyx collaris. Leopards had a bigger prey diversity, mainly in the smaller animals. Monkeys Macaca spp and Presbytis spp were the second most frequent prey items in leopard faeces, but were not often found in tiger faeces.

The leopards did not show subordinate behaviour to tigers, unlike in Nepal's Royal Chitwan National Park. Rabinowitz suggests that this is because tigers made low use of the study area, making social dominance unnecessary. The estimated tiger density of one per 100 km² was 3-4 times less that estimated for some other tropical areas. This may have been due to the dry forest and lack of permanent water sources in the study area. Leopards, with a density of one to 37 km², have been found to adapt well to drier areas with low cover.

Rabinowitz notes that, after barking deer, the crestless Hima-

Rabinowitz's discovery of the white-handed gibbon Hylo-


Tiger Research

A major tiger research project in India has been halted amid bitter controversy following the discovery of five dead tigers in the space of a few weeks. One of the tigers had been radio-collared as part of the project, which is being carried out by Cat Group members Ullas Karanth, a leading Indian wildlife biologist, and Melvyn Sunquist of the University of Florida.

The tigers were found dead in the Nagarhole National Park in Karnataka State, South India, between 6 March and 4 May. The State Forest Minister, Mr B. Basavalingappa, announced the withdrawal of permission for the project and declared that Karanth and Sunquist would be fined Rs50,000 for each dead tiger, although he acknowledged that four of the tigers were not involved in the project. He rejected a call from Mrs Maneka Gandhi, Minister for Wildlife and Forests in the Central Government in Delhi to allow the project to continue.

Karanth obtained a court order which enabled him to resume work, but then a new government order forced him to stop radio-tracking.

According to an independent investigation ordered by the central government, the tigers died of injuries sustained in fights and not through overdoses of drugs, as had been alleged in the state assembly. The only tiger with a radio collar died of starvation and exhaustion two months after its capture by tranquillisation.

In a public statement Karanth said that, in a place like Nagarhole, where tigers were abundant, some died every year from natural causes, such as old age, disease, injuries and fights with other tigers. The five deaths should not cause alarm because they seemed to be the result of natural causes. He explained the normal conflicts which arise between tigers for space and social domination.

Project Halted

Karanth said that single dead tiger with a radio collar was a very old male tranquilized on 7 January. It was found to have worn out teeth, one blind eye and old, healed gunshot wounds, as well as severe recent wounds from a fight with another tiger. Although its wounds were treated by a veterinarian, it was expected that it would die as a result of impairment of its hunting abilities. Of the other tigers, one was a sub-adult, which was probably the victim of infanticide, two were young adults killed by more powerful rivals; and one might have died due to disease.

Karanth further pointed out that wildlife research involving chemical immobilisation and radio collaring had been identified as a national priority in the government's National Action Plan for Wildlife Conservation. The Wildlife Institute of India was using the techniques for research on lions and elephants. He added that the genetic and demographic management of small tiger populations required full understanding of their ecology, behaviour and genetics. Otherwise they were doomed to extinction in the view of international conservation biologists and tiger specialists. He said that the project had radio collared four tigers and three leopards safely since December 1989. None had died during capture or immobilisation.

Indian wildlife biologists have supported Karanth, among them J.C. Daniel, Curator of the Bombay Natural History Society, who declared that the decision to stop the project seemed to be political. "We hope better counsel prevails on the government."

The Chairman of the IUCN Cat Specialist Group, Peter Jack-

Karanth, who has been a critic of Indian tiger censuses, notably
in Karnataka's Bandipur Tiger Reserve, received his master's degree from the University of Florida for a study of the population structure, density and biomass of large herbivores in Nagarhole. The large carnivore study was a natural corollary for his doctoral work. Sunquist gained his doctorate for studies of tiger in the pioneer Smithsonian Tiger Ecology Project in Nepal's Royal Chitwan National Park.

**Global Tiger**

Plans are advancing to develop a Global Tiger Master Plan to conserve the tiger in the wild and in captivity, reports Ulysses S. Seal, Chairman of the IUCN Captive Breeding Specialist Group. A draft outline plan by Seal, Peter Jackson, Chairman of the Cat Specialist Group, and Ronald Tilson, Conservation Director of the Minnesota Zoological Garden, was published in TIGERS OF THE WORLD (1987), the proceedings of a symposium in Minneapolis/St Paul in 1986. Seal said that the plan was reviewed in the light of recent advances in computer technology and the expansion of scientific tiger breeding programmes.

"Our captive propagation and species survival programs have the goal of contributing to the conservation of the species in the wild with support from captive propagation. The habitat of the tiger continues to be reduced and fragmented and there is every reason to believe that the projections of progressive loss of each of the subspecies continue to be valid. Many suggestions have been made for the use of captive bred animals for release programs, for supplementation of wild populations, and for exchange of genetic material between populations in original tiger habitat. There has never been an adequate analysis of these proposals in the terms of the status of free ranging species in local habitats or in terms of population viability analysis recommendations."

"We lack information on the distribution and numbers of the species in formats that can be used for management decisions or that can be updated easily on a continuing basis. It is our impression that much of the information exists but needs to be brought together in a modern map-linked database form. This would allow development of a process for continuing update and the ability to respond to specific requests concerning the effects of actions to be taken in tiger country."

An international meeting on the lines of that held in 1986 is planned, which will include an update on knowledge of tiger biology in the wild and captivity. Working groups will develop Viability Assessment and Survival Plans (VASPs) and Population Viability Analyses (PVAs) for each of the extant populations. Tilson has assumed responsibility for organising the meeting and raising the necessary funds.

(Note: You can keep up to date on tiger conservation plans in TIGER BEAT, a newsletter published by Minnesota Zoological Garden, Apple Valley, MN 55124, USA)

**Tigers in Bhutan**

Between 150 and 250 tigers estimated to live in the Himalayan kingdom of Bhutan have good prospects provided deforestation is carefully controlled, according to Dasho Paljor Dorji and Charles Santiapillai. In a paper in Biological Conservation they say the tiger has a wide distribution in Bhutan, and its range includes savannah grasslands and sub-tropical and temperate forests from 200 m in the foothills to 3,000 m in the north. Prey includes barking deer *Muntiacus muntjak*, wild boar *Sus serofoa*, hog deer *Axis porcinus*, sambar *Cervus unicolor*, buffalo *Bubalus bubalis* and gaur *Bos gaurus*. At high altitudes serow *Capricornis sumatraensis* and takin *Budorcas taxicolor* are taken. Attacks on domestic yak are not uncommon and cause conflict with herdsmen who treat the tiger as vermin and eliminate it with poison, despite a government ban. However, poisoning is not a major problem.

The authors call for surveys to find viable tiger populations, particularly in the central Black Mountains, and listing of the tiger as Royal Game so that killing without Royal permission be severely penalised.

"All current efforts to conserve the tiger are unlikely to succeed if they do not have the support of the local people," the authors declare. "The herdsmen must believe that conservation measures are being taken in their longterm interests. Protection of conservation areas should be accompanied by measures that would improve the living standards of the people without disrupting the environment."


**Joint USSR-USA Siberian Tiger Project**

Maurice Hornocker of the University of Idaho and Howard Quigley of Frostburg State University have signed an agreement with the USSR Academy of Sciences for a three-year study of Siberian tigers *Panthera tigris altaica* in the Sikhote-Alin Biosphere Reserve in the Soviet Far East.

Hornocker and Quigley visited Sikhote-Alin, which lies north of Vladivostok, in February. They were accompanied by Dmitri Pikunov of the Far East Science Center.

"We were able to see fresh tiger tracks on three occasions on hikes in the area around the reserve," Quigley reported. They also flew over the area by helicopter over most of the range of the Siberian tiger.

Capture and radio-telemetry will be used in the joint study. If sufficient funds can be raised, research will be carried on outside Sikhote-Alin as well as inside the reserve.

According to Russian biologist Anatoley Bragin there are about 430 Siberian tigers in Primorye and Khabarovsky Provinces. Across the border in China, reports suggest that fewer than 50 survive.
Just a Slim Chance of Saving the Tiger

By Ronald L. Tilson

EARTH IS UNDER siege. An ever expanding human population is responsible for wasting valuable resources, polluting the environment and degrading wildlands, all of which are putting many animal species on the fast track to extinction.

Conservationists are planning strategies to avoid this but disagree over policy. At the heart of this conflict is the question of whether propagating endangered species in captivity in zoos is less of a risk than leaving them to their fate where they occur naturally.

North American zoos are a $5-billion-a-year industry with 100 million visitors annually. Zoos increasingly portray themselves as last-ditch refuges for endangered species — as a kind of biological (rather than biblical) Noah’s Ark — and, in small measure, they are. Already on board are several species now extinct in the wild that survive only in zoos, including the California condor, the black-footed ferret, Penwalki’s home and, recently, the Arabian oryx.

But zoos, alone, can’t do the job. Roughly 450 birds and mammals worldwide are threatened with extinction and another 1,000 will soon join them. If zoos managed only bird and mammal species using their Species Survival Plans — computer programs that try to maximize genetic diversity in small populations — only some 200 species, or 30 percent of the vertebrates in need of such programs, could be accommodated in North America’s zoos, numbering about 100. Expansion of the programs to include all species available in the world’s fleet of 500 zoo zoos might increase the number to 900 species. Even with such an effort, however, there are already more threatened species than zoos can manage.

The size of this dilemma increases with time. If zoos added 10 new programs each year (they currently manage 83), about 156 programs would be created by 2000. This is not enough.

By that time an estimated 2,000 species of birds, mammals and reptiles need captive breeding programs to escape extinction.

Like the biblical ark, zoo arks are not built to house an unlimted horde of passengers, nor to sail indefinitely. Collectively, zoos can hold only small populations, and the genetic and demographic goals of the most ambitious programs to date have a life span of only about 200 years. Presumably by that time, human demands on the biosphere will stabilize. So far, these demands are far from stabilizing.

* The world’s population has grown 4 billion in the last 200 years; it will grow another 1 billion in the next 10. Ninety percent of this growth is in developing nations where most endangered species live.

* Management of land has eroded or desitized 1 million square miles of fertile land in the last 10 years. During the same period, 400,000 square miles of rain forest — one-tenth of all forest on Earth — has been cut down.

* Millions of tons of toxic waste are poured by humans into the oceans, lakes and rivers, and enough carbon, nitrogen and sulfur are dumped into the atmosphere to raise global temperature and disrupt rainfall.

* Estimates of species extinctions during the last decade range from 3,000 to 30,000, greater numbers than ever seen before. Paleontologists predict that the 21st Century may be a period of one of the greatest mass extinctions of all time, comparable to the events 65 million years ago when the majority of species on Earth perished.

If we cannot save all of nature, should our priorities be to save only certain ecosystems, certain species, or a combination of both?

What should be avoided is a knee-jerk reaction to the extinction crisis. This would mean attempting to save every species that captures our attention, instead of concentrating on the protection of "keystone" species.

Conservationists are well aware that certain species — elephants, pandas, gorillas, whales — are regarded more highly than others when it comes to raising the public’s profile or raising money. For zoos, they are known as "flagship species" — animals that are popular and evoke the idea of wilderness to the general public. For ecologists, they are also "keystone species," animals that play major roles in maintaining community structure and a balanced environment. By protecting these keystone species, we also protect numerous less attractive and more obscure species. The net result is a well-balanced ecosystem.

Today, tigers are a good example of a falling keystone species. Small pockets of tigers remain in forests that spread from India across China to the Soviet Union’s eastern republics and south to Indonesia. In India, about 1,200 tigers are protected in 16 tiger reserves, based on an ecosystem approach that provides the critical environmental ingredients — the pastures, streams and ponds — to protect areas of biological importance. Central to this concept is the realization that tigers and humans come into conflict when they share the same space. The idea is to maintain a core area for use exclusively by tigers, surrounded by a buffer zone that is shared by tigers and humans. Buffer zones help reduce the probability of tigers coming into contact with villagers or their livestock. Once a tiger kills a person or livestock, it becomes extremely difficult to promote conservation ethics in the local community.

For a species like Panthera tigris, a minimal population size of several hundred breeding adults is believed necessary for long-term survival. These numbers are obtained from census data, from data for habitat preservation and species conservation, can be built. Most have community interest and support not otherwise available to conservation. They are thus uniquely positioned to link human communities with endangered natural communities.

Roughly 450 vertebrate species worldwide are threatened with extinction, and another 1,000 will soon join them.

Ronald Tilson was a convenor of the International Tiger Symposium in Minneapolis-St Paul in 1986. He is now organizing another symposium to update knowledge of tiger biology and to develop a conservation programme (see Global Tiger Master Plan, p.5)
Chinese Medicine Threatens Asia's Last Tigers

Asia's last tigers are threatened by the demand for bones and other parts for Chinese medicine. Reports from India and Nepal speak of tigers being killed and their bones smuggled out of the country for the Chinese market. According to a senior Nepalese wildlife official, poachers send cattle into reserves. When they are killed by a tiger, pesticides, easily available to farmers, are put in the carcass to poison the tiger. Bones are easily transported across the border into Chinese-ruled Tibet.

In 1987 government officials in India's Uttar Pradesh State seized five tiger skeletons from poachers around Dudhwa National Park, adjoining southwest Nepal. In 1989 a poacher arrested in Rajasthan State claimed to have killed 18 tigers and to have sent their bones to Bombay for shipment to China.

Cat Group member Tan Bangjie says bones are considered essential for the manufacture of a wine, which is sold widely in southeast Asia. Leopards Panthera pardus and golden cats Felis temmincki were being poached for substitute bones.

The Chinese Materia Medica dating back to 1597 describes many medical uses of tiger bones, stating that yellow ones from males are best. The bones have to be broken open and the marrow removed. Butter, urine or vinegar is applied and they are drowned over a charcoal fire. A long list of uses includes removing all kinds of evil influences and calming fright; curing dysentery, prolapse of the anus, ulcers and rat-bite sores. A bath in tiger bone broth is recommended for rheumatism, and provides new born children with protection from infection, convulsions, devil possession, scabies and boils. Powdered bone is applied to burns and eruptions under the toenail.

The Chinese newspaper Guan Ming Ri carried a reader's letter in 1987 in which he said he had found eight full tiger skeletons in the market in Kunming, capital of Yunnan Province, and many stalls were selling tiger bone and other tiger products. Yunnan borders Burma and Laos, from which the tiger products may have come.

Pressure on Asia's tigers is the result of the near extinction in China, which was the only country to have four of the eight subspecies - tigris, altaica, amoyensis and corbetti. The Ministry of Forestry was reported to have established a tiger breeding farm to meet the demand for bones, and to have concentrated there all the Siberian tigers imported from North America in 1983-84 (CAT NEWS 7 Aug. 1987). The Beijing Pharmaceutical Company was setting up a farm near Beijing.

Recently Hong Kong newspapers said that 26 Siberian tigers had been born in the past three years at a 40,000 km² breeding farm at Majiling in China's northern Heilongjiang Province (Tin Tin Daily News 30 April 1990). The report said the farm now had 50 tigers. Tin Tin added that some of the young tigers would be released into the wild when adult.

Needed: A Few Good Leopards

by Alan H. Shoemaker

Introduction

Among felids, the leopard Panthera pardus has the widest range of any species (Turnbull-Kemp, 1967). Even today, leopards continue to be found, albeit in varying degrees of abundance, throughout Africa, ranging all the way from the forested mountains along the Cape of Good Hope (Norton, 1987) to the Atlas Mountains of Morocco, Algeria, and Tunisia in the North (Pa, 1986). To the East, they range across Arabia and the Middle East in disjunct populations, and are found in every mainland country of Asia as well as on the islands of Sri Lanka and Java. Within this incredible expanse of habitat, at least one subspecies, P. p. ituriensis, from the rainforests of Zaire, exists even today at population levels that are almost unchanged from pre-colonial times. Elsewhere in Africa, most other races and populations exist at lower levels, although because of their adaptability, surprisingly large numbers remain in many countries, and are even increasing in some (Cobb, 1981; Martin and de Meulenaer, 1988).

Outside Africa, things are not so rosy. Some races, particularly those which traditionally had small ranges, now border on complete extinction. One of these, the Amur or Far Eastern leopard of N.E Asia, P. p. orientalis (Schlegel, 1857), presents a classic case of a taxon that has become reduced to vestigial populations because of habitat loss and continued persecution. It now faces possible genetic problems because remaining leopards only exist in small, fragmented populations (Korkishko, 1990; Pikunov and Korkishko, 1985). In two instances, one each of father/daughter and sibling matings has already been observed (Korkishko, 1986).

Status

Originally resident in Korea, Khabarovsk and Primorye Provinces of the Soviet Union, as well as adjacent portions of China, 1990 populations are but a fraction of earlier ones. Today they are extinct in South Korea (Won, 1988), and although field work has not been carried out in China, 1980 populations in both Manchuria and North Korea were estimated to be only 30-40 animals each (Prynn). Moreover, conservation activities in both these countries are apparently slight. Remarks in the 1970 guide book of the Pyongyang Zoo, North Korea, suggest that at that time leopards were treated as vermin and lacked any form of protection. In China, a party to CITES, strong evidence of poaching and smuggling continues to surface. During the period of July-September, 1989, six skins supposedly from Chinese Mongolia passed through an "under-ground" taxidermy shop in Taiwan after being purchased in the Chinese port of Xia Men (Brigin, pers. comm.). Worse yet, these skins were probably not the only ones.

In the Soviet Union, effective populations have always been limited to southern Khabarovsk and Primorye Provinces, with transients from China periodically crossing the frozen Amur and Usuri Rivers. Realizing their rarity, but without hard data in hand to force protective legislation, Soviet biologists initiated a census during the winter of 1972-73. To their horror, only 20-25 resident and 38-46 migrant leopards were found living in the Soviet Far East (Abramov and Pikunov, 1973). As a result of these censuses, the Amur leopard was listed as Endangered in both the IUCN Red Data Book and the Red Data Book of the USSR.

These populations continued to decline. Although still present in the Sikhote-Alin Mountains from 1967-72 (Judaev, 1973), data taken from both field investigations and personnel working in the Lazovsky State Reserve suggest that leopards had disappeared from there by 1976 (Pikunov). Further censuses in 1987 failed again to find any sign of the animal in what had once been one of its strongholds (Pikunov and Korkishko, 1988).

In a similar retreat, the number of migrant leopards crossing
the frozen Ussuri River while following mass migrations of roe
deer Capreolus capreolus began to decline in 1978-79, and none
has been reported since 1984 (Pikunov and Korkishko, 1985).
In this case, the migration of their favorite prey was blocked by the
erection of fences along the international border. In essence, all
resident leopards outside the extreme Southwest had vanished,
and a second 1983 census of the southwest recorded only 25-30
leopards, 12-16 as permanent residents and the rest transients
from adjacent countries.

The problems facing leopards in Russia are similar to those
facing large carnivores in many other regions. Timber interests
have removed much of the conifer forest growing in the upper
altitudes of the Sikhote-Alin Mountains and on land to its West.
Milder maritime climates along the coast provide prime condi-
tions for hardwood forests, and the production of mast ensures
high year around populations of favored prey, roe deer, wild boar
Sus scrofa, sika deer Cervus nippon, musk deer Moschus mos-
schiferus, and goral Nemorhaedus goral (Bragin, 1986). In
warmer weather, badgers Meles meles, raccoon dogs Nyctereutes
procyonoides, and Manchurian hares Caprolagus brachyurus are
also numerous and further augment their diet. Unfortunately,
hardwood forests too are being cut, both for lumber and firewood,
and the increase of mining and livestock production in the middle
of leopard and tiger habitat is a poor combination.

The human element presents the most difficult problem. Leo-
pards have never been as high a profile species as the tiger
(Seidensticker, pers. comm.). Also, the fur trade is important in
the Soviet Far East, and by the very nature of that industry is
responsible for a continued human presence in otherwise ideal
leopard habitat. This growing human population is heavily
armed, and hunting so widespread that it seriously impacts both
the leopard and its prey. The fact that all leopard trapping was
banned in 1965 and that a total ban on ungulate hunting was
enacted to save the prey base has not been sufficient to protect
either group. Poaching for both prey and predator continued as
recently as 1989 (Korkishko, pers. comm.) despite intensive edu-
cation and enforcement efforts by local authorities.

Captive Management

In captivity, an international studbook for Amur leopards was
first approved in 1974, and pedigree information as been available
on an annual basis since 1975 (Shoemaker, 1975). Until 1986, the
captive population hovered around 60 animals in 16 zoos
(Shoemaker, 1987), but, during the last two years, this population
has grown to 82 (47.34) animals, excluding those in China and
Pyongyang (Shoemaker, 1989). In the future their numbers are
likely to continue increasing as additional pairings are developed
by North American zoos that formerly held unmanaged felids.

Compared to other races of leopards in captivity, the level of
inbreeding present in Amur leopards is quite low; few individuals
have Inbreeding Coefficients in excess of .25, a relatively high
level easily reached if siblings, or a parent and offspring, are
mated. Such a level may be easily reduced by acquiring unrelated
stock (Shoemaker, 1982). Overall, only one collection is threat-
ened by consistently high levels of inbreeding.

Like many other species managed by studbooks, an analysis of
the living population shows an effective founder population of
only seven animals. Moreover, two of these animals (#2 & 3)
provide more than 70% of the genetic makeup of today's captive
born population. While not a desirable situation, exhaustive
efforts are being made to reduce the over-representation of these
two animals, while increasing the representation of three more
uncommon founders, #14, 15, & 35. A sixth founder, #89, is never
found without the presence of #2 & 3.*

To change this founder effect, three new animals, all origina-
ting via the Pyongyang Zoo, recently have been imported by
Moscow and Tierpark Berlin. The first one (#136) has just begun
breeding; the other two (#142 & 193) will hopefully start soon.
Moreover, Moscow reported recently that they had received two
additional founders, #211 and 212, via Pyongyang which hope-
fully will further reduce the impact of the present lopsided
founder representation. Although the precise relationship, if any,
of the Korean-born animals is unknown to date, colleagues in the
Soviet Union are doing their best to investigate their origins.

As an aside, 16 additional leopards were taken from the wild
between 1961-1973 and exhibited primarily by Soviet zoos.
Unfortunately, all but one were males and none ever reproduced
or otherwise impacted today's population. While this capture
tactic favoring males might be viewed as a conservation move
that simultaneously met the exhibit needs of Soviet zoos, their
behavioral potential, twice that of the today's founder size, is sorely
missed, and now provides little more than historic data on range.

Release Program

According to their 1983 census, Soviet biologists consider the
remaining population of leopards within their territory to be
25-30 animals (Korkishko, 1990). Of these, 8-9 are males, includ-
ing 5-6 adults; 10-11 are females, include 7-8 adults; and one is of
undetermined gender (Korkishko, 1990). The rest are subadults
or juveniles. Because the existing habitat is full, subadults have
been establishing ranges near those of parents or siblings, or
entering unfavorable habitat and being killed (Korkishko, 1986).
Even if all habitat within their present 2,400 km² range in the
extreme southwest Primorye was as optimal as the mixed conifer
and hardwood forest of the 180 km² Kedrovaya Pad' State
Reserve, it would only permit a population of 40-50 adults.
Repopulation of the southern Sikhote-Alin only adds enough
space for another 20-25 adults, and natural repopulation would
require a lot of time.

After examining data in recent studbooks and reviewing conser-
vation priorities in Primorye Province, Soviet managers are
developing two tactics. Initially they suggested breeding captive-
born male leopards to surplus wild-born females in order to
increase the shrinking gene pool of the remaining wild popula-
tion (Korkishko, pers. comm; Shoemaker, 1988). In theory, females
and young, produced by such a union were to be released in
existing habitat or used for reintroduction to good habitat pres-
ently void of leopards. From a zoo administrators' point of view,
such a proposal would be a welcome use for surplus males. From
a husbandry point of view, such a proposal has several deficien-
cies, the most serious of which involves acclimatization of newly-
captured females. Recent failures at breeding newly-captured
adult female pumas Felis concolor as part of the Florida Panther
F.c. coryi Recovery Plan offers an insight to potential problems
for leopard propagation if adults were captured. Constructing and
staffing such a facility would also be a major undertaking. Initial
breeding plans by Soviet biologists required the maintenance of
250 adult leopards! No other carnivore breeding project of this
scale has ever been undertaken in Europe, and only the red wolf
Canis rufus breeding and release project in the USA begins to
rival its scope.

Given the above mentioned problems involving adult animals,
the Soviets now plan to develop a breeding program that begins
by taking surplus juvenile leopards from the wild which would
be lost by emigration from their natal range. Because most
zoo-born animals derive at least part of their genealogy from
leopards originating outside the USSR, it was decided that they
would not be used for initial breeding efforts but rather for the
development of training and release technology. The breeding facility itself is to be located near Ussurisk where sika deer are raised commercially on a large scale. They, in turn, would be used as the program’s primary food source. Moreover, a variety of state and federal wildlife, agriculture, and military agencies will be called upon to accomplish logistics.

Funding is another matter, particularly in this era of social upheaval. Modern veterinary technology and vaccine production is woefully inadequate within the Soviet Union and will have to be upgraded for success. Sound husbandry practices involving food storage, personnel management, training and other “routine” practices must be developed. And for tracking, radio telemetry equipment will need to be obtained.

The other problem involves protection. In the past, only animals living within the confines of the 18,000 ha Kedrovaya Pad Reserve were safe from persecution. To further safeguard extant populations within adjacent areas, the 1,000 km² Basovoy Special Nature Reserve was recently created to augment the existing reserve (Pikunov and Korkishko, 1985). For release in former areas of abundance, zoo-bred male leopards selected from the studbook initially would be used in release and tracking experiments within the newly enlarged 3,115 km² Lazovsky Reserve and 7,600 km² Sikhote-Alin Reserve, where ideal habitat, prey resources and total protection exists and can be guaranteed in the future (Pikunov, 1990). Going one step further, the Soviets recognize the need to create buffer zones adjacent to these areas. To this end, protection zones now under development will bring the total area of protection of the Lazovsky reserve to 10,388 km² and of the Sikhote-Alin reserve to 13,238 km². Topping this off, lumber and firewood removal, as well as ungulate hunting, will be permanently banned.

What else is in the future? Tourism! In the past, travel to this area has been extremely limited because of nearby international boundaries and defense facilities. This is all changing. During the winter of 1990, a dozen pantherid specialists were invited to examine the region, and more are expected there this summer (Koehler, pers. comm.). While this region may not rival the Serengeti in faunal diversity, cervid populations within protected areas are high and the scenery is breathtaking. Moreover, the Soviet will seem strong. Now it is up to the planners.

Acknowledgements

Much of the above information would not be available without the generous cooperation of colleagues Anatoley Bragin, Dimitry Pikunov and Victor Korkishko. All have shared, and in many cases translated, their studies, papers, and research from the original Russian to English. Further, they have continuously provided slides and photographs of material german to this project. Perhaps best of all, all three have provided original and new material for publication in the International Leopard Studbook, an act that benefits both owners and interested persons alike in the conservation of these animals. To these three gentlemen, I offer my sincerest gratitude.

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Observations on Amur and “Amur” Leopards

The Amur leopard’s highly distinctive pelt pattern is stressed by Roland Wirth, Chairman of the Mustelid and Viverrid Specialist Group. Wirth has seen at least nine captive Amur leopards. He has provided photos of a wild-caught specimen and a captive born-animal with a 50% genetic contribution of founder #2. Taxonomist Colin Groves of the Australian National University, supports Wirth’s view that #2 has genes of the Nepal leopard *Panthera pardus pernigra*.

Wirth says the true Amur leopard pattern is unlike that of any other leopard subspecies. The rosettes are widely spaced and of large size with very thick margins, which are usually closed. Hybrids are much like an average leopard, except slightly long-haired. Their rosettes are closer together and often of smaller size, with thinner, broken margins. Pure Amur leopards have quite long legs compared with hybrids, which, Wirth suggests, is possibly an adaptation to walking in snow.

Expressing his strong reaction to the original proposals to release captive-born Amur leopards as part of the proposed Amur leopard conservation programme in the USSR, Wirth states: “The Amur leopard is a magnificent and unique form of leopard and anybody who is involved in destroying the last genetic reservoir of pure Amur leopards in the wild by releasing hybrid leopards has to be made responsible for the final extinction of the subspecies.”

Amur leopard (Studbook #35) at Frankfurt Zoo - Photo: R.Wirth

Captive-born “Amur” leopard (Studbook #72 or 106) at East Berlin Zoo with 50% genetic contribution from the presumed *Panthera pardus pernigra* (Studbook #2) - Photo: R.Wirth
Leopard in India

The total of leopards reported in 1989 by 23 Indian states and territories covering most of the country was 6,767 compared with 4,747 in 1984, according to the Directorate of Project Tiger.

However, the increase in numbers should not be taken as an indication of a growing population. It is likely to be due to better census, that in 1984 being the first of its kind of leopard.

Dr M.K.Ranjitsinh, a leading specialist on Indian wildlife, commented that it was very difficult to be precise about population trends and status surveys of animals like leopards. Habitat reduction and degradation, which has caused declines in wildlife, applied a little less in the case of the leopard because of its adaptability. If forest cover were lost, leopards could live in caves and rocky outcrops, and live on stray dogs, livestock and chickens. Leopards still occupied a very large portion of their original habitat, although, within that range, their distribution might have shrunk and populations become isolated or even relict. However, in some places isolated populations were slowly increasing.

Ranjitsinh said that conflict with people over livestock predation constituted a threat to leopards, although instances of retaliatory measures, including shooting or poisoning, had declined.

Barren Leopard Habitat in South Africa

There are vast tracts of suitable leopard habitat in South Africa, but they no longer occur in many of these areas, writes Chris Stuart. In a late comment on the report by Martin and de Meulemaer on THE STATUS OF LEOPARD IN SUB-SAHARAN AFRICA (CITES 1988), Stuart states that leopard were once widespread in Cape Province, but are now only present in the coastal mountain chain and and escarpment, certain eastern coastal associations, the lower Orange River basin and the extreme north, near the Botswana border, which includes the Kalahari Gemsbok National Park. Except in the park, prey levels are generally low if domestic stock is excluded.

Stuart says he also considers the total leopard population given for Lesotho (420) as "far too optimistic".

Commenting on the discussion in the report on livestock losses given by Norton for Cape Province, Stuart declares that most of these involved surplus killing and therefore give a false picture.

"We should take great care not to overestimate leopard numbers, but, at the same time, I am very much aware of the need for such surveys, but, wherever feasible, field surveys must play a prominent role."

The Martin/de Meulemaer report gave a computer estimate of 700,000 (600,000 to 900,000) leopards in sub-Saharan Africa, but most leopard specialists considered the figure far too high (CAT NEWS 11, July 1989).

Leopards find a Cosy Refuge

Three leopards were found living in an old steam engine in Kampala station in the heart of the city. The Uganda Game Department planned to tranquilize them and move them to Entebbe Zoo.

The Lions of Etosha

by Hu Berry*

Etosha, "The Great White Place" in the local language, has always been associated with lions in the minds of people. Situated in the north of Africa's newest sovereign state, Etosha presently covers an area of 22,770 km, less than one quarter of its previous huge size of 99,526 km. Proclaimed in 1907, Etosha owes its colloquial name to the vast (c.5,000 km) saline depression known as the "Pan" which occupies its eastern sector.

The earliest estimate of lion numbers in Etosha was in 1926, when about 200 were said to be present. The natural system was still very much intact at that stage and lions migrated with their food supply when the wildebeest and zebra herds trekked long distances to avoid the periodic droughts which characterize this semi-arid part of south-western Africa. Then, in 1961, foot-and-mouth disease swept through the country and 2.5 metre-high veterinary cordons were erected along Etosha's boundaries, spanning vast tracts of hitherto unfenced areas. This resulted in the demise of the majority of wildebeest, whilst zebra seemed more resilient to the restrictive fences.

Prior to the fencing, two other man-made events had occurred, seemingly innocuous at the time. They were, however, destined to cause immense changes in the natural system operating within Etosha. Firstly, a series of artificial waterpoints was built from 1951 onwards to provide tourists with improved opportunities for game-viewing. This provided lions with the chance of colonizing previously uninhabitable areas. The drinking troughs also made hunting and ambush easier because their small size concentrated prey species into an unnatural configuration when drinking.

Secondly, the excavation of hundreds of gravel pits for building tourist roads created a situation in which a lethal disease, anthrax, was able to establish itself. Anthrax flourished in the highly alkaline, limestone soils of Etosha and its ability to survive was boosted by the fact that it is a spore-forming bacteria, which, when exposed to the air, forms a protective capsule, making it viable for decades. The herbivores (and lions) drank from these numerous gravel pits during the rainy season. Whilst wildebeest and zebra are susceptible to anthrax, Etosha's lions apparently developed an immunity and consequently could feed on the hundreds of anthrax-infected carcasses which became available for scavenging during anthrax epidemics. Thus prey vulnerability and lion immunity to anthrax favoured the opportunistic and dominant predator-scavenger in Etosha, which responded by increasing significantly in number from the earlier figure of 200 to 500 lions by 1980.

To illustrate the complexity of change in trophic relationships which these man-made changes wrought, not only in the lion population, but to the entire spectrum of large carnivores and herbivores, it is worthwhile to note the following: as wildebeest and zebra numbers were decimated, lions shifted their prey preferences to the abundant oryx and eland, causing them to decline. Unlike the plains-loving wildebeest and zebra, oryx

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occur throughout Etosha, whilst eland’s mode of feeding, namely woodland browse, make them relatively safe from the hazards of the anthrax-infected plains. In addition, the lion and spotted hyaena, which is the second most dominant predator-scavenger, competitively suppressed the cheetah and brown hyaena. This in turn, together with the abundance of anthrax carcasses, brought competitive relief for the black-backed jackal which increased dramatically from hundreds to an estimated 2,000. The herbivores also showed competitive release from the diminished wildebeest and zebra numbers, when the smaller, relatively anthrax-resistant springbok (which also profited from the demise of its major predator, cheetah), increased significantly from 10,000 to 30,000. Thereupon, lions began to hunt and kill noticeable numbers of springbok. Moreover, elephant and black rhino began dying of anthrax in large numbers, adding greatly to the food supply of the scavengers. In one period almost 300 elephant carcasses were located, many of which could keep a lion pride in food for up to 10 days. To compound this disease problem, kudu, which had increased their numbers greatly because of bush encroachment, contracted rabies and several thousand died in Etosha within two years, providing yet more carrion for the scavengers. Through these episodic events, the lion emerged a clear winner and demonstrated its ability as an outstanding and opportunistic predator and scavenger.

The question may well be asked as to what could possibly go wrong for the lions under these ideal food and water conditions? The turning point in this lion paradise came in 1980 with the advent of the worst drought which Namibia has experienced for the past century, a situation which still persists. The failure of the rains caused the plains animals to move off the depleted grasslands, forcing lions to shift their territories to the woodlands, where their living space became progressively more restricted.

It is well known that lion pride areas serve as spacing mechanisms and therefore the displaced lions found themselves wedged between a drought-stricken plains system and adjoining farmland. Their choice was predictable and many subsequently trespassed onto farms via fence breaks or by burrowing. Here they found short-lived relief by way of domestic stock, which they proceeded, in typical lion fashion, to kill in large numbers. One infamous, nomadic male was responsible for killing well over 100 cattle, horses, donkeys and goats in the space of two years before he was tracked back into Etosha by rangers and shot. In the 10-year period 1980 through 1989 at least 320 lions were confirmed destroyed on farms bordering Etosha.

The farmers’ wrath was great and methods of destroying lions included shooting, gin-trapping and strychnine poisoning. In one incident a farmer’s rifle failed at the critical moment and he resorted to knocking down and driving over wounded lions with his vehicle when they were reluctant to leave a carcass on his farm!

Thus Etosha’s lions underwent a macabre culling, which reduced their numbers, ironically enough, to the earlier figure of 200. They have during the past few years again shown their resilience to setbacks and present estimates are that the lion population of Etosha has increased to at least 300. Because drought conditions still predominate, the majority of lions appear to be in the woodlands, where their prey is located, instead of on the plains. What the future holds for Etosha’s lions will depend on the retention of this conservation area by the incoming Government of Namibia. Fortunately, the policy towards conservation and wildlife appears to be one of protecting national assets, as indeed Etosha is. This world famous National Park is the single biggest reason why tourists visit the country and when they arrive there, the two questions most often asked are: “Where are the lions?” and “Where are the elephants?” That just about sums up the justification for ensuring the survival of free-ranging lions in Namibia.

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**Asiatic Lion Population Up**

A total of 284 Asiatic lions were counted this year in their sole home, the 1,412 km² Gir Lion Sanctuary in western India. This shows a continued population increase since 1974 when 180 were counted. In 1979 the total was 205 and, in 1985, 239.

However, the encouraging conservation picture is clouded by the fact that there have been about 90 attacks on local people in the past two years, in which at least 15 have died. Lions are reported to have strayed 40 to 60 km outside the sanctuary. A senior forest officer is quoted as saying: “The increase in attacks is alarming. Such a phenomenon was last recorded 90 years ago.”

Cat Group member M.A Rashid, who was Chief Conservator of Forests responsible for wildlife in Gujarat State, agrees with those who suggest that the lion population now exceeds the carrying capacity of the Gir.

“The disappearance of the once wooded corridors used by the lions in the past has now brought them into direct conflict with the surrounding human population, whose physical presence and interference with the free movement of lions has also expanded manifold,” he says.

Rashid played a major role in the development and implementation of The Gir Lion Sanctuary Project in the early 1970s to tackle a decline in lion numbers. This project followed several years of studies by Paul Joslin, now Deputy Chairman of the Cat Group, of the lions, Stephen Berwick and Peter Jordan of herbivory and predation of wild ungulates, Berwick and Mary Anne Berwick of the ecology of the large grazing community and their cattle, and K.T.B. Hodd of the vegetation. The wild ungulate population was greatly reduced and Joslin found that 75% of lion faeces contained domestic stock.

A major part of the project involved moving graziers and their herds from the Gir. As a result vegetation improved and wild ungulate numbers increased. However, large numbers of graziers and their cattle remain in the Gir.

There are long-standing proposals to create a second lion sanctuary, both to relieve the pressure on the Gir and to lessen the risks of a catastrophe wiping out the single population. However, most of the reserves under consideration, although lion habitat in the 19th century, are now close to populated areas of Gujarat and neighbouring Rajasthan where reintroduction might be opposed.

Management proposals for the Gir lions may soon be developed following the recent completion of field work by Ravi Chellam, a research fellow of the Wildlife Institute of India, on the ecology of the Gir lions, with special reference to predation and ranging patterns.

A.J.T. Johnsingh, Joint Director of the Wildlife Institute of India, states that during four years field work (1986-1990) studying lions in the Gir, he and Chellam found that leopards *Panthera pardus* and jungle cats *F. chaus* were thriving. They was no evidence to support speculation on the existence of fishing cats *Felis viverrina* and desert cat *F. silvestris ornata*.
Jaguars and Livestock

Predation on livestock by big cats is a widespread problem in many ranching areas throughout the world. It usually leads to attempts to wipe out the cats, regardless of whether they have taken livestock or not. But there are ranchers who want to conserve their resident cats while bringing predation down to acceptable levels. One such is Don Antonio Branger, who raises about 15,000 cattle on the 70,000 ha Pinero ranch in the Venezuelan llanos (the plains north of the Orinoco). He recently told Cat Group member Rafael Hoogesteijn that losses amounted to some 200 head a year, mainly calves and young steers and heifers. Pumas appeared to specialise in newborn and very young calves in maternity paddocks, while jaguars took weaners and older animals in paddocks adjacent to forest areas. The weaning lasts from November to January.

Four jaguars were shot in January, three at Pinero, and one on a neighbouring ranch. Hoogesteijn, a veterinarian and jaguar specialist, reports that the latter animal was an 87 kg young male, which had been blinded in the left eye by a shotgun. He also had scars where he had been shot through the loins, with the bullet breaking the upper end of a thoracic vertebrae before leaving the body. He had killed about 25 cattle before being tracked by dogs from a kill and shot. Hoogesteijn believes that this jaguar was one which had been shot earlier in the back of the neck with pellets by a deer poacher at a waterhole when it was bathing with a female.

One of the Pinero jaguars, a very large, old male of 107 kg, was also a confirmed cattle killer. He was very thin and had many white hairs on the head. He had been shot at least twice before, once in the nape, from which four big shotgun pellets were recovered. The second shot had blinded him in the left eye, broken the upper left canine, deformed the left side of the lower mandible and probably caused abscesses, since the upper and lower mandibles had holes and porous areas of bone, on to which lead particles were grafted.

“How he survived those shots and stayed alive is incredible.”

Another male, weighing 96 kg, was examined by Hoogesteijn who found the remains of banded peccary Tayassu tayacu, presumed to be a female with two fetuses at end term or recently born; nails of spectacled caiman Caiman crocodilus and of nine-banded armadillo Dasypus spp. Hoogesteijn comments that this animal was in prime condition and clearly able to catch natural prey. His range consisted of a large gallery forest bordering weaner paddocks. He was called up to the gun by imitating jaguar calls with a gourd. There were no further attacks on weaners after his death.

A female, tracked by dogs and shot, was not a cattle killer. She was near giving birth to a male cub.

Hoogesteijn says that many poachers enter Pinero to get capybaras Hydrochoerus hydrochaeris, white-tailed deer Odocoileus virginianus, peccaries and water turtles for meat. They shoot and wound any jaguars they encounter, thus leading to attacks on cattle. Hoogesteijn and Eduardo Mondolfi found that of 12 problem jaguars they examined six (40%) had shot wounds with damaged sight and/or teeth. Alan Rabinowitz reported that 10 or 13 (75%) of cattle-killing jaguars in Belize had previous wounds to head or body.

Don Antonio Branger is keen to have jaguars at Pinero, where they are a major attraction to the many tourists who go there to see the rich wildlife, and he has now banned all jaguar shooting, even if predation occurs.

Other conservation-oriented ranches in the llanos include El Porvenir owned by the De Vries family, and El Frio in Apure Province; and Masaguaral, owned by Tomas de Blohm, like Pinero in Guarico Province.

The Cat Group is hoping to sponsor a study of jaguar and puma predation on livestock at Pinero with the aim of developing management recommendations applicable in other ranching areas.

Cheetah Surviving in Iran

There is increasing evidence of cheetah Acinonyx jubatus venaticus in many parts of Iran where they were not thought to survive, reports Mahmoud Karami of the University of Teheran.

In a letter to Laurie Marker-Kraus, Keeper of the International Cheetah Sudbook, Karami said two cheetahs were observed on 13 November 1989 in Dashte-Rig, Bahram-e-Gour Protected Area, southwest of Kerman. About 100 wild ass Equus hemionus, Dorcas gazelle Gazella dorcas and abundant hares Lepus spp are found in the area.

Karami said that Abu Talebi, Director General of the Department of Environment of Khorasan Province, which neighbours Afghanistan, reported that there were at least 15 cheetah in the south of the province. One was captured by local people and is held in Mashad Zoo. On the other hand, cheetah are no longer found in northern Khorasan.

Cheetah were also reported from Turan Protected Region, Karami said. He added that it was generally believed in Iran that cheetahs lived on hares outside protected areas. Hares were not hunted, although Islamic law allows, but does not recommend, eating them.

Colin Groves from the Australian National University, who visited Iran recently on an FAO mission to advise on wildlife conservation, saw cheetah footprints and scats while breakfasting under a pistaccio tree in Bahram-e-Gour Protected Area. In a letter to Peter Jackson he said that prime cheetah habitat near Mashhad had been complete overrun by sheep and goats after the revolution.

During the 1970s there were reports of 250 cheetah in Iran, but Paul Joslin, who was working with the Department of the Environment at the time, believes this was an over-estimate.

Meanwhile, Vladimir Flint, Director of the Soviet Nature Conservation Research Institute, reported that a search of the most likely places for cheetah in Turkmenia produced no sign. He said that cheetah, of which sightings were reported between 1975 and 1983 (CAT NEWS 8), were too rare and scattered too widely.

Flint asked for opinions about his idea to introduce several African cheetahs from the Uzbekistan Breeding Centre. He referred to the question of interbreeding of African and Asiatic cheetahs, adding: Are Asian and African cheetahs really different subspecies? In CAT NEWS 8 he said he did not believe there was a difference.

The last three confirmed Asiatic cheetahs Acinonyx jubatus venaticus in India were shot around the end of 1947 and the species is considered extinct. A fresh skin was brought to Muscat, Oman, about 1978, but investigations failed to confirm the survival of any in the wild.
International Cheetah Studbook Published

The first International Cheetah Studbook, compiled by Laurie Marker-Kraus, has now been published. As reported in CAT NEWS 12 it records 704 cheetah in captivity in 139 facilities around the world at the end of 1988.

The studbook contains details in English and German of captive populations and their history, as well as a brief review of the status in the wild. Marker, who is Director of the NOAHS Centre, National Zoological Park, Washington DC, says that the 1989 edition is progressing well and will be available in a few months.

For those interested in the cheetah, there is also CHEETAH NEWS, a newsletter published bi-annually by the Zoological Society of San Diego, Center for Reproduction of Endangered Species, San Diego Zoo, Box 551, San Diego CA, 92112, USA.

Clouded Leopards in Nepal

Four clouded leopards Neofelis nebulosa were found in Nepal in 1987-88. Apart from reported sightings in the Langtang National Park in the early 1970s, these were the first published records since 1863.

Two cubs, whose mother was presumed to have been killed by villagers, were found near Janakpur in eastern Nepal in 1987 and taken to the Kathmandu Zoo.

Then in early January 1988 a young male was captured by villagers in Nawalparasi District to the west of the Royal Chitwan National Park. It was taken to the Smithsonian/Nepal Terai Ecology Camp in the park, where it was treated for its injuries and released 100 km east of the capture site after radio-collaring. In a report in ORYX, Eric Dinerstein and Jai N. Mehta state this was the first radio-collaring of a free-ranging clouded leopard. During eight days monitoring only terrestrial behaviour was recorded, contrary to expectations that it would take to the canopy of the evergreen forest. It was frequently found resting in dense patches of tall grasslands. It moved westwards towards the capture site along the ridge of the Siwalik hills. Contact was lost after an enforced gap in monitoring.

The authors suggest that the fact that the clouded leopard remained only nine days in the release area should be noted in the light of suggestions that large felds could be translocated or relocated in protected areas as an option in conservation management.

The fourth clouded leopard, also male, was stoned to death on 11 February in Pokhara, in central Nepal, while fighting with a dog.

The discovery of the two males moves the recorded boundaries of clouded leopard range some 400 km further westwards than before. The range extends eastwards through southeast Asia and southern China.

Dinerstein and Mehta point out that the clouded leopards found near Janakpur and west of Chitwan were in marginal scrub forest, rather than the primary forest, with which they are usually associated. They believe the species may be more common in Nepal than previously thought.


Formosa and the Clouded Leopard

by Kristin Nowell

Smugglers from mainland China are creating a new market for pelts of clouded leopard Neofelis nebulosa in Taiwan.

This is happening despite a Taiwan government crack-down on smuggling between the mainland and the island. One enterprising trader has set up a lucrative venture selling smuggled pelts of clouded leopard to his fellow aboriginal tribesmen in the south of Taiwan, far from the main markets in the big cities. They have special significance because clouded leopard pelts were used as ceremonial garments by tribal people in Taiwan before their conversion to Christianity. Those pelts were from the Formosan clouded leopard Neofelis nebulosa brachyurus, described as having a yellowish background color, smaller size, and shorter tail than other subspecies. The Formosan cat has not been caught for decades by these skilled hunters, and the few ceremonial leopard pelt jackets which have survived are stiff and worn with age. Many men are apparently now willing to pay US$1,500, a princely sum for the average aboriginal wage-earner, for a clouded pelt from the Chinese mainland, little caring that the import differs from the original.

Recent interviews with aboriginal hunters of three separate tribes in over 20 southern villages led to the uncovering of six Formosan clouded leopard jackets, most reputedly over 60 years of age, and an identical number of jackets made from imported pelts, all purchased within the last year. One shopkeeper indicated an interest in maintaining a stock of these new jackets for sale to Han Chinese tourists.

Up to only a few decades ago, the slaying of an elusive clouded leopard in the mountainous highlands afforded heroic status to the successful hunter, so much so that he was obliged to live outside his village for a week in splendid "god-like" isolation, while his family and friends travelled back and forth tending to his needs. The capture of a clouded leopard was a great event, so that the hunter was not only regarded with awe, but also a touch of fear, and the spirit of the animal required propitiation in prayer.

Another tribe treated as taboo any slaying of a clouded leopard that was not accidental (i.e. by trapping). In all three tribes, however, the hunter could return with prized trophies of a beautifully patterned pelt and a set of the cat's long sharp canines, to be fashioned into a ceremonial jacket and head-dress for the chief only to wear--the pride of the village.

The recent availability of imported pelts, however, will surely corrupt the last vestiges of the traditional symbolic value of the clouded leopard. A clouded pelt is seen now as merely another luxury item attesting to the wealth of its wearer, much like the imitation Rolex watches also available to those Taiwanese who know where to look.

The newly-appointed Premier of the Republic of China on Taiwan, General Hau Pei-Tsun, has ordered a much publicized crackdown on the booming smuggling trade carried on by small fishing boats across the Formosa Strait between Mainland China and Taiwan.

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and Taiwan. To strengthen Coast Guard and Army patrol efforts, the government announced the creation of a $NT$50 million (about US$1.85 million) fund from which to offer rewards up to US$88,560 for information leading to the apprehension of smugglers. The main aim is to stop the smuggling of mainland-manufactured handguns, the sudden wide availability of which (unthinkable before the ending of martial law in 1987) has led to an alarming wave of kidnappings, robberies and extortion.

Next to weapons, however, the most profitable items in the smuggling trade are endangered Chinese wild animals and their parts and products. A pelt of snow leopard *Panthera uncia*, for example, may reportedly be purchased in Fujien or Guangzhou Province markets for the equivalent of US$75, and sold in Taipei for a minimum of US$1,000, an astounding profit of 1,233%.

China is a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and Taiwan recently enacted strong CITES compatible wildlife protection legislation. But it seems that many smugglers are still willing to run the risks involved in the light of the fantastic profit that can be made.

Florida Panther Survival Plan

A Florida Panther Species Survival Plan has been developed "to prevent the certain extinction of the Florida panther and to provide for its recovery in the wild".

The plan was developed during 1989 at meetings of specialists under the auspices of the IUCN Captive Breeding Specialist Group. It envisages the establishment of 130 breeding animals in a combination of wild and captive populations by the year 2000, and increasing to 500 breeding age panthers by 2010. Implementation of the captive populations recommendations is contingent upon the continuation and, in some cases, expansion, of the existing capture and tracking programme.

The current wild population of the Florida panther *Felis concolor coryi* is estimated at 30-50 animals, of which 24 are fitted with radio collars for monitoring. The population may have numbered about 500 at the beginning of the century, but has declined steadily since that time in the face of an expanding human population and activities. The panther is now limited to south Florida in the Big Cypress and Everglades regions. It was classed as Endangered in US legislation on 11 March 1967.

A new threat to the panther has emerged recently - toxic mercury contamination. Extremely high levels of mercury (over 100 parts per million) were found in the liver of a panther that died in the Everglades last summer. This compares with a US Food and Drug Administration action level of 1.0 ppm, reported Dennis Jordan, Florida Panther Coordinator of the Florida Cooperative Fish and Wildlife Research Unit. Warnings about mercury in fish have already been issued for some parts of Florida. Jordan said that none of the usual sources of mercury contamination were found in the state, and one hypothesis suggested that the mercury could be coming from a natural source - the peat and muck soils that are common throughout Florida. These are often flooded, and highly anaerobic soils provide a suitable environment for production of methylmercury, the biologically active and toxic form of mercury, from inorganic mercury, itself considered biologically innocuous.


Rusty-Spotted Cat Photographed in Gir Lion Sanctuary

The rusty-spotted cat *Felis rubiginosus* has been found in the Gir Lion Sanctuary in western India. Photographs are thought to be the first taken of the species in the wild.

A.J.T. Johnsingh, Joint Director of the Wildlife Institute of India, and Senior Research Fellow Ravi Chellam, sighted a small cat while driving towards Kankai from Sasan in the Gir in the early morning of 18 November 1989.

"It was a rather small cat, less than half the size of an adult jungle cat. It was curled up and we could see it shivering in the cold. We managed to take four photographs and then the cat slowly moved into the tall grass by the roadside. We assumed it was a jungle cat kitten. On processing the film we discovered ...that it was no jungle cat, but it was indeed the elusive rusty-spotted cat. The stripes on the head, the colour of the animal, the spots on the body and the unmarked tail made identification possible."

Johnsingh reports that B.J. Pathan, Deputy Conservator of Forests (Wildlife) at Sasan, also photographed a small cat at half past midnight on 13 May 1990 which turned out to be a rusty-spotted cat. He said it crossed a road and climbed a tree.

Commenting on the discoveries, Johnsingh said it was possible that the rusty-spotted cat was widespread throughout the Gir sanctuary and had probably not been observed so far because of its solitary and nocturnal existence. He recommends a full-fledged survey to assess the status and ecology of the species.

The rusty-spotted cat is one of the smallest felids and is said to be partly arboreal. Its range has been reported to be Sri Lanka and western India. The Indian population is on Appendix I of CITES to prevent international commerce, and the Sri Lankan population is on Appendix II to ensure licensing and monitoring.

Recent records extend the range in India. S. Chakraborty of the Zoological Survey of India, collected a specimen near Udhampur in Jammu and Kashmir State on 16 October 1975. This was the most northerly record. Erach Bharucha, who is conducting a study in the Dangs forest of southern Gujarat, north of Bombay, says that his colleagues Sejal Worah* and S. Mukherjee reported three sightings in the Dangs in May 1990. Bharucha also said that a rusty-spotted cat in Hyderabad Zoo is believed to have been collected in Andhra Pradesh, in southeastern India. *(The Editor apologizes to Sejal Worah for an error in CAT NEWS 12 in the transcription of her contribution to the Cat Group meeting in Rome last August, which made it appear that she claimed to have taken the first photos of the species in the wild. She actually said that she had taken photos in the Frankfurt Zoo.)*
International Snow Leopard Trust Opposes Hunting

The International Snow Leopard Trust (ISLT) is opposed to hunting of snow leopard, currently available in Mongolia. In the winter 1990 issue of its newsletter SNOWLINE, the Trust made the following statement:

In some instances sport hunting in development countries of species which are not endangered may be a viable method for obtaining foreign currency if:
1. the population of the species or subspecies has been determined by detailed survey work to be so abundant that a harvest has no negative impact and is sustainable;
2. the population is continually monitored in such a manner that the harvest is regulated;
3. a significant proportion of the money brought in from the hunt directly benefits the local people; and
4. sport hunting may be demonstrated to be a deterrent to poaching.

The International Snow Leopards Trust strongly objects to the sport hunting of snow leopards in any area of its range because:
1. the species is generally rare throughout its range and accurate knowledge of population size in local circumstances is scarce and of questionable reliability;
2. the species is listed as "highly endangered" by international and national conventions;
3. international trade in the snow leopard is prohibited by CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora;
4. the snow leopard is an indicator species for the conservation of the Himalayas and high altitude reserves.

Because the species is extremely difficult to census and its exact status is unknown, ISLT recommends that detailed surveys be conducted and these results be circulated for comment by international authorities on snow leopard distribution and biology before permit hunting is considered as a mechanism for revenue or management of snow leopard. Therefore, based on the above, the ISLT is opposed to permit hunting of the snow leopard. ISLT recommends that alternative methods, such as game viewing and photographic opportunities, be encouraged as sources of foreign currency.

In a commentary, ISLT President Helen Freeman said that a 14-day snow leopard hunt in Mongolia was being offered to US hunters for $7,000 plus a trophy fee of $13,000 if a snow leopard were taken. Hunts can be observed for $3,000. The promoters declared that cropping was necessary because there was an over-abundance of snow leopard in Mongolia, and the cats were killing too many wild sheep and ibex.

Freeman said that other reports said sheep and ibex were declining because of over-hunting by local people and that snow leopards had little choice but to turn to livestock.

"This is doom for the snow leopard because losing even a few livestock is unacceptable to a subsistence herder."

Freeman accused foreign hunting firms of exploiting a unique situation for their personal profit and promoting it as a conservation measure.

"To me it is a question of being legally correct but morally wrong," she said.

Freeman noted that Mongolia had been committed to wildlife management for over 40 years, and sport hunting produced a good financial return, which could be an excellent incentive to long-term game management if the foreign currency generated went back to the local economy. But reports were too limited to determine if there was a surplus of snow leopard in Mongolia and if the snow leopard was actually causing a decline in ibex and argali populations.

"An extensive survey is necessary and a moratorium regarding hunting the snow leopard should be instigated while such a survey is conducted," Freeman declared.

Snow Leopards and Lynx

Snow leopards, lynx and wolves are among the animals in the area chosen for a vast new reserve in the Qian Tang region of northwestern Tibet. The reserve will be the third largest in the world, covering one-fifth of Tibet.

An agreement to create the reserve and manage it was signed in the Tibetan capital, Lhasa, last 29 November by a representative of China's Environmental Protection Agency and George Schaller, Science Director of Wildlife International, an arm of the New York Zoological Society.

Schaller has spent several years surveying Tibet's wildlife, and has estimated that there are about 2,000 snow leopards in the country, but that numbers are declining.

A Hunting Pair of Snow Leopards

Two snow leopards were seen hunting together in the Langu Valley of western Nepal, reports Karan Bahadur Shah in a note in the Journal of the Bombay Natural History Society. Shah, who was monitoring a herd of Himalayan tahr Hemitragus jemlahicus on the morning of 10 May 1987, saw an adult snow leopard (A) start stalking from about 20 m above the feeding tahr. A minute later a second, but smaller, adult (B), descended by the same route as A, then moved to the right and, without stalking, moved towards the tahr. It made a sudden rush from about 10 m, chasing the tahr down the slope. B halted on a rock and looked upwards, upon which A went after tahr which had moved left during the chase. Neither were able to attack a tahr.

B then climbed about 50 m and started stalking downwards, while A climbed and got within 30 m of the tahr, which stamped and gave warning calls. A ignored them and joined B, when the two moved off together, three times sitting and looking back before disappearing in a pine forest. B was seen to squat, thus indicating that it was a female. Shah suggests the two were a late mating season pair.

Lynx Concentration in Ladakh

The highest known concentration of lynx *Lynx lynx* in the Himalayas has been located in the Nubra Valley in Ladakh by researchers from the Wildlife Institute of India (WII). It is threatened by increasing human presence, local exploitation of forest patches for fuel, poaching and snaring.

R.S. Chundawat, who has been studying snow leopard in Ladakh, estimates that there are 14-16 lynx in an area 36 km long at the 3,000 m. high confluence of the Shyok and Nubra Rivers between the Karakoram and Ladakh ranges. The lynx are found on islands in the riverbeds with thick patches of Hippophae scrub forest growing up to a height of 5 m..

In a report in the WII newsletter, Chundawat said movement through the spiny vegetation was restricted to narrow paths like tunnels, which were used by lynx. Fresh signs of lynx were found in every forest patch, where the hare *Lepus spp* was fairly common. Two lynx carcasses were found, one killed to protect livestock and the other a natural death.

The conservation problem arises from the high human population in the area around the large villages of Diskit, Sumur and Hunder. The forest patches are the only source of fuelwood for cooking and heating. Pressure has increased as a result of army settlements and other developments. However, export of fuelwood from the valley is banned. The local people have a system rotation of 6-7 years or more, depending on the size of the fuelwood patch. This provides adequate time for regeneration. During winter the area is disturbed by entire villages out chopping fuel wood and grazing sheep and goats. Snaring is common, mainly for fun by young people.

Chundawat says that at least 2-3 lynx appear to be killed every year, mostly around Sumur. Wolves are the main livestock predators and action against them affects the lynx population. The forest patches are the only available grazing areas in winter.

"If the present use pattern continues it is doubtful that any habitat will be left for this endangered species in 10-15 years. There is an urgent need to look into these problems seriously," says Chundawat.

But he believes that timely action could save the habitats and help the lynx, although the closeness of the area to the border with Pakistan-held Kashmir complicates the issue. He suggests that alternate energy sources, such as kerosene and solar energy, and plantations could reduce pressure on the forest patches. Rotational harvesting of the forest could be more effectively enforced. More vigilance is required against poaching and snaring.


French Hunters Call for Lynx Control

Hunters in the French Jura mountains have called for control of lynx, whose predation on sheep has become a major political problem. The confrontations between officials and conservationists opposed by sheep owners and hunters included large noisy demonstrations last year, when 426 sheep were killed, mostly attributed to lynx. According to lynx specialists, 40% of the attacks were in three communes (local administrative districts) with an area of only 5,000 ha, which is less than one per cent of the area colonised by lynx in the Jura.

The affected area is in the Department (Province) of Ain, where the lynx are thought to be the progeny of animals reintroduced in Switzerland. Three young lynx have been trapped and removed from the scene.

The French authorities attribute the high number of killings to lynx specialising in sheep, but note that the phenomenon is unusual and the reasons for its occurrence are not known. Compensation is paid for losses, and measures, such as protective and toxic collars, have been made available.

The Hunters’ Association has circulated a leaflet explaining why they want lynx controlled. The following is a summary:

The area affected includes 58 farms, whose only possible activity is sheep raising. When sheep are found dead, the carcasses are examined by an official veterinarian. In 1989 compensation was paid for loss of 305 sheep killed by lynx, and there were 41 doubtful cases. But the association complains that the system does not cover animals that have disappeared, said to number 83, nor take account of indirect losses through lowering of fecundity, stress etc.

Protective collars are a serious inconvenience in sheep breeding, and, moreover, do not deter lynx. The result is that sheep are eaten alive because the lynx cannot kill them immediately. Protection of flocks by trained dogs "seems completely illusory".

"The only solution lies in controlling the lynx population."

The hunters complain that lynx are having a heavy impact on roe deer *Capreolus capreolus* and chamois *Rupicapra rupicapra*,

They claim that roe deer in certain areas had been reduced by 50%, and that stress occasioned by the presence of lynx has had an effect on reproduction and health. While well-established chamois populations had survived “despite considerable damage”, areas being colonised are completely deserted.

The hunters insist on a hearing because they number 10,000 in the area involved and say they established, developed and protected the game population. They pay compensation for any damage it causes, and the official National Hunting Office is supported by hunters’ dues.

In support of lynx control, the hunters say that a natural lynx population has become established in the area, but geographical circumstances favour a higher lynx density than normal.

"It is therefore clear that there must be control. This must be carried out in a flexible manner. The principal of control must be officially accepted. Trapping must be carried out over the whole area concerned and not just in some communes, both for domestic species and for wild species. If control authorisations are always reserved for agents paid by hunters, there must be a quid pro quo for the provision made.

"The sheep breeders must receive fair compensation, through official procedure and public funds, so that the extortion practised by some is stopped. More generally, the principal of control of all problem species, whatever their juridical status, must be accepted. It is in this way, and only in this way, that a balance can be found between the interests of all the parties."

**Newly released lynx dies in Vosges**

A young female lynx captured in Czechoslovakia was released in April this year in the Vosges, but was later found dead. The release was authorised after a conference of national and local authorities, hunters and lynx specialists. This was the 13th in a series of releases since 1983 in the 4,750 km² range, which could support 20-30 adult lynx, according to biologist Veronique Herschmidt. Of the 12 reintroduced lynx, two females had litters.

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which did not survive, while one female was shot illegally just after giving birth. Two other lynx were shot illegally.

The hunters complain that, on the basis of scientific studies elsewhere, the six existing lynx would kill 300 roe deer and chamois each year, adding that there are only 300-350 chamois because of over-hunting. Although the hunters say that the lynx threatens an already declining population of capercaillie Tetrao urogallus, the lynx specialists say that there is no record of lynx killing these large birds in France. Predation is possible, but would not threaten the capercaillie population.

**Taxonomic Status of the Pardel Lynx**

By Lars Werdelin*

The taxonomic status of the pardel lynx, which is found in the Iberian peninsula, has been the subject of considerable discussion over the past 40-odd years. To the majority of pre-war taxonomists there was little doubt that it represented a distinct species. However, the balance of opinion in this matter swung sharply with the publication of a highly influential book by Ellerman and Morrison-Scott. [Ellerman, J.R. & Morrison-Scott, T.C.S. 1951: Checklist of Palaearctic and Indian Mammals 1758 to 1946. 810 pp. British Museum (Natural History), London.] These authors synonymized the pardel lynx (Lynx pardinus. I will use Lynx as a separate genus here, although this is a separate bone of contention among taxonomists) with the northern or Eurasian lynx, L. lynx. This synonymy was created without explicit justification, but has had inordinate effects on the taxonomy of the genus since then.


Unfortunately, the morphological distinction between L. lynx and L. pardinus has been confounded with the morphological distinction between L. lynx and L. canadensis. The two species are much closer, both morphologically and phylogenetically, than are L. lynx and L. pardinus, yet these two species pairs are often discussed in the same terms in the literature. I wish, however, to make explicit the fact that, while the specific status of L. canadensis is debatable, and to a great extent dependent on personal judgment and what weight one wishes to attach to the question of allopatry in this context, the distinction between L. lynx and L. pardinus is based on ample evidence, both from morphology and paleontology.

Morphologically, the two species differ in many respects, and it is perhaps not coincidental that nearly all authorities who have dealt first hand with the pardel lynx have considered it a distinct species (see references in Beltran, J.F. 1987: Base bibliographica de especies amenazadas: Lince iberico. 51pp. Junta de Andalucia, Agencia de Medio Ambiente). Important distinguishing characters are the width of the palate, the development of the metacoid on the lower carnassial and the convexity of the interorbital area (Werdelin, L. 1981: The Evolution of Lynxes. Annales Zoologici Fennici 18, 37-71; Garcia Perea R. et al. 1987: Review of the biometrical and morphological features of the skull of the Iberian lynx, Lynx pardina (Temminck 1824) Säugetierkundliche Mitteilungen 1985:146-156.). Palaeontologically, the two species have clearly distinct histories (Werdelin ibid.) and have in the past been partially sympatric without any evidence for hybridization. Indeed new palaeontological evidence indicates the presence of these two species at a single locality. Although the subsequent evidence is meagre, it seems quite clear that with the expansion of the range of L. lynx, the range of L. pardinus shrunk correspondingly. The current distribution of the pardel lynx in Spain represents a true relic population(s).

In summary, there is little doubt, based on current research, that L. pardinus is a valid species, and one of the rarest living feline species. It should be recognized as such in the IUCN Red List of Threatened Mammals and in CITES.

For taxonomic purists it may be worthwhile noting that, since the genus name Lynx is masculine, the proper name for the pardel lynx is Lynx pardinus. If Lynx is not recognized, however, the name becomes Felis pardina.

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**Serval Research**

Serval in a research area in South Africa are proving to be primarily nocturnal and to spend most of their time in wetlands, according to Jane Bowland of the University of Natal.

Bowland is studying territory size and utilisation of food requirements of serval and in near the Kamberg Biosphere Reserve. She is also investigating the extent of interference with livestock.

In ENDANGERED WILDLIFE (formerly QUAGGA), the magazine of the Endangered Wildlife Trust, Bowland said scats showed that serval fed almost entirely on rodents, especially the abundant vlei rat Otomys irroratus, and occasionally on birds. Sixty per cent of the total rodent population of the study area lives in the wetlands, which account for 19% of the area.

**in South Africa**

Bowland said serval populations inhabited the Drakensberg midlands, northern Zululand and game reserves in the Transvaal. They are considered extinct in Cape Province. The principal threat to serval in South Africa is habitat loss, but other threats include catching for skins for adornment and persecution for taking poultry. They are also killed as possible culprits in small stock predation on sheep farms near the Drakensberg. Hunt packs and traps set for blackbacked jackals Canis mesomelas and caracals Felis caracal, which are known stock predators, also account for serval.

Critical Situation for Wildlife in India
by Peter Jackson

Rapidly increasing population pressure on India's wildlife reserves, political unrest, deforestation and poaching are creating a critical situation for the survivors of India's once teeming wildlife.

During a two month visit to India earlier this year, I found leading conservationists, both government and private, deeply disturbed about the situation. This contrasted with the mood of hope which sprang from the success of Project Tiger in the 1970s and 1980s.

Fortunately, those two decades saw the development of talented teams of wildlife scientists and managers grouped at the Wildlife Institute of India, the Bombay Natural History Society, and the Centre for Environmental Sciences at the Indian Institute of Science, as well as vocal private environmental organisations. Much will depend on their achieving strong influence in shaping and implementing nature conservation policies in the coming years.

Central to the problem is the fact that wildlife reserves are unpopular among the mostly impoverished people who live around them. They are banned from utilising the wood and grazing resources, which have largely vanished outside the reserves, while wild animals emerge to ravage crops. During the elections which brought the present Janata Government to power last December, many candidates are said to have promised to get the reserves abolished. The government is now considering revisions to the Wildlife Protection Act of 1972, which are said to include the principle that wildlife conservation must be compatible with tribal rights, and providing immunity from prosecution for anyone killing wild animals in defence of property. While conservationists do not challenge the principles, they fear that, in practice, they may provide a legal cover for activities detrimental to wildlife and habitat.

In 1983 a Government-appointed Task Force on "Eliciting Public Support for Wildlife Conservation" recognised the problem. It said that the Planning Commission and a number of central government ministries gave "unreserved acceptance" to the Task Force's view that "Special Areas for Economic Development" were required around reserves where there should be "greater per capita inputs on development based upon a firm conservation bias". The report specifically mentioned eco-development involving soil conservation, afforestation, forestry practices compatible with the needs of local people and wildlife, improved dry farming techniques, micro-minor irrigation, pasture and fodder development, energy alternatives and improved but compatible animal husbandry.

On the official side little has happened. However, there are private initiatives. Notable is establishment of the Ranthambhore Foundation by Valmik Thapar, author of three books on the tigers of Ranthambhore. I went with the Foundation's well-equipped and staffed medical van and found men, women and children queuing for health and family planning services. An extension worker lectured to children in village schools on healthy living. The first high milk yielding buffaloes, which are stall-fed, are arriving. The foundation provides loans for the farmers, who have to dispose of their generally poor cattle. Women are being organised to produce traditionally colourful garments, which are being successfully marketed in Delhi. The women earn money, and the scheme is developing a camaraderie among them which had been lacking. A school for local artists is producing works, some of which are contracted for in Italy. Environmental education for adults and children is being carried out using feature films the villagers seldom get the chance to see to draw them to meetings. Children have been taken to see the wonders of the tiger reserve that they had little idea existed.

Thapar has built a small house just outside the reserve and is developing his land as a model plot by planting local trees and showing how protection from grazing can lead to rehabilitation of apparently barren land. Timber lots for fuel and building material are being developed, and fodder crops grown.

Indian donations to the foundation include equipment from industrialists. International funds are being raised by the Ranthambhore Society, a London-based charity.

The Wildlife Institute of India has announced plans for similar work, and WWF India is developing a project to help the people around the threatened Manas Tiger Reserve in northeast India.

However, political unrest dogs conservation. Manas Tiger Reserve in Assam, which contains 21 mammals listed for top protection by the Wildlife Protection Act, including the rare one-horned rhinoceros Rhinoceros unicornis, pygmy hog Sus sylvanus and hispid hare Caprolagus hirsutus, as well as tiger, leopard and several lesser cats, is still largely under the control of extremists of the Bodo tribe. They invaded the area in February 1989, killing wildlife guards and destroying buildings and equipment in support of claims to autonomy for their tribe, which makes up about one-third of the population of Assam State. Although the authorities have reestablished the headquarters in the central area, much of Manas remains unpatrolled and without management.

Widespread fires, far more extensive than usual during the hot, dry season, have swept through the forests of Kanha Tiger Reserve in central India. There is argument about whether they were set off by invading Marxist extremists, known as Naxalites after the region where their activities began nearly 30 years ago. The Naxalites champion tribal peoples, who, they say, are oppressed and cheated. Some reserve officials were beaten up and accused of not handed over to tribal labourers their full wages. Some animals were found poisoned near saltlicks. Although the situation is reported to have affected patrolling, tourists were still visiting the reserve until it closed for the monsoon season.

Several hundred police were moved to Kanha to combat the Naxalites, but none has been caught. The magazine SUNDAY commented: "From the environmental point of view, probably the presence of such huge police forces is causing more damage than the fire that grabbed the headlines." It speculated that the Naxalites might make their next stronghold in Kanha, which is in the centre of one of the main tribal belts of India.

Deforestation is a major problem throughout the country. A government minister stated that 91,700 km² was lost between 1972 and 1982, and in 1984 the Environment Ministry put the remaining forest area at 642,041 km² (19% of the land area). Recently, the Washington-based World Resources Institute reported that satellite imagery showed that deforestation was now nearly 15,000 km² annually - almost twice that of Indonesia. The Institute remarked that large areas of India legally designated as forest land are already virtually treeless. Not surprisingly, the pressure on forests in protected areas for fuelwood, timber and other products, as well as for grazing, is enormous, particularly when the population (835 millions in mid-1989) is growing at a rate of 2.2% a year and will top 1,000 million by the year 2000.

Poaching and illicit wildlife trade are rampant. During raids in
Sadar Bazar in Old Delhi last February 29 the wildlife department seized skins of 29 leopards, two tigers, 30 jungle cats, and one leopard cat, along with 30 kg of tiger bones. The Hindustan Times of 21 April said that in 1988, 44,849 wild animal skins, including tiger and leopard, were seized, 479 (sic) in 1989, and 6,602 in the first four months of 1990. Non-felid skins included jackal, fox, otter, tody cat and snakes.

Meanwhile, the Indian Institute of Public Administration has published a report on the state of management of India’s wildlife reserves*. Both questionnaires and visiting teams were used to collect data. Among the most worrying statistics are those showing that only 21 of the 52 national parks (which have the highest level of protection of habitat and wildlife) and just 16 of 209 sanctuaries (where some other activities may be allowed) had completed the legal formalities of establishment required by the 1972 Wildlife Protection Act. Such lacunae mean that legal action to deal with encroachment and other pressures is difficult. For example, more than 400 dolomite mines have been opened on the southern boundaries of the Sariska Tiger Reserve. The wildlife department of the Rajasthan Government considers that they infringe on the reserve, but conservationists say that the boundaries have not been legally established.

Rights of grazing, agriculture and collection of forest produce, such as fodder and firewood, still exist in nearly half the national parks and over two-thirds of sanctuaries. But even where such rights do not exist, these activities are rife. Sailana Sanctuary in Madhya Pradesh reported a density of 15 cattle per hectare. Many parks have considerable numbers of feral cattle - 800-900 in the 33 km² Keoladeo Ghana at Bharatpur, one of the world’s spectacular bird sanctuaries, according to a recent report in the Wildlife Institute of India newsletter.

Protected areas suffer from illegal occupation, not only by cultivators, but even by labour camps and temples and, surprisingly, the government. Most plantations in national parks are said to be for wildlife, but there are some for fuel and for commercial and industrial purposes. Fortyone per cent of plantations in sanctuaries are commercial. Two of the main threats documented are destruction of habitat resulting from grazing, collection of forest products, and poaching. Destructive fires often result from these activities.

The volume also highlights attacks on people by wild animals. Tigers, bears, leopards and elephants were mostly responsible. There were 189 tiger attacks in five years in the Sundarbans Tiger Reserve and 119 by tigers and other animals in Dudhwa National Park. In the Gir Lion Sanctuary, 25 attacks occurred. Several State Governments do not pay any compensation for human fatalities, and of those that do, the amount varies from Rs10,000 (about US$700) to only Rs200 (about US$15).

Catches between people and guards over illicit felling of trees, poaching, illegal grazing, encroachment and other offences occurred in 37% of national parks and 17% of sanctuaries which answered a questionnaire.

Only 50% of the national parks and 31% of the sanctuaries said they had five or 10-year management plans. Most areas were managed on an ad hoc annual basis. Although some research and monitoring were reported from rather more than one-third of the protected areas, the authors comment that the scope and quality probably varied considerably.

Despite the problems involved with large human populations around protected areas, only one in five of 43 national parks and 23 of 197 sanctuaries said they had education programmes for villagers. Only about one-third of the parks and sanctuaries said they had vaccination programmes for cattle, which have introduced devastating epidemics in wildlife in the past. Of 11 national parks with livestock grazing within their boundaries, only Bandhavgarh National Park carried out vaccination.

The authors stress the importance of a broad conservation-based national land-use plan; action to complete legal procedures for establishment of protected areas; management plans for all protected areas, including basically uniform compensation throughout the country for human and livestock deaths or injury and damage to crops by wildlife; provision of realistic funding to carry out management plans; education and interpretation programmes, including participation and employment of local people; and major improvements in research and monitoring, also involving non-governmental organisations.

The authors declare: "The major hurdle in the protection of Indian wildlife today is the reconciliation of short-term human interests with the interests of fauna and flora... With the increasing growth of human population and the progressive decrease of wilderness areas, this conflict of interests is becoming more and more visible, and more and more difficult to resolve... Seeming conflicts must be properly analysed, and in resolving them it should be remembered that, apart from the dependence that human kind has on plants and animals, these plants and animals also have a right of their own to live."


Uncertainty in Nepal

Would-be settlers in the Royal Chitwan National Park, who took advantage of the recent political disturbances, have been removed with the support of local people, according to Hemanta Mishra, Member/Secretary of the King Mahendra Trust for Nature Conservation. He was commenting on a report in the International Herald Tribune on 11 May quoting a Trust spokesman as saying that about 400 people had illegally cleared about 75 ha in Chitwan. The national park is one of the most important in Asia, with about 400 great one-horned rhinoceroses Rhinoceros unicornis, nearly one-third of the surviving population. It is also renowned for its tigers, which have been the object of a pioneering long-term study by American and Nepalese scientists.

Mishra said that there were bound to be areas of uncertainty until elections were held to replace the interim coalition government formed earlier this year by the Nepali Congress and Communists after King Birendra agreed to end the panchayat system. But the new Minister for Forests and Soil Conservation had been very supportive of the activities of the King Mahendra Trust, particularly its role in the involvement of local people in conservation.
Ultralight Aircraft in Wildlife Research

Ultralight aircraft can be a useful tool for radio telemetry in wildlife research, but disadvantages should also be considered, according to Howard Quigley and Peter Crawshaw. Writing in the Wildlife Society Bulletin, Quigley and Crawshaw describe the value they found when using an ultralight for tracking jaguar in the Brazilian Pantanal. The ultralight was cheaper to operate than a fixed wing light aircraft and locations of radio collared animals were more accurate and could be made more frequently. However, they consider the ultralight less safe and more limited by weather considerations than a light aircraft.

The authors recommend that ultralights should not be used in areas with a completely closed forest canopy or that experience constant winds. A cost analysis of a proposed project should include the price per hour of, and accessibility, to light aircraft, plus the intended duration of the project and the quantity of data sought. They warn that only qualified personnel should attempt mechanical maintenance and repairs.


CBSG News

The IUCN Captive Breeding Specialist Group (CBSG) has started a newsletter, CBSG News. Chairman Ulysses S. Seal said that the newsletter would “serve as a timely means of communication and distribution of information among people with a special interest in the uses, resources and problems of captive breeding as a tool for conservation of endangered species.”

“Every country on earth has animal species which are declining in numbers, are endangered, or already near extinction because of human activities. Nearly every country has zoos or wildlife departments with collections of native species for exhibits, wildlife translocation and recovery programs. Private organizations and individuals play an important role in many countries. These collections and people who manage them are an essential resource for the use of captive breeding for conservation of genetic diversity. Problems of managing captive populations of a species for survival and for reproduction and to retain the genetic diversity of the species are common to all of these programs. Solving these problems through a variety of resources is a part of the activities of the CBSG.”

The office of CBSG News is 12101 Johnny Cake Ridge Road, Apple Valley, MN 55124, USA.

Successful Ocelot Translocation in Texas

Translocation of ocelots in southern Texas can now be declared a success with the first birth in the new location, reports Michael Tewes. The project began in 1988 with the capture of a female ocelot (F42) and its removal to prime habitat on the west of Laguna Atascosa Lake. Immediately afterwards a male (M53) was translocated. He appeared to have had an aggressive encounter with F42 and dispersed for several months. He found another female which Tewes’s team also radio-collared. Two litters are believed to have been produced. Meanwhile a second female (F79) was translocated to the same area as F42, but left after a few days following an aggressive encounter with F42. She homed on her original range.

“This event marked the first documented case of homing behaviour in a wild ocelot,” says Tewes.

A year later F79 moved, possibly by force, to a neighbouring home range where she died after a fight, which may have been with a neighbouring female. Despite M53 and F97’s failure to remain on the release site, much was learned about potential characteristics and techniques for translocation, Tewes declares.

The original translocated female, F42, has remained at the release site since 1988, and earlier this year the team trapped a male ocelot that had apparently found its way there. From May F42 showed denning behaviour, leading Tewes to state: “With her reproduction we have fulfilled our original criteria for establishing a new resident subpopulation of ocelots...This success has excited us about the potential usefulness of translocation as an important conservation tool for ocelots”.


Cat News From Djibouti

Cat skins appearing in markets in Djibouti are thought to have come from Ethiopia, Kenya and Somalia. Recently 17 leopard skins and 23 cheetah skins were counted in the market.

There have been some unusual sightings of cats, which are likely to have come from Somalia. Two lions were seen at dusk last December on the outskirts of Djibouti. Their pugmarks were found next morning, but there have been no further reports. A leopard was seen in the mountains of Randa, 20 km from the city of Tadjourah, and a serval appeared close to Arta beach, 40 km from Djibouti.

Honours for Catfolk

Helen Freeman, President of the International Snow Leopard Trust, was the first recipient of the Woodland Park Zoological Society Medal in Seattle on 16 May in recognition of her “significant contributions to wildlife conservation and research”. Helen said the medal was beautiful, but weighed nearly five pounds of solid bronze. She got a “stiff but honored neck”.

Veronique Herrenschmidt was declared “Personality of the Year 1989” at a ceremony at the French Ministry of the Environment on 22 May for her work on lynx re-introduction and monitoring in France. Veronique was married on 27 July to Olivier Laurens-Bernard, a government official, but was back at work three days later promising not to neglect the lynx.
Cat Specialist Group

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Cover: Ocelot by Marcelo Aranda

(Editor: Initial mailings of CAT NEWS 12 wrongly credited the cover picture of a Siberian tiger in Lazovsky Reserve, USSR, to Kaplanov. It was taken by Dimitrey N. Mezentsev)