## CAT NEWS 25
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*Cover: Asiatic lion Panthera leo persica in Gir Forest, India. Photo: Peter Jackson*
Editorial

Can Large Cats be Reintroduced to the Wild?

The reintroduction of large cats to the wild is an issue of critical importance, because they can become problem animals which prey on livestock and may threaten, or be perceived to threaten, humans. With wild populations declining, most captive breeding programmes have future reintroduction as a principal objective, but discussion has been largely theoretical in the absence of science-based evidence drawn from field experience. The situation is changing and the time has come to review the results of projects in various parts of the world. This issue of Cat News includes several relevant articles.

Most important is the report of an experimental reintroduction of captive-bred and wild-caught Texas mountain lions *Puma concolor stanleyana* in northern Florida to test whether a viable wild population of the critically-threatened Florida panther *P. c. coryi* could be recreated. The authors conclude that reintroduction is biologically feasible, but that the tremendous costs (economic, political, social etc.) would have to be offset against the benefits to be gained by such a project.

Notable in the report is the evidence that captive-bred large cats can be trained to take live prey and then settle down in the wild in a natural social system. In fact, the captive-bred mountain lions appeared to be better adapted to reintroduction than wild-caught and translocated animals. On the other hand, the captive-bred cats were less secretive and were observed more often; and they were responsible for killing new-born calves and a domestic cat.

Great care was taken to minimize human contact and to offer natural prey species in training the captive-bred cats. This is in complete contrast to a project in China, where Amur tigers in a safari park are being fed cattle and chickens from vehicles in a public spectacle. Clearly, the tigers will have a taste for livestock and will associate people and vehicles with food, thus becoming totally unsuitable for release in the wild.

Accepting the Florida experiment as proof that captive-bred large cats can be released successfully, the real issues emerge: the economic, political and social impact. The economic impact includes the capital and running costs of a long-term captive breeding programme: the investment required to ensure a suitable site, which means allocating a vast natural area, with a thriving prey population, and elimination of the threats which caused the species to decline or disappear; the cost of actual release of an initial group of cats, followed by subsequent releases to ensure genetic health of the population as well as to increase its numbers; cost of long-term monitoring, which would need radio-telemetry, and management.

Assuming that the vast sums required were available, the political and social impact must be considered, and that means people. The Florida experiment provides a clear illustration, while a majority of the population favoured reintroduction, those at the site were not enthusiastic, and some formed a “Not In Our Backyard” Association after losing some calves. Since the Florida experiment was limited from the start to a short term, the situation did not become a major political issue, but that would almost certainly happen if a major reintroduction project were involved. Wherever they are found, the large cats threaten livestock and are, not surprisingly, opposed by livestock owners (see the item on the killing of 13 lions by a Namibian farmer in this issue).

Despite a spate of recent attacks in North America, some fatal, the cougar/mountain lion/puma is not the potential threat to humans that lions, tigers and leopards clearly pose. Throughout the ages, humans have had to coexist with threatening animals, but, in the world today, that is no longer true. To impose large cats on an unwilling population is scarcely possible. In southern Africa, the problem has been solved in some cases by fencing (yet another major capital and running expense), but in no case will this allow a natural wild population to evolve because the area is inevitably limited.

Hopefully, this brief review of what is becoming a major issue in large cat conservation will stimulate greater understanding of the problems and the costs involved before projects are embarked on.

Peter Jackson

Wild Cats: Status Survey and Conservation Action Plan

The book was airmailed in June to members of the Cat Specialist Group and to others who contributed data. If you have not received your copy, please contact me.

Peter Jackson
Namibian Farmer Shoots 13 Lions

Namibian farmer Willem Kotze shot dead 13 of 17 lions which crossed the Kalahari Gemsbok Park fence on to his property on 23 April. Luke Hunter, lion expert at the University of Pretoria’s Mammal Research Institute says that a park ranger discovered that the lions had crossed the fence, but staff could not follow them because the fence formed the international border between South Africa and Namibia. Kotze was contacted and it was suggested he herd the lions back through the fence, but when the staff arrived in the afternoon he had already shot 10 of the lions.

A Namibian conservator helped chase three lions back into the park, and a fourth was darted and returned by evening. Kotze shot two of the remaining three lions as night fell, claiming that he feared they would attack his livestock during the night, and he killed the third in the morning.

Kotze claimed that he received no assistance from the park staff and he shot them because they were starving.

Hunter says the Park Board’s response had perhaps contributed to the outcome because it was slow in providing assistance and staff arrived at the scene with only three darts. Kotze had been fined twice for shooting lions and once for dumping poisoned meat over the fence, which is in a very bad state of repair.

Hunter comments: “Clearly there is blame on both sides. and, typically, it is the wildlife that ultimately pays.”

Poachers Strike India’s Rare Lions as well as Tigers

At least 14 Asiatic lions *Panthera leo persica* have been poached this year, perhaps as many as 20, according to reports from India.

Meanwhile, seizures of tiger skins during 1996 rose to 18 by August, and five tigers have been found dead, two of them poisoned and one killed with an axe. Claws of both lions and tigers were recovered.

The figure of 14 lions poached came from the wildlife authorities in Gujarat State where the last 300 Asiatic lions survive in and around the Gir forest. Scientists from the Wildlife Institute of India said they thought up to 20 had been poached.

Lion poaching is a new phenomenon, and lion bones could be used as substitutes for tiger bones for traditional Chinese medicine as they are indistinguishable. However, the lions appear to have been killed primarily for their claws, as carcasses were found with the paws cut off. Claws are made into good-luck pendants. Villagers found wearing such pendants said they paid Rupees 500 (about $15) for them. A number of arrests have been made.

According to a census last year there were 304 Asiatic lions in and around the Gir Lion Sanctuary, but a statistical analysis of the data put the figure at about 250. The lions are the last survivors of a subspecies which once ranged from Macedonia to northern and central India. By the end of the 19th century fewer than 100 remained, all in the Gir, as a result of gross over-hunting by British colonialists and Indian aristocracy. They were given protection by the local ruler, the Nawab of Junagadh, with support from the British Viceroy, Viscount Curzon.

The Wildlife Protection Society of India reported the arrest of two illegal traders in tiger parts in a sting operation near Corbett Tiger Reserve, in the Himalayan foothills. After information was received from the Corbett reserve authorities, decoy customers contacted the traders and were offered three tiger skeletons and up to seven skins. A deal was made for one skeleton and one skin. When the traders appeared with them they were arrested by the Field Director of Corbett reserve and his staff.

**South Korea Burns Tiger Bones**

South Korean authorities burned 793.2 kg of tiger bones, 48,049 packs of capsules and 159 kg of semi-manufactured products on 11 June 1996, according to a report to the World Conservation Union (IUCN). The items were seized from the IKSU Pharmacy Company’s stocks under the amended Pharmaceutical Affairs Law, which prohibits sale, storage or display of medicines made from tiger bones and derivatives. Three pieces of bone and 200 g of powdered bones were sent to the Korea Food and Drug Administration for research purposes.

Import of tiger bone was legal in South Korea until imposition of a ban in 1993.

Lions in Addis Ababa

Arousing Speculation about Extinct Races

A South African biologist has speculated that heavily black-maned lions he found in a zoo in Addis Ababa could be descendants of the extinct Barbary/Atlas lion *Panthera l. leo*, or even the Cape lion *P.l. melanochaitus*.

Hym Ebedes for the Onderstepoort Veterinary Institute in South Africa said: “The sight of a black-maned lion pacing around his cage in a zoo in Addis Ababa last October (1995) had an undescrribably chilling effect on me. This animal was exactly as I had always visualised and pictured the Cape lion, which became extinct about 150 years ago.”

The lions originated from the private collection of the former Emperor of Ethiopia, Haile Selassie, who was overthrown in 1974. Ebedes said it was possible that Haile Selassie, known as the “Lion of Judah”, obtained his lions from European zoos which had acquired Cape and Barbary lions before they became extinct.

The last known Cape lion was shot in Natal in 1865 by a General Bisset (Day 1981), while the last known Barbary lion was shot in 1920 in Morocco (Grizmek 1975). Both were noted for their rich black manes which extended to the belly. Wolfgang Frey, a German specialist on rare species, says that he has never found any reference to Haile Selassie receiving lions as a gift from Europe despite a long search. But Roberts (1951) speculated that Dublin Zoo, which bred lions for many generations, might have received lions from the Cape and perpetuated the characteristics.

Frey remarks that “shipping a lion from Europe to Ethiopia was not an easy problem in the pre-war era, while wild lions were always available in Ethiopia. The Addis menagerie sold surplus lions to the nobles and others who kept them as status symbols until the revolution.”

Frey said he had traced only one report of a wild lion with a belly mane in Ethiopia, in Awash National Park, but he had found...
references to lions with enormous manes in that region. There was a picture of lion with a profuse mane and a belly mane in a renowned book of mammals, Brehm’s Tierleben (1915). This lion was a gift from the Emperor Menelik to Kaiser Wilhelm II of Germany and was reported to have been caught in the area of the Ghibbe, about 250 km south-west of Addis.

Discussing the belly mane, Frey quotes the German mammalogist, Helmut Hemmer, as suggesting that it is a feature from an archaic form of lion that had been best preserved in northern Africa and south-west Asia, but also in relict populations in sub-Saharan Africa. If a belly mane were genetically fixed in a lion, environmental conditions, such as climate, might suppress its development, leaving only a modest neck mane.

“This is demonstrated by some Asiatic lions P. l. persica from India which developed belly manes in European zoos,” says Frey.

“Belly manes were also present in some zoo lions that were brought from Sudan, Ethiopia and Zimbabwe, but never in specimens that originated from Central and West Africa, Tanzania or Transvaal.

“I have seen many pictures of lions in the Addis menagerie that were taken since the early 1950s, which also showed lions with both types of manes.”

In the early 1970s, Hemmer and fellow German mammalogist, Paul Leyhausen, found lions in the Rabat Zoo in Morocco, which had features of the extinct Barbary lion. However, genetic tests have not been carried out, nor a proposed breeding programme designed to eliminate any heritage from other subspecies.

Genetic tests of Asiatic lions in India have shown that they are distinct from sub-Saharan lions, but with less difference than that between human races. The two lion groups are estimated to have separated as recently as 100,000 years ago.

Until comparatively recently, lions, and other species, were seldom, if ever, bred according to their subspecies or area of origin, so that most captive lions today are of mixed origin and are termed “generic”.

References

Tiger Studies in India’s Panna National Park

Tigers are being radio-collared and tracked in a study of their ecology in Panna National Park, in northern India. The study, which began in January 1996, is led by Raghunandan Chundawat of the Wildlife Institute of India.

Monitoring of one male, collared in April 1996, indicated that he might be using a range of over 60-80 km², which is relatively large. A young female has been collared while dispersing from her natal area. If she survives the perilous period before she can establish a territory, it is hoped she will provide critical information on survival, dispersal and mechanisms of territory formation.

Chundawat says that information collected on predator-prey relationships will help determine the prey requirement of tigers, while the availability and structure of prey communities will help to determine the minimum size required for a protected area to sustain a demographically viable population of tigers. The information could then be used to predict the potential of India’s protected area network for conserving tigers and their habitat.

Studies of habitat utilization by the tigers will help to predict patterns of habitat selection which can be used to prepare special management programmes for crucial tiger habitats.

Panna National Park consists of two plateaux rising steeply in steps from the main valley floor with dry deciduous vegetation through which flows the broad Ken River. The potential prey species for tiger include nilgai antelope Boselaphus tragocamelus, sambar deer Cervus unicolor, cheeked deer Axis axis, chowshingha Tetracerus quadricornis, and wild boar Sus scrofa.

India’s Project Tiger Needs Expansion

An Indian government-appointed committee, which has evaluated Project Tiger, has declared that it needs to be expanded to meet emerging threats and challenges.

The so-called “J.J. Dutta Committee”, which was set up in 1994 by the Ministry of Environment and Forests, recommended that the Wildlife Institute of India should serve as a consultant to study, analyse, investigate and suggest ways and means to revamp the entire Project Tiger and its operational linkages within a reasonable time frame.

It said the post of Director of Project Tiger should be upgraded to Director General with the rank of Principal Chief Conservator of Forests. Special pay should be given to all Project Tiger staff and they should be invested with adequate authority and indemnity to discharge their protective functions.

The headquarters should have a special department to prepare management plans for each tiger reserve and monitor their implementation. Habitat management should maximize herbivore production to ensure the prey base for the tiger. Control of livestock grazing in reserves was “an absolute necessity”, and it was suggested that there should be rotation in time and space, and settlements reached with the villages concerned. Cattle holdings should also be reduced.

The committee called for increased efforts at ecodevelopment around reserves in a more studied and methodical manner. Shifting of villages from reserves should be voluntary and fully supported. Alternatives should be provided for local people to compensate for loss of livelihood arising from stoppage of collection of non-timber forest products.

The committee said that funding for Protect Tiger had to be increased manifold; funds should be allotted in the first quarter of the fiscal year, and should not lapse if unspent at the end of the year.

Tiger census figures did not represent the true numbers, the committee said, adding that indices of tiger numbers should be developed rather than trying to find out exact numbers.

Pointing out that no proper mechaism or atmosphere for research had been developed, the committee said the research component of Project Tiger needed to be totally remodelled and that research posts should come under central rather than state direction.
Top Indian Wildlife Official Cites Lack of Government Support

India's top wildlife official, Sarat Chandra Dey, has declared that the Central and State governments have no scheme for controlling the illegal trade in wildlife in the large cities where traders thrive. As a result, "considerable illegal trade in wildlife still continues in India", he added, according to a report in the Pioneer (22 January 1996).

Dey, who is Additional Inspector General of Forests (Wildlife) made the statement in a note added to the interim report of a committee of experts appointed by the Delhi High Court to report on wildlife preservation, protection and laws. Dey said the total amount available for developmental expenditure for conservation of wildlife in India was only 600 million rupees (about $17 million), which was only one-tenth of what was needed, considering that there were 500 sanctuaries and national parks.

He added that in the foreseeable future also the gap between the requirement and resources available would continue to be very large.

Dealing with poaching and illegal trade in wildlife products, Dey said a Central government-sponsored scheme for control had been transferred to State governments in 1992-93, along with the funds allocated. But it appeared that "the money transferred has got merged in the general kitty of the State plans".

(A report by the Press Trust of India newsagency quoted the Director of Kaziranga National Park, principal sanctuary of the great one-horned rhinoceros Rhinoceros unicornis, as saying that funds from the Central government had gone into revenue deposit in Assam State so that it was impossible for the wildlife authorities to use it.)

In a preliminary reaction to the report of the committee of experts, the government said it was examining splitting the present Ministry of Environment and Forests and establishing a Ministry of Natural Resources.

The committee declared that the "post-Rio (Earth Summit 1992) scenario" warranted the proposed Ministry to care for forests and wildlife, management and protection.

The government has also endorsed the proposal that a radius of 25 km around protected areas should be declared a "no development zone", but said it could not remove or relocate industries that had already been established. Nor could it impose a blanket ban on development activities once a protected area had been denotedified. Existing environmental guidelines provide for a 25 mk radius buffer, but there are no legal sanctions.

The committee noted the "sheer bullish power of denotification which the legislature wields", which could lead to unregulated denotification of protected areas without any scientific or research studies, but based on political and industrial contingencies. It recommended select committees in every state to look into applications to denotify protected areas.

The committee also suggested the formation of an advisory council of village representatives who could participate in the management and protection of a denotified area. It said there should also be a long-term compensation scheme immediately for all resettlement/relocation from forests.

Other recommendations of the committee included:
- statutory backing for the Indian Board for Wildlife under the Wildlife (Protection) Act
- all State Wildlife Advisory Boards to be constituted and meet regularly. Honorary Wildlife Wardens to be appointed
- creation of Wildlife Wings in Indian & State Forest Services
- special wildlife training for general category Forest Officers
- increasing India's protected area network to 7.5% by the year 2000
- Wildlife Protection Schemes for wildlife outside the protected area network
- more autonomy for protected area authorities to utilise funds
- improved anti-poaching measures
- steps to harmonise the relationship of forest communities with wildlife
- steps to reduce pressure of urbanisation and economic development on wildlife habitats
- harnessing revenue from low impact tourism to conservation and community development
- steps to reduce human and livestock pressure on critical wildlife habitats
- a minimum of 15% of total forestry budget to be earmarked for wildlife management, and both financial and other resources to be enhanced.

A committee member, former Additional Inspector General of Forests (Wildlife) Sanjoy Deb Roy opposed calls by non-governmental organizations for human activities in national parks. "This will be disastrous for wildlife and hence should not be allowed under any pretext," he declared.

Minister Who Launched Project Tiger Deplores Current Situation

The former Cabinet Minister who initiated and presided over India's Project Tiger in the 1970s, Karan Singh, has declared: "Unless the Government of India and the State Governments rethink their policies and get their act together, there will not be any tigers left to see in the next century".

"As far as the government is concerned, the level of interest in actual terms in environmental and wildlife protection today is substantially lower than it was 20-25 years ago," he added.

Karan Singh was delivering the memorial lecture on 5 October 1995 for Kailash Sankhala, the Director of Project Tiger, with whom he worked and who died in 1994.

"Political commitment and support in such matters is absolutely essential, as we are now realising. We find that political support and interest now seem to have evaporated. As a result, despite all the work being done by forest officers and conservationists, the spark has gone out of the whole effort."

Reviewing the early history of Project Tiger, Karan Singh stressed the importance of the interest and support of Prime Minister Indira Gandhi, whom he described as "a conservationist before it became fashionable".

He said the three elements of Project tiger were the central government, the state governments and WWF International.
Stressing the importance of the state governments, he declared: "In this vast country of ours, they are the ones who directly deal with the forests and village communities. Any attempt to by-pass them is doomed to disaster."

After speaking of the toll taken by Indian princes, British officials and American hunters, as well as fashion-conscious women, Karan said poaching for bones was "probably the last and the worst crisis of all".

He pointed to the chain leading from the poacher to the illegal trader and the smuggler to China, stating: "If we are not able to break this chain, there will not be any tigers left by the end of the century, except in zoos. The rate of attrition is staggering. I am not sure if officials will agree with me, but the rate of attrition now appears to be one tiger every day. It is a horrific figure. "Along with the menacing problem of trade in tiger bones, we have the problems of deforestation, increasing population and pressure on tiger habitats."

Karan Singh, a distinguished Hindu scholar, reviewed the place of the tiger in Indian mythology, and declared: "The best tribute to the memory of Kailash Sankhala is to involve ourselves, even at this late hour, in a last ditch attempt to save what has truly been described as the spirit of the Indian jungle; to save this great and glorious creature, so deeply rooted in our mythology, our iconography, our history and our consciousness."

**Russia Expands Major Amur Tiger Reserve**

Sikhote Alin Nature Reserve in the Russian Far East, which is central to conservation of the Amur tiger *Panthera tigris altaica*, has been expanded by 673 km² to cover a total area of 4,143 km². The reserve is in the mountains adjacent to the coast of the Sea of Japan.

The US-based Hornocker Wildlife Research Institute, which is carrying out a tiger ecology study in Sikhote Alin in cooperation with scientists from the Russian Academy of Sciences, described the move as "the most significant expansion of protected areas for tigers in eastern Russia in the past 50 years", adding that the area was probably the most diverse natural community of vertebrate life in all of Russia.

The mixed deciduous forests, along with Korean pines and Mongolian oaks, are the home of brown bears *Ursus arctos*, Asiatic black bear *Ursus thibetanus*, red deer *Cervus elaphus* and wild boar *Sus scrofa*, as well as small mammals.

In the course of the study, which began in 1991, 14 tigers have been trapped and radio-collared, and their movements and behaviour are under continuous monitoring. Brown bears, which have also been radio-collared, have been found to take over tiger kills.

The Hornocker Institute said that the study had identified key core areas in Amur tiger habitat, as well as a network of ecological corridors that must be protected. It is also focussing on education of local people, especially children, whose future is linked with the tiger and sustainable use of the forests.

Russian and American biologists are also studying the Amur leopard *Panthera pardus orientalis* in Kedrovaia Pad Reserve and the surrounding area bordering China, west of Vladivostok. The area is estimated to contain only about 30 leopards, while a few survive in China and North Korea. Five leopards have been radio-collared, and they have produced three litters.

The leopards prey on sika deer *Cervus japonensis* which are farmed in the area, and they therefore suffer persecution by the owners, as well as being vulnerable to poachers, who can sell the skins and bones to illegal traders.

**Bangladesh Expands Tiger Reserves**

Three small, unconnected tiger reserves in the mangrove forests of Bangladesh have been expanded to cover a contiguous area of 1,397 km² adjoining the Sundarbans Tiger Reserve in India, thereby creating a total protected area of 4,000 km².

The Sundarbans mangrove forests, in the vast delta region of the Ganges and Brahmaputra rivers, are believed to hold a possible 400-500 tigers, the largest surviving single population in the world.

The westernmost of the expanded reserves, Sunderbans West (715 km²), has been proposed as a World Heritage Site by the Bangladesh government. It adjoins the 2,585 km² Sundarbans Tiger Reserve in India, which has already been granted World Heritage Site status by Unesco.

Sundarbans tigers thrive in a unique habitat for the species; the dense mangroves are threaded by great rivers and narrow, winding creeks which cover about one-third of the area. Twice a day, tides race in from the Bay of Bengal, raising the water level by up to six metres. Tigers have been recorded swimming 28 km. The main prey consists of deer, wild boar and monkeys, but the tigers also eat fish, crabs and large water monitor lizards.

The region is also notorious for its highly aggressive tigers, whose record as man-eaters goes back to the 17th century. Fishermen, woodcutters and honey collectors are the principal victims, and it is estimated that 50-100 people are killed every year.

**Saving the Sumatran Tiger**

by Ronald Tilson *

The Sumatran tiger *Panthera tigris sumatrae* is critically threatened, with only about 400 living in five national parks and two game reserves on the island, and another 100 in unprotected areas likely to be converted to agriculture.

Tigers are being poisoned by villages at the forest edges, and poaching occurs at unknown levels. Forest loss or disturbance has further fragmented the tiger populations.

The largest estimated population of about 110 tigers occurs in the Gunung Leuser National Park in North Sumatra. The other populations are estimated at half this number or fewer. These small populations are extremely vulnerable to poaching or the removal of problem animals. Even without further losses, the present populations are so small that they are vulnerable to severe environmental catastrophes, as well as demographic and genetic
problems typical of small populations. The continued loss or
deterioration of tiger habitat further intensifies this crisis.

The Sumatran tiger field study is designed to develop informa-
tion about the distribution, status and ecology of wild tigers in
Sumatra. The four-year study, which began in June 1995, is
designed to develop a cost-effective field censusing system for
tigers living in lowland rain forest habitat, using ground-based
census counts, remote camera census and radio-telemetry that can
be modified and used as a model for long-term population moni-
toring in Way Kambas National Park and other tiger protected
areas in Sumatra.

We will establish a set of life history characteristics that will
be critical in developing effective interactive management strat-
gegies for wild populations. We will also establish a community-
based conservation education programme to decrease tension in
human-tiger interactions and to show how to share forest re-
sources equitably. A final product will be to train university and
PHPA counterparts to become future conservation leaders, par-
cicularly for tigers, in Indonesia.

* Conservation Director, Minnesota Zoo, Apple Valley,
MN 55124.

**Status of the Tiger in 1996**

<table>
<thead>
<tr>
<th>Tiger Sub-species</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
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</table>
| **BENGAL (INDIAN) TIGER**<br>
*P. t. tigris* (Linnaeus 1758) | 3,030   | 4,735   |
| – Bangladesh | 300     | 460     |
| – Bhutan | 50      | 240     |
| – China | 30      | 35      |
| – India | 2,500   | 3,750   |
| – Nepal | 150     | 250     |
| **CASPIAN (HYRCANIAN/TURAN) TIGER**<br>
*P. t. virgata* (Illiger 1815) | EXTINCT | –       |
| Formerly Afghanistan Iran Chinese and Russian Turkestan Turkey | 1970s | –       |
| **SIBERIAN (AMUR/USSURI/NORTH-EAST CHINA/MANCURIAN) TIGER**<br>
*P. t. altaica* (Temminck 1844) | 162     | 230     |
| – China | 12      | 20      |
| – Korea (North) | <10 | <10     |
| – Russia | 150 | 200     |
| **JAVAN TIGER**<br>
*P. t. sondaica* (Temminck 1844) | EXTINCT | –       |
| 1980s | –       |
| **SOUTH CHINA (AMOY) TIGER**<br>
*P. t. amoyensis* (Hilzheimer 1905): China | 20     | 30      |
| **BALI TIGER**<br>
*P. t. balica* (Schwarz 1912) | EXTINCT | –       |
| 1940s | –       |
| **SUMATRAN TIGER**<br>
*P. t. sumatrae* (Pocock 1929) | 400     | 500     |
| **INDO-CHINESE TIGER**<br>
*P. t. corbetti* (Mazák 1968) | 1,180   | 1,790   |
| – Cambodia | 100 | 200     |
| – China | 30      | 40      |
| – Laos | present | –       |
| – Malaysia | 600 | 650     |
| – Myanmar | present | –       |
| – Thailand | 250 | 600     |
| – Vietnam | 200 | 300     |
| **TOTALS** | 4,792   | 7,285   |
| **ROUNDED TOTALS** | 4,800   | 7,300   |

Note: Both Bengal and Indo-Chinese tigers are found in Myanmar; Bengal tiger west of the Irrawady and Indo-Chinese tiger to the east.

Table compiled by Peter Jackson, Chairman, Cat Specialist Group, Species Survival Commission, The World Conservation Union (IUCN), from reports by specialists in tiger range countries. Most estimates are educated guesses.
Selective Killing of Leopards in Himalayan State Banned

India's Ministry of Environment and Forests has refused a request from the State of Himachal Pradesh to be allowed to selectively kill leopards, on the grounds that they were too numerous.

The State's Principal Chief Conservator of Forests, Gian Chand Gupta, made the request in 1995, declaring, according to a Delhi report in the British magazine New Scientist (12 Aug. 1995), that a census in 1993 counted 515 leopards in the lower areas of the Himalayan state. He wanted to shoot 270 because the remaining forest could support only 245. Valmik Thapar, Vice-Chair (Asia) of the Cat Specialist Group, was quoted as saying that nobody knew the real number of leopards and a detailed survey was necessary to gather reliable information.

The Ministry of Environment has asked the Wildlife Institute of India to carry out a study and recommend measures to deal with the leopard problem without selective killing.

The Indian Express (3 June 1996) said that around 32 persons, mostly children aged 4-14, had been killed by leopards in the State during the past five years, and cattle losses were "enormous".

Illegal Trade in Leopard

Leopard cubs picked up in tea gardens in the Indian state of Bengal may be entering into illegal trade, according to a report from an Indian wildlife specialist.

The specialist, Kishore Chaudhuri, who visited North Bengal, said it was common for leopards to drop litters in tea gardens adjacent to forests. The tea bushes provided good cover and mothers could find food around the labourers' settlements. Labourers going into tea areas came across litters and were reported to be collecting them and selling them to dealers in nearby towns.

Cat Group member Anne Wright commented that a rumour that 50 tiger cubs had been flown to Thailand from Bhutan (which is not a Party to CITES) may have referred to leopard cubs.

Cubs Reported in India

Leopard cubs are also collected by official Wildlife Squads at the request of tea garden managers and handed over to a Forest Department Leopard Rehabilitation Centre. The Centre received 43 cubs over nine years, of which seven were released in the wild. 18 died in captivity, and eight were sent to zoos.

Chaudhuri recommended that tea garden managers be reminded of their responsibility to protect leopards under the Wild Life Protection Act and they should take steps to prevent labourers disturbing lairs with cubs. He also questioned the release of hand-reared leopards from the Rehabilitation Centre because they acquired a taste for poultry.

Captured Leopard Shot by Poacher in Russia

by Viktor Korkishko*

Efforts to capture, radiocollar and study the Amur (Far Eastern) leopard are being conducted under the auspices of a cooperative agreement between the US-based Hornocker Wildlife Institute, Kedrovaya Pad Nature Reserve, and the Far Eastern Leopard Fund. Permission to capture leopards, tigers, and bears is provided by the Federal Ministry of Nature Protection.

On May 14, a young female leopard of approximately 18-22 months was captured at the AOZT Amurskaya deer farm in Bezverkhovo, several kilometres south of Kedrovaya Pad in Khasan District. A. Zaev, J. Augustine, E. Ivanov and E. Ivanov were present during the capture. The animal was immobilized with the drug Telazol, using a protocol that has been developed by the Siberian Tiger Project. Upon examination of the animal, it was found that serious trauma had been inflicted to her front right foot. Four toes were missing, and the second phalanges were broken and exposed. The wounds appeared to have been inflicted within the previous 48 hours. The wound was cleaned with the antiseptic Betadine, and bleeding was stopped by applying pressure to the wound. While still immobilized, the animal was transferred to a secure shed at the Sukhaya Reschka Cordon within the boundaries of Kedrovaya Pad Reserve.

As soon as all preparations were made, and the leopard was resting securely, Augustine and Zaev returned to Kedrovaya Pad headquarters and notified the Director of the Reserve, Victor Korkishko. Dale Miquelle, representative of the Hornocker Wildlife Institute, was also notified. Miquelle, who was in Khabarovsk, called D.G. Pikunov and asked him, as a leopard specialist, to go and assess the situation, to locate a capable veterinarian, and bring him to Kedrovaya Pad to carry out treatment.

On May 15, Pikunov brought Y.V. Khasin, a doctor with extensive experience with animals, to attend the wounds of the leopard. The animal was immobilized a second time to allow treatment. Because broken and exposed bones would be an avenue for infection, Khasin removed the broken phalanges that were extruding from the wound, cleaned the wound, and stitched the wound to assist in the healing process. The stitching left the wound slightly open so that drainage of fluids could occur. A regime of valium (to keep the animal calm) and pencillin (to reduce the possibility of infection) was administered orally three times a day.

It is not entirely clear how the injury was sustained. We are certain that the snare itself did not cause damage to the foot. The snare loop was holding the animal around the wrist in a position...
that is considered optimal for holding the animal securely with minimum impact. Therefore, either the animal inflicted the damage on herself by chewing the foot, or the trauma occurred within 48 hours prior to capture. If the animal chewed her foot, one would expect to find the remaining claws either at the capture site, or in her excrement. Neither examination of the capture site nor examination of excrement revealed the presence of claws. Therefore, the possibility existed that the injury could have been sustained prior to capture.

If the trauma had been self-inflicted, it would be the first such documented case known in large cats. The Horrocks Institute has used Aldrich snares of the same design in 13 captures of Amur tigers, 11 captures of Far Eastern leopards, and over 200 captures of puma. Snares of the same type have been used in hundreds of captures of lynx without any documentation of this type of behavior. Aldrich snares are considered to be one of the safest and most effective means of capture, providing the opportunity to target specific animal species, and at the same time minimizing the chance of injury.

The doctor who treated the wounds, Khasam, suggested that recovery would take 7-10 days (May 22- May 24), and, at that point, a decision had to be made whether to return it to the wild, or to keep it in captivity. If this leopard were to be returned to the wild, there were two considerations: 1) what was the probability of survival, and 2) what was the probability of reproduction.

An expert committee of Russian and American scientists came to the following conclusions:

1. Probability of Survival
The injury sustained to the foot would potentially decrease her chances of survival in two ways: by changing her ability to hunt and successfully capture prey, and by affecting her ability to elude dogs, or other potential enemies (e.g. tigers). Wild cats use the front claws as an integral component of the hunting process when capturing large prey: the claws on both front paws are used to secure a hold on the prey and control its movements while a killing bite is delivered to the neck or throat. Capture of small prey (e.g. badger or raccoon dog) would probably be less affected. The degree to which this animal could learn to compensate for the loss of claws on one foot while hunting was unknown. Secondary, loss of toes may diminish the ability to run, decreasing the animal’s speed, and decreasing its chances of capturing prey. We knew of no other events of this kind, and therefore had no means of estimating the chances of the animal developing the capacity to hunt effectively. The animal’s ability to escape from potential enemies would probably also be lessened. Leopards often escape from dogs and tigers by climbing trees. With only one claw remaining on its front right foot, the animal’s ability to climb would likely be limited. Because tigers are rare in this region, this leopard might live many years, or its whole life, without encountering a tiger. However, if an encounter were to occur, its chances of escape would be lower. In conditions of lack of suitable habitat, territorial competition is high and a wounded animal can be ousted, probably to the vicinity of villages. The risk of poaching or killing by dogs is higher there.

2. Probability of Reproduction
Chances of reproduction would depend on the considerations listed above, plus the added burden of providing adequate food for offspring. It was possible that this animal might be able to compensate enough to secure enough food to survive, but not enough to successfully raise young. In such a case, even though she would be living in the wild, she would not contribute to the population. Under these conditions, she would be more valuable in captivity, where reproduction would be more likely.

We saw two potential courses of action: release into the wild could be attempted on an experimental basis under the following conditions: 1) that we could recapture her at any time to assess her health and status; 2) that we hold her long enough to allow for recovery of the foot; 3) that she would be fed well while in captivity so that she was known to be in good shape prior to release. This process was only possible if we had the possibility to recapture her. This possibility also existed if we could obtain a “capture collar”, which is a special collar that sends out radio signals for tracking, and which contains a tranquilizing agent that can be delivered by remote control. With such a collar, we could have released her for an experimental period, 2-4 weeks, recapture her, and compare her weight and condition with that prior to release. Based on that assessment, a decision could be made whether to bring her into captivity, or leave her in the wild. This process could be repeated over 4-6 months.

The other option was to commit her to captivity. As a wild-caught female, she was potentially a very valuable addition to the captive population of Amur leopards. At present, there are less than 10 pure-bred captive Amur leopards in the international breeding programme, and she would therefore have been a unique contribution to the captive gene pool. If it became necessary to release Amur leopards into their native habitat in the future, she would have been a valuable component of that process. However, her potential for contributing to the captive gene pool was not guaranteed. Because she was already a subadult, she might not adjust well to life in captivity. There are several instances of Amur leopards breeding poorly in captivity, and how she would respond was unknown.

If this leopard were committed to captivity, it would have been critical that the following conditions be met: 1) she should be assigned to a zoo that is an active participant in the international breeding program; 2) the selected zoo should already have Amur leopards (in particular a male Amur leopard); and, 3) the selected zoo should have already demonstrated its ability to successfully breed leopards in captivity.

An unsuccessful attempt was made to find a special “capture collar”. The Americans were not able to bring specially trained dogs, and using Russian dogs would have been dangerous for the leopard. Therefore, there was no possibility to recapture this female if a critical situation arose.

After waiting about a month for a guarantee of quick recapture, Moscow decided (13 June) to commit the animal to Moscow Zoo. The representative came on 20 June and had a flight back to Moscow on the 25th.

On 21 June, reserve inspectors met two men near a cage containing the leopard. The cage was only 300 m from their home in the forest. From then on, the inspectors kept watch near the cage. But on the 23rd, soon after they left for dinner, they heard a shot. Minutes later, the inspectors caught a man carrying the dead leopard. He had put the barrel of his gun inside the cage and fired when the leopard bit the barrel. He had removed the radio-collar. The inspectors, who had kept and treated the leopard were ready to cry and the same time to kill him.

The poacher was detained for inquiry.

* Director, Kedrovaya Pad Reserve, Primorski Krai, Russian Federation.

8
Lumping Leopards; Should 27 Subspecies be Reduced to Eight?

Sri Lankan biologist Sriyanie Miththapala, John Seidensticker of the US National Zoo and Stephen O’Brien of the US National Cancer Institute have formally proposed that 27 described leopard subspecies be reduced to eight.

Preliminary announcement of the results of molecular studies was made in 1993. Now, in a long-awaited paper, published in Conservation Biology (Aug. 1996), they confirm their findings that only six geographically isolated groups of leopards exist – African, central Asian, Indian, Sri Lankan, Javan and east Asian – and declare that only eight subspecies should be recognized:

1. Africa’s 12 subspecies to be classified as *P. p. pardus* (the so-called North African leopard, although its range is actually south of the Sahara from West Africa to Eritrea);
2. Six Central Asian subspecies to be classified as *P. p. saxicolor* (the so-called North Persian leopard);
3. Four Indian sub-continental subspecies to be classified as *P. p. fusca* (the so-called Indian leopard);
4. *P. p. kotiya* to be retained for the Sri Lanka leopard;
5. *P. p. melas* to be retained for the Javan leopard;
6. *P. p. delacouri* to be retained for the South China leopard;
7. *P. p. japonensis* to be retained for the North China leopard. *(japonensis)* is a misnomer resulting from the skin described being reported to have come from Japan, which actually has no leopards;
8. *P. p. orientalis* to be retained for the Amur or Far Eastern leopard.

The authors note that final recommendations on *P. p. melas, delacouri, japonensis and orientalis* must await future studies as the specimens available were inadequate for clear distinction.

The authors stress the importance of taxonomy in conservation biology, particularly because precise definitions of taxonomic units have been incorporated into wildlife legislation. They recommend a multidisciplinary approach because their results confirm that modern technological methods – molecular and statistical – allow for quantification of differences and precise characterizations of taxonomic units.

They recommend careful monitoring of Sri Lankan and Javan island leopards, not only because they are taxonomically distinct, but because they are ecologically significant. They are top carnivores on both islands – in Sri Lanka since it separated from India and in Java since the Javan tiger became extinct in the 1970s. Because of their position in food webs, top carnivores are important in the management and monitoring of whole ecological communities.

The authors recognize that controversy exists over the incorporation of genetic differentiation into the definition of a subspecies. In their study they have used the general definition proposed by O’Brien and Mayr (1991) that members of a subspecies would share a unique geographic locale, a set of phylogenetically concordant phenotypic characters, and a unique natural history relative to other subdivisions of the species. Although subspecies are not reproductively isolated, they will normally be allopatric and exhibit recognizable phylogenetic partitioning.”

The authors suggest that other geographically widespread species be evaluated taxonomically. An obvious candidate is *Puma concolor* for which some 30 subspecies have been described throughout the Americas. Studies of Mitochondrial DNA sequences at O’Brien’s laboratory indicate low genetic variation in North American pumas, relative to a higher amount in the variation in South American pumas.

Alan Shoemaker, International Studbook Keeper for Endangered Leopards and Deputy Chairman of the Cat Specialist Group, comments:

“I am concerned that none of the extensive museum material on leopards was examined and tested. The varying populations from which captive-held subspecies originated are not mentioned. nor has any consideration been given to physical differences of populations that are lumped into one taxon. Having looked at hundreds of skins from Africa, this is particularly obvious to me. For instance, Zaire leopards are consistently small and greenish in comparison with other populations. Leopards from Anatolia, Lebanon and Iraq are consistently large, tan, and with markings quite distinctive from those of northern Iran. Skulls of populations of the northern Caucasus have short snouts in comparison to adjacent populations.

“The list of 27 described subspecies represents a recent synthesis – even in the 1950s there were over 30. “In assigning the trinominal *pardus* to African leopards, the authors use the principle of priority in taxonomic nomenclature. This is correct, but it is ignored in assigning subspecies names to other leopard populations; for instance, *saxicolor* Pocock 1927 would not have priority over *tulliana* (Valenciennes 1856), *nimr* (Hemprick and Ehrenberg 1833 or *ciccaucasia* (Satunin 1914).

“Regarding the origin of sample sizes and origins: a sample size of only one *sindica* and a zoo-bred population of *saxicolor*, which derive from two regions (northern Iran and western Afghanistan, two forested mountain regions separated by a desert) begs some questions. Also, conclusions about subspecialization in this region ignore leopard subspecies from other areas: Arabia, Turkey, Israel and the Caucasus. One has only to look at the body size and pattern and color conformation to realize that there has to be some difference across this geographical area that is being consistently passed down within populations.

“Lumping the three described subspecies in the Indian subcontinent under *fusca* may be sound, but the Kashmir leopard *militardi* is morphologically different from *fusca*; it has a spot within each rosette on the dorsum.

“Samples of *delacouri* from Colombo zoo are said to have been deliberately inbred; the question arises whether they were inbred to achieve a particular colour morph.

“*Virtually all the orientalis* samples contain genes in their backgrounds from the controversial leopard Frankfurt #2, which was a founder of the captive population but whose origin is unknown. If this animal could be traced to a region other than Siberia, Korea or Manchuria, it might help explain the results. The many differences between *orientalis* and *japonensis* are not touched upon.

“The populations of *japonensis* sampled were captive born and certainly did not come from the same part of China.

“As far as *panthera* is concerned, one wonders if the samples of a reported wild-born one came from a collection that is suspect? “All in all, the incorporation of data from preserved material will be critical to acceptance/rejection of the authors’ recommendations.”
The Snow Leopard in its Northeastern Range

Evgeniy Koshkarev*

From April until June of 1995, I surveyed the central and eastern Sayan regions of Russia to determine the population of snow leopard within the northeastern part of its range in Asia. I was especially interested in looking at population cores along this marginal extent of range, and ecological corridors linking the groups.

The areas surveyed were: (1) Okinskiy and Kropotkinskiy Mountains of Eastern Sayan (2) Munku Sardyk Peak (3,492 metres) in the Bolshoi Sayan Mountains on the border between Russia and Mongolia (northwest Hovsogol) and (3) Tunkinskiy Mountains (central portion – the ridge between Altan-Mundarg at 3,157 metres and Shumakskiy Pass at 2,760 metres).

Snow leopard tracks were found in all three regions. Secondary evidence received through questionnaires also supports the idea that snow leopards here are not unique, but have continually lived here at least in recent years.

Kropotkinskiy and Okinskiy Mountains

In all, I recorded seven tracks in the Zhombolok River Basin: five to six were made by different animals, including two sets from female with young. Evidence of snow leopard has existed here since the 1960s. From 1975 to 1993 tracks were noted in Zhombolok by hunters every winter. In neighboring regions, snow leopard were observed in the Sentsa, Khoitto-Oka, and Urda-Oka River basins. Most recently, a live animal was sighted in 1994. Of known snow leopard prey, the ibex, red deer, roe deer, and reindeer are widespread here. The landscape of the region does not at all resemble that of Central Asia.

Munku-Sardyk Peak

I noted one track of snow leopard along the Beliy Irkut River. Another seven places where snow leopard had marked with scrapes were found along the divide between the Beliy Irkut and Muguvek Rivers. This was the only discovery of marking in the Central and Eastern Sayan region. Evidence of snow leopard here is not regular. This may be due to the fact that human hunting in the Munku-Sardyk area is sporadic. The largest population settlement nearby is the village of Mondy and no one there ever reported seeing a snow leopard. The only exception is evidence from the local hunter, Bimba Zabanov. His grandfather had told his father about sighting a snow leopard more than 100 years ago around Munku-Sardyk. More often I heard about tourist groups: they found snow leopard tracks once in 1993 (April), three times in 1994 (May) and twice in 1995 (May).

Known snow leopard prey here include mountain goat, red deer and musk deer. The landscape here resembles snow leopard habitat of Central Asia.

Tunkinskiy Range

I noted three tracks, made by at least two separate animals along the upper reaches of the Ikhe-Ger and Shumak Rivers to the west and east of Shumakskiy Pass. Snow leopard tracks were noted around Altan-Mundarg Mountain in 1981 and 1991 or 1992. Four of the cats were seen here together in 1994 (female, male and two young). The adults were killed.

Also in 1994, along the Ikhe-Ger River, four were seen: in one case the animal apparently was an adult and in the other case a female with two young. In this region, snow leopard prey includes mountain goat (the largest group occurs here), red deer and musk deer. The landscape here is also closer to that of Central Asia, but snow cover is much higher than in the Munku-Sardyk area.

The results of this work allowed the following generalizations:

1. The snow leopard in this region is more common than secondary evidence has suggested, but special research on the species has not been done here. Local hunters rarely visit snow leopard habitat in the winter and therefore are practically not acquainted with the animal's tracks, and poorly recognize even the live cat. They have claimed, for example, that they have seen "tigers" or "lym with long tails" in the area.

2. Kropotkinskiy, Okinskiy, and Tunkinskiy Mountains seem to contain permanent population core groups totaling not less than 20 to 30 individuals. This is suggested by the continuity of evidence over time and the presence of breeding females.

3. Peak Munku-Sardyk apparently makes up a narrow ecological corridor linking the Tunkinskiy Mountains with Northwest Hovsogol in Mongolia.

4. The most northeastern point of permanent population within snow leopard range seems to be at present time the middle section of Tunkinskiy Mountains, especially the upper reaches of Shumak River (Kitoi River basin dividing Tunkinskiy and Kitiskiy Ranges). Distribution of snow leopard and mountain goat to the east of Shumak River is apparently limited by deep snow cover. In terms of sign of animals, there has only been evidence of some mountain goat in this region.

5. It may be that the highest exchange of population is between the Kropotkinskiy, Okinskiy, and Udinskiy groups. Peak Topography (3,044 m.) seems to represent the separation between the southernmost groups in the Kropotkinskiy and Okinskiy Mountains. To the west and east of this peak, there are spatial constraints on population spread. Its role as an ecological corridor may not be great although snow leopard has been noted in various places along its western side.

6. Cases of poaching are well-known here, but its prevention is difficult, given a 70 per cent unemployment rate and continuous inflation in Okinskiy and Tunkinskiy regions.

Support for the research was obtained from the International Snow Leopard Trust and individual donations

* Institute of Biology, Irkutsk University, Russian Federation.

(Translation by Kathleen Braden, Seattle Pacific University)
Baby-clothes to Conserve Snow Leopards

The International Snow Leopard Trust (ISLT) and a Mongolian partner have crafted a programme to supply families in snow leopard habitat with baby-clothes and good quality flour. In return, the families, chosen as having shown concern for the snow leopard, will be expected to provide information about the cat and its prey.

The need for flour and children’s clothes at a fair price was proposed by the local people in the southern Gobi in response to a request to define their greatest needs. At present they have to buy from Chinese traders who visit the area twice a year.

“I expected to see high-cost items like schools, new gers (Mongolian-style tents) and jeeps on the most-wanted list,” said Rod Jackson, Conservation Director of the ISLT. “I was delighted when they said ‘good quality flour and children’s clothing at a fair price.”

The programme has been organized in conjunction with the Mongolian Association for Nature and the Environment (MACNE).

Jackson explains: “Thanks to its philosophy of learning from in-country individuals and organizations. ISLT long ago abandoned the ‘fence it off and patrol it’ tactic in place of share partnerships involving local people at all levels,” adding that the prospects of the new programme in Mongolia were encouraging.

Source
Snow Leopard News Vol.1(2) Autumn 1996. ISLT. Seattle WA, USA.

Snow Leopard Pelts in Kashgar Market

A German mountaineer recently found between five and 10 snow leopard pelts in a shop in the market of Kashgar, in China’s western province of Xinjiang.

The mountaineer, on her way to climb the Muztagh Tower, went to the shop with friends who wanted fur hats. The shopkeeper said the hats were made from lynx. Hanging on a clothes-line in the shop were the snow leopard pelts. The mountaineer said the shop was chosen at random, and thinks it unlikely that it was the only one offering snow leopard pelts.

Mother Dies Protecting Son from Cougar

A cougar Puma concolor (also known as puma and mountain lion) killed a 36-year-old mother in British Columbia, Canada, as she was trying to save her son from an attack.

The boy, out riding near Princetown, 75 km east of Vancouver in late August, fell from his horse when it was spooked by the cougar. The cougar attacked him. His mother, Cindy Parolin, leapt off her horse and went for the cougar with a stick. It turned on her while her other children dragged the injured seven-year-old away.

As she fought the cougar they rushed to get help, but had to run two kilometres and back. When they returned, Cindy was under the cougar, and gasped: “I’m going to die.” A helper fired a gunshot but failed to scare the cat, and so he pelted it with rocks and freed his dog to attack. As the cat pulled off the woman, he was able to shoot and wound it. Conservation officers later tracked the cat down and killed it.

Parolin was pronounced dead in hospital. Her son needed 70 stitches in his head.

Protection Continues for California’s Mountain Lions

Californians voted 58% to 42% in March 1996 in favour of maintaining protection of mountain lions Puma concolor (also known as pumas and cougars) despite fatal attacks on two women in 1994 and a reported increase in killing of livestock and pets.

The voters were asked to allow the State Department of Fish and Game to manage mountain lions as it manages other animals which are not rare, threatened or endangered. A favourable vote would have allowed a majority vote by legislators to amend or repeal provisions of Proposition 117, an initiative passed in 1990 that gave special protection to mountain lions and made a 1972 sport hunting ban permanent.

Republican Senator Tim Leslie, who called for the vote, argued that mountain lions were a growing threat to humans, livestock and pets. And Governor Pete Wilson declared: “Mountain lions are symbol of California’s rugged wildlife, but they have become frequent visitors to our neighborhoods. With two fatal attacks in 1994 and lion incidents occurring at the rate of nearly one per day, it is crucial to return management of the cougar population back to the wildlife professionals at Fish and Game.”

Voicing the views of opponents of the bill, Paul Van Dyke of the California Wildlife Protection Society said: “This is not about public safety. We feel this is an effort to bring back trophy hunting and with the worst abuses of California wildlife.”

The vote in favour of mountain lion protection occurred despite many press accounts of people confronted by the big cats or spotting them around their homes and even in school grounds.

The mountain lion population of California has been estimated at about 6,000, up from 2,500 in 1972. Under current law, mountain lions that attack or threaten humans and livestock can be shot. In 1994, Fish and Game officials killed 10 lions, including those that killed the two women.

Cat News 25 – Autumn 1996
Florida Panther Reintroduction Feasible, but Issues Complicated

Re-establishment of additional populations of the critically endangered Florida panther (Puma concolor coryi) is biologically feasible, but the tremendous economic, political and social costs have to be considered. That is the conclusion of a "Florida Panther Reintroduction Feasibility Study" by Robert C. Belden and James W. McCown published by Florida's Bureau of Wildlife Research.*

The authors state that the Florida panther, of which only 30-50 survive, faces the threat of extinction on three fronts. Firstly, continual loss of habitat to human development reduces the carrying capacity and therefore the number of panthers than can survive; secondly, genetic variation is probably decaying at a rate that is causing inbreeding depression and precluding continued adaptive evolution; thirdly, panther numbers may already be so low that random fluctuations could lead to extinction.

Although habitat protection and genetic restoration are ongoing projects, the panther populations would still be vulnerable to random fluctuations, they declare.

The objectives of the project were to evaluate an initial stocking of at least 10 mountain lions as a means of establishing a mountain lion population in northern Florida; to compare the performance of wild-caught animals with captive-raised animals in the initial release; and to determine the feasibility of adding new animals to an established population.

The experiment involved the release in a selected area of northern Florida of 19 Texas mountain lions (Puma concolor stanleyana), from a population that, in the past, was a next-door neighbour to the Florida panther and closely related. Six of the mountain lions were born and raised in captivity; three were taken from the wild and held for 2-8 years in Florida; and 10 were captured in the wild and translocated to Florida. They included 11 females and eight vasectomized males. The cats were monitored by radio-telemetry from February 1993 to June 1995.

In the first phase, 10 mountain lions were released (six females and four males). The remaining nine animals were released during the study to determine the feasibility of adding new animals to an established social structure. Seven of them were assimilated: one kitten had to be withdrawn because she would not follow her mother, and a male dispersed from the population.

Before the releases, local community leaders and public officials were informed, and a brochure released to key contacts and the media. A press conference was held at the release site. To allow for compensation for livestock losses, a Bank agreed to indemnify the Florida Game and Freshwater Fish Commission up to $10,000.

The mountain lions were held in release pens at the site for 10-14 days before "soft release," (i.e. allowed to make their own way to freedom, not forced out).

Fifteen mountain lions, predominantly captive-born and wild-caught/captive-held, established one or more home ranges. The mountain lions that established home ranges outside this population had a higher excursion rate than animals within it. Captive animals established home ranges more quickly, and were more likely to be in association with other animals than were wild-caught animals. However, captive-raised animals, particularly males, were more likely to be seen and caused most of the human/mountain lion interactions that created negative attitudes in the public towards the programme.

Of the 21 sightings during the study, most were of captive-bred males. Seven mountain lions were involved in eight predation incidents, three of which involved new-born calves, two exotic ungulates, one a horse, one a hog, and one a house-cat. Captive-bred males had a higher predation rate than others.

Five of the mountain lions died during the study; two were illegally shot, two were killed on highways; and one died in a snare. Mortality was significantly higher for the wild-caught cats than for the captive-raised.

In their discussion, the authors state that an initial stocking of at least 10 mountain lions can be used to establish a population. They say that captive-raised animals tend to establish home ranges close to the release site, with a tendency to become established more quickly than wild-caught animals. They appear to be more social, even grouping at times.

"The main disadvantage of captive-raised animals is their lessened fear of humans and greater likelihood to be involved in mountain lion/human encounters that may be perceived by some as negative. There is also evidence that kittens produced in captivity fail to learn to follow their mothers to kill sites ... this effectively precludes releasing females with dependent captive-raised kittens. Non-dependent captive-raised animals, however, began making large kills within a few days of release, suggesting this behaviour is instinctive. That one captive-raised female successfully raised wild-born kittens is evidence that captive-raised animals can be successful.

"The main advantage of wild-caught mountain lions is that they do not interact as readily with people and livestock. Wild-caught females with kittens do not move far from the release site when released, and the kittens seem to behave normally.

"The main disadvantage of wild-caught mountain lions is that males tend to disperse far from the release site and remain transient, moving from one use area or home-range to another. The probability of mortality is higher in this group, probably due to the great movement."

The authors stress that reintroduced panthers would need to establish and maintain a social structure after release. They state that areas of at least 2,200-5,500 km² would be necessary for the initial establishment of a resident breeding population, adding that reintroduction plans should consider expansion, excursions and dispersal; the 19 mountain lions in the experiment covered an area of 84,745 km².

In discussing alternative release plans and site and prey requirements, the authors point out that public attitudes and fears would probably be the major factor affecting success of reintroduction efforts. Although public attitudes had shifted in favour of preserving Florida panthers rather than persecuting them, some historic concerns remained. A statewide majority of respondents to a telephone survey (83%) supported reintroduction efforts, 7% opposed and 11% had no opinion or did not know.

"However, it is our opinion that those rural residents that lived in the immediate area where experimental mountain lions were released were strongly opposed to reintroduction efforts. These people became organized in November 1994, forming a 'Not In My Backyard' organization to oppose reintroduction efforts after a captive-bred mountain lions attacked three new-born calves in three weeks. Most of those we heard from said they were not opposed to Florida panthers, they just did not want them in the immediate vicinity."

Major concerns were human safety, safety for pets and livestock, landowner rights and effects on deer populations.
The authors concluded: "Re-establishment of additional Florida panther populations is biologically feasible ... There are enough habitat and prey available in northern Florida and southern Georgia to support a viable, self-sustaining population ... The presence of this population, however, will create new problems for government agencies, as well as the general public ... It will only be through the re-establishment of additional populations that this risk (of random fluctuations in population size) can be significantly reduced.

"It must first be decided, however, whether the tremendous costs involved (economic, political, social, etc.) in the re-establishment of additional Florida panther populations can be offset by the benefits gained in reducing the risk to the present Florida panther population."


How the cougars were prepared for release
The mountains lions used in the reintroduction experiment were trained at the White Oak Conservation Centre, Yulee, Florida, under the charge of John Lukas.

A colleague briefed by Lukas explained to Cat News that the cougars were only fed the food items they would encounter in the wild, i.e. turkey meat, quail, rabbits, venison, etc., with the expectation that their taste for such prey would be established early in their lives. For this reason, horsemeat and commercial diets were expressly forbidden. At first, the meat was presented as dead meat to young animals. Gradually live prey was introduced, with the smaller prey items first. Eventually live fawns, then adult deer were introduced into the 15 acre (six hectare) wooded and secluded enclosure. This process, from small dead "prey" to live adult deer took about 2-3 months. The way the prey items were introduced also became important. The main thing was to remove human/truck sounds, etc. from the presentation of the food/prey items. White Oak accomplished this by sneaking in, when the cats were asleep in the morning, with drop boxes which dropped rabbits etc. into the enclosure or released deer from cages. By the time the cats got up to forage, the prey was anywhere within the enclosure, with no predictions, and no humans around connected to the scene.

All in all, these details were successful. The cats caught their own deer within a week of release and hunted successfully throughout their time in the wild. Possibly they were still too acclimated to the sounds of humans and trucks, however, and they were more often seen by locals than wild cats would have been. Further reintroduction protocols will be even more stringent in this regard.

Concern About Chinese Tiger Programme

by Peter Jackson

With a near-extinct wild tiger population, China has been considering reintroduction of captive-bred tigers. In 1986, a Feline Breeding Centre was established at a failed fox and mink fur farm at Hengdaohezi, 150 km east of Harbin, in the north-east province of Heilongjiang. It had a found population of tigers from Chinese zoos and five tigers sent to China by the US Siberian tiger breeding programme. It has raised 70 tigers, of which 30 remain at the centre, 30 have been sent to a newly-established Siberian Tiger Park in Harbin, and 10 to Shanghai.

The tigers in the Siberian Tiger Park are being publicly fed live cattle and chickens in order to prepare them, according to the Director, Liu Xin Chen, for reintroduction in the wild.

After visiting the tiger park in June, I sent a letter to Liu Xin Shen and Chinese authorities explaining that the programme was not suitable for training tigers for reintroduction, and that the tigers would constitute a danger to people and livestock if released in the wild.

I explained that the provision of cattle and chickens to train the tigers to take live prey would result in then seeking these domestic animals if released in the wild. This would lead to serious social and political problems with local people and the authorities. I noted that the tigers I observed were not able to kill cattle efficiently, a necessary skill a wild tiger learns from its mother.

Furthermore, I pointed out that the tigers were already familiar with, and dependent on, people, and that feeding from motor vehicles would associate them with food. The tigers would be attracted to both people and vehicles if released.

Along with guidelines prepared by the IUCN Reintroduction Specialist Group which stress that reintroduction is always a very lengthy, complex and expensive process, I explained that, ideally, wild tigers should be used for reintroduction because they know how to survive in natural habitat. Since wild tigers would not be available, it would be necessary to raise a new generation of tigers, which, throughout their captive life, would have minimal contact with people.

Training in taking wild prey would have to be carried out with appropriate species in an area of natural habitat, or one that was similar. The prey would have to be released in such a way that it would not be associated in the tiger's mind with people. Obviously, training should not be conducted in public.

I also drew attention to the necessity of seeing that site conditions were suitable to support a tiger population, and that a very large area with abundant wild prey, would be required to support a viable tiger population. Advance studies would have to be carried out by scientists and other specialists. Local people and authorities would have to be prepared for, and agree to, the project. If this were not done, serious problems could arise if tigers became involved in incidents with people or their livestock, which would be certain to happen.

The Hengdaohezi breeding centre aroused concern when the Chinese government prepared requests to the CITES Conferences of the Parties in 1992 and 1994 for recognition of the centre, which would permit the sale of tiger products on the international market. The reason given was that sales would raise funds to support the breeding centre. Conservationists feared that this would provide a cover for the illegal trade which is threatening tigers throughout their range. However, on both occasions the request was withdrawn before consideration by the Conference.

The Chinese request stated that no bones had been sold by China since it became a Party to CITES in 1980, and recalled that, in 1993, China banned import and internal trade. Liu Xin Chen declared to me that no bones or tiger parts had been sold by the Feline Breeding Centre, and he showed me large steel containers with officially-sealed locks, which he said contained the remains.
of tigers that had died naturally or been put down because of genetic deformities.

Doubts about the genetic purity of the Hengdaohezi tigers also make them unsuitable for reintroduction. Although the tigers from the USA were registered studbook animals, Chinese zoologists say that some from zoos in China could have been of mixed subspecies origin. Since the Chinese release plan involves an area close to the Russian border near Lake Khanka, they could “contaminate” the pure population in Russia. Professor Ma Jian Zhang, Dean of the College of Wildlife Resources, North-East Forest University in Harbin, is currently carrying out molecular studies of the Hengdaohezi tigers.

Secondary Reintroductions of Large Cats in South Africa

by Luke Hunter*

Populations of lions and cheetahs established by re-introduction in the Phinda Resource Reserve in northern Natal, South Africa (see Cat News 24) are providing individuals for other re-introduction efforts in the region. At the end of 1995, a pair of sibling male cheetahs was translocated from Phinda about 850 km north-west to Madikwe Game Reserve near South Africa’s border with Botswana. The two cheetahs were born at Phinda to a female released there in 1992 and it was decided to shift them to avoid the possibility of them breeding with related females. The two brothers have settled in to Madikwe without incident and are being radio-tracked to follow their progress. Two unrelated males, wild-caught in Namibia have since been released at Phinda to introduce new genetic stock into that population.

In April and May of this year, eight lions from Phinda were translocated to Tswalu Desert Reserve, a privately owned tract of 70,000 hectares on the southern fringe of the Kalahari Desert. Like Phinda, Tswalu was formed with the purchase and consolidation of many small properties previously engaged mostly in cattle-farming and hunting. The new development, which will concentrate primarily on tourism, has re-stocked the area with over 1,000 head of wildlife, including black rhinos from Etosha National Park in Namibia. Tswalu’s new lions were born to individuals translocated to Phinda from the eastern Transvaal four years ago. It is hoped these second generation re-introductions will find a new population in an area where, like Phinda, lions existed decades ago before they were extirpated by human activities.

These secondary re-introductions illustrate the kind of active management necessary for re-introduced populations if they are to succeed. The Madikwe and Tswalu translocations were undertaken to avoid the deleterious effects of in-breeding in the Phinda cats, a serious long-term threat to small populations with low numbers of founding members. Additionally, it alleviates competition for space arising in rapidly growing populations in small reserves. At Phinda (180 km²), this pressure has recently been manifested in increasing incidences of cats leaving the reserve and conflicting with local land-owners. Four of the lions moved to Tswalu were responsible for killing R18,000 worth of cattle and game on a property neighbouring the reserve. Fortunately, good relations between the land-owner and Phinda enabled the lions to be retrieved and translocated.

Perhaps more importantly, the distribution of cats from Phinda represents an exciting trend in South Africa in which eco-tourism is providing a demand for re-establishment of large carnivores in areas of their former range. That the cheetahs and lions established by re-introduction at Phinda are assisting the re-stocking of other areas is an encouraging sign that such projects have exciting potential in the gradual restoration of species across their former range.

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Cheetahs on the Move from Namibia to South Africa

Large numbers of cheetahs, captured on farms in Namibia, are being translocated to reserves in South Africa. This year, the Africat conservation organization moved 16 cheetahs by air in one day to reserves at Phinda, Pilanesberg and Madikwe, and the Cheetah Conservation Fund has sent 15 to Umfolozi.

Namibia has the largest surviving concentration of cheetahs, estimated at around 2,500, or which over 90% live on farmland. In the past, large numbers were killed, but the two conservation organizations have encouraged farmers to live-trap cheetahs they want to get rid of, and to send them to holding camps, from which they can be exported.

Natal Parks Board and the Cheetah Conservation Fund (CCF) have been collaborating for the past two years in a translocation program to re-establish a viable cheetah population in the Hluhluwe-Umfolozi Park. During the past two years, 11 other cheetahs have been relocated from Namibia in a similar manner. Although the total 22 cheetahs from Namibia will not constitute a minimum viable population, they will expand the reserve’s cheetah gene pool. These 11 cheetahs are the last group of animals for translocation into the reserve.

Laurie Marker-Kraus of the CCF says that reintroduction of predators is not simple and straightforward as there are several factors which must be considered, including size of area, prey base, and existing predator populations.

"Cheetahs are indigenous to Natal, but were exterminated from the province in the 1930s. Since 1965, two reintroductions of cheetahs have taken place into Hluhluwe-Umfolozi in an effort to re-establish a population there. The present population is low and was estimated at approximately 25 cheetah.

"Top carnivores like the cheetah occur at low densities. This, together with genetic problems already found in the cheetah, leads to conservation problems compounded by the small size of protected reserves and parks. For this reason, the Natal Parks Board realizes that cooperation with all of southern Africa is critical in managing the cheetah for the future.

"This cooperative approach is known to biologists as a metapopulation management strategy, which is extremely important when attempting to manage a small population for long-term survival. A small population is a group of animals that cannot retain enough genetic diversity due to their limited numbers, putting them at risk of extinction. Genetic diversity is important in order to survive inbreeding and random catastrophes over a short span of time, or to evolve adaptations and ensure survival over a long span of time."
Fate of Translocated Cougars *Felis concolor* in Alberta

by P. Ian Ross and Martin G. Jalkotzy

Three cougars in Alberta were translocated in response to problem-wildlife complaints. One, an adult female, died within a few weeks. The other two, subadult males, survived at least 10 months and did not return to their natal areas.

Livestock depredation and other problem wildlife complaints in western North America have historically been dealt with by animal damage control agencies by destruction of the offending individuals or entire populations (Connolly 1978). In Alberta, as in most jurisdictions, cougars have been subject to lethal predator control in response to complaints regarding losses to personal property (Gurba and Neave 1973).

Recently, however, a general softening of opinion toward predators (Hancock 1980), as well as lack of public support for traditional predator control have resulted in attempts to deal with individual problem animals by nonlethal means. At present, most complaints regarding cougar predation on livestock and pets in Alberta are responded to by attempts to capture and translocate the offending individuals (Alta. Fish and Wildl. Div. 1992). However, the efficacy of translocations of cougars has not been documented as it has with other large predators including wolves *Canis lupus* (Fritts et al. 1985), brown bears *Ursus arctos* (Miller and Ballard 1982) and black bears *U. americanus* (Rogers 1986). We report on the case histories of three cougars which were translocated following depredations in south-western Alberta.

Depredation complaints were reported or referred to problem wildlife specialists of the Alberta Fish and Wildlife Services (AFWS). Officers contracted the services of houndsmen, and dogs were released at the scene of the depredations. Cougars were treed and immobilized, then transported to a selected site and released. The three cougars captured and translocated had been previously marked with either a radio collar or ear tag as part of an investigation of cougar population characteristics and food habits. Fates of these animals were determined by recovery of these marks. An adult female cougar, F31, was implicated in an attack in which two domestic sheep were killed. She had been radio collared as a kitten 16 km west of the depredation site, and was 4.3 years old.

On 7 December 1988 she was captured at the scene and was moved 51 airline km south and released. We radio-tracked her from an aircraft at approximately weekly intervals. For three weeks she remained very close to the release site, then began moving south. On 21 March 1991 she was found dead on a ridgetop 35 km south-south-east of the release site. Telemetry data suggested she may have died as early as 20 January. Her intact carcass weight of 30.0 kg was 73% of her live weight one year earlier. A pathological examination determined that proximal cause of death was an unidentified bacterial infection, to which she was predisposed due to her extremely malnourished condition (N.R. Lowes, Alberta Agriculture, personal communication). No injuries directly related to her capture were noted.

At the time of the depredation, F31 was accompanied by a 20-month-old son, M48. One week after the original complaint, M48 killed a goat at another farm one km from the first, and was captured on 15 December 1988. He was released at the same site as his mother. Because M48 was ear-tagged only, his movements could not be followed. On 2 December 1989, in response to a complaint of cougar depredation on two goats, AFWS officers captured M48 on a farm 79 airline km south of his release site. He was taken a further 43 km south and released adjacent to Waterton Lakes National Park. His subsequent movements are unknown.

An independent 15-month-old male, M60, was captured after he killed a dog in a ranch yard. He was translocated 63 km to the north-northwest on 8 March 1989. He was shot by a licenced hunter 20 km from the release site on 4 January 1990. He was in good physical condition at that time.

These data suggest that translocation may be an effective alternative to destruction of nuisance cougars, particularly with subadult animals. Homing ability appears not to be well-developed in cougars, because cougars released within 51 km of their home ranges did not return. Two of three translocated cougars, both young males, survived the experience although one subsequently reoffended. Both presumably adapted to a diet of natural prey.

The effects of translocation for juvenile and subadult male cougars may duplicate those of natural dispersal, a typical event in the lives of this sex and age class (Ross and Jalkotzy 1992). In Utah, one adult male cougar returned to his home range after translocations of 56 and 72 km, whereas one subadult male and two adult females did not return from distances 9 km (F.G. Lindzey, Wyoming Cooperative Fish and Wildlife Research Unit, Laramie, personal communication). The sole adult female moved died soon afterwards. Possibly the social stresses of injection into unfamiliar, occupied cougar habitat prevented her from hunting successfully, rendering her susceptible to physiological trauma. Nonetheless, she was given a chance not offered by more traditional animal damage control methods.

We encourage problem wildlife personnel to consider translocating depredating cougars, and monitoring their fates through radio-telemetry.

Acknowledgments: We thank Fish and Wildlife Officers from districts in southwestern Alberta, and in particular Jan Allen, for handling cougars and forwarding information. N.R. Lowes, Alberta Agriculture, Animal Health Division, performed the necropsy. Ralph Schmidt helped in the field and Gary Erickson arranged funding for aircraft charter.
Management of Leopard Cat in China

by Wang Yingxiang, Jiang Xuelong, Feng Qing, Chen Zhiping*

This study reports the distribution, classification, habitat, skin purchase and annual change, status, resource and utilization, causes of resource change and endangerment, skin storage, trade and exportation management and conservation of leopard cat (Prionailurus bengalensis) in China. The results are:

1. The leopard cat is widely distributed in China, except in desert, dry wilderness and central areas of the Qinghai-Xizang Plateau (over 3,800m alt).

2. There are five subspecies distributed in China. The nominate subspecies (P. b. bengalensis) is only found south of Xizhang (Tibet), and central, west and south of Yunnan, southwest of Guizhou, northwest of Guangxi. P. b. scripta is a valid subspecies distributed in the west of Sichuan, north of Yunnan, northwest of Guizhou, south of Shaxi and Gansu and southeast of Qinghai.

3. The habitat varies widely, including primary and secondary forests, shrubs, grasslands and grasslands, but the leopard cat prefers secondary forests, sparse shrubs, forest fringe and shrub, near villages, and it seldom lives in man-made economic forests (e.g. rubber and tea plantations and pine forests, etc.), agricultural land, dry desert and semi-wilderness, high-mountain shrubs and highland grasses.

4. There are four areas of high density in China, according to skin purchases from 1973-1987. The high-density areas (over 7.0 skins/100 km²) are mainly in Yunnan, except the north; Guizhou, except the northwest, Hunan, Hubei and Jiangxi. The middle-density areas (3.0-7.4 skins/km²) are mainly in Guangxi, north of Guangdong, Fujian, Zhejiang, south of Anhui, east of Sichuan, north of Yunnan and northwest of Guizhou. The low-density areas (1.0-3.0 skins/100 km²) are mainly in Hainan, Taiwan, southeast coastal areas, Jiangsu, Henan, Shandong, south of Shanxi and Gansu, west of Sichuan and south of Xizang. The sparse-density areas (under 1.0 skins/100 km²) are mainly in the northeast, north of China, and Tianshan, and Erjingshan in Xinjiang.

5. There has been a steady purchase of leopard cat skins, with the highest numbers in the 1970s-80s, when as many as 200,000 skins were purchased annually in China. In 1986 and 1987, about 130,000 skins were purchased. In the early 1990s, purchases were only 2/3 of those in the 1980s.

6. Generally speaking, there is a small cycle every 3-4 years and a large cycle every 9-10 years, according to statistical data of skin purchases from 1962-1985 in the four southern focal provinces (Yunnan, Guizhou, Hunan and Jiangxi).

7. According to transect-line surveys, the total resource reserves of leopard cat in China were 801,000±140,700 (650,400-940,800) in 1992, which consisted of 177,200±32,500 (138,900-209,800) (P. b. bengalensis); 493,100±90,500 (402,600-583,600) (P. b. chinensis); 65,300±1,200 (64,100-66,500) (P. b. scripta); and 66,100±1,200 (64,900-67,300) (P. b. euptiptura). According to skin purchases, the total resource reserves were 1,065,000 in 1992, which is more than the estimates obtained from the transect-line surveys.

8. The main factors which lead to the change in resource reserves are as follows: (1) decrease and deterioration of habitat; (2) overhunting; (3) unreasonable hunting methods; (4) secondary poisoning caused by the poisoning of rodents; (5) hunting of leopard cats for food in Guangxi and Guangdong; (6) growth and decline of rodents. The factors mentioned above will result in the decrease and endangerment of the leopard cat. (7) Factors, such as creation of natural reserves, publicizing protection and some hunters ceasing to hunt etc., will decrease hunting pressure on the leopard cat.

9. Skin storage was approximately 566,000 in 1983; 5-10% skins were consumed in China and over 90% of the skins were exported. Exportation was 104,000 in 1984, 82,000 in 1986, 195,000 in 1987, 198,000 in 1986, and 4,000-8,000 annually in 1990-1993. Since 1993, no export permits have been given. However, there were still 80,000-150,000 exported to Russia by the folk trade in the market of Luoshi city in Hebei.

10. At present the leopard cat is not listed as a protected animal in China. However, CITES and IUCN have listed it in Appendices I and II. At present, the management and trade of leopard cat are in confusion in China and the main trade is not by state-operated departments but by individuals and collec-
African Golden Cat in South-West Uganda

by Timothy Davenport*

The extinction of the leopard from Bwindi Mountain Gorilla National Park in the mid-1970's has led the golden cat to be arguably the dominant terrestrial carnivore in the Park. The forest was only gazetted as a National Park in 1991, prior to which it fell under Forest Department jurisdiction. During the 1960s to 1980s, the forest was intensively and selectively logged, both legally and illegally, resulting in a radical alteration in vegetative composition (ironically this may favour the mountain gorilla and, possibly, also the golden cat). Accompanying all the activity in the forest, there was widespread hunting which wiped out the leopard and forest buffalo, and greatly reduced the forest elephant duiker and bushbuck populations.

The reduction in herbivore density may have had more of a profound impact on local ecology than first realised. A locally common climber (Seriothestachys scandensis), known locally as omuna, which is an important source of nectar for beekeepers in the area, is currently undergoing an extremely successful regeneration. It is possible that the depletion of herbivorous mammals (notably duikers, which favour the young plant), and previously restrained mass regeneration through browsing pressure, has produced a 'scandens trap', suppressing light-demanding secondary forest trees.

Since the forest was afforded National Park status, hunting has largely been eradicated and it would appear that herbivore density has greatly increased since the last census was carried out in 1984. I performed a very ad hoc duiker census around the Ruhija area at an altitude of about 2,500 metres, which supported this view.

In Wild Cats (Nowell and Jackson 1996), it is stated that predation by the golden cat on domestic livestock "appears to be rather rare". My own view (admittedly both unquantitative and unsubstantiated) is somewhat different. Rather; I believe the cat may be a bold opportunist (possibly reflected by its catholic diet) that will take anything, including domestic animals, depending upon the local conditions, a fact which may be of considerable relevance to its conservation.

During my time in Bwindi, I spoke to many members of the local communities (Bakiga) directly surrounding the forest and was able to build up a very rough idea of the golden cat (locally called "embaka") situation. According to local people from Buhoma and Nteko (low altitude), Kitahwira (mid-altitude) to Mbaramezi and Ruhija (high altitude), the cat is still seen in all areas.

There is a general local consensus that the cat regularly takes chickens, goats and sheep. I have also heard from three separate sources that it has also taken domestic cats, and on one occasion a hunter's dog. However, almost all the people I have spoken to have stated that the taking of livestock has greatly reduced over the past few years. They claim that the cat is now rarer, although of course, this may simply be that, since the duiker population has increased within the forest, the cat no longer needs to hunt in the surrounding villages. Indeed, the BaTwa, who generally know the forest considerably better than the Bakiga, tell me that the cat is no rarer now than it used to be.

I have looked at three (only) scats from different parts of Bwindi and all contained duiker hair (probably the black-fronted Cephalophus nigrifrons). One also contained the lower jaw of a rodent (possibly Lophuromys flavopunctatus). I was working in the forest with a MuTwa, Caleb Ngambaneza, whose knowledge of local ecology is possibly unparalleled; in March we tracked a golden cat as it pursued a black-fronted duiker for approximately 50 metres along a forest trail. He claims to have seen the cats on duiker carcases on at least four separate occasions, each time during daylight hours. The black-fronted is the only predominantly diurnal duiker in Bwindi (the yellow-backed C. sylvicultor being too large for the golden cat), and one may possibly assume that if this species provides the bulk of the cat's diet in Bwindi, then the cat may at the very least be crepuscular.

In contrast, the situation in Semiliki forest, an extension of Zaïre's Ituri, appears to be somewhat different. The Bwamba people claim that the cat exists, but does not take livestock. However, human population pressure here is much less than in Bwindi, and historically the only significant hunting of herbivores has been carried out by the BaTwa (who number only about 40 people) on what was/is a relatively sustainable basis.

The dynamics of the cat's food preference and human activity in the forests, and their relevance to the animal's conservation seems complex. Our Forest Department work has tended to show that increased human disturbance within the forests increases rodent diversity (of the more common species) and abundance. However, herbivore density is undoubtedly reduced drastically by hunting pressure. The situation in Bwindi, where rodent diversity and abundance are particularly high (a result of human activity, diverse vegetation, altitudinal range, location etc.) is of interest. It seems that the cats are prepared to run the gauntlet of human retribution outside the park, in order to take domestic livestock when duiker numbers are low, even if there is an abundance of other prey items within the forest.

Reference

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Lynx Recolonize Italian Alps

The Eurasian lynx *Lynx lynx* has spontaneously recolonized the Italian Alps since 1980-82, according to a report by Bernadino Ragni, Mariagrazia Ponsenti and Stefano Mayr of the Institute of Zoology, University of Perugia.

A detailed monitoring programme has been carried out since 1987, using naturalistic methods to investigate distribution, reproduction and population size. This has shown that the area used by lynx has progressively increased. Six reproductions have been recorded, and the present population is estimated at about 20 in the Central-Eastern Alps. Two lynx have been killed. No livestock damage has been reported.

(Edward: the above report was presented at the symposium on the status and conservation of the Alpine lynx in Engelberg, Switzerland, in December 1995: see CAT NEWS 24, Spring 1996, pp.17-18)

Lynx In Eastern Bavaria

by Manfred Wölfli*

After 150 years absence, the lynx (*Lynx lynx*) is trying to come back into eastern Bavaria in Germany. But people are not yet prepared to cope with the presence of this large predator. Recent history reveals some of the reasons for this defensive attitude. In the late 1950s, the first hints of lynx presence were recorded from the Bohemian and the Bavarian Forest. Possibly these few individuals migrated from the autchton population of Slovakia, because, during these years, Slovak wildlife biologists recorded a definite population peak in the Carpathian Mountains.

In the early 1970s, German conservationists went into action and released an unknown number of lynx into the Bavarian Forest. However, other interest groups were not included in the planning and the public was not informed at all. In a harsh, but understandable reaction, hunters and farmers formed a strong alliance against the lynx. After a population peak of 10 to 12 animals in the mid-70s, numbers dwindled to virtually zero by the early 80s, due to poaching, road kills and emigration.

Between 1982 and 1989, Czech authorities released a total of 18 individuals into the Bohemian Forest. This time, the population prospered and formed the nucleus of the currently estimated 100 individuals inhabiting the border area of Germany, Austria and the Czech Republic. Czech biologists soon began to census this population by snowtracking. Fearing the troublesome past, the German authorities tried for as long as possible to conceal the fact that lynx had re-established a population in the Bavarian Forest. However, the presence of lynx-kill roe and red deer roused first the land-users suspicions and led to protests again. They are still far from accepting the homecomer.

The lynx is not only threatened by shooting. As a high profile species, biologists, conservationists and wildlife managers often care more about their own public prestige than the species survival. Jealousy between these interest groups can easily block the path towards a long-term coexistence between man and lynx. By endlessly discussing the pros and cons with landowners nobody will win public attention or the Nobel Price. But, by doing so, one can definitely prepare the ground for the returning big cat.

In the Cat News 24, P. Kaczensky concludes that, in Germany, active management and intensive public education will be necessary to obtain and secure public acceptance of the lynx.

In Eastern Bavaria, the first steps towards this ambitious goal are currently being made. First of all, all interest groups were informed about the current situation. During the winter 95/96, extensive snow-tracking revealed a population estimate of about 10 to 15 established individuals. Talks were launched at all levels of authorities, hunting and conservation organizations to discuss the situation and to find out the level of agreement about further management of the species. Slowly, mutual trust, which was lost during the controversial past, is returning. Obviously, lynx management is not so much a matter of scientific argument and databases, but strongly depends on inaspecific human interaction.

The next steps towards a sound management can be quickly outlined. To heighten tolerance, compensation for predation on livestock should be available for farmers in the very near future. Landusers are to be involved in the monitoring system. Scientists have to judge habitat values and potential distribution and numbers of the lynx. Even use of the population should be taken into account. It is not sufficient to just want the lynx back in Germany. We have to outline possible population development and discuss fitting management options in advance. But, apart from all management needs, the main emphasis will be on securing a dialogue between humans. Unbiased information combined with the ability to listen appears to be the key to long-term coexistence of man and lynx in Bavaria.

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Radiotracking the Wildcat in Switzerland

by Martin Liberek*

The status of the wildcat in Switzerland is rather mysterious. No ecological study of this subspecies has been undertaken in the country. The available material is, above all, research on museum or captive specimens (Condé et Schauenberg, 1971 et 1969), or on individuals found dead (Lüps, 1976 et 1981). These studies are mainly concerned with morphology and skeletal charactistics (Schauenberg, 1969, 1971 et 1980). Publications on the ecology and ethology of the wildcat in Switzerland are based solely on knowledge acquired from old documents or by some field observations (Schauenberg, 1970, 1981; Lüps, 1985). A 1971-93 study (Cagnolari et al., 1976) concluded that the wildcat had disappeared from the cantons of Grisons and Tessin. It seems, however, that the observations of this cat have increased during the past 10 years, especially in the Jura mountains.

Beginning in 1994, a radio-telemetry study has been in progress in the Swiss Jura mountains. The aim is to study habitat
utilization, characteristics of resting sites and the environments frequented; to identify territory size, social organization and activity, and to define the food regime. A new distribution map for Switzerland will be produced by means of a questionnaire.

The 170 km² study area comprises the littoral area on the north side of Lake Neuchâtel, which consists of cultivated land and some pasture, at a height of 450 m., facing south, and more mountainous areas (highest point 1,339 m.) consisting mainly of pasture. In the lower part of the area, the vegetation consists mainly of beech Fagus silvatica, whereas in the high part it consists of Norway spruce Picea abies. In winter, snow cover at 1,300 m. can exceed one metre for several weeks.

Two types of traps are being used: 1. large box traps (1.20 m.x1.20 m.x2.50 m.) are placed in winter on known trails and scent-marking areas; 2. small traps (80 cm.x24 cm.x24 cm.) are placed in succession near wildcat tracks, or clearings, or places where there are signs of wildcat presence. Baits are placed in the second group.

Wildcats were captured five times in 1994 (two males, two females, four captures and one recapture), and two males (one recapture) in 1995. This represents 238 trap-days per capture in 1994, and 2,772 trap-days in 1995. The captured cats have all been measured and fitted with radio-collars weighing 60 gr. (Wagener, Cologne). Hairs and pieces of skin, as well as external parasites, have been collected for genetic analysis.

The first results of following these five cats show that, in summer and autumn, activity is mainly at night, but, in winter, it lasts further into the morning, while much more important diurnal activity occurs in spring.

The most frequently used habitats are forest, fallow land, pasture (including wooded pasture), and spruce plantations. The habitats used are significantly different from one cat to another (χ² contingency table, p). Habitat use for the period of activity is also significantly different from one season to another (χ² contingency table, p). During the activity periods, pastures are regularly used in summer, whereas forst habit is used mostly during the rest of the year. During the day, when resting, clearings are preferred, especially when there is no snow.

Home range sizes vary according to season and the sex of the individuals. The area frequented by the males is vast (average 37 km²) in comparison with those of females (4.1 km²) (Ranges IV, convex polygon). Similar studies in Scotland (Corbett 1979) and in France (Stahl 1986) showed smaller ranges. Seasonal differences were equally important for the males.

In 1996, despite a bigger trapping effort, no wildcat has been captured. March was devoted to exploring the study area in search of sign, but no sign of new individuals has been found. Intensified trapping is planned for the winter of 1997, and the study area will be enlarged.

### References


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### Marbled, Golden and Flat-headed Cats Photographed in Sumatra

Camera-traps set in Way Kambas National Park in Sumatra have produced shots of rarely seen marbled cat *Proailurus marmorata*, Asiatic golden cat *Catopuma temmincki* and flat-headed cat *Prionailurus planiceps*.

The successes were announced by the Indonesian Nature Conservation Department PHPA, which is carrying out a collaborative research project with a Sumatran Tiger Project field team in Way Kambas. The project, involving also the IUCN Conservation Breeding Specialist Group and Taman Safari Indonesia, is sponsored by the Indonesian Institute of Science.

The cats were photographed in daylight in old secondary lowland forest.

No scientific research has been carried out on these three species, and little is known about their natural history, distribution and conservation status. Following the advice of the compilers of *Wild Cats: Status Survey and Conservation Action Plan*, Kristin Nowell and Peter Jackson, the flat-headed cat is classified as "Vulnerable" in the IUCN Red List of Threatened Mammals; the golden cat as "Near Threatened"; and the marbled cat as "Data Deficient".
Photographs had earlier been taken of marbled and golden cats by phototraps in Thailand’s Huay Kha Khaeng Wildlife Sanctuary, but the photo of the flat-headed cat is believed to be the first taken in the wild.

Cats generally follow trails and can be photographed by camera traps set along them. Sophisticated apparatus in which the camera is triggered when an animal breaks an invisible infrared beam across the trail is increasingly in use. Pressure pads placed where animals are likely to tread are also used to trigger cameras. Earlier, simple traps with thread connecting baits to the camera shutter button proved successful and even provided the evidence to separate distribution of fox populations in Iran in the 1970s (P. Joslin pers.comm.).

Problems of Identification of Camera-trapped Tigers

by S.P. Goyal and A.J.T. Johnsingh*

One of the major problems facing tiger conservation today is our inability to accurately estimate the population in a given tract. Population estimation based on pugmarks, the traditional method (Choudhury, 1970; Panwar 1979), has been questioned (Karanth 1995) as most of the parameters used for population estimation have not been statistically validated. Gore et al. (1993) concluded that sex can be identified, but the technique for individual identification needs to be refined.

It is believed that individual tigers can be identified based on facial markings and stripe patterns (Champion 1927, Schaller 1967, McDougal 1977). Based on this assumption, Karanth (1995) had applied capture-recapture technique for tiger population estimation. He used self-activated cameras to identify individual tigers based on stripe pattern. Data on individuals identified during a time period were then used to estimate the population.

Since December 1994, in Dholkhand, the mini-core area in Rajaji National Park in north-western India, we have been using self-activated camera units to photograph tigers. Till November 1995, tigers were photographed six times over 85 camera trap nights. Three new facets about the use of camera trap technique arose when we asked our colleagues at the Institute to identify individual tigers based on these photographs. In one case, the face of a tiger was photographed twice with a time difference of nine seconds. In the first picture, one of the face stripes is connected with the eye and in the second, due to a slight change in posture, the stripe looks as if separated from the eye. This had made 100% of our colleagues (N=20) identify the photographs as belonging to two different tigers.

Another time, two photographs of the lateral side of a tiger were taken one after the other. All (N=13) identified them as two different individuals. The track data, however, had shown that only one tiger had walked in front of the camera. When we examined the face pictures of these two tiger photographs, 10 major stripes were seen in both the pictures. But in the second picture a loop had been formed due to a change in posture. Seventy-eight per cent of our colleagues (N=9) identified these face pictures as belonging to two animals.

When we critically looked at the reason for this confusion we discovered that 24 stripes above the belly and shoulder were identical in both the photographs. There were considerable variations, however, between the two photographs when the stripe pattern on the flank above the elbow joint and hind quarters of the body were compared. We observed similar variations in the stripe pattern of a tiger photographed in Delhi Zoo. The left side of the tiger was photographed three times and the right side four times. When photographs of a particular side were compared to one another, all showed individual variations. These variations are attributed to the loose nature of the skin on the upper parts of the body. As a result, slight changes in the body posture bring about variations in the way stripes appear from one photograph to the other.

From these preliminary observations we conclude the following:

1. Movements are likely to cause least variations in the stripes on the face as the skin is tight. But we have to ascertain, based on photographs of captive animals, whether there are enough variations in face stripes to identify individuals.

2. Shift in posture causes considerable variations in the stripe patterns on the hind quarters and flank above the elbow joint and this is attributed to the loose nature of the skin on these parts of the body.

3. Stripes above the belly and shoulder show least variations due to movements. This, however, needs to be ascertained with a large sample from captive tigers.

We conclude that identifying individual tigers based on stripe patterns may not be as easy as it appears to be. Variations could appear in photographs of the same animal due to slight changes in posture. These findings need to be taken into account in any future programme to estimate the population of tigers based on camera traps.

References


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Recent Distribution Records of Wild Cats

The distribution of many of the lesser cats is not clearly known, a fact that became clear during the preparation of Wild Cats: Status Survey and Conservation Action Plan, compiled and edited by Kristin Nowell and Peter Jackson (IUCN 1996). Records are mentioned along with the distribution maps in the book. There are, however, reports from time to time, which are not easily traced by researchers. The following are some picked up recently by the Cat Specialist Group:

**Fishing Cat Prionailurus viverrinus**

Buxa, NE India. A young fishing cat, which strayed into a village near the Buxa Tiger Reserve in north-east India, was rescued by four students. They handed it over to reserve guards who had it checked by a veterinarian before being released in the forest.


**Rusty-spotted cat Prionailurus rubiginosus**

Udaipur, Rajasthan. A small cat, apparently run over, was identified as a rusty-spotted cat. It was found on 26 July 1992 on Rani Road, which circles the lake Fateh Sagar of Udaipur. It is believed to be the first record of the cat in Rajasthan.


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**Hong Kong Returns Seized**

A shipment from China of 500 plates of leopard cat *Prionailurus bengalensis* skins, which were seized by the Hong Kong authorities in March 1996, have been returned to China as no import licence had been obtained.

The Hong Kong authorities declared that the plates were said to have originated from 3,145 skins. The shipment had a valid Chinese CITES export permit and all the plates were individually tagged. It was worth about US$40,000.

In May, Japanese police in Kanagawa prefecture arrested a dealer whose import of 11 packages declared as containing “Chinese rabbit skins” turned out to contain 320 leopard cat skins. He told the police he bought them for about US$8 a skin in China and could sell them for $100 a skin in Japan.

The leopard cat, as a species, is on Appendix II of CITES, which permits licenced trade. This covers the two subspecies found in China: *P. b. bengalensis* and *P. b. chinensis*, which the Chinese say number 1.5-2 million in the country. *P. b. bengalensis*

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**Leopard Cat Skins to China**

is preferred by the trade because of its superior pattern. However, the populations of this subspecies in India, Bangladesh and Thailand are on Appendix I, which bans trade.

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

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

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**WWF Canada Calls for on Tiger Products**

WWF Canada has called on the Government to implement without further delay an act passed in 1992 to ban illegal trade and possession of tiger and other wildlife products. In a booklet published in May 1996, WWF praised the Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRITTA), but strongly criticised delays in preparing the regulations necessary for it to come into force.

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**Implementation of Ban**

The report said that, although the volume of the trade was not known, tiger-based medicines, bones and decorative items were being smuggled into Canada, where medicines have been found in traditional Chinese pharmacies.

It said that the Canadian Export and Import Permit Act did not prohibit possession, purchase and sale of products. As a result, tiger products smuggled into the country could be offered, and
were being, offered for sale with little risk. Delays in implementing the new 1992 Act demonstrated that proper enforcement was not a high priority for the government.

The report said that between November 1994 and March 1996, over 24,000 pieces of tiger bone, medicines and claw and tooth pendants had been seized by the Canadian authorities at the border. Pointing out that only 6-7 of 32 wildlife enforcement officers worked full-time on enforcing CITES, and that Customs offices had little or no training in the identification of wildlife products, the report went on: "If this untrained, skeletal staff has managed to effect the seizure of over 24,000 tiger items in just over one year, we should be very concerned about the volume of tiger products entering the country undetected."

The report said that sometimes items and medicines were re-exported to other countries. US records showed 157 packages of tiger derivatives were imported from Canada between 1987 and 1990, 85 of which were seized.

It was noted that China reported exporting 1,193 shipping containers of tiger products to Canada between 1990 and 1992, but Canada had no record of the shipments.

**Medetomidine and Rubber-padded Leg-hold Traps in Venezuelan Cat Studies**

by Rafael Hoogesteijn*, Roy McBride**, Melvin Sunquist*, Almira Hoogesteijn*** and Laura Farrell*

As part of an ongoing research project on predation problems of jaguar and puma on beef cattle, felids were captured for measuring, sampling and radio-collaring at Hato Piñero, Cojedes State, Central Llanos of Venezuela. In the initial stage of this project, five felids were captured: one adult male jaguar (*Panthera onca*), one adult female jaguar, one adult female puma (*Puma concolor*) and two female ocelots (*Leopardus pardalis*). Chasing with dogs was not used as a capture method due to high ambient temperatures (38-42°C) before midday), because the chase, in combination with the anaesthetic would increase the risk of an elevated body temperature in the tranquilized felid. Instead we used rubber-padded leg-hold traps (The Livestock Protection Co., Alpine Texas). This method had the additional advantages that it allowed having all the veterinary gear near the tranquilized felid, and avoided the danger involved for the felids, dogs and researchers.

For the immobilization we used a combination of the central alpha adrenococeptor agonist, Medetomidine, in combination with the dissociative anaesthetic, Ketamine hydrochloride, delivered with a Telinject air-compressed blowpipe. This drug combination was chosen because of the excellent reports in the literature (zoos and/or captive conditions) which indicated better anaesthesia of carnivores than the commonly used Xylazine-Ketamine combination. Also Medetomidine has the additional advantage of the possible use of a reversing agent (Atipamezole, an alpha adrenococeptor antagonist) that can be injected immediately after procedures (Jalanka, 1989a, 1989b; Barnett & Lewis, 1990; Jalanka & Roeken, 1990; Swan, 1993). Since this was the first time that the tranquilizer Medetomidine had been used in free-ranging felids, we felt it was important to report our findings.

Rubber-padded leg-hole traps were set along trails used by cats and near streams and lagoons. They were also set in small openings left at one side of stick enclosures containing pigs or goats as baits, or around recently consumed prey items. All leg-hole traps were checked early in the morning. Animals captured were cautiously and silently approached, weight was visually estimated, and a syringe dart with the drug combination was prepared. The doses utilized for the estimated weights were: Medetomidine (concentration 10 mg/ml, 10 ml vial): 50 mg/kg Ketamine (concentration 200 mg/ml, 20 ml vial): 2 mg/kg. Doses were so small that the 1 ml syringe had to be completed with distilled water. Medetomidine, Ketamine and Atipamezole were kindly donated to the project for experimental use by Orion Corporation and Wildlife Pharmaceuticals.

After the felid was tranquilized, the foot was taken out of the trap, and the animal was brought to a shaded area, where it was examined, treated, measured, weighed, radio-collared, and bled. Feces and hair samples taken. Additional treatment included the injection of a long-acting antibiotic, Ivermectin (to prevent screw worm infections, which are very common in the Llanos), Ringer-Lactate solution (1-2 liters in the big cats to prevent dehydration after fighting the trap), opthalmic ointment (to protect the eyes, which were also covered with a clean dark cloth), betadine and a larvicidal spray (to treat any small wound or scratch on the skin).

Atipamezole (concentration 5 mg/ml, 10 ml vial), was injected when the handling of the animal was finished, or when it showed signs of spontaneous recovery, at a dose three times higher (150 mg/kg) than the Medetomidine dose previously used (50 mg/kg).

The species of felid immobilized, sex, estimated age, actual weight, the doses of Medetomidine, Ketamine and Atipamezole they received in relation to their weight, the induction time (interval between injection and recency of first handling), the duration of handling (interval between first handling until spontaneous recovery or until the antagonist was administered), and the type of recovery (spontaneous or Atipamezole induced) are shown in the Table.

The Medetomidine and Ketamine combination given in a single dart, rapidly induced a calm and complete immobilization, characterized by stable heart and respiratory rates, stable rectal temperatures, good mucous membrane color, and good myorelaxation in all felids treated. The intramuscular injection of the reversing agent, Atipamezole, resulted in calm and uneventful recoveries. Some animals recovered spontaneously, in approximately one hour after darting. No side effects such as vomiting, overheating (in this very hot climate) or jerking of the limbs muscles were noted in any of the tranquilized animals - even in the case of large or small doses. No deaths during or after the immobilization occurred. Dart volumes were very small. All animals were successfully radio-tracked for at least four months after being immobilized.

One recommendation arising from this experience with free-ranging felids is the use of a slightly higher dose of Medetomidine (60-70 mg/kg) than the dosage utilized in zoo conditions (50 mg/kg), in this combination with 2 mg/kg of Ketamine. Many of the tranquilized felids recovered spontaneously and too soon, and this can be inconvenient. This recommendation also takes into account the high security margin shown by this tranquilizing agent. We used up to 184 mg/kg for one ocelot, and 87 mg/kg for one jaguar, with no complications. Other authors report very high doses of Medetomidine and Medetomidine-Ketamine combinations, administered to pregnant animals, or animals that had to be
euthanized, because of medical or management reasons, without any signs of adverse effects related to the immobilization (Jalanka & Roeken, 1990).

One possible disadvantage of Medetomidine is its relatively high cost. Originally we also thought of using the cheaper Tylozol-Ketamine combination, successfully utilized in the immobilization of wild jaguars (summarized in Hoogsteijen & Mondolfi, 1993; see also Crawshaw, 1992, 1995). It has the disadvantage that after the Tylozol solution has been reconstituted, its shelf-life is very short (two weeks), and the doses are much larger, so the final price (per tranquilized animal) is probably higher after immobilizing many carnivores over a shorter or longer period of time in a research project or a zoo situation.

With all these advantages, an increased use of the Medetomidine-Ketamine combination and the reversal with Atipamezole in the immobilization, capture and sedation of wild carnivores should be anticipated.

### Table – Data on the Immobilization of Wild Felids in the Central Llanos of Venezuela

<table>
<thead>
<tr>
<th>Felid Species</th>
<th>Puma</th>
<th>Jaguar</th>
<th>Ocelot</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>Estimated age (years)</td>
<td>10-12</td>
<td>19-20</td>
<td>2</td>
</tr>
<tr>
<td>Actual weight (kg)</td>
<td>48</td>
<td>70</td>
<td>184</td>
</tr>
<tr>
<td>Medetomidine dose (mg/kg)</td>
<td>2</td>
<td>3.7</td>
<td>7.7</td>
</tr>
<tr>
<td>Ketamine dose (mg/kg)</td>
<td>1.9</td>
<td>3.48</td>
<td>1.46</td>
</tr>
<tr>
<td>Induction time (min)</td>
<td>4</td>
<td>61</td>
<td>2</td>
</tr>
<tr>
<td>Handling duration (min)</td>
<td>119</td>
<td>130</td>
<td>63</td>
</tr>
<tr>
<td>Atipamezole dose (mg/kg)</td>
<td>Spont.</td>
<td>Induced</td>
<td>163</td>
</tr>
<tr>
<td>Recovery Date (1996)</td>
<td>21 Feb</td>
<td>22 Mar</td>
<td>14 Mar</td>
</tr>
</tbody>
</table>

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**References**


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Cross-breeding Wild and Domestic Cats

In recent years, cat breeders, especially in North America, have experimented in cross-breeding domestic cats with wild species in order to obtain the "wild look".

Leopard cats *Prionailurus bengalensis* have been used to produce so-called "Bengals", and bobcats *Lynx rufus* to produce "pixie-bobs". In a recent article in TICA TREND, the magazine of "The International Cat Association" (June/July 1996), a writer said that other cats with an acknowledged wild heritage were awaiting acceptance and development: the "Chausie", derived from the jungle cat *Felis chaus*; the "Safari cat", from Geoffroy’s cat *Onca felis Geoffroyi*; and the "Savannah cat" from the serval *Leptailurus serval*. The writer, Anthony Hutcherson, said it was hoped that these hybrids would relieve pressure on the world’s wild cats, adding: "Perhaps people will be more concerned over the plight of some of the wild cats if their loving companion is one with a wild heritage".

In response to a request for the view of the Cat Specialist Group, the issue was referred to Dr Jill Mellen, Conservation Research Coordinator of the Metro Washington Park Zoo in Portland, Oregon. Although prepared as her own opinion, the views she expresses in the following letter to the Northwest Director of The International Cat Association are likely to be supported by other Cat Group members:

"Thank you for sending me the information on the increasing variety of domestic x wild cat crosses that seem to be gaining popularity among cat fanciers. I was unaware of the substantial increase in the number of feline species involved in these hybridization attempts and their increasing popularity. You asked for my opinion on this issue. Frankly, I’m appalled at this trend.

"As co-chair of the American Association of Zoos and Aquariums’ Felid Taxon Advisory Group, it is my job to facilitate the conservation of wild felids through education and through the captive propagation of endangered cats. I think most people are aware of some of the consequences of the decline of wild populations of felids: hunting and loss of habitat. Other reasons for their decline include collection for the pet trade and hybridization with domestic cats.

"The primary reason for endangerment of the European wildcat and the Scottish wildcat is hybridization with domestic cats, i.e., with each of these sub-species, their wild genes are being diluted when they hybridize with free-ranging domestics. These hybrids further compete with the true sub-species representatives, accelerating the spiral to extinction. This is especially relevant to one article you sent me on pixie-bob (domestic X bobcat cross). The 'breed' is depicted as a 'natural hybridization' which is an incorrect label. Domestic cats were 'introduced' into North America by humans and so are not a naturally occurring species. Thus, the occasional bobcat x domestic cat cross that may occur in urban areas is no way 'natural', but instead is a very real cause of population decline in some species.

"I read in a number of articles that the goal of these crosses is to produce a cat that is wild in appearance, but domestic in temperament. While I think most cat lovers admire the look of wild felids, I’m very concerned about this selfish need to 'own' this look. My concern is for both the well-being of the individual wild felids that are used for these hybridizations as well as the impact on the populations of wild cats.

"With regard to the well-being of the individuals, it appears that there is a perceived need to breed these hybrids back to the wild cat because of sterile F1 males or to somehow 'rejuvenate' the wild look. I question whether these individual wild cats are housed adequately. The American Zoo and Aquarium Association (AZA) provides standards for small cats that dictate a substantial amount of room in which to maintain wild cats, as well as expensive and complex dietary requirements. Do you have a sense for whether these requirements are being met for the leopard cats, servals, bobcats, Geoffroy’s cats, etc. that are being used? These guidelines have been shared with the United States Department of Agriculture. Also, I would hope that these wild cats were legally obtained (as opposed to illegally-obtained, wild-caught animals) and that the owners have the appropriate permits to hold these wild animals.

"With regard to populations of wild cats in captivity, my greatest concern about these hybridizations is the apparent total disregard for what a species is all about. Each of these species of cat evolved over thousands of years, each to its own niche in nature. I think it is so presumptuous of humans to want to 'mix and match' the genes of these beautiful cats in an attempt to acquire 'a domestic temperament with the . . . appearance of the wild leopard', and by doing so diluting the wild genes that it took nature thousands of years to create.

"Captive breeding programs in zoos involve the creation of breeding strategies designed to maintain self-sustaining populations of endangered species. Every pairing is designed to minimize the average inbreeding coefficient of the population and to equalize the genetic representation of each animal. These captive populations serve as a kind of biological (rather than biblical) Noah’s ark. The potential exists in some cases to reintroduce these animals back into the wild. Since we don’t know which genes are necessary for survival in the wild, it is important to minimize the loss of genetic diversity in our captive breeding programs. Again, in my opinion, the hybridization of wild cat species to domestic cats serves only to dilute an already small gene pool of captive wild cats. It does nothing to enhance the conservation of endangered cats, but instead supports the further loss of genetic material.

"For my Ph.D. dissertation, I spent hundreds of hours studying the behavior of 20 species of small cats in captivity, including domestic cats. One of the most surprising findings was the striking similarity between the wild cat species and the domestic cat in terms of scent marking, solitary, and social behaviors. I found that one of my best "guides" to the insight into wild cats was my own domestic tabby cat at home. I find it interesting that cat fanciers seem so taken with exotic cats when, in fact, the domestic cat already shares so many of the same traits as its wild counterparts. Absent in the domestics though are the undesirable 'shyness'; 'aggressiveness'; and the pervasive scent marking.

"I urge The International Cat Association to reconsider its support of wild x domestic cat 'breeds'."

(EDITOR’S NOTE: I have supported Jill Mellen’s disapproval of domestic-wild cat crosses. If other members of the Cat Specialist Group wish to express an opinion, they can write to Ms Resa Bauer-DeMeyere, Northwest Regional Director of the International Cat Association, 2875 Grandview Drive, Clarkston WA 99403, USA. Please send a copy of any communication to Peter Jackson, Chairman, IUCN Cat Specialist Group, 1172 Bougy, Switzerland)
Triennial Report for 1994-95 to Species Survival Commission

Publication of *Wild Cats: Status Survey and Conservation Action Plan*, compiled and edited by Kristin Nowell and Peter Jackson (IUCN 1996) in May 1996 was the climax of many years of collaborative work by Cat Group members and many other knowledgeable contributors. Reactions have been very positive; it is regarded as a valuable resource and likely to become a standard reference.

Because of the high profile that wild cats enjoy, it was decided to seek funds outside IUCN/SSC for publication and for free distribution to CSG members, contributors and to Third World institutions. WWF International and WWF Netherlands readily responded, and the CSG expresses its gratitude.

The senior author, Kristin Nowell, has taken on responsibility for implementing the Action Plan as Vice-Chair (Projects). As is commonly the case, funding is crucial. Kristin has therefore set up, in her private capacity, a "Cat Action Treasury (CAT)" which has been registered as a charitable foundation in the USA. The CAT will fund projects approved by the Cat Specialist Group, not only those contained in the Action Plan.

Moving with the times, the CSG has established a home page on the Worldwide Web: http://www.iucn.org/themes/ssc/ssc-cats_home.html. It is planned to put the data sheets and distribution maps for all 37 species of wild cat on the Web. Our bi-annual newsletter, Cat News, now at number 25 is also being put up. Links have been established with other cat sites, notably http://www.stigers.org, established by Minnesota Zoo with support from the EXXON Save the Tiger Fund. Tiger items from Cat News are being reproduced on Stigers.

In a short report it is possible to highlight only some activities of the more than 200 members of the CSG, drawn from 53 countries. But WILD CATS represents their work, and will hopefully help them and others interested in study and conservation. It is hoped that Wild Cats will stimulate further research and promote the flow of information so that supplements can be circulated from time to time.

What Cat Group members have been doing

Saving the tiger has been a major preoccupation of many members of the CSG, and especially of the 24-strong Indian sub-group, headed by Vice-Chair Valmik Thapar. Heavy poaching for bones and other parts severely threatens tiger populations throughout the range, where they are already suffering from continuing loss of habitat and essential large prey. Thapar, who is a member of the Steering Committee of the government's Project Tiger, has organized a nation-wide network of non-governmental organizations and individuals into "Tiger Link," to collect and exchange information and influence the government's conservation programmes. Belinda Wright and Ashok Kumar of the Wildlife Protection Society of India have played leading roles in tracking poachers and illegal traders, and monitoring court cases. A welcome grant for tiger conservation from the US State Department enabled the CSG to provide vehicles and other equipment for anti-poaching operations.

CSG members collaborated in international workshops in India, Thailand and Vietnam. Of particular note is the developing set of GIS maps of tiger distribution in south-east Asia resulting from joint work by Dr J.L. David Smith of the University of Minnesota, Dr Schwann Tunhikorn of the Royal Forest Department, Thailand, Dr Sean Ahearn of Hunter College, New York City University, and Jonathan Rhind of the World Conservation Monitoring Centre. The Royal Forest Department hosted a GIS training workshop attended by specialists from 12 of the 14 range countries.

Alan Rabinowitz of the Wildlife Conservation Society (NYZS) has been conducting surveys and training wildlife personnel in Laos and Burma.

In the Russian Far East, a study of the ecology of the Amur (Siberian) tiger led by Drs Maurice Hornocker, Howard Quigley and Dale Miquelle, which began in 1990, has become a major force for conservation in the area, where the collapse of the USSR led to lawlessness and chaotic conditions, with intensive poaching of tigers and other wildlife.

Dr Charles McDougal continued his 25-year-old intensive study of tigers in Chitwan National Park, Nepal, following up the long-term research initiated by the Smithsonian Tiger Ecology Project in the 1970s. Here too, there have been important conservation achievements, including expansion of the park, and promotion of anti-poaching measures.

Dr Ron Tilson of Minnesota Zoo has spent several years promoting a major programme for conservation of the Sumatran tiger, which now numbers only 400-500. The programme includes field research employing radio-telemetry and photo-traps in Way Kambas National Park.

Photo-traps have proved very effective in establishing the presence of secretive wild cats. Thereby the first photo of a marbled cat *Proylea marmorata* was obtained by Kathy Conforte in Huai Khai Kheng, Thailand. This cat was also photographed recently in Way Kambas, as well as golden cat *Catopuma temmincki* and flat-headed cat *Prionailurus planiceps* in India. Dr Ullas Karanth has made use of photo-traps to identify individual tigers by their stripe patterns and to uncover secrets of tiger density and movements.

Photo-traps have also proved invaluable in studies of leopards in the rain forest of the Tai National Park in Ivory Coast by Dr David Jenny and Frédéric Dind.

The last surviving 300 Asian lions are in a precarious position, confined to a single area in western India. Dr Ravi Chellam of the Wildlife Institute of India has been put in charge of a government plan to establish a second home as a precaution against sudden extinction. The CSG is arranging for him to benefit from the experience of lion translocations in South Africa, which have been studied by Luke Hunter.

Several CSG members have concentrated on the cheetah in Africa, including ecological and biological research and management. Vice-Chairs Laurie and Daniel Marker-Kraus moved their Cheetah Conservation Fund headquarters to Namibia and have been working to ameliorate the problem of thousands of cheetahs on farmlands, where they are persecuted as a threat to livestock. Kristin Nowell was commissioned by the Namibian Government to prepare a Cheetah Management Plan for the country.

A last-minute effort to save the cheetah in North Africa is the aim of a project forming part of an IUCN North African Biodiversity Conservation Programme. As consultant to the project, the CSG Chairman has been cooperating with the leader, Dr Mostafa Saleh of Al Azhar University, Cairo, and representatives of Libya, Tunisia, Algeria and Morocco.

As in Namibia, livestock predation is a big issue in central and South America, where jaguars and pumas are widespread on ranchland and are persecuted. Drs Mel Sunquist and Rafael Hoogesteijn are conducting studies in the Venezuelan llanos.
aimed at producing management recommendations to reduce the problem, which would be valid for the region. Dr Peter Crawshaw has established a National Centre for Research and Conservation of Natural Predators in Brazil.

The International Snow Leopard Trust, founded and headed by Vice-Chair Helen Freeman, has successfully brought together specialists from the range countries to promote conservation. Rod Jackson and Don Hunter have developed a Snow Leopard Information and Management System (SLIMS) as a multi-national information network on reserves. They have run workshops in China, Mongolia and Pakistan, and produced a practical guide to snow leopard survey and conservation.

Dr Marijke Jongbloed organized a workshop on the endangered Arabian leopard Panthera pardus nimr which brought together representatives of the United Arab Emirates, Saudi Arabia, Oman and Yemen, to plan cooperative programmes. Chris and Tilde Stuart carried out surveys leading to recommendations for conservation of the Arabian leopard.

Vice-Chairs Dr Urs and Christine Breitenmoser formed a CSG sub-group to promote collaboration among European lynx specialists. Re-establishment of the Alpine lynx population is the priority project. Since the 1970s, lynx have been released in several Alpine countries, but, except in Slovenia, and to a lesser extent Switzerland, the results have not been very successful.

Preparation of WILD CATS showed how little is known about most of the cats. This is particularly true of the small species, on which little research has been carried out. However, Alexander Sliwa uncovered secrets of the life of the tiny black-footed cat Felis nigripes in the course of long night-tracking in its small range in southern Africa. In Brazil, Leandro Silveira has been working on the population of the panpats cat Oncifelis colocolo in Emas National Park. The taxonomy of this species has been reviewed by Dr Rosa Garcia-Pérea, who has proposed that it actually represents three separate species in different areas of South America.

In another taxonomic review, Dr Sriyanie Miththapala, collaborating with Drs Stephen O'Brien and John Seidensticker, has proposed that the 27 recognized subspecies of the leopard be reduced to just eight. The subspecies to be lumped would result in a sub-Saharan African Panthera p. pardus; a central and southwest Asian P. p. saxicolor; and an Indian subcontinental P. p. fusca. Five other subspecies, all in Asia, would survive.

The Chairman’s office in the village of Bougy-Villars, Switzerland, serves as an information centre on wild cats, which is consulted by media organizations and those interested in cats and their survival.

In closing, the CSG expresses its gratitude for the continuing support of Dr George Rabb and the SSC staff at Brookfield, Illinois, and Dr Simon Stuart, Head of the SSC office, and his staff at the IUCN Headquarters in Gland, Switzerland.

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compiled and edited by Kristin Nowell and Peter Jackson

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*Cover: Asiatic lion Panthera leo persica in Gir Forest, India. Photo: Peter Jackson*