

Report on Tigers and Leopards of the Russian Far East and Northeast China

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21 July 1994

Report from Visits to Far East Russia (Khabarovsk Krai and Primorsky Krai)
and Northeast China (Heilongjiang Province),
30 April - 22 June 1994

Report for: Ecologically Sustainable Development, Inc.
and USDA Forest Service, Pacific Northwest Research Station

This report presents information I gathered on the status of Siberian tigers (*Panthera tigris altaica*) and Far East leopards (*Panthera pardus orientalis*), during my 30 April to 22 June 1994 travels throughout Far East Russia and northeast China. (Other trip reports summarize my trip itinerary and other findings on wetlands and forest conservation of the area.)

SIBERIAN TIGERS

Number of Tigers in Northeast China

According to Lu Bingxin (Director, Heilongjiang Province Wildlife Institute, Harbin, China; personal communication 31 May 1994), in 1976 there were 151 tigers in northern China, which included 81 in Heilongjiang Province and Jilin Province. As of 1991, only 10-12 remain in Heilongjiang Province (with virtually none in Jilin Province). The decline has been due to poachers and habitat loss from logging.

Number of Tigers in Far East Russia

Number of tigers.--According to Dimitry ("Dima") Pikunov, tiger and leopard researcher out of the Pacific Institute of Geography, Far East Branch of the Russian Academy of Sciences in Vladivostok, approximately 300 wild Siberian tigers remain in Khabarovsk and Primorsky Krai of the Russian Far East, principally in the main part of the Sikhote-Alin Mountain Range, and in the coastal slope forests southwest of Vladivostok along the China border extending south to the Tumen River and North Korea. Other tiger population estimates I had heard ranged up to 350.

Distribution of Tigers in Far East Russia

Bikin River Valley.--One of the hearts of the tiger range in the Far East is the Middle and Upper Bikin River Watershed in northern Primorsky Krai. In 1993, I flew over the area in an observation flight and noted its vast extent of primary forests, although some patches had been burned and were in earlier successional stages of birch, aspen, and larch. During 8-14 May 1994, I traveled up the Bikin River from its confluence with the Ussuri River, by lorry and by river boat, to the Udege native villages of Krasny Yar in the Middle Bikin and Ulanga in the Upper Bikin. On this expedition were Vladimir Bocharnikov (ornithologist with Pacific Institute of Geography, Vladivostok), Alexi Kiselev (vegetation ecologist with the Institute), Nadia Ignatova (small mammal ecologist with

the Institute), Phillip Siarkowski (forester with the U.S. Ussuri Planning team), and four Udege boatmen and hunters. We discussed tiger, prey, and game abundance in the Bikin River Watershed with the scientists, the Udege, and with several Russian Gospromkhoz (hunting industry) hunters and trappers we met along the way.

Tigers and their prey (red deer and wild boar, principally) in the Middle and Upper Bikin seem to be doing well, although it is obvious that the fate of forest habitats to the north in the Khor River watershed, and to the south in the Ussurka River Watershed and beyond, will influence the tiger population in the Bikin. We met with Pavel Sulyandziga, President of the Association of Indigenous Peoples of Primorsky Krai, and discussed the need to protect the scarce primary forests of the Bikin River Watershed for tigers, for traditional hunting and gathering use by the Udege, and for other resources and peoples. He agreed that such protection is necessary. We discussed the current proposal to (1) maintain the Industrial (Pine) Nut Zone designation of the Middle Bikin for Udege control and use, and (2) designate the Upper Bikin as an indigenous people's national park. Already, the government has built a logging road into Ulanga in the Upper Bikin and another logging road just east of Krasny Yar in the Middle Bikin.

We found tiger tracks -- fresh tracks of a male and female together, along with many older tracks -- along the dirt logging road next to our cabin in Ulanga.

Isolated tiger occurrences and key population linkages.--I had heard of tigers occurring somewhat widely throughout the Far East, ranging in the Sikhote-Alin rather consistently as far north as the Khor River area. North and northeast of the Khor, however, as up to Vaninsky District and the Sovyetskaya-Gavan area, tigers become much more sparse and occur only intermittently.

Several tiger sites in the Far East seem to be isolated low-mountain forest areas surrounded by lowland river floodplains and landscapes altered for farming, urbanization, roadways, etc. One such site is Khekhtsir Zapovednik (scientific nature reserve) just south of Khabarovsk city. Boris Voronov, Associate Director of the Institute of Water and Ecological Problems, Far East Branch of the Russian Academy of Sciences in Khabarovsk, told me that a pair of tigers has been seen in this reserve over the past 2 or 3 years. I briefly visited the reserve in May 1993, and again May 1994, but did not see sign of tiger during either visit.

The presence of tigers in Khekhtsir Zapovednik is significant, as the area occurs close to the Khabarovsk urban area (in fact, the reserve forms part of the city's green belt¹). And the reserve might act as a stepping stone for dispersing tigers west across the Ussuri River into the remaining forests and wetlands of Sanjiang (Three Rivers) Plain and further south into the Wandashan Mountain forests in China (but few tigers have been reported in either area in recent years). During winter when the Ussuri River ices over, such dispersal is made much more easy (but so is "dispersal" of poachers and hunters).

Another isolated site with tigers is Shivki Field Station of the Pacific Institute of Geography, Vladivostok. Shivki is a *de facto* lowland forest reserve in the Lower Bikin River Valley near the city of Bikin and the Ussuri River. I spent several days in Shivki, exploring the forests and primary forests there, and the resident zoologist, Alexander "Sasha" Antonov, had seen a tiger here 2 years ago, and tiger tracks over the winter time. During my visit in June 1994, we found a clear track of a tiger, the first evidence of summertime use of the forest by tigers. Like Khekhtsir Zapovednik, the forests of Shivki are more or less disjunct from much of the main forest habitat and range of tigers in the Sikhote-Alin Mountains to the east.

One of the key linkages for tiger movement throughout the Far East's Sikhote-Alin Mountains is the area of the Katen and Kafen Rivers, tributaries flowing north into the Khor River (itself a westward-flowing tributary of the Ussuri River). Forests of these river basins are being cut and roaded and are likely sites for further timber harvesting by the Lespromkhoz (forest industry) of Russia. (I visited timber logging towns of Cita and Dolmi and taiga logging

¹In Russia, each major city must have a "green belt" of forest cover. The size of the green belt, and the distance of the green belt from the city, is determined by a formula involving the size of the urban area.

sites to the north of this area, in May 1994.) I'd like to see definitive forest habitat maps, including range maps showing density of wild boar and red deer, for the Katen/Kafen area, to better delineate this vital north-south habitat corridor for tigers.

The forests southwest of Vladivostok -- including those of the greater Elduga River drainage (see below), Kedrovaya Pad Zapovednik, and south toward North Korea -- harbor both Siberian tigers and Far East leopards. These are remarkable, subtropical jungles with hundreds of rare, endemic, and relict plant species (both Pleistocene glacial coastal relicts and Tertiary relict species, genera, and even families). I visited the Elduga area and Kedrovaya Pad Zapovednik in June 1993, and Elduga again in June 1994, with scientists (cat researchers and herpetologists) from the Pacific Institute of Geography of Vladivostok. Both times we found fresh sign of tigers and leopards. The Elduga area should be designated as a no-hunting national park (see below) to help protect its mostly unroaded and uncut primary forest habitats for the big cats.

Tiger Breeding Farms in China

China has several breeding centers for tiger, as well as for sable, American mink, raccoon dog, blue fox (color phase of red fox, prized for its pelt), and other species.

I visited the Handaohuza ("Felidae") Tiger Breeding Center near the town of Hangto, west of Mudanjiang city in southern Heilongjiang Province. According to the staff, some 10 million yuan had been invested in its construction, but there is little funding available at present to maintain it. The Center includes 58,000 square meters of space (I assume this is for pens, offices, and labs), and is located at about 1100 m elevation in the Laoling Range, a "correct ecological setting" for the tigers.

The Center claimed to have 76 tigers (I counted perhaps 20-30 in the indoor/outdoor pens). The Center Director noted that 70% of the tigers are "young," mostly 7-8 years old (an odd concentration of ages for the "young" cohort), and they also have "some" tigers 1-6 yrs old. The remaining 30% is over 8 yrs old. I pressed for more specific statistics on population age class structure and sex distribution but little more information was forthcoming.

They want to exchange tigers with zoos in other countries, but CITES regulations have prohibited that. Last year (1993), China attended a CITES convention and petitioned for tiger exchange, but was denied permission; they will petition again at the next CITES convention.

The stated intention of the Center is to build up the captive breeding population (to an unspecified level) and eventually release tigers into the wild. However, only one release area was specified ("the best place") -- Qixinglaza ("Seven Star Rocky Mountain") Tiger Reserve (QTR) in Heilongjiang Province. I was told by the Center director that there "may be" tigers there already because "habitat is good" and red deer and boar are present; however, no sightings or tracks have been reported. Said Professor Chen Shu Xuan (wildlife and biology manager, and wildlife director of the Department of Forestry of Heilongjiang Province, Harbin), QTR is capable of supporting 10 tigers. QTR includes parts of three mountain ranges.

The Center Director also noted that they had planned to release tigers into the local hills, but there is "no prey" available there. Hai Lin city reports 1 tiger in the nearby mountain forests, based on tracks, and Chen says the area is capable of holding 5 tigers, but there is no prey available.

The Center was built in 1986 and in the eight years of its operation the custodians have learned "how to feed the tigers." There was no discussion of this learning process, and no direct information on mortality rates or the degree of professional training of the staff in tiger breeding and management.

The Center is also raising over 2,000 American mink and hundreds of blue fox and raccoon dogs. They are kept in cages on the same compound as the tigers, beyond a 6-foot high brick wall.

My own observations and conclusions of Handaohuza Tiger Breeding Center follow:

(1) I saw only 20-30 tigers, not 76, although some were doubtless indoors and out of sight. Still, I wonder if the stated number is correct. Also, I was perplexed at the lack of clear statistics on age class distribution and population structure. I wondered if perhaps some tigers had been procured from the wild after the national law prohibiting such taking had gone into effect, but there is no evidence of this.

(2) The cages are tiny, maybe 8 m by 7 m with an additional indoor area, and utterly barren and concrete. One tiger had only a stub of a tail. Overall, however, the cats looked fairly healthy.

(3) The staff claims to not be supplementing the captive population with any more wild tigers, and not to be selling tiger parts. I have no evidence otherwise.

Last year I also met with the Director and he discussed his interest in regularly selling tigers for medicinal markets, to provide income to pay for the breeding operation. However, his recommendations had not yet been formally authorized by the government.

(4) Plans for reintroduction of tigers to the wild are gloss only. I recommend that tigers be considered for release in Qixinglaza Tiger Reserve, and be radio-monitored for their home range area and habitat use. However, first, the genetic constituency of the captive-bred population should be determined.

Also, the Hai Lin forests could be now managed for restoration of mature Mongolian oak, red deer, wild boar, and diverse forest tree species, to help restore suitable habitat and prey for eventual release of tigers there.

(5) The Center should be funded to substantially upgrade the pens to more natural habitat conditions.

(6) Many pens at the Center are contiguous and all are in the same compound. This is a formula for eventual disaster, should disease occur and quickly spread, despite the fact that I was initially told that the tigers are "separated" to eliminate this risk. Some tigers need to be separated further -- perhaps by building another breeding center elsewhere in the area.

(7) It is unclear if the Center keeps breeding records and genealogies of the tigers; I assume they do, but did not get a clear answer to this question. If they do not, then the tigers should be studied for potential inbreeding conditions before further breeding is done and certainly before any tigers are released into the wild, should that ever occur. Probable inbreeding effects have been documented in other small populations of wild cats, such as in the Florida panther.

(8) A population biologist should model the breeding dynamics of the population at the Center, specifically for genetic composition. To do this, information is needed on initial founder population size and structure (age and sex distributions), subsequent breeding and genealogies, and current population structure. The purpose would be to determine what risk the current penned population carries in terms of inbreeding levels. If the base information needed is not available, or was never kept, then the Center should immediately begin keeping such records; and a modeling exercise would be all the more useful, employing stochastic variables for the unknown parameters.

FAR EAST LEOPARDS

I spent several days with Dimitry Pikunov in the greater Elduga River basin and the proposed new national park just north of Kedrovaya Pad Zapovednik southwest of Vladivostok (which I have informally dubbed "Pikunov National Park"). We explored the region on foot and scanned for his radio-telemetry-equipped two leopards and one tiger that he and his colleagues had captured with leg-snares the month before. Eventually we located one of the leopard, the radio signal varying in volume as we listened, the cat obviously on the move among the rocks in the valley below our ridgetop vantage point.

Pikunov mentioned that perhaps 20-30 Far East leopards remain in the wild in Primorsky Krai. He doubts if any occur in North Korean, and is unsure about their status in China. I asked wildlife experts in China and few felt there were any leopards in southeast Heilongjiang Province or Jilin Province; perhaps a few cross over from Russia, but the border there is marked with a tall, electronically-monitored fence built for defense purposes, I believe by the Russian army. Pikunov related that the fence has severed most of the deer and wild boar herds, making the habitat less suitable for the big cats. He was unsure how the fence affected movement of the cats themselves over the border, but emphasized that removal of the fence is paramount to restoration of prey populations in the border area for tiger and leopard.

I did not see or hear of any captive breeding efforts for Far East leopards in either Far East Russia or northeast China.

ONGOING CAT RESEARCH AND POACHING PATROL IN RUSSIA

Pikunov and colleagues out of the Pacific Institute of Geography, Far East Branch of the Russian Academy of Sciences, Vladivostok, are continuing their field radiotelemetry work on Siberian tigers and Far East leopards. However, Pikunov emphasized that their funding is paltry and they need additional support. For example, during our field outing he had only a single radio receiver unit (Yagi antenna), and thus could not triangulate locations of the cats. This is a major impediment to mapping home range areas, travel corridors, etc., even with careful observation of tracks and other sign in the field.

Although we located the blip of one of the leopards, the other radio-equipped leopard and the tiger remained elusive (as of 21 June 1994; and I have not yet heard about their status as of the date of this writing). On foot in the steep, roadless, tick-infested country of Elduga River basin and surroundings, it is virtually impossible to keep track of three, let alone one, large-ranging cat.

Specifically, Pikunov noted that he needs funding for: (1) purchase of additional radio receivers to better track the cats, for triangulation purposes; (2) hiring of additional field assistants for radio tracking; (3) paying for aerial tracking of his cats from fixed-wing aircraft; and (4) other misc. supplies such as film (I returned to the U.S. with some 25 rolls of his film, had them developed here at my own expense, and will send the developed slides back to him care of a "courier" from our U.S. team; I also gave him several extra rolls of my ASA 400 Ektachrome slide film there, and a spray can of REI tick repellent; the stuff works!).

I also joined Pikunov on a field outing in Elduga in which he tracked sign of potential poachers in the area. Indeed, at 4 a.m. I had heard a rifle shot in the direction where we later found boot marks and drag marks along a stream bottom. We then found a single hunter in a makeshift camp; he denied wrongdoing and would not tell us about any friends of his in the area. Later we heard a congregation of crows in the woods and Pikunov speculated that they were feeding on the entrails of a poached deer after the poachers had dressed their kill. Poaching likely continues there, and it was my impression that there, as in the Bikin River Valley and elsewhere in the Far East, the field forest guards need much help and support.