

THE SIBERIAN TIGER PROJECT™
ECOLOGY AND CONSERVATION OF THE SIBERIAN TIGER

Final Report To
Save The Tiger Fund/National Fish and Wildlife Foundation
Grant STF-98-093-056
1 May 1998 – 30 April 1999

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EXECUTIVE SUMMARY

This year marked the seventh year of field operations for the Siberian Tiger Project™. This report covers activities of the field research, with brief summaries of related conservation activities. The field project was successful in a variety of areas this year. In addition to the continued tracking of nine study animals, the Project added two new radio-collared individuals, a male and female, for research in the coming year. Unfortunately, we also documented the loss of two tigers, also a male and a female, on the study area. As in the previous two years, we have intensively focused our attention on the documentation of reproductive ecology, tiger demographics, and dispersal characteristics.

Related activities in the development of our overall, comprehensive conservation plan have continued to occupy an increasing amount of time, energy and resources. During the past year, we have added field research components on both wild boar and elk on our study area and continue to monitor brown bears and black bears using radio telemetry. Conservation education focused mainly on our poster/calendar campaign, directed at the public at-large, and opportunistic presentations in local schools. We continue to develop activities within our tiger conservation corridor. These include work with newly developed hunting societies, local communities and government officials. A similar analysis was begun this year in Khabarovsk Province. In an effort to expand our impact to all of Siberian tiger range, surveys were conducted in both Northeastern China and North Korea.

INTRODUCTION

The primary purpose of this report is to describe the Siberian Tiger Project™ field research activities, with brief summaries of related education and conservation programs. Thus, below, we provide the current status of radio-collared tigers in the Sikhote-Alin Zapovednik, our efforts to collar additional tigers in the area, re-capture activities, an update on personnel, a brief review of data obtained, environmental education work, and other issues and activities in the Russian Far East. However, in the space utilized here, we cannot nearly begin to adequately portray the effort currently underway to secure a future for Siberian tigers and their native habitat. What is currently underway – or has taken place over the reporting period of this document – is but a small window on the energies, activities, and resources necessary to reach this point. Below, a brief history of this underpinning will add perspective to the activities of the past year. The depth and breadth of the Siberian Tiger Project™ activities are all planned to provide the most effective and efficient route to secure the future for the Siberian tiger.

Field research efforts of the Siberian Tiger Project™ were begun in January, 1992, after nearly two years of planning by the Hornocker Wildlife Institute (HWI) and Russian cooperators. Maurice Hornocker and Howard Quigley, of HWI, along with more than a dozen Russian biologists, established two main goals for the Project. First, through a combination of modern and traditional field methods, we endeavored to create the best possible documentation of tiger ecology in the Russian Far East. Second, we wanted to utilize the data on Siberian tiger ecology to develop and implement programs for its survival.

The use of radio telemetry is an essential part of the study of large, secretive carnivores. Of course, in order to place these radio transmitters on study animals, they must be captured and safely anesthetized. The initial captures of all Siberian Tiger Project™ study animals have been made with the use of the Aldrich spring-activated foot snare. This technique is commonly used in North America, but had never been used in Russia prior to our activities. We have now made 21 such captures. However, recapture of these previously-captured animals is very difficult and time consuming using foot snares; and, recapture is essential for continued monitoring of study animals due to the finite battery life of the radio collars (about 30 months). Thus, we developed the technique of helicopter capture for recapturing study animals; ten such captures have been performed.

The combination of capture and recapture techniques has allowed the Project to monitor a large percentage of the tigers within the study area, and maintain long-term contact with individuals. This continuity creates a history on study animals that is important for analyzing a variety of tiger behaviors, but most importantly reproduction and mortality. For example, we have now followed one of our study animals, Tiger 01, since February, 1992, through dispersal from her mother, three litters of her own, and dozens of kills she has made.

The continuity, support, and enthusiasm of personnel on the Project have also been an important part of its success. From the beginning, the Siberian Tiger Project™ has built and maintained a totally integrated team of Russians and Americans. Our Russian field coordinator, Evgeny Smirnov, has remained throughout the Project. Dale Miquelle, the original American field coordinator of the Project, has now moved into the position of regional coordinator for all Siberian Tiger Project™ activities in the Russian Far East. John Goodrich and Linda Kerley are now in their fifth year as field coordinators. Kola Reebin and Losha Kostera carry out much of the day-to-day responsibilities of radio-tracking, kill documentation, and capture, and have for six and four years, respectively. Bart Schleyer has now acted as capture specialist for the Project for six years, performing all helicopter recaptures and most snares captures.

In 1994, with two years of field data in hand, the Siberian Tiger Project™ expanded into a variety of conservation-related activities. A geographic information system (GIS) was established at the Sikhote-Alin Reserve headquarters in Terney; the mapping capabilities of the GIS have been critical to our ability to analyze tiger habitat use in the study area and extrapolate those conclusions to conservation planning issues throughout Siberian tiger range. In 1994, we undertook an analysis of education needs related to tiger conservation. As a result, we began an annual calendar/poster campaign, supplied small grants to local schools to improve programs, and helped fund summer ecology camps near Terney. The Project has also conducted tiger surveys, analyzed biodiversity region-wide, supported anti-poaching teams, undertaken community development projects, and a variety of field science studies related to tiger conservation. Some of these activities are described further on page 5.

CAPTURE ACTIVITIES

Trapping. We trapped near the confluence of Nevedemka and Djigitofki rivers 13 May - 28 June 1998 and 9 October - 13 November 1998. We captured Pt27, an adult female, on 15 May and again on 16 October and Pt28, an adult male on 10 October (Table 1). On 16

October we fitted Pt27 with a satellite collar to test the ARGOS satellite system.

Helicopter captures. We recaptured Pt22 via helicopter on 29 December 1998. We attempted to recapture Pt23 but were unsuccessful after five flights because she was in coniferous forest and we were unable to see her through the dense canopy. We also attempted to capture Pt01's unmarked 1.5-yr-old cub via helicopter on the same five flights, but she was not with her mother.

STATUS OF RADIO-COLLARED TIGERS

Tiger 01. Tiger 01 moved throughout her usual territory until early 1999 when her movements became localized in the southern portion of her home range. On 29 April 1999 we located her in a new area several km south of her territory, across the Serebrionka river, and south of Terney.

On 21 June 1998 one of Olga's cubs was shot by a Zapovednik forest guard when the cub aggressively approached him several times at a Zapovednik cabin. The cub was thin and had a large abdominal hernia, which may have caused its abnormal behavior. Shortly thereafter field personnel found tracks indicating that Pt01 had only one cub left from her litter of three.

Tiger 03. Tiger 03 has remained in her new territory after shifting east from her old territory in February 1998. On about 1 November, she gave birth to a litter of at least four cubs. On December 2, one cub was found dead, apparently killed by a small predator, and tracks indicated that three cubs were still alive. On 3 March tracks indicated that only two cubs remained.

Tiger 16. Tiger 16 still travels within his normal home range. In November 1998 we observed him together with an unmarked female.

Tiger 20. Tiger 20 still travels within his normal home range.

Tiger 21. In June 1998 Tiger 21 localized her movements to an area north of the lower Seenanshaw river and we suspected that she had given birth. However, we were unable to confirm the presence of cubs until after winter's first snow. On 29 November we found tracks of three cubs ranging from 7-8 cm wide, indicating that they were about 6-months-old, i.e., born in late May or early June.

Tiger 21 was shot by a poacher on 13 December 1998. The poacher was captured and awaits trial at the time of this writing. At 6- to 7-months-old, the three cubs would not have adapted well to captivity, so we immediately began feeding them near the site where their mother was killed with the hope that at least one would survive in the wild. The cubs readily fed on the bait until early March, when they left the area. In late April 1999, tracks indicated that at least two of the cubs were still alive. That the cubs discontinued feeding at the bait site indicates that they were probably hunting successfully.

Tiger 22. On 25 November Pt22 was hit by a car near the town of Kaimenka. He survived the collision, but tracks indicated that he was not using his right rear leg; the same leg that had been injured during his initial capture. On 26 November, he was within one km of Kaimenka and that night was within a few hundred meters of the edge of town. He remained within two km of the town until we captured him on 29 December. He was extremely thin, weighed only 126 kg, and was missing two toes from his right rear foot. He was also extremely dehydrated, even though he was not far from open water and snow, suggesting that he sustained

internal injuries in the car collision that kept him from drinking. We euthanized him because of his abnormal behavior, injuries, and poor physical condition.

Tiger 23. Tiger 23 moved into her mother's (Pt04) original territory along the Shandooy and Sakalinsky rivers in January 1999. We are currently trying to capture her with snares to change her radio collar.

Tiger 25. Tiger 25 was last located on 16 July 1998. We believe that she was poached and her collar destroyed shortly after 16 July.

Tiger 27. Tiger 27 is a young (estimated 3-years-old) female tiger who weighed 109 kg when captured at Nevedeemka on 15 May 1998 (Table 1). She was in good physical condition with apparent body fat on rump and back and a good hair coat, although she had numerous tics. Her nipples were very small indicating that she has never reproduced. Since her capture we have located her several times in the Djigitofky drainage primarily upstream from the confluence of Kozliny creek with the Djigitofky river.

In October we recaptured her and fitted her with a satellite collar designed to transmit two locations per week. Through January 1999 we received one to two locations per month, but have not received a location since January. We suspect that the antenna on her collar was damaged; however, the UHF transmitter is working properly.

Tiger 28. Tiger 28 is a 7-year-old (estimated age) male weighing 200 kg captured near the confluence of Nevedeemka creek with Djigitofki river on 10 October. So far his home range boundaries are very similar to those of Tiger 27. We have not located him since February 1999 and suspect that he may have been poached.

Tiger 29. Tiger 29 was captured in early May, 1999, during our attempts to capture and recollar Tiger 23.

Tiger 30. Tiger 30 was captured in early May, 1999, during our attempts to capture and recollar Tiger 23.

FOOD HABITS

We located 23 kills made by 6 marked and an unknown number of unmarked tigers between 1 May 1998 and 30 April 1999. Seventy percent were elk, 17 percent were boar, and 13 percent included two Asiatic black bears, a roe deer, and a raccoon dog.

CONSERVATION ACTIVITIES

In addition to the activities directly related to field research on tigers, a multitude of activities are underway to further understand the ecology of tigers, their prey, and other aspects of their habitat and subsequently apply the understanding to the long-term conservation of tigers. This past year, field crews began research on elk and wild boar in the tiger study area. At present, 16 elk are being monitored with radio-telemetry in the study area. Wild boar will be radio collared in the coming months. This monitoring will assist our understanding of predator-prey interactions, particularly as it pertains directly to tiger movements in the area. Our work on black and brown bears in the study area continued this year. Our field biologist visited the U.S. and our projects in 1999 to get further training. In the summer of 1999, we will be intensively trapping for bears in an attempt to add to the present radio collared numbers (4

black bears and 5 brown bears).

In the area of environmental education, we continue to present our information in local schools and we publish our annual tiger calendar in an effort to get to the public in general. Our overall plan for the conservation in Primorye Province has not only been incorporated into national plans, but has now been published in scientific format (Miquelle et al. 1999). A grant from the Save the Tiger Fund has also been obtained during the past year for the development of a similar plan for the Khabarovsk Province. In addition, another grant has been obtained – in conjunction with the Wildlife Conservation Society – to work with hunting societies throughout the proposed tiger corridor area in the coming years. This will be a comprehensive approach to conservation and development planning that will benefit tigers in the long run. We continue our attempts to expand work into China and North Korea. The first efforts have been to define more exactly the range and numbers of tigers in those two countries. To this end, we completed our second year of surveys in Northeastern China and made our first contacts with biologist in North Korea. The results of the survey have been encouraging in the lack of human impact on tiger habitat; however, few tigers have been documented in the area.

PERSONNEL

Losha Kostera, Kola Reebin, and Sosha Reebin are the principal Russians conducting field work on the project. In addition, we recently hired Griesha Shaumsky. Their primary responsibilities are radiotracking from the ground and assisting with trap lines. Kola is also the main mechanic and Losha does about 50% of the aerial radiotracking. We have continued training Kola in capture and handling techniques and he has become proficient at administering drugs and collecting all samples and data. Although Losha has received some capture and handling training, we hope to train him more intensively during future trapping seasons. Losha has continued his biology studies as a correspondent student with the university in Vladivostok.

Evgenny Smirnov spends little time in the field. However, he is currently involved in several projects including working with Vladimir Shiteenin in developing a protocol for dealing with problem tigers and the development of an insurance fund for compensating tiger depredations on domestic livestock.

Igor Nikolaev worked for the project during spring and fall trapping, 1998.

PUBLICATIONS/PRESENTATIONS

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- Wenshi, P., Shi-Qiang, H., Johnston, K., Sunquist, M., Karanth, U., and O'Brien, J. 1999. Molecular Genetic Ascertainment of Subspecies Affiliation in Tigers. Pages 40-49, in J. Seidensticker, S. Christie, P. Jackson, eds. *Riding the Tiger: Tiger Conservation in Human-Dominated Landscapes*. 383 pp.
- Smirnov, E.N., and D.G. Miquelle. 1999. Population Dynamics of the Amur Tiger in Sikhotealin Zapovednik, Russia. Pages 61-70, in J. Seidensticker, S. Christie, P. Jackson, eds. *Riding the Tiger: Tiger Conservation in Human-Dominated Landscapes*. 383 pp.
- Miquelle, D.G., D.G. Pikunov, and Y. Shihe. (1998). A survey of Tigers and Leopards in Easter nJilin Province, China, Winter, 1988.

Table 1. Notes about animals captured and collared 1 May 1998 - 30 April 1999.

Date MM/DD	I.D. ¹	Capture method	Estimated age	Sex	Physical condition ²	Notes
05/15	Pt27	Snare	3-3.5	f	good	has not reproduced
10/10	Pt28	Snare	7	m	very good	
10/16	Pt27	Snare	3.5-4	f	good	
12/29	Pt22	Helicopter	6	m	poor	ethanized
5/3/99	Pt29	Snare	7	m	good	
5/3/99	Pt30	Snare	4	f	good	

¹Pt=*Panthera tigris*.

²Rated as poor, fair, good, very good, or excellent based on body weight, estimated body fat, i.e., observer ability to see and feel bones, and hair coat condition.

Table 2. Summary of tracking data from radio collared tigers on the Sikhote-Alin Reserve, 1 July 1997 – 30 April 1999.

Tiger number	Dates tracked		Number of Locations
	from	to	
01	98/05/01	99/04/30	31
03	98/05/01	99/04/30	75
16	98/05/01	99/04/30	44
20	98/05/01	99/04/30	23
21	98/05/01	99/12/13	22
22	98/05/01	99/12/29	11
23	98/05/01	99/04/30	18
25	98/05/01	98/07/16	31
27	98/05/15	99/04/30	70
28	98/10/10	99/02/07	36