



THE SIBERIAN TIGER PROJECT
MEDIATING CONFLICTS BETWEEN TIGERS AND PEOPLE:
DIRECT INTERVENTION AND BETTER UNDERSTANDING
OF TIGER-PREY RELATIONS

A PROGRESS REPORT TO
21ST CENTURY TIGER
FROM THE
WILDLIFE CONSERVATION SOCIETY (WCS)

MAY 2005

Project Coordinators: Dale Miquelle, Ph.D.
John Goodrich, Ph.D.

Reporting Period: November 2004 – 1 April 2005

Contacts:

Colin Poole
Acting Director
Asia Program
Wildlife Conservation Society
2300 Southern Boulevard
Bronx, NY 10460
T: 718.741.5885
F: 718.364.4275
E: cpoole@wcs.org

Linde E. T. Ostro, Ph.D.
Director
Foundation Relations
Wildlife Conservation Society
2300 Southern Boulevard
Bronx, NY 10460
T: 718.220.6891
F: 718.364.7963
E: lostro@wcs.org

PROJECT SUMMARY

The Amur or Siberian tiger (*Panthera tigris altaica*) is a classic landscape species, ranging across a variety of human-influenced landscapes, and competing with man for critical habitat and resources. International efforts have been under way for more than 10 years to save this population from extinction. After an apparent rapid decline in population in the early 1990s, in recent years, partly due to a decade-long effort of The Hornocker Wildlife Institute/Wildlife Conservation Society (HWI/WCS) Siberian Tiger Project, the tiger has begun to show signs of stability. Poaching has declined, and improved scientific understanding of the species' ecological requirements has enabled planners to begin to take constructive long-term conservation actions, including: protected area planning and management; establishment of a legal basis for corridors between protected areas; road closures to reduce mortality of tigers and their prey; management of game populations outside protected areas to benefit both humans and tigers; education and outreach to ensure a local understanding of the role tigers play in the ecosystem; bi-lateral discussions to establish transboundary reserves that will connect tiger populations in the Russian Far East and northeast China, and help reestablish viable tiger populations in China.

However, the effectiveness of nearly all of these projects depends on a continued strong, scientific effort to understand the ecology of this northernmost population of tigers. Because of the limited productivity of northern environments, the carrying capacity of the Sikhote-Alin landscape for tigers is inherently low. This low density, in combination with the secretive nature of tigers, makes the study of this animal a slow and difficult process. The Siberian Tiger Project has been successful in developing a database on Amur tigers through persistence and a commitment to incremental increases in our understanding of tiger ecology, including population dynamics, predator-prey relationships, social structure, reproduction, and survivorship. This database is the backbone of our conservation efforts, and is what distinguishes WCS from all other conservation organizations working in the region: we recommend conservation actions based on our understanding of tiger ecology, and the requirements for population persistence. Our research efforts provide a platform to conduct conservation in a responsible and effective means, and also provide the credibility to address bureaucrats and politicians as scientists with a real understanding of tiger ecology and conservation needs. Additionally, our highly trained staff is capable of dealing with conflicts between people and tigers.

Two types of conflicts must be addressed to ensure the long-term co-existence of tigers and people: direct conflicts, in which tigers threaten human health or welfare, and competition for ungulate species. This project addresses both issues.

The staff of the Siberian Tiger Project works closely with the State Inspection Tiger Response Team, also based in the village of Terney. Together, we work to resolve conflict situations, to demonstrate a concern for the welfare of people living in proximity to tigers, and to provide an alternative to killing problem animals. This program is contingent on continuation of the Siberian Tiger Project and its commitment to retaining

and training staff capable of handling problem situations. Our ability to monitor rehabilitated and translocated tigers is, of course, also dependent on the continuation of the Siberian Tiger Project.

A second source of conflict between tigers and humans is the sense of competition, be it real or perceived, between hunters and tigers for ungulates. Most hunters believe there are too many tigers and that they kill too many ungulates. We are working with local hunting groups to change this perception. Our ability to do this is partly contingent on our understanding of tiger predation rates, which is still incomplete. Therefore, we are working to better understand predation rates and prey requirements as part of our overall effort to resolve hunter-tiger conflicts.

PROJECT OBJECTIVES

With an overall goal to better understand the needs of and to protect Siberian tigers in the Russian Far East, the Wildlife Conservation Society/Hornocker Wildlife Institute is conducting a two-pronged effort of field research and conservation action. Through radio-collaring and monitoring tigers, we will define tiger predation rates and variables, while simultaneously working with the Tiger Response Team to intervene as the tigers move into situations where conflicts with humans are likely to arise.

Predation Rate Field Study

Our primary objective is to use GPS telemetry to intensively monitor tigers of varying sex and age categories as long as possible (ideally three to four weeks) to locate all “kills” during the period, identify the prey species, and estimate the volume eaten. These data will form the backbone of our estimates of intervals between kills and volume of food required by tigers in the wild. We will continue to:

- Conduct long-term (three to four week) intensive monitoring of individual animals to determine how often kills are made, size of kills, and volume of meat consumed at kills;
- Focus particularly on females with cubs, which demonstrate the most dramatic change in predation rates as the young mature;
- Seek to determine if there is seasonal variation in predation rates;
- Develop an understanding of prey requirements, and consequently prey densities required to sustain tiger numbers.

Tiger Response Team

The intent of our work with the Tiger Response Team is to reduce or eliminate the threat or sense of threat to health and welfare of people who come into contact with tigers; and minimize mortalities to tigers by seeking responses to problem situations other than killing, such as removing tigers from situations where they are in danger of being killed. We will continue to:

- Devise and evaluate new intervention methods as needed;
- Conduct the necessary intervention and monitor the outcomes;
- If re-release or relocation is carried out, radio-collar the tiger and track its movements to determine the success of the action or need for re-intervention;
- Continue the ongoing field training of members of the Tiger Response Team, and
- Create a record of all interventions, actions taken, and outcomes to be used as a resource by projects in other tiger-range countries dealing with similar conflicts.

PROGRESS

Field Study

Predation rates: We radio-tracked 14 different tigers (Table 1) during the report period. While we have not yet implemented GPS collars (see below), we have advanced with predation rate studies. We assigned two Russian graduate students (Roman Kozhichev and Svetlana Sutyryna) to the study in late February 2005 and they focused on collecting predation rates on Pt35 during March and April. The task has proven difficult because Pt35's cubs (Pt64, Pt69, and an unmarked female) have not yet dispersed and frequently share her kills. The cubs are nearly two years old and the group usually consumes their prey in less than a day, making it difficult to detect kills. Nonetheless, the researchers have collected one sequence of three consecutive kills and are currently on the fourth consecutive kill of a second sequence.

We expect permits for GPS collars this spring, but have run into an additional delay. We originally decided to use GPS collars because Televit had developed a small collar that would last a sufficiently long period (> 2 years). However, many field studies using Televit collars have recently reported very high collar-failure rates and have strongly discouraged us from using Televit collars. No other company had GPS collars that were small enough and would last >2 years. However, Lotek, a company with an excellent reputation (i.e., low collar-failure rate), has since indicated that they have a collar that will fit our needs and we hope to purchase and implement one or two collars this year.

Other aspects of tiger ecology: To date we have successfully tracked all three of Pt56's cubs, which we fitted with radiocollars in August 2004 when they were just 5 weeks old, as part of a new study designed to collect data on cause-specific mortality rates for cubs in their first year of life. We intend to recapture these cubs and fit them with permanent collars in spring 2005, which will allow us to collect data on dispersal movements.

In summer 2004, we monitored an unexpected event that may provide some of the most important data we have collected during the course of the project. Two tigresses (Pt55 and Pt56) captured as cubs in 2001 and who settled in their natal home ranges, gave birth to their first litters of cubs in July 2004. Pt56 was just three years old and Pt55 was just under three when they gave birth, i.e., they gave birth just as soon as they became sexually mature. This marked a very important change in the tiger population in our core study area, i.e., the density of adult tigresses doubled, and three of the four resident tigresses had cubs. This change was likely made possible by social stability created by a

long (about 5 years) period during which human-induced mortality was eliminated on our core study area. That is, when resident adults survive long enough, densities may increase dramatically as their offspring settle in their natal home ranges. These results are preliminary and monitoring this core population over the next year will be essential to determine if the habitat can support such high densities and how the tigresses will adjust to these new changes.

Also surprising, Pt35's cubs (males Pt64 and Pt69 and an unmarked female), which were nearly 23 months old, had not yet dispersed at the time of this report. Previously, the oldest recorded dispersal age for a male cub was about 20 months and mean dispersal age was 18.8 months. Not only have these cubs not dispersed, but they still spend much of their time together and frequently share kills with their mother. Pt35's territory is only about 190 km² and it is surprising that the area can support 4 adult-sized tigers.

Sadly, we lost contact with Pt01 during the report period and believe she was poached and her collar destroyed. Captured as a one-year-old cub in 1992, Pt01 was the first Amur tiger ever fitted with a radio collar. We monitored her for 13 years, during which time she gave birth to 6 litters. The data we collected from her has significantly enhanced our knowledge of tiger ecology.

Table 2. Summary of radio-tracking data collected from tigers on the Sikhote-Alin Biosphere Zapovednik, 1 November 2004 – 1 April 2005.

Tiger no.	Sex	Age	Dates tracked		Days tracked	Number of locations		Notes
			from	to		total	report period	
1	f	14	02/11/92	01/11/05	4718	961	6	Missing, probably poached.
35	f	9	10/21/99	04/01/05	1989	1526	87	3 cubs born early June 2003.
37	f	11	11/17/99	04/01/05	1962	382	13	
49	m	8	05/22/01	04/01/05	1410	410	21	
55	f	3.5	10/24/02	04/01/05	890	180	27	Pt37's daughter.
56	f	3.5	10/24/02	04/01/05	890	294	46	Pt35's daughter.
60	m	4	08/08/03	04/01/05	602	50	2	
62	m	10	02/22/04	04/01/05	404	20	4	
63	m	4	04/30/04	04/01/05	336	27	7	
64	m	1.9	05/24/04	04/01/05	312	158	76	Pt35's son.
66	f	0.8	08/16/04	04/01/05	228	70	35	Pt56's daughter.
67	f	0.8	08/16/04	04/01/05	228	70	35	Pt56's daughter.
68	f	0.8	08/16/04	04/01/05	228	70	35	Pt56's daughter.
69	m	1.9	09/16/04	04/01/05	197	93	69	Pt35's son.

Tiger-Human Conflicts

There were two situations when Inspection Tiger requested assistance from WCS during the report period, but use of scare tactics or aversive conditioning was not appropriate in any of the conflicts. In the first, a tiger killed several dogs in and near the town of Kavalerovo in December 2004. Nikolai Rybin responded and met personnel from Inspection Tiger on site. They confirmed that a tiger had killed several dogs and showed little fear of humans while doing so. They remained on site for three days, but the tiger did not return.

In the second situation, a tiger attacked but did not kill two calves in the town of Rokovka, near Ussurisk, and also scavenged discarded leftovers from a sausage factory in the same town. Observers, including an experienced field biologist, reported that the tiger was not using its right front foot and was emaciated. Inspection Tiger asked WCS to capture the tiger and Nikolai Rybin went to Rokovka where he was met by Inspection Tiger personnel on 15 March. They captured the tiger, a young adult male, on 17 March 2005 and euthanized it. The tiger had a deep puncture wound on its right front paw, had hair loss suggestive of skin mites on its lower legs, and its liver and spleen were enlarged and spongy in texture. The tiger otherwise appeared healthy and had considerable body fat (i.e., it was not emaciated). Additionally, they caught the tiger in a foot snare by its right front foot; thus, the tiger was clearly using the foot, at least enough to trip a snare and necropsy revealed that the wound was not life-threatening. While this tiger appeared reasonably healthy, he probably was not a good candidate for translocation because he displayed very bold behavior despite good body condition. Based on past experiences, healthy tigers that display such bold behavior may continue the behavior patterns that initially caused the problem.

The Ministry of Natural Resources underwent reorganization in 2004, which resulted in considerable changes. A significant change relative to our work with tiger-human conflicts was that Boris Litveenov no longer heads the Tiger Response Team. Indeed, all Inspection Tiger personnel who have received significant training from WCS have left Inspection Tiger. Thus, our assistance with tiger-human conflict situations has become more important. In the future, we intend to continue assisting with conflict situations and will continue training Inspection Tiger personnel to deal with tiger-human conflicts.

PUBLICATIONS

Scientific

Miquelle, D., I. Nikolaev, J. Goodrich, B. Litvinov, E. Smirnov, and E. Suvorov. 2004. Searching for the co-existence recipe: a case study of conflicts between people and tigers in the Russian Far East. Proceedings of the Zoological Society of London. *In press*.

- Miquelle, D. G., P. A. Stephens, E. N. Smirnov, J. M. Goodrich, O. Zaumyslava, A. Myslenkov, and G. Chapron. *In press*. Competitive exclusion and top-down processes: a case study of tigers and wolves in the Russian Far East. *In Large Carnivores and Biodiversity: Does Saving One Conserve the Other?* Island Press. *In Press*.
- Goodrich, J and D. Miquelle. *In press*. Amur tiger research: where have we been and where are we going? Pages XX-XX in Miquelle and XXX, eds, Proceedings XXXX conference, Khabarovsk.
- Goodrich, J. M. and D. G. Miquelle. *In press*. Translocation of Amur tigers to alleviate tiger-human conflicts. *Oryx*.
- Shujin L., J. Kim, W. E. Johnson, J. Wentzel, J. Martenson, M. Menotti-Raymond, N. Yuhki, D. G. Miquelle, J. Goodrich, O. Uphyrkina, H. B. Quigley, R. Tilson, G. Brady, U. Karanth, P. Martelli, C. McDougal, S. Hean, S. Huang, W. Pan, V. Subramaniam, M. Sunquist, J. L. D. Smith, and S. J. O'Brien. 2004. Phylogeography and genetic ancestry of tigers (*Panthera tigris*). *PloS Biology* 2:e442.

Popular

- Goodrich, J. *In press*. Capture of Galia's cubs. National Geographic, Russia (in Russian)
- Goodrich, J. 2004. Veterinarians report first case of canine distemper in wild tigers. *Zov Taigi* 6:26-27.
- Goodrich, J. 2004. How young cubs received radio collars. *Zov Taigi* 6:22-27. (in Russian)
- Goodrich, J. 2004. Helping cubs survive, part I. *Vectnik Terney*. 87:2. (in Russian)
- Goodrich, J. 2004. Helping cubs survive, part II. *Vectnik Terney*. 88:2. (in Russian)
- Goodrich, J. 2004. Tracking Olga. *Vectnik Terney*. 82: 2. (in Russian; translation of Goodrich 2003)
- Goodrich, J. 2004. Against all odds. *Vectnik Terney*. 83:2. (in Russian; translation of Goodrich 2004)
- Goodrich, J. 2004. The magic of the tiger. Pages 108-109 in V. Thapar, editor, *Tiger: the ultimate guide*. CDS Books, New York.
- Goodrich, J. 2004. Team tiger. *Wildlife Conservation* 107 (3): 34-37
- Goodrich, J. 2004. Against all odds: a Siberian tiger is rescued from a poacher's snare. *Wildlife Conservation* 107 (3): 6-7
- Goodrich, J. 2004. A two-year-old in trouble. *Wildlife Conservation* 107 (1): 8.