



REHABILITATION AND TRANSLOCATION OF TWO ADULT FEMALE AMUR TIGERS

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INTRODUCTION

In July 2001, after several months of rehabilitation and captivity, 2 wild-caught female Amur tigers were removed from the Otes Wildlife Rehabilitation Center in Khabarovski Krai and released into the wild in northeast Primorski Krai. This event marks one of the few cases of translocation and only the second recorded rehabilitation attempt of tigers world-wide. This report places this translocation in context by briefly describing other tiger translocation efforts and other actions to resolve conflict situations with tigers, and then reports on the circumstances of this translocation, including a report on the first 3 weeks of monitoring after translocation.

TIGER TRANSLOCATIONS AND PROBLEM TIGERS IN RUSSIA

Background

To our knowledge there have been 5 examples of translocations of wild tigers prior to this effort.

1. In 1974 Seidensticker et al. (1976) translocated a young male tiger that had killed a woman and several livestock from a heavily populated area in the Sunderbans into a protected area, and attached a radiocollar to monitor the animal. However, the translocated tiger survived less than a week in its new location before it died, apparently from wounds inflicted by a resident tiger.

2. A second translocation occurred in the Sunderbans in 1988 to move a problem tiger that was depredating livestock in the village of Sajnakhali at the edge of the Sunderbans Tiger Reserve (Telegraph Sunday Supplement 1988). It took more than a month to capture the animal (during which time it ate two goats and a sheep), but on June 29th the tiger was captured, shifted to a "transfer" cage, and loaded onto a boat by noon. By 6:15 the next

morning the animal was released within the Tiger Reserve. No further information exists concerning the fate of this animal.

In Russia, three previous translocations have taken place.

3. In winter 1975 in Khasanski Raion, Southwest Primorski Krai, permission was granted to capture a large adult male tiger after it had killed a number of dogs in a small village south of the town of Slavyanka (I. G. Nikolaev, pers. comm.). Representatives from the Hunting Management Department caught the tiger in a metal cage, immobilized it using Sernalyn, and then placed him in a wooden transfer cage. The tiger was transferred by boat to Vladivostok to the Hunting Department's base. On the recommendation of I. G. Nikolaev, it was decided to release the animal, which was flown by helicopter to Perevalnaya (formerly Nezhnaya Sinacha) Creek, a tributary of the Iman River, and released in Tayoshni Zakazanik (refuge). Nikolaev traveled to the release site the following week and snow-tracked the tiger for approximately 2 km (afterwards he lost the trail on southern, snow-free slope). Behavior and movements of the tiger appeared normal, and within that distance the tiger attempted to stalk and prey on a wild boar. Later Nikolaev confirmed that this area was already inhabited by a resident male and female with young, but no further information on the status of the released tiger was obtained.

4. A young animal was captured in Khabarovski Krai, apparently in winter 1998-1999 in an emaciated condition close to a village it was frequenting. It was held at Otes Rehabilitation Center for some time, and then released in the Tigrini Dom region of Khabarovski Krai with a satellite radio collar the following winter. This animal was supposedly tracked on a daily basis for 3 weeks to ensure that it was hunting and feeding. "Within a month or so the signals became less frequent until they were non-existent" (Cameron, pers. comm.). This work was largely supported by an American businessman, James Cameron. This is the only example we know of where a tiger has been held in captivity for some extended period before release back into the wild, but unfortunately, the fate (and even the sex) of this animal remains unclear.

5. On December 9, 2000, members of the Wildlife Conservation Society's Siberian Tiger Project and the State Tiger Response Team (Inspection Tiger) captured and released a young male tiger (Pt43) that had been preying on dogs in the town of Vostok II, Krasnoarmeyski Raion, Primorski Krai. This tiger appeared to be an ideal candidate for translocation. He was healthy and at about 2-years-old, probably had not yet secured his own territory and hence would be less likely to return. He was radiocollared and released on the Siberian Tiger Project study area (but outside the boundaries of the Sikhote-Alin Zapovednik) in the upper Djigitovky River, 150 km east of his capture site. Two weeks after his release this tiger ripped up a tent in an unoccupied camp while apparently attempting to prey on a dog. From there, he continued moving down the Djigitovky River and on January 5, 2001, entered a field of summer cottages (dachas), killed two dogs, and retired to the relative warmth of a nearby shed. When the resident caretaker awoke that morning, he realized there were tiger tracks all around his house, and tracks leading into his shed, but not out. Armed, he approached the shed, at which time the tiger rushed out, exiting via the same way he had entered, not two meters from the caretaker. The tiger continued running from the site, but the caretaker fired a shot into the left ribcage when the tiger was already 10-15 meters away, and the tiger died approximately 100 meters from where he was shot. The caretaker was charged with possession of an illegal firearm, but not for shooting the tiger.

These incidents highlight many of the problems with translocations and rehabilitation. Most animals that are candidates for translocation are already problem animals – in some instances, they are injured (see Pohomovna below) or have become habituated to people, or at

least sufficiently tolerant to approach settlements in search of easy prey. Via depredations, they cause financial hardship to village communities, and their presence represents a threat to human life, even if the majority of these animals have never demonstrated any direct or immediate threat to humans. Thus, translocation of a problem animal may be simply a movement of a problem from one area to another. Animals that become available for translocation likely already represent that portion of the population that has a low probability of surviving due to their habituation to presence of people.

In each of the above examples, translocation of tigers has been conducted as an attempt to alleviate a conflict between tigers and people without resorting to destruction of the tiger. In the two cases where the animal was monitored, survival was less than 2 months.

Nonetheless, there are a number of compelling reasons to further explore the potential for rehabilitation and translocation of tigers. These include:

1. As available habitat shrinks, and human populations increase, conflicts between humans and tigers will also increase. Therefore, we need to develop a full suite of actions that will allow us to effectively deal with any conflict situation with a well established protocol with a defined probability of success.

2. Although to date all tiger translocations have been conducted as an alternative to destroying a problem animal, in the future translocations may be key tool in recovery of tiger populations (either supplementation or reintroduction) or as a means to introduce new genetic material to a genetically impoverished population. In general, translocation is likely to become an important tool for future wildlife managers.

3. Despite its potential importance, we really don't know whether translocation can be done, or how it should be done. Can "hard" releases be conducted, or is it necessary to provide additional support ("soft" release)? With only two cases fully documented for tigers, it is too early to tell whether translocations can be effective. Translocations with pumas have been successfully conducted in Florida and New Mexico, and it is likely that appropriate protocols can be developed for other big cats.

4. Tigers are expensive to house and feed, and space in zoos is limited. It is therefore unlikely that any set of zoos or rehabilitation centers will be able to handle, worldwide, all conflict situations where removal of the animal from the place of conflict is necessary.

5. In many situations, the only alternative to translocation is euthanasia, resulting in loss of an individual and valuable genetic material from the population. Some percentage of problem animals can likely be rehabilitated, reconditioned, and re-released back into the wild to become contributing members of the wild population. We still have no idea what types of animals can be saved, and which have such a low risk of success that it is not worth the effort. As destruction of an animal should be considered a last resort (see below), the feasibility to conduct translocations should be fully explored and documented because it provides some animals their only alternative to death.

6. In Russia, there is a unique opportunity to conduct the necessary experiments to determine the feasibility of tiger translocation. With low human densities, there is less of a chance that the tigers will come into contact with humans, and, with low tiger densities, there is a good chance that they can establish their own individual territory. Perhaps most importantly, this is the only place in a tiger range country where there is a team of government specialists trained to deal with conflict tigers, and a team of scientists with the expertise to capture, immobilize, and handle these animals. We are in a unique position to conduct this work, and learn how to do it properly. Although the population of Amur tigers probably can survive under present conditions, without such translocations, it is likely that we will need such tools in the future, if not in Russia, than in other range states. Indeed, such

capabilities are already needed in other countries where available habitat is less and human populations exploding. Therefore, the techniques learned in Russia could be applied in other countries, thus assisting in tiger conservation worldwide.

In fact, translocation is only one of a suite of actions available to deal with problem tigers (defined as an animal that poses a real or perceived threat to humans). Aside from potential actions that humans may take (e.g. better management of livestock), potential actions towards a problem tiger include (listed in increasing degree of invasiveness):

1. Do nothing. Leave the tiger in place, assuming that a depredation or situation is a one-time occurrence that will take care of itself in time. Many depredations are a one-time event, and therefore it is inappropriate to respond until a pattern has developed.

This approach may be appropriate even for very young animals. A radio-collared tigress (Pt3), monitored by the Wildlife Conservation Society's Siberian Tiger Project was poached when her two cubs (male and female) were 7.5 months old. It took two months to locate and finally capture one of these animals (male Pt36). At 9.5 months, this animal appeared healthy and a nearby scat indicated that it had just fed on wild boar. There was evidence that the female cub had also survived this period. Because the poaching incident occurred in summer, there were adequate small prey available for these young tigers to feed upon. This male survived the following winter, and began dispersal from his natal home range at about 12 months, moving some 200 km south before we lost contact (he was likely poached and his collar destroyed) when he was about 2 years-old.

2. Apply aversive conditioning program. When problems recur, take immediate steps to apply a negative conditioning program for the specific animal. Such a program may include scare tactics (flares, disturbances), aversive conditioning to meat of domestic livestock (by using lithium chloride, for instance), or use of electrified replicas of potential domestic prey (e.g. electrified stuffed dogs) that would provide a powerful shock to preying tigers. A standard procedure has not been worked out for tigers, but some experiments have been conducted by Wildlife Conservation Society and the Tiger Response Team.

3. Translocation. As noted above, translocation has been attempted only a handful of times, and in only two instances were animals radiocollared and their fate determined. In both those cases, tigers survived only a short time in their new home. Nonetheless, it is yet still too early to know if translocation can be a successful tool for handling problem animals. Movement of animals to regions remote from human settlements would seem like a good option for problem animals, and has been used with moderate success in dealing with problem grizzly bears in North America. Translocation of tigers is still in an experimental phase, and it is critical that translocated tigers be marked and radio-collared to monitor the behavior of each animal after release. At a minimum, it provides adult animals, inappropriate for introduction into a captive breeding program, a second chance.

4. Rehabilitation and release. Some injured, sick, or emaciated animals may be unlikely to survive a simple translocation, but if given time to recover, could be released back into the wild, if they are old enough to be live independently (at least 10 months, depending on the season). It may be reasonable to hold such animals on a site where they can be treated and allowed to recover with minimal contact with humans. It is critical that recovery occur in the absence of habituation to humans, for habituation is likely to increase the probability of further conflicts with people when the tiger is released back into the wild. Whether such animals are to be translocated or re-released near the capture site, the rehabilitation process should only be undertaken if it is possible to radiotrack and monitor them upon release.

For young animals, at least, other actions are possible, depending on the situation:

5. Return young to their mother. For some animals that may have been temporarily separated from their mother, it may be possible to reunite offspring with their mother. In Primorski Krai, Russia, attempts by the Wildlife Conservation Society's Siberian Tiger Project staff and the Tiger Response Team this past winter to reunite cubs with their mother failed, but should be considered as a potential option in the right conditions.

6. Remotely provide food for young until they can hunt independently. In 1998 the Wildlife Conservation Society's Siberian Tiger Project and the Tiger Response Team provided food to 3 cubs that had been orphaned when their mother, a radiocollared tigress, was shot and killed by a poacher. These three cubs remained near the site where food was provided on a regular basis for 3 months (December 1998 - March 1999). Feeding was discontinued only after the cubs left the area on their own.

7. Removal to a zoo. This is only a realistic and humane option for a limited number of problem tigers, for a variety of reasons. Nowadays, the care of tigers in zoos is well understood and breeding, as part of regional managed programs, is commonplace. Tigers are expensive to house and feed, most tiger enclosures are generally occupied, and so available space to hold tigers from the wild is limited. In addition, for some subspecies the existing genetic base in zoos is good and there is no conservation reason to add further founders to the population - there is a sincere desire on the part of most zoo organizations to assist in in-situ conservation, and therefore most zoos want to avoid removing animals from endangered wild populations unless there is an absolute need. Finally, tigers under one year old adapt much better to life in zoos than juvenile or adult animals and so animals over one year may be considered unsuitable on welfare grounds. It follows that a home in the appropriate breeding program is only the best solution if there is no prospect of keeping the tiger in the wild, if it is under one year old, and if there is suitable space available in a properly built and managed tiger enclosure.

Wildlife Conservation Society's Siberian Tiger Project has assisted in transfer of two pairs of cubs to zoos: in 1993, 2 3-month-old cubs, orphaned when their mother was poached, were taken from the wild and transferred to Omaha Zoo, in consultation with the SSP (North American zoo tiger program), and in January 2001 we transferred two 4-5 month old cubs to Moscow Zoo, in consultation with the EEP (European zoo tiger program), when they were found abandoned under a building in the village of Pokrovka, Krasnoarmeyski Raion.

8. Euthanasia. As a last resort, if translocation is out of the question, animals can not be rehabilitated, and are not suitable for zoos, then euthanasia will be necessary. This should be done only after thorough examination; i.e., the animal has been captured, immobilized, and examined by a qualified individual. This is of course a last resort, but may be necessary with man killing tigers, very old animals, or repeat offenders that have already been translocated a number of times. We strongly recommend that animals not be shot except under extreme situations when there is no alternative (e.g., an attacking animal). It is critical that thorough examinations occur prior to a decision to end an animal's life. In Russia in the 2000-2001 winter season, two animals were euthanized (a decrepit old female with advanced and severe dental diseases, and a male who was a repeat offender depredator with broken canines) and a third was shot when it attacked members of the Tiger Response Team (after already mauling a forest worker).

Tiger conservation needs to develop a range of responses to problem tigers, and Russia is further along this road than any other tiger range state. Lessons learned from experimenting with such practices are of international importance. There are virtually no data on the success of rehabilitation and translocation of tigers, which have tended to be done without follow-up monitoring. If we are to learn how to do either successfully, we have

to try it out somewhere, some time. Russia is the most suitable place for such an effort because:

- it has very low human population density,
- it has a functioning tiger response team for conflict situations,
- it has a research team (Wildlife Conservation Society's Siberian Tiger Project) capable of capturing, immobilizing, radiocollaring, and monitoring rehabilitated or translocated animals;
- it has a wildlife rehabilitation center (Otes) whose staff have the right attitude and facilities that although in need of upgrading, are appropriate for such actions.

No other tiger range country comes close meeting these criteria.

PRESENT REHABILITATION AND TRANSLOCATION OF TWO TIGERS

Background

The 2000-2001 winter season was extremely harsh, with bitter cold and deep snows across Khabarovsk Krai. There were reports of litters of tiger cubs dying (Vasilinenko 2001, Dunishenko, personal communication) and number of tigers appeared in forest villages, feeding on dogs. Apparently as a result of these severe conditions, a number of tigers were brought to the Khabarovsk Wildlife Rehabilitation Center "Otes." During visits to the Center in May, 2001 (separately by SC and DM) there were four tigers being kept. The background on each of these animals follows.

1. There is an adult male, kept in a spacious and reasonably well constructed enclosure on natural woodland in the public area of the Center. He is habituated to humans and will never be released. He is their tiger "ambassador" and is on display to human visitors.

2. A female tiger "Troya," captured near Troitski village in Nanaiski Raion, Khabarovsk (near the northern limit of tiger range), was captured and brought to the center on June 12, 2000, in an emaciated condition. She had been seen in the region since June 1, with no sign of her mother in the vicinity. She was captured when she became tangled in a fishing net used to fence a barnyard. At the time of her capture, it was reported that she still retained her deciduous teeth, indicating that she was less than 12 months old. At the Otes Rehabilitation Center, a special one hectare enclosure of natural woodland, with several small holding areas attached at the edges had been built to hold such animals. To minimize contact with humans, it was built approximately a half kilometer away from the public area and on top of a ridge, out of sight and earshot of visitors. The fencing is about 3 meters high with a one-meter 45 degree inward overhang. Troya was put into this enclosure for rehabilitation with the intent of translocating and releasing her back into the wild. Caught June 12. First time seen was June 1

3. In the same enclosure with Troya was a second animal, "Pahomovna" brought from the village of Svetagoreya, Lazo Raion, Khabarovsk Krai, on January 26, 2001. This animal had lost 2 toes on its front right paw (perhaps to a steel trap), and apparently as a consequence of being unable to hunt effectively while the foot healed, resorted to killing several dogs in the village. After it retired into a dog kennel to eat a dog on the premises of A. A. Pahomov, villagers blocked the exit to the kennel and the tiger, apparently emaciated and weak, did not break out. This animal could have been translocated immediately, but it is probably beneficial that it spent some time at the rehabilitation center so the foot could heal, and it could recover from a period of food deprivation. In fact, this particular situation is a

classic example of how a rehabilitation center provides a valuable service - holding tigers temporally during a recovery phase until they are ready for release back to the wild. Initially, Pahomovna was housed in one of the holding areas next to the large enclosure – assuming it to be a male, staff at the rehabilitation center were well aware that they had no need of cubs from a potential mating, and kept it separate from Troya. However, in early spring (March) it broke through the fence into the main enclosure to join Troya. Upon capture and immobilization for translocation, we discovered Pahomovna was a female.

Thus, at the time of capture and translocation, Troya had been in the enclosure for one year, and Pahomovna for 5 months. Despite the long period in captivity, both Troya and Pahomovna were highly wary of humans and avoided visual contact by slinking away from the occasional visitor. Both animals in this enclosure were generally fed once a day – one person dropped off meat at one of several locations, and then left. The tigers apparently waited for the person to leave before feeding. Subsequent events, including our difficulties in capturing Pahomovna, indicated that these animals were by no means habituated to the close proximity of humans.

4. The fourth tiger was a female of 6 to 8 months, who arrived in March 2001. She was being held in a small pen (approximately 3 by 6 meters) attached to the big enclosure. She was also highly wary of humans and reacted very aggressively to people approaching her. She died of unknown causes in late June.

A fifth animal, a young cub, was brought to the release center from the village of Kazakevichevo, near BolsheKhekhtsirski Zapovednik. This was one of three cubs of the single female “Trekhpalaya” (or “Three Digit,” referring to the lack of one toe on one paw) known to reside in the zapovednik. This cub died before arrival to the Center, and the other two cubs of this litter were found dead in the wild (Vasilinenko 2001).

The Otes Rehabilitation Center did not request these animals, but was only responding to a need. While interested in caring for these animals, the Center had neither the financial means, nor the desire, to provide a permanent home for all these animals. They had agreed to hold them with the understanding that either they would be re-released to the wild, or transferred to a zoo.

A meeting was held at the Otes Wildlife Rehabilitation Center in May 2001 to decide the fate of these animals. The meeting was attended by V. K. Boltrousko, S. A. Zubtsov, B. I. Litvinov, Yu. M. Dunishenko, A. Darenski, E. Kruglov, V. Kruglov Yu. Yu. Kolpak (of Otes Rehabilitation Center), and Dale Miquelle. At the meeting, representatives of the Otes Rehabilitation Center expressed their concern that the cost of maintaining these tigers was high, and they had no desire to become a “storage facility” for problem animals if no action was going to be taken to rehabilitate these animals, or move them to a permanent site at an appropriate zoo. It was generally agreed that release of Troya and Pahomovna was feasible, but that the younger 6-8 month old cub should be placed in a zoo. There was a general consensus to attempt the release of the two animals as quickly as possible, and to contact EEP representatives about placement of the young female in a zoo. Several permits from Moscow would be necessary, as well as coordination between Inspection Tiger, MinPreroda, Khabarovsk, and the Wildlife Conservation Society’s Siberian Tiger Project.

Based on a series of discussions, Sarah Christie, EEP Coordinator for Amur tigers, obtained a grant of 1000 pounds (about \$1400) from Care for the Wild International, a British-based organization, to offset the cost incurred by the Otes Rehabilitation Center in maintaining the tigers. Care for the Wild International have since agreed to fund improvements to the tiger rehabilitation enclosure fence, and are also investigating the possibility of running an appeal later in 2001 to assist the future development of the Center.

Sarah Christie also raised funds from European zoos to cover expenses of the translocation. Inspection Tiger would have primary legal responsibility for the translocation, and an official letter from the Ministry of Natural Resources in Moscow requested the Wildlife Conservation Society's Siberian Tiger Project to assist in the capture, immobilization, translocation, and monitoring of these two tigers.

Although the EEP identified Lisbon Zoo as an appropriate home for the 6-month old female cub, as already mentioned she died at the Otes Rehabilitation Center in mid-June. A veterinarian assessment suggested that she died due to liver or kidney complications derived from the period of starvation in winter.

Actions: Translocation of Two Adult Female Tigers

On July 3rd, 2001 members of the Wildlife Conservation Society's Siberian Tiger Project and the Tiger Response Team, left Terney for Otes Wildlife Rehabilitation Center near Bichavaya, Khabarovski Krai. Included in the team for Wildlife Conservation Society were: John Goodrich, Alexander Reebin, Nikoli Reebin, and Dale Miquelle. Upon arrival at the center that evening, we walked to the enclosure where the tigers were maintained and assessed the options for capturing the two tigresses. Staff at the Rehabilitation Center had already placed a metal bar cage inside the enclosure, and were placing food inside so that the tigers would become accustomed to entering the cage. The next morning (July 4th), the cage was made into a trap by connecting the door to bait inside, which when moved, triggered closure of the door. A transmitter was set to turn on when the cage door closed, so status of the cage could be monitored remotely.

The tigers had not been fed the previous 24 hours to increase probability of their entering the cage. We expected that the tigers might enter at one of three times: (1) immediately upon presentation of bait (if they were largely conditioned to humans, and



(Photo courtesy of V. Solkin, Zov Taigi)

Photo 1. Processing "Troya," approximately 23:45 July 4th, 2001, Otes Wildlife Rehabilitation Center.

associated human sounds at that corner of the cage with food); (2) at the normal feeding time (early evening) a tractor drove up to the site and back, simulating normal feeding procedures; or (3) at dusk, or shortly after dusk, when tigers become more active, and feel more secure under the cover of darkness.

The third of these predictions was realized. With darkness nearly upon us, the transmitter emitted signals at 22:49. Darts were loaded with immobilizing agents, equipment was prepared, and a team of 5 people rode in a trailer behind a small tractor up to the cage. The tiger was illuminated with headlights from the tractor and strong flashlights (this has a calming effect, as the tiger cannot see approaching humans) and Alexander Reebin delivered two darts into the tiger at 23:20. To avoid having to enter the enclosure where the other tiger was still at large, the entire cage was pulled out through a gap specially created for this purpose. The animal, which turned out to be Troya, was removed from the cage, placed in the trailer, and taken down to the Center, where a radiocollar was attached, blood and tissue collected, key physiological parameters monitored during anesthesia (respiration, body temperature, and heart rate), and body measurements taken (Photo 1). Based on tooth wear, we estimated Troya to be 2 years-old, which is in agreement with age estimated by staff at the Center. She weighed 210 pounds (95 kg) and body length without tail was 143 cm. The immobilization went smoothly, although body temperature was slightly elevated, so water from a nearby creek was continuously applied. The whole process was filmed and photographed by a squadron of journalists. By 00:30 on July 5th, Troya was loaded into a cage mounted on the back of a pick-up truck, water was again liberally poured on her (Photo 2), and a team consisting of Nikoli Reebin, Evgeny Tsarapkin, V. Kruglov, and several



(Photo courtesy of V. Solkin, Zov Taigi)

Photo 2. 00:30 am, July 5th. Cooling “Troya” before the 10-hour drive to release site.

journalists, left for the release site in Krasnoarmeyski Raion.

Traveling through the night, they arrived at the site mid-day on July 5th, and released Troya into her new home at approximately 17:00. Fully recovered from anesthesia, she promptly jumped from the cage to the ground (Photo 3), growled slightly at team members (Photo 4), and disappeared into the forest.



(Photo courtesy of G. Shalikov, Zov Taigi)

Photo 3. Release of Troya, July 5th, 17:00 in Krasnoarmeyski Raion, Primorski Krai.

Back at the Rehabilitation Center, remaining team members returned to the enclosure around 01:00 on July 5th, returned the cage to the enclosure, reset the cage, and opened a second bait site at a small attached enclosure (where the young female had formerly been kept). This work was finished by approximately 02:00 in the morning. Monitoring of both traps was done remotely (both were set with transmitters) on an hourly basis through the night, the following day (July 5th), and night. The second tiger, Pahomovna, was much more reluctant to enter either of these bait sites, even though, by morning July 6th, she had not eaten for more than 3 days. We considered this a good indication that she was not habituated to people.

Mid-morning on July 6th, we decided to attempt to free-range dart Pahomovna. Our plan was to place lookouts at the 4 viewing posts built on each side of the enclosure, and then send two people (Alexander Reebin and John Goodrich) with tranquilizing guns along the perimeter. Center staff reported that when disturbed in this way Pahomovna would sometimes charge people along the perimeter. We hoped there would be an opportunity to place the necessary minimum of two darts (hence two people) into the tiger during such a rush and before the tiger moved out of range of the tranquilizing guns (about 30 meters). For more than 4 hours we searched the enclosure for sign of Pahomovna, with no evidence of any movement at all.

When we had already begun to search for sign of tiger tracks outside the enclosure, assuming she may have escaped, Vasily Solkin spotted ear movement and finally made out



(Photo courtesy of G. Shalikov, Zov Taigi)

Photo 4. Troya looks back at release team before disappearing into forest.

the head of a tiger, lying in the tall grass and forbs approximately 30 m from the edge. We all returned to our view stations, and the hunt began. First, an empty dart without a needle was fired in her direction to get her to move. Instead of approaching the intruders, however, she ran off in the opposite direction. When Reebin's gun jammed, John Goodrich moved ahead to try and track down the tiger along the perimeter. However, John's approach to her side of the enclosure pushed her back to the opposite side. By this time, Sasha had managed to correct the problem with the gun, and was heading up along the perimeter on that side. Pahomovna lay down, mostly hidden behind a tree, approximately 15 meters from the perimeter fence (Photo 5). With ears back, she charged Reebin (Photo 6), coming nearly to the fence before turning. During the charge it was impossible to dart her, but as she turned to move away, she paused briefly, allowing Reebin to fire a dart that hit her right shoulder. She nonetheless quickly moved again to the far side of the compound, about 40 m from the edge. Another empty dart pushed her again, but this time she moved to the very center of the enclosure, and lay down in a small depression, and from the perimeter only one ear was visible. The team waited for signs of anesthesia. When all ear movement stopped, Litvinov fired his pistol into the air, with no visible reaction by the tiger. A team of 4 people climbed into the enclosure, and quietly moved to within 15 m of Pahomovna, at which point Goodrich delivered a second and third dart, both necessary to fully anesthetize the animal. At 15:40,



(Photo courtesy of V. Solkin, Zov Taigi)

Photo 5. Pahomovna looks out at Alexander Reebin prior to charging, about 15:00, July 6th.

we finally had our hands on the animal, at which point we discovered that he was really a “she”. As with Troya, we transported Pahomovna down to the Center in the trailer behind a tractor, affixed a collar, took blood and tissue samples, monitored physiological parameters



(Photo courtesy of V. Solkin, Zov Taigi)

Photo 5. Pahomovna charges out from behind a tree at Alexander Reebin, July 6th.

during anesthesia, and took body measurements. Based on tooth wear, we estimated Pahomovna to be 3 years-old, but surprisingly, she was exactly the same weight as Troya (210 pounds or 95 kg). However, she was larger bodied - total body length, without tail, was 165 cm.

Pahomovna was loaded into a cage in the back of a large "Ural" vehicle, and at approximately 17:00 the remaining members of the Wildlife Conservation Society's Siberian Tiger Project and Tiger Response Team left in two vehicles. We drove through the night, arriving just at the outskirts of the forest village of Melnichnoye at approximately 05:00 on the morning of July 7th, where we met Nikoli Reebin and Evgeny Tsarapkin, who were camped alongside of the road, awaiting our arrival. We drove the remaining 40 km to the release site (about 10 km from where Troya had been released), positioned the vehicle, and opened the cage at approximately 07:00, July 7th. Pahomovna, however, was reluctant to exit the cage. We left the truck positioned, and aside from the driver, who fell asleep in the cabin up front (having driven all night) we all left the site by 08:00. When Reebin and Tsarapkin returned at 11:00 am, Pahomovna was gone.

Actions: Monitoring Translocated Tigers - the first 3 weeks (July 5th to July 25th, 2001).

1. Troya. Immediately after her release, Troya did not go far. Locating her at 19:00, two hours after release, Nikoli Reebin saw Troya about 70 m from her release site. By 08:00 the next morning (July 6th), she was only 150 m from her release site, laying up at a nearby creek. She stayed in this vicinity most of that day, but by the morning of July 8th, she had moved 6 km downstream from her release site. However, she was no longer in immediate proximity of the forest road. By the evening of July 9th, she had crossed the main road that connects Melnichnoye and Plastun (an unpaved forest road), approximately 9 km from release site. From that point, on July 10th she started moving uphill, largely paralleling the main forest road, but keeping 300-400 m from the road, heading in the general direction of Plastun (which was more than 70 km from her). On July 11th, she had crossed the road again to the east, up into some higher hills, and her signal was not heard on July 12th. On July 13th her signal was heard again, and now she was at an even higher elevation, at least 5 km from the main road, and 3-4 km from her last location.

At this point Troya moved more rapidly, and with greater directionality. Her signal was lost by the ground crew after July 13th, and it was necessary to locate her from the air. A series of 4 aerial locations demonstrated that she was consistently heading southwest. By July 21, she was 57 km southeast from her release site, and less than 30 km from the town of Dalnegorsk. Troya was located in the same area July 21st and July 25th, suggesting that she may have a large kill. A team is presently investigating this site.

2. Pahomovna. By mid-day on July 7th, her release day, Pahomovna was 300 m uphill from the release site. On the morning of the 8th, she was further upriver, approximately 600 m from release site, and by that evening, she had moved even further up. On July 9th, she was approximately in the same place, but on July 10th she crossed the forest road and moved about 1 km, where she remained on July 11th. On July 12th she was approximately 1 km above the release site, but on July 13th, she went about 2 km down the road at night. A vehicle apparently frightened her off the road, and she paralleled the road for some distance, but on July 14, her signal was lost by our ground crew, and locations were again necessarily made from the air. Pahomovna moved more or less in the opposite direction of Troya, but so far has not traveled so fast. By July 25th, she was located approximately 17 km northeast

from her release site. Between July 13th and July 21st, Pahomovna moved into Sikhote-Alin Zapovednik, so she is now living in a well protected area.

During the first week Nikolai Reebin found one of her bedsites a few meters from a badger den, suggesting she was hunting badgers. Although we found no kills during the initial monitoring period, based on our experiences with wild-caught tigers, it is difficult to find kills in summer. Often, tigers prey on small items (badgers, raccoon dogs, elk calves, wild boar piglets) which are eaten quickly, with little trace left behind.

Actions: Criteria for Success and Future Actions

Of course, releasing these tigers is just the beginning of this experiment. We will define success for these translocations using four criteria:

1) *Survival for at least 2 months.* If these animals can survive the first two months, it is an indication that they have successfully adapted to their local surroundings and can hunt successfully.

2) *Survival through the coming winter.* This would indicate that these animals are fully adapted to survive in native Amur tiger habitat through the most stressful season when cold, snow, and lower prey availability all increase stress to predators.

3) *Lack of problems or encounters with people.* This would indicate that these tigers have successfully avoided people, a key behavioral trait necessary for long-term survival of tigers.

4) *Successful reproduction of young.* If these tigresses produce young, then they will have successfully established resident territories and have become contributing members of the wild population. Even if both tigers survive, we do not anticipate reproduction for several years because both animals are young, yet genetic contribution to the next generation is the ultimate criteria for successful translocation.

Together, the Wildlife Conservation Society's Siberian Tiger Project and the Tiger Response Team will continue to monitor the status of Troya and Pahomovna as they disperse, and hopefully, settle into an area. Perhaps surprisingly, neither animal has indicated a movement towards its prior home at the Otes Rehabilitation Center, or where they were initially captured, and the two animals moved in opposite directions from each other (although they were likely completely unaware of their proximity to each other). Our current priorities are to determine if these animals are successfully hunting. As Troya moves closer to human settlements, it will be necessary to closely monitor her activities to try and prevent conflict situations. The experiment has begun.

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