

PAVING  
THE WAY  
FOR TIGER  
CONSERVATION  
IN RUSSIA

*time for*  
**TIGERS**

By John Goodrich, Dale Miquelle,  
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LINDA KIBBLEY

FROM JOHN GOODRICH'S

# field DIARY

**15 December 1998**—“Today I carried Nadia off of a hill in pieces; her skin, her legs, her spine and ribs, her head. All were scattered across a ridge-top; her hide buried here in the snow, her head several yards away, chopped from her neck and carelessly tossed down the hillside, her body above on the ridge, lying in packed snow stained with blood and excrement. Everywhere were the tracks of her cubs, wandering hungry and cold. Nadia was a radio-collared tigress who had been shot by Vasily Muluco, a poacher from Plastun. Tracks in the snow told the story. Less than a kilometer from where I stood, the poacher left his WAZ (a Russian jeep) on the road and began tracking a wild boar he had wounded. Seventy-five meters from where I stood, the poacher came across the tracks of Nadia and her three cubs; these tracks were on top of the boar tracks. Whether he wanted to kill a tiger or was just too stupid to realize moving forward would be dangerous is known only to him, but he did move forward and as he came over the ridge-top on which I was standing, he surprised Nadia. She charged aggressively to within 15 meters and he shot her. . . .

“As I stood on the ridge-top looking at Nadia’s remains, I remembered it was three years ago almost to the day that my Russian colleagues and I crept through the moonlit forest, snow crunching under our feet, hearts pounding, breath coming out in great clouds, the air so cold and quiet that every sound seemed as though it rattled through the forest like an earthquake. Then there was a low growl like distant thunder—as much felt as heard—a warning, an approaching storm. My adrenaline jumped and every hair on my body stood on end as a shiver rippled my skin from head to toe. With every step, the growls became louder, more urgent, and finally became roars. We heard her lunge in the darkness, green eyes flashing in the beams of our flashlights. Then, a soft ‘pop’ as a tranquilizing dart flew through the air and found its mark. Ten minutes later, she was sleeping like a baby as we removed the foot snare in which we had caught her and fitted a radio collar around her neck. Within four hours, she was moving off upstream, perhaps a bit hung over, but none the worse for wear.”

Russian and American scientists have been studying Siberian tigers (right) for ten years. At left, top to bottom: The author measures Tanya’s paw; tiger tracks on a dirt road; Anatoli Khabitnov and a forest guard examine Nadia’s skin after poachers killed her in 1998.



JOHN GOODRICH



JOHN GOODRICH, MAURICE HORNOCKER (RIGHT AND PAGES 22-23)



**W**e lost an important study animal, but Nadia’s death was not in vain. With this incident, we began to see a pattern that might help put an end to such poaching incidents. Nadia, like so many other tigers, was killed because a road provided access for a poacher. It is clear that where there are roads, tigers get poached or hit and killed by cars. Where there are no roads, tigers can live to a ripe old age and die natural deaths.

A simple but unrealistic answer: Keep people out of the forests or keep tigers only in protected areas. The more complicated but necessary solution must answer this question: How do we ensure that local people retain access to forest areas to collect wood, meat, berries, and fish, yet ensure some level of security for tigers and other wildlife?

This is a difficult question, but we think we have some of the answers.

Nadia is one of more than 30 tigers we have captured and fitted with radio collars during the past ten years as part of a Russian-American project between the Wildlife Conservation Society’s Hornocker Wildlife Institute and the Sikhote-Alin State Biosphere Zapovednik. The goal is to study tiger ecology and to determine ways in which people and tigers can coexist, while meeting the needs of both.

After Nadia was outfitted with a radio collar, we followed her every move for three years. We knew what and how much she ate, the size (240 square miles) and boundaries of her territory, with whom she mated, and when and where she gave birth to her three cubs. We have collected similar information on the other cats, including Olga, who

is our first collared tiger (caught in February 1992) and still out there today (see From the Field, page 6). Among our findings is the relationship between roads and tiger mortality.

We studied the fates of radio-collared tigresses and their cubs that prowled three types of territories: remote areas in the Sikhote-Alin Zapovednik with no roads, areas surrounding the Zapovednik with secondary roads (not regularly maintained, but allowing public access into forested lands), and areas with primary roads (maintained year round and providing access between towns or villages). Primary roads are paved or hard-packed dirt and allow traffic to move at high speeds, while secondary roads are suitable only for 4-wheel-drive vehicles for part or all of the year.

We monitored the roads from 1992



to 2000 and followed ten tigresses and 37 of their cubs from 15 litters. Annual adult female survivorship was 100 percent in the areas without roads. In areas with secondary roads, survival was 89 percent, and with primary roads, survival was a mere 55 percent. We found a similar pattern for cubs: 90 percent survived in roadless areas, while 40 percent survived in areas with primary roads. All of the tigresses that died were poached, and most of the cubs died because their mothers had been poached and they were too young to survive on their own. Two cubs were hit and killed by cars, as was one radio-collared adult.

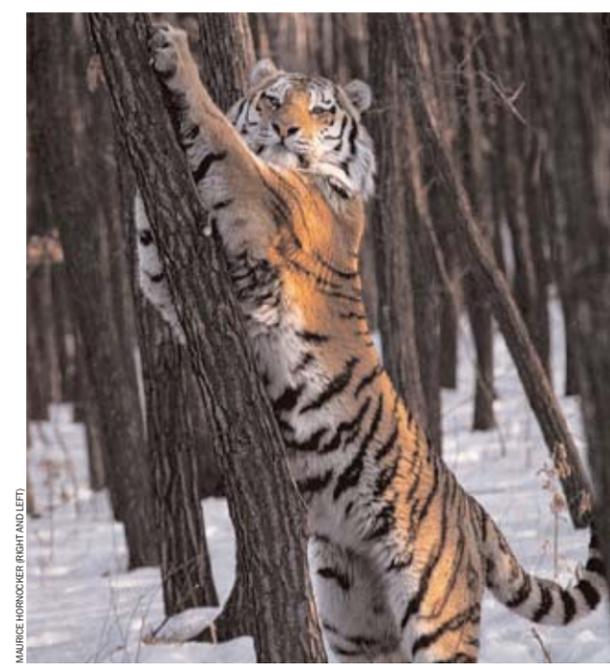
Perhaps even more disturbing is the pattern in the region where the road connecting the towns of Terney and Plastun cuts across the Zapovednik. Although it receives much less traffic than many other roads in tiger habitat, it is the most heavily traveled of all the roads in our study site. Because ungulate populations are very high here, tiger reproduction should be high and many young should be successfully raised to disperse into neighboring areas. We have monitored five radio-collared tigresses here since June 1992. Lena, our first tigress in this area, had had four cubs in 1991, but all of them died—three of unknown causes and one in a car accident. A month after her capture, Lena gave birth to four more cubs. Then, in November 1992, she was shot by a poacher on the road along Koonalayka Creek. We were able to capture her four cubs. Two of them died from congenital defects, and we sent the others to the Omaha Zoo in the United States. We made this decision because these cubs would have died without human care and so were already lost from the population.

In good tiger habitat, a territory does not remain vacant for very long. Lena was quickly replaced by Katya, whom we also captured and radio collared. In November 1995, Katya gave birth to one cub, and successfully raised the youngster until it was 22 months old and ready to wander off to find its own territory. Not long afterward, in October 1997, this cub was hit and killed by a truck on Khaunta-mi Pass. In the meantime, Katya had given birth to a new litter, in July 1997, but she was

poached in October and we never found those cubs. At three and a half months, they were too young to survive on their own and surely died.

Katya was soon replaced by two tigresses: Natasha, who had been Katya's neighbor to the west, and Natasha's two-year-old daughter, Emma. We had captured Natasha in 1992 and had already radio tracked her for five years. During this time she held a territory in a roadless area. Natasha took advantage of the vacancy created by Katya's death to move to a territory with higher prey densities. She used the southern half of Katya's former territory, and her daughter Emma used the northern half.

Emma didn't last long. She was



MAURICE HORNICHER (RIGHT AND LEFT)



OMAHA'S HENRY DOOREY ZOO

**One of the tigers' biggest threats is roads, which allow poachers access. The two cubs above were orphaned when mother Lena was shot. Too young to survive on their own, they were sent to the Omaha Zoo in the U.S. Right: The author checks the radio signal from Emma's radio collar.**

poached in the summer of 1998. In December of that year, Natasha gave birth to a litter of four on Camel Mountain. One of these cubs was killed by a small predator within two weeks, and a second later died of unknown causes. In July 1999, Natasha was shot by a poacher in the same area as Lena had been shot. Natasha's two remaining cubs were just seven and a half months old, but they survived. We captured one, Alec, in September and fitted him with a



BART SCHLEVER



HOWARD QUINCY / WWP DESIGN WITH A TOUCH

radio collar. His sister thwarted our efforts, but we know she survived until she was at least ten and a half months of age. Alec dispersed to the south. His transmitter ceased to function when he was two years old, most likely because he was shot and the collar destroyed.

Meanwhile, Natasha was replaced by Lidya, whom we captured in Koonalayka in October 1999. The following May, Lidya gave birth, but the cubs died of unknown causes a few months later. Lidya gave birth again this past summer and is still alive today.

To sum up, four of five tigresses in this region were poached, roughly one every two-and-a-half years. Even more important, of 12 cubs born in the area, we know that ten died. Only Alec and possibly his sister survived to disperse



LINDA WEBLEY

After Katya's cub was hit by a truck (above) on Khaunta Mi pass, a sign was erected that reads, "Attention! Tigers on the road." The sign (left) was designed by a Terney student who took part in a contest that was part of the Siberian Tiger Project's environmental education program.

to new territories. Remember, this is excellent tiger habitat and should be producing surplus tigers to populate other areas.

In contrast, let's look at Mary Ivanna and again at Natasha. Before she moved to take over Katya's territory, Natasha used a roadless area for five years and produced two litters, one with two cubs and the second with

three. All survived to independence. Mary Ivanna gave birth to two litters totaling five cubs, four of which dispersed. In 1995, Mary Ivanna, like Natasha, moved to a new territory containing a primary road. In less than two years she was poached. While they were living in areas without roads, Natasha and Mary Ivanna and 90 percent of their cubs survived, but not long after moving to areas with primary roads, both tigresses were poached.

We have followed several radio-collared male tigers as well, but all of them lived in territories bisected by primary roads, so we can't make the same comparisons about male survivorship. Nonetheless, we can look at male mortality patterns in relation to roads. Alexei was hit by a car near Kaimenka in December 1998. Zhenya, whose territory was in the same area as those of Lena and Katya, was poached in April 1999. Igor and Maurice disappeared; that is, their transmitters stopped functioning and from winter track surveys, we knew they no longer inhabited their former territories. These two tigers were almost certainly poached and their collars destroyed. Both disappeared while traveling less than half a mile from primary roads.

We are trying to reduce poaching. International groups have funded a program called Inspection Tiger, a Russian governmental organization working to stop poaching and alleviate tiger-human conflicts. In addition, many of the larger zapovedniks have received foreign monies to maintain their own anti-poaching teams. Russian customs officials are working hard to stop exports of tiger and other wild animal parts, and groups such as the Wildlife Conservation Society are trying to reduce demand for tiger parts in China and other countries. Despite all these efforts, poaching continues.

We need to do more. If we can make it more difficult for poachers to get access to some areas, we can increase both adult and cub survival. Roads that are not necessary, especially those created for logging and other natural resource extraction, could be destroyed or made impassible. When a logging operation is finished, the roads remain and provide easy access for lazy poachers and a

quick way for them to get the meat out. In Russia, legal hunters normally have a set of cabins, and they will come and go with or without roads. This approach would not work in all cases, because some roads are too important to local people. But if we can carefully close down those that no longer serve a useful purpose, we can greatly increase survival of the prey species upon which both hunters and tigers depend.

On some important secondary roads, it may be possible to set up gates manned with guards whose job it is to limit access to those with permission and a reason to use the area. This option gives law-abiding citizens opportunities for fishing, wood collecting, and berry picking. And because the guards can ensure that guns are not illegally brought onto the land, it can largely eliminate poaching. Poachers willing to walk long distances will still have access, but in our experience, only a small percentage of poachers will make that effort.

The concept of road closures is relatively new in the Russian Far East, but it has been successful in North America and Europe. There, as in Russia, people will tear down blockades, find ways around road closures, and expend large amounts of effort to retain access to their favorite poaching areas. Persistence in rebuilding gates and providing personnel to enforce closures are key to long-term success.

Locations of new roads should be carefully planned to avoid sensitive areas. Often, roads are constructed with no review of potential environmental impacts. Unless there is a way to control where and how roads are built, as road construction continues and access increases, there soon will be no wild places left in the Russian Far East.

The only workable tiger conservation plans will be those that improve conditions for both tigers and people. After all, for tigers to exist, people have to want them to exist. We believe that controlling road use is a win-win situation and will benefit everyone.

John Goodrich is field coordinator of the joint Russian-American Siberian Tiger Project. He has lived and worked in Russia since 1995.

## WCS IN ACTION

By Dale Miquelle and John Goodrich

In North America and parts of Europe, closing roads to protect valuable wildlife resources is an accepted practice. In Russia, however, this is still a new concept. To demonstrate the effectiveness of road closures, we launched three "demonstration" road closures to show local hunters and wildlife biologists their value.



1. Since 1998, the Siberian Tiger Project (see page 6) has been working with Vladimir Valechko and the Terney Hunter and Fisherman's Society—as well as with a non-governmental group called Terney, Taiga, Tiger—to close two important drainages within the Terney hunting lease. We closed the road to upper Shepton (Mala Seenansha) River, where Nadia was poached, and with a bulldozer, rendered the road into upper Beriozavey Creek, where natural salt licks concentrate deer and other ungulates, impassable. During 2000, an unknown party used a bulldozer to reopen the Beriozavey road, so we had to "deconstruct" it again. Valechko, initially a skeptic, now says that these closed basins are the only places where ungulate populations have thrived in his hunting lease.

2. Southwest Primorski Krai is key habitat not only for the Siberian tiger, but also for the even more endangered Far Eastern leopard, whose population numbers fewer than 50. The Wildlife Conservation Society signed an agreement to support the construction of roadblocks and guard cabins on the three primary drainages that provide access to Nezhinskoe Hunting Lease. This area, within easy driving distance of Vladivostok and Ussurisk, has incurred heavy wildlife losses to poaching. Here, we are working with V. Vasiliev of the Naval Hunting Society and V. V. Aramilev of the Institute for Sustainable Use of Natural Resources. With adequate support, Nezhinskoe Hunting Lease can be a model of how to control poaching, provide good hunting opportunities for licensed hunters, and provide adequate prey densities for both hunters and large carnivores.

3. The Tavisa region, just north of Terney, is considered a key wintering area for ungulates. As recently as ten years ago, one could see herds of red deer on the winter hayfields and large groups of wild boar in the oak forests. With such an abundance of prey, it is not surprising that Tavisa was a favorite hunting ground for Olga, the first tiger collared by the Siberian Tiger Project. However, with construction of a new road providing easy access from Terney, and almost no control on hunting, ungulates have been virtually eliminated from this region. Olga still lives in the general vicinity, but concentrates her activities to the north or south of Tavisa. WCS has joined forces with the county administration and the leader of the local federal anti-poaching patrol "Inspection Tiger," B. I. Litvinov, to reverse the trends in this area. The plan calls for limiting access to Tavisa by building a guard station and a gate. People owning farms in the region, fishermen, and people harvesting hay will be allowed in. Those without a valid reason to enter the area will be turned back. We will institute a program to monitor prey numbers to determine if, in fact, the road closure results in increases in ungulate numbers. It is our hope that, in the not too distant future, we will once again see herds of red deer wintering in the fields of Tavisa, and that Olga, or perhaps one of her offspring, will again consider Tavisa a favorite hunting spot.



JOHN GOODRICH