# Tiger Conservation in the Russian Far East

*Background*

The Russian Far East is home to the world's only remaining population of wild Amur, or Siberian tigers, *Panthera tigris altaica* (Figures 1&2). Population surveys conducted in 2005 estimated this to be between 430 – 500 individuals (Miquelle et al. 2007), but since then numbers have declined even further, based both on data from the Amur Tiger Monitoring Program (a 13 year collaboration between WCS and Russian partners), and official government reports (Global Tiger Recovery Program 2010). An increase in poaching (Figure 3), combined with habitat loss, is the key driver of this downward trend. Furthermore, the appearance of disease-related deaths in tiger populations represents a new threat of unknown dimensions and one which is only just being acknowledged.

*WCS-Russia's overall tiger program in the Russian Far East*

The Wildlife Conservation Society (WCS) has been active in the Russian Far East since 1992, working to conserve landscape species including Amur tigers, Far Eastern leopards and Blakiston's fish owls, whose survival ultimately requires the conservation of the forest ecosystem as a whole. Our science-based approach, which relies on the findings of our research to design effective conservation interventions, emphasizes close collaboration with local stakeholders to improve wildlife and habitat management, both within and outside of protected areas, inclusion of local communities in resolving resource use issues, and the application of robust monitoring programs to understand the effectiveness of conservation interventions.

Poaching of tigers and their prey appears to be the number one threat to tigers in the Russian Far East. Our response is to focus first on regaining effective protection for tigers within key protected areas, given that protected areas are acting as *de facto* core breeding habitat. In paired comparisons of protected areas and adjacent lands, both adult and cub tiger densities in protected areas are significantly greater than those in unprotected areas (Figure 4). Despite this, densities of both tigers and their prey in protected areas are lower than the carrying capacity of the habitat. And in recent years, densities have dropped more within protected areas than outside. Given the importance of protected areas acting as source sites, these are high priority areas for effective conservation.

Increased survival rates of adult tigers, especially females, appears to be the key ingredient to increasing productivity and growth rates of tigers (Chapron et al. 2008, Smirnov and Miquelle, in press). Since poaching is the primary cause of mortality (Goodrich et al. 2008), improving anti-poaching efforts will be key to recovering tiger numbers.

In the last five years repeated restructuring of wildlife and forestry agencies within the Russian government has resulted in substantial budgets cuts, loss of quality professional staff and (at least for portions of that period), an absence of regulatory authority. Newly created national parks (three exist within tiger range in

Russia) are severely underfunded, while well-established protected areas still lack adequate salaries and resources to mount fully effective anti-poaching efforts. And joint patrols between protected area inspectors and inspectors responsible for adjacent lands are rare, making apprehension of poachers along the border zone (where most violations occur) possible only if violators are apprehended *within* the reserve.

In partnership with four key protected areas in Primorski Krai (Figure 5), WCS has introduced a new anti-poaching patrol system which improves the effectiveness of law enforcement efforts, leading to lower levels of poaching and higher survival rates of tigers and prey species.

Because protected areas comprise less than 10% of Amur tiger habitat, we have also forged long-term collaborations with community-based hunting associations that are responsible for wildlife management on vast multiple-use territories of the Russian Far East. Together we are leading grass-root efforts to increase ungulate populations, protect tigers and improve rural livelihoods, with economic benefits linked directly to the conservation of tigers and the landscapes on which they depend.

Our research indicates that the development of extensive road networks (that often goes hand in hand with commercial logging), is not only leading to a fragmentation of the landscape, but is also facilitating illegal harvesting of timber and wildlife. Roads provide access for poachers (Figure 6) and the increasing density of forest roads throughout the region is therefore posing a major threat to tigers and the ungulates upon which they depend. By working with local timber companies and local governments, we hope to close unneeded forest roads and thus reduce the rates of poaching and illegal logging.

As prey densities decline and habitat degrades, the potential for conflict with humans increases. As the only organization locally capable of safely capturing and handling tigers and leopards, WCS works with government agencies to improve techniques for alleviating human-tiger conflicts, increase tiger survival, reduce risks to people and develop a government-sponsored conflict resolution team capable of working independently of WCS. We have placed renewed emphasis on increasing capacity of government personnel and developing more disciplined protocols for addressing conflict situations.

Disease represents an as yet unknown level of threat to both tigers and leopards. We know from initial surveys that both species are exposed to an array of diseases, from distemper to feline parvovirus, but it is unclear as to the impact these diseases are having at the population level (Figure 7). At the same time, we have documented disease-related deaths of tigers. Thus disease monitoring and medical assessments of both species are critical. Such efforts are hampered by the absence of local veterinarians trained in wildlife health. WCS is working to increase capacity by training local vets and assisting in the creation of a laboratory that will be devoted to wildlife health issues.

Underpinning all of our conservation work is a long-term program of scientific research to explore and better understand the ecological requirements of the Amur tiger – their dietary needs, home ranges and population dynamics as well as interactions with other species (Figure 8). In 2010, information gained through the Siberian Tiger Project (the longest running radio-telemetry–based tiger research project in the world, run in collaboration with Sikhote Alin Biosphere Reserve) formed the backbone of conservation recommendations outlined in Russia's Federal Tiger Conservation Strategy. WCS also conducts regular monitoring of tiger, leopard and prey populations in order to assess the effectiveness of our conservation initiatives. Importantly, our research programs provide a platform for the training of promising young Russian wildlife biologists for a career in Big Cat conservation.

***Option 1 for support - Creation of a Tiger Health and Veterinary Support Program***

In order to increase capacity to address wildlife health issues in the Russian Far East, WCS has adopted the following strategy:

**i) Capacity building of Russian veterinarians**

We are conducting a series of wildlife vet field training sessions (Figure 9), targeting staff and students of the regional Veterinarian Department of the Primorski State Agricultural Academy (PSAA). The intent is to provide an introduction to wildlife health issues and identify both trained staff and students who might commit to addressing wildlife health issues as a career path. While we have been successful in recruiting a few key professional vets, we are still looking to increase the number of students committed to this field.

**ii) Provision of specialized training in medical and animal handling protocols**

WCS is providing training to veterinarians and wildlife professionals to ensure: 1) the existence of appropriate protocols in necropsies and 2) appropriate handling of live animals to ensure that the correct samples are collected for diagnostic tests and necessary actions are taken to avoid potential human health problems (Figure 10). A huge problem in diagnostics is the absence of suitable samples from dead animals, often simply due to the lack of adequate knowledge and a defined protocol and rationale for collecting samples. Similarly, our work has demonstrated that problem tigers may often be sick tigers, yet to date there is no protocol for handling problem tigers that addresses the potential disease implications. We are working with the regional wildlife departments to address this issue.

**iii) Creation of a dedicated wildlife health laboratory**

Currently in Russia there are no dedicated wildlife health specialists or facilities that can be used to monitor health of wildlife in the Russian Far East. The Primorskaya State Academy has made first steps to the creation of a laboratory, but support is still needed to complete construction, buy lab equipment, and provide support and training to make the laboratory functional. Export of samples out of Russia is extremely difficult, and existing laboratories do not conduct wildlife specific analyses. Therefore, creation of a dedicated laboratory with the capacity to conduct analyses is critically important if we are to address the threat of disease posed to remaining tiger populations.

**iv) Risk evaluation and intervention**

Baseline health information from wild tiger populations is largely lacking. Preliminary work in Russia has demonstrated pathogen exposure, but as yet contextual studies to interpret the source and potential impact of this have yet to take place. The urgency of completing such studies has increased as infectious diseases represent what appears to be a relatively new threat to tigers in Russia (historical reports of tigers with symptoms such as those recently documented do not exist). Key approaches include the introduction of standardized sample and data collection protocols when tigers are in-hand, investment in epidemiological study of tigers, their domestic and wild carnivore contacts, and detailed investigation of mortalities when opportunities arise. Where appropriate, the development of appropriate vaccination programs for domestic livestock and pets will be promoted. But most crucial is the identification of pathogens and circumstances where health constitutes a threat to tiger populations in *source sites*, with measures to design and implement mitigation strategies to address them when they emerge.

Your support for WCS Russia's wildlife health program will allow us to effectively address the threat of disease to tigers and other species of the Russia Far East, by building local capacity first through the creation of a wildlife health laboratory and secondly through the development of a cadre of vets trained and dedicated to wildlife health issues.

***Option 2 for support – Improving Law Enforcement and Law Enforcement Monitoring at key sites in the Russian Far East***

WCS has achieved considerable success in improving anti-poaching efforts across tiger range countries though a comprehensive, law enforcement monitoring (LEM) program, developed around a *M*anagement *I*nformation *Syst*em (MIST). Designed to monitor poaching activities and anti-poaching patrol response, the biggest advantage of the MIST database is that it provides a means of measuring, evaluating and comparing outputs both in terms of effort expended (e.g. number of kilometers patrolled, number of patrol days) and results (e.g. numbers of citations, arrests, confiscations). The MIST based LEM systems provide spatially explicit, geographic representations of both efforts and results, allowing managers to visualize how effort is allocated across management units, and where violations are most prevalent, providing for rapid and efficient re-allocation of law enforcement efforts.

Protected areas represent core breeding habitat for tigers and leopards and are therefore priority for improved protection in Primorski Krai. WCS Russia launched its LEM anti-poaching program in December 2010 at two sites - Kedrovaya Pad and Lazovski Reserves. In June 2011, the program was rolled out to two more protected areas: Zov Tigra National Park and Sikhote-Alin Nature Biosphere Reserve (Figures 11-13).

The WCS Russia LEM initiative has five key components:

i) Introduction of the LEM program, including a training package and provision of necessary materials for collecting, storing and managing patrol data (i.e. GPS units, MIST software, laptops).
ii) Provision of operational support for anti-poaching patrols (i.e. fuel, vehicle maintenance, equipment).
iii) A performance-based incentive scheme that rewards improvements in anti-poaching results.
iv) Regular bi-monthly strategic planning meetings where inspectors can review results from the previous patrol cycle, identify new priorities and discuss tactics for the next cycle of patrol activities.
v) A biological monitoring program to track changes in tiger/prey densities and to provide insight into trends in tiger population dynamics.

The combination of a more strategic approach to patrolling activities and improved morale of rangers leads to more effective patrolling, which in turn leads to lower levels of poaching and increased reproduction and survival rates of Amur Tigers and prey species.

The LEM systems are now set up and running across all four target sites, however there is still much work to be done before the program is fully sustainable. Indeed, the introduction of this kind of information-led approach to LEM represents a major cultural shift in operating procedures and we anticipate that this process will take at least another 2 – 5 years. During the consolidation phase of this project, WCS efforts will therefore focus on continued capacity building of Protected Area staff, the institutionalization of LEM within Protected Area Management structures and systems and enhanced collaboration and cooperation between enforcement agencies. WCS will also advocate for increased support (and funding) from the federal government. We will continue to improve biological monitoring, including activities such as the standardization of camera trapping methods (Figure 14) and annual tiger and ungulate surveys.

Your support for WCS Russia's anti-poaching program will ensure that key source sites for Amur Tigers are better protected against poaching, with increased reproduction and survival rates of tigers and their prey species. This will ultimately result in an increase in tiger populations both within the four protected areas and in adjacent lands.



Figure 1: Amur tigers in the wild

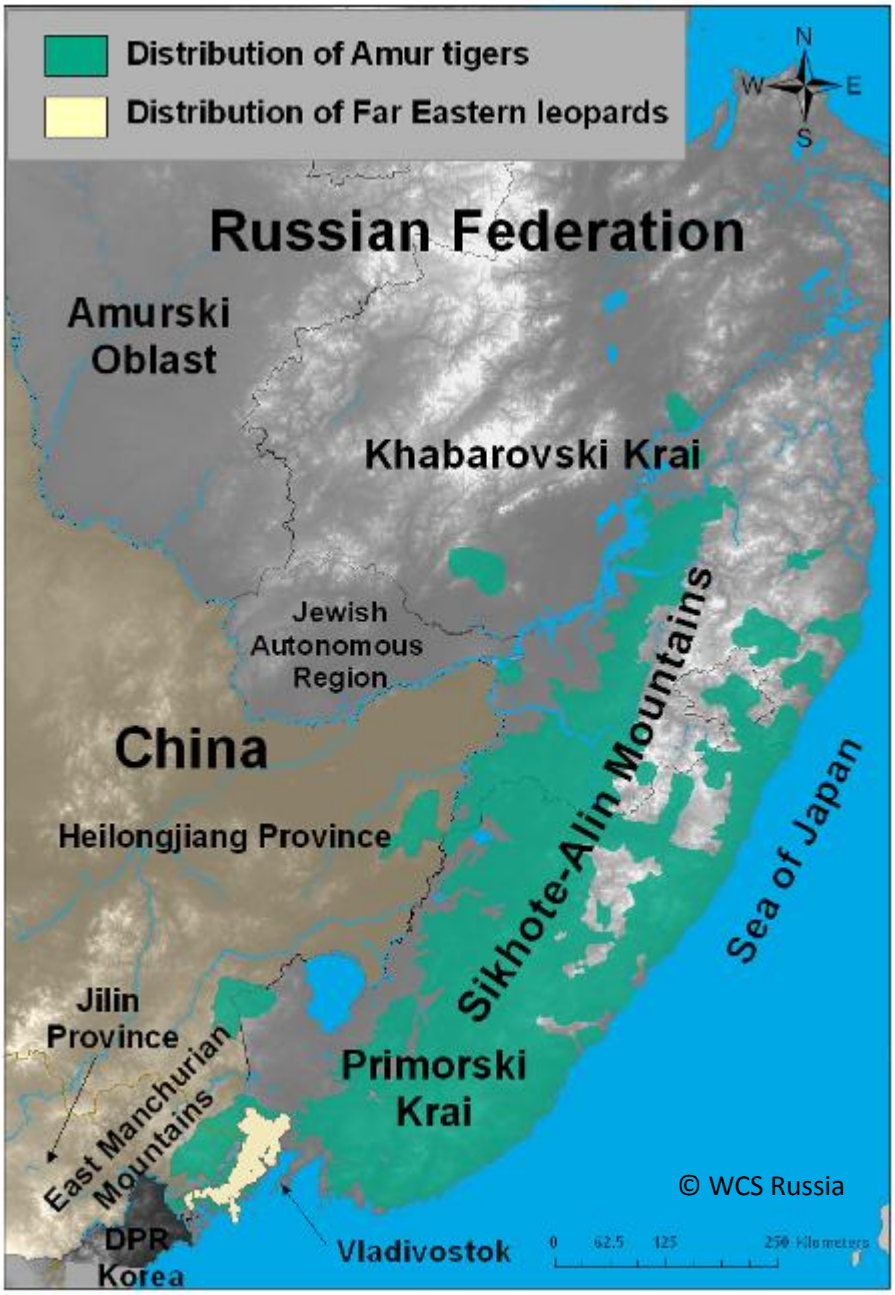
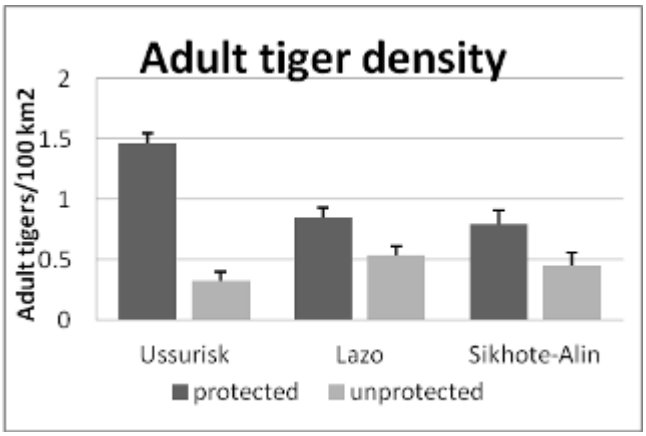



Figure 2: Distribution of the Amur Tiger in the Russian Far East


Figure 3: A wildlife inspector with a confiscated tiger skin



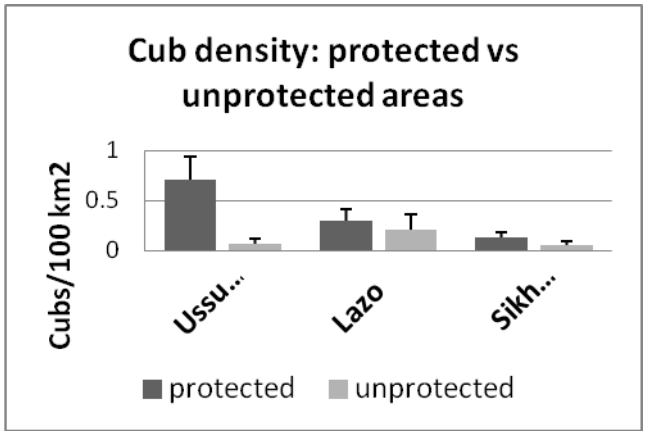




Figure 4. Adult and cub densities (tigers/100 km$^2$) in paired comparisions of three protected areas and adjacent lands, based on 12 years of results of the Amur Tiger Monitoring Program (Matyukina 2009).

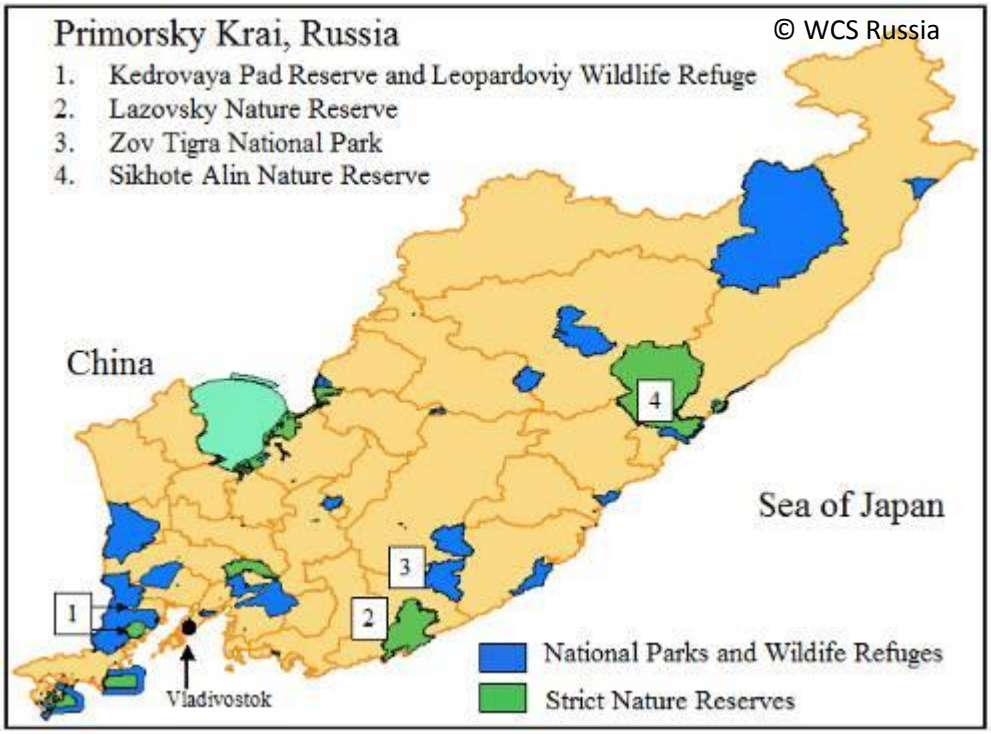



Figure 5. Protected Areas in the province of Primorski Krai, Russian Far East, where the MIST based Law Enforcement Monitoring Program has been introduced.


Figure 6. This tiger was one of the lucky ones! Found caught in a poacher's snare, the tiger was anaesthetized, released from the snare and trans-located to new territory by WCS field biologists.


Figure 7. A seemingly healthy adult male tiger walked onto a hunting base near the village of Aleksayevka, Primorski Krai, in winter 2010. He died within three weeks, but appropriate samples were not collected to adequately diagnose cause of death. Symptoms and blood titer levels suggested distemper may have been a factor.



Figure 8: Alexander Reebin (WCS Field Technician and PhD student) takes physiological measurements of an anaesthetized tiger. The tiger is subsequently released unharmed.



Figure 9. John Lewis (left) of Wildlife Vets International, and Doug Armstrong (Henry Doorly Zoo) providing "hands-on" training in immobilization and health assessments for wild carnivores in the Russian Far East.


Figure 10: WCS is working with government and university staff to ensure necropsies are conducted in standardized formats, with standardized collecting procedures to ensure full diagnostic potential is preserved.


Figure 11: WCS LEM trainer Dr. Tony Lynam instructs protected area inspectors in the use of hand-held GPS units as part of the start-up training workshop at Sikhote Alin in June 2011.


Figure 12: Members of the Kedrovaya Pad Reserve anti-poaching squad


Figure 13: Inspector enters data on a MIST patrol form


Figure 14: Three tiger cubs photographed by WCS staff during camera trap monitoring in Leopardovyi Refuge in winter 2011

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