![ZSL | LET'S WORK FOR WILDLIFE]

Half-year Report to the WildCats Conservation Alliance from the Zoological Society of London

Amur Tiger Conservation in Lazovsky Zapovednik and Adjacent Areas, 31 Jan 2019 - July 2019

Image: Adult female Amur tiger "Inna", age 3.5 years old, photographed using a camera trap in Lazovsky Zapovednik, February 2019. After being involved in a conflict situation in October when she killed a cow, Inna has moved to a remote area in the Zapovendik where we hope she will remain away from conflicts with domestic animals.

Summary

The Zoological Society of London's (ZSL's) Amur tiger conservation project in Southeast Primorsky Krai has achieved several successes over the past years thanks to generous

support from the WildCats Conservation Allience. Our overall project goal is to develop our holistic programme for tiger conservation in the Lazovsky Zapovednik (LZ), Zov Tigra National Park (ZT), and adjacent areas. The WildCats Conservation Alliance provides critical funds for programme. The following provides a summary of our progress to date in 2019. During this time, ZSL worked with partners ANO AMUR and United Administrations of Lazovsky Zapovednik and Zov Tigra National Park (UALZZT) to conduct tiger population monitoring, implement improved management plans that have increased the effectiveness of anti-poaching activities in the area, and continued wildlife disease monitoring and veterinary capacity building. Tiger population monitoring results for 2019, reveal a stable population and good reproduction in the area. The fifth year of monitoring efforts in the unprotected area between LZ and ZT provided evidence that tigers are surviving and reproducing there as well. Of particular interest so far in 2019 includes 1) the territory takeover of an 11 year resident male "Yasha" by a new tiger, 2) an age wide collection of pictures to construct criteria for estimating ages of wild tigers (especially cubs less than 2 years of age) from camera trap photographs; information needed for range wide tiger monitoring programs in Russia, and 3) publication of a book in Russian Language entitled "Disease Risk Assessment for the Amur Leopard Reintroduction Programme in the Russian Far East", authored by 12 specialists including ZSLs Misha Goncharuk as first author and Linda Kerley as 8th author. Our programme aim is to continue to focus on combating threats in protected areas (most importantly poaching and wildfires) and, in turn, hold stable or increase tiger and prey numbers, verified by effective monitoring results. The continued success of our conservation activities will ensure a source of tigers for dispersal into adjacent unprotected areas with fewer tigers.

Project update

The generous support from WildCats Conservation Alliance provided an important boost to the project continuing through 2019. The funds provided financial security for our work with Amur tigers, supporting our vital core monitoring (of population and disease), anti-poaching and wildlife vet capacity building and disease monitoring. Your suppport also helped us expand our monitoring range in 2011 to include the nearby Zov Tigra National Park, a then-newly created protected area, within which little was known about the numbers and density of tigers. In 2013, we were able to include the Medved Hunting Lease, and later Southern Valley hunting lease,

both situated between LZ and ZT. This in turn enabled the team to gain a greater understanding of tigers in the region and helped inform recommendations for further conservation action.

WildCats Conservation Alliance's support also helped us leverage additional funding sp far in 2019 from US Fish and Wildlife Service Rhinocerus and Tiger Conservation Fund and the Indianapolis Zoo Conservation Fund.

The following provides a summary of our progress from January - July 2019:

Monitoring of Amur tigers

Over the past 12 years (2008-2019), ZSL has worked with partners UALZZT using camera traps and conducting snow track surveys to monitor tigers in LZ; we have also been using these methods for the past 9 years in ZT (although we have been involved indirectly with tiger monitoring since 2001). In November 2014, LZ and ZT were joined to form the United Administration of Lazovsky Zapovednik and Zov Tigra National Park (UALZZT), but they continue their original functions as a strictly protected area (LZ) and a national park (ZT), so we continue to refer to them as such. Because it is critical to understand how tigers move between the two protected areas, we extended our survey in 2013 to include the unprotected Medved Hunting Lease (MHL) between LZ and ZT, managed by a private hunting club. In 2016, we again extended our survey to include the Southern Valley Hunting lease (SVHL) (Figure 1). Monitoring a larger contiguous area provided better information about tiger survival, reproduction and movements through unprotected areas, where they are more susceptible to poaching. This year, we continued our long-term tiger monitoring over the tiger landscape shown in Figures 1-2.
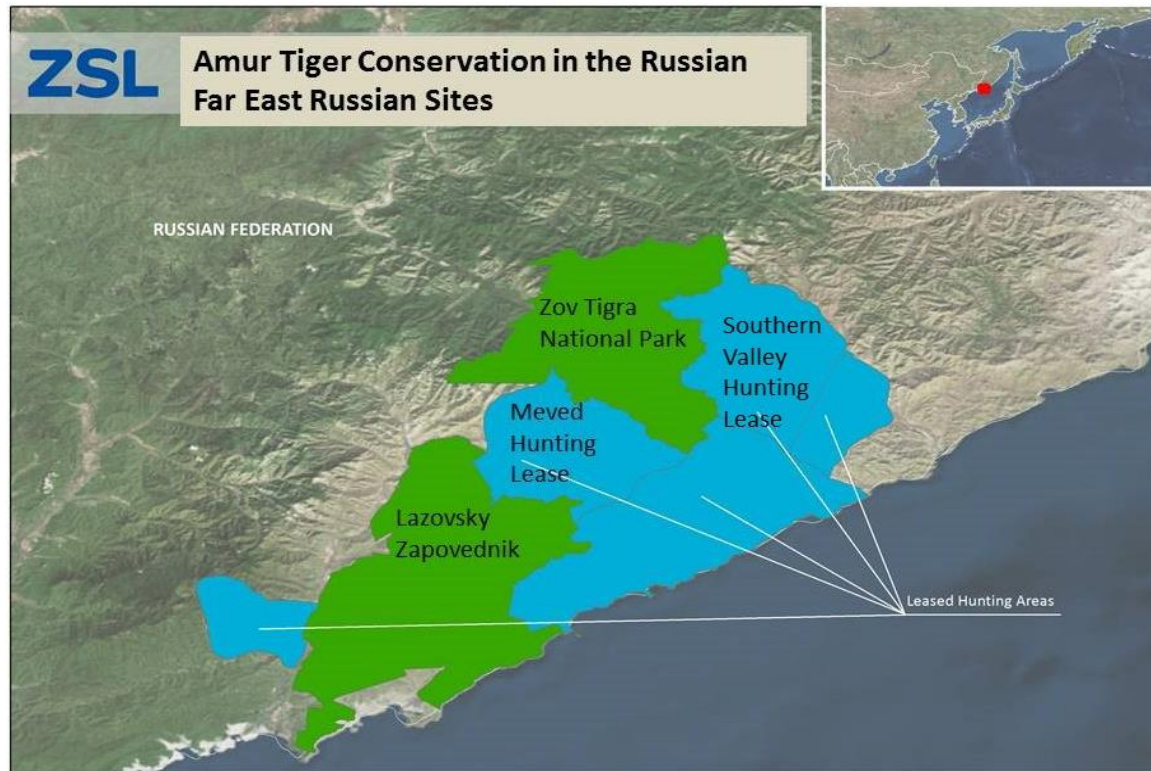
Figure 1. ZSL Russia Amur tiger conservation landscape, including Lazovsky Zapovednik (LZ), Medved Hunting lease (MHL), Southern Valley Hunting Lease (SVHL), and Zov Tigra National Park (ZT).

Figure 2. ZSL Russia Amur tiger conservation landscape showing tiger habitat in Zov Tigra National Park. The area is conifer and broad leaved forest tiger habitat on the Milogradovka and Ussuri rivers.

Together with UALZZT, we completed our annual camera trapping surveys between December and May each winter (hereafter referred to as the "2019 tiger survey" for example for Dec 2018-May 2019) operating 60-paired camera trap stations in LZ, 28 in ZT, 25 in MHL, and eight in SVHL, over 90 day-periods (Figures 2-4). Forty camera traps are left in LZ and ZT year round to record supplemental information about resident tigers, including site persistence, body condition, and evidence of reproduction (cubs or lactating females).

Figure 3. ZSL employee sets a camera trap for a tiger monitoring survey by anchoring it to a tree (seen on the right foreground of the photograph) and aimed across a trail where a tiger might frequent. The first photograph is taken of a paper sign with the location, date and time held in front of the camera as illustrated here.

Figure 4. Camera traps are set in remote areas with challenging road conditions.

Results for the 2019 tiger survey show a minimum number of 21 adult tigers (11 females, 10 males) in combined areas LZ, ZT, MHL and SVHL during 10,890 trap/days and from 290 sets of camera trap photographs. We also identified 1 subadult male and five new litters of cubs born in Spring-Summer 2018 and still traveling with their mothers at end of this survey. Litter sizes were three litters with 3 cubs, one litter with 2 cub, and one litter of at least one female cub (Table 1). Also of importance in the 2019 surveys was 1) the territory takeover by a new male tiger away from a 14-year old male who held his territory for 11 years ("Yasha" is the oldest recorded territorial male Amur tiger), and 2) age wide collection of tiger photos enabling us to construct criteria for estimating ages of wild tigers from camera trap photographs; information needed for range wide tiger monitoring programs in Russia.

Mother tigers can be secretive and cubs are notoriously difficult to photograph during short tiger surveys (illustrating the value of supplementary trap days which provided valuable information on reproduction). The 2019 survey was atypical because two litters of cubs (2 and 3 cubs each) were photographed several times each, perhaps because those mother tigers were accustomed to camera traps after themselves being photographed over most of their lives. We have also discovered that family groups tend to visit certain mark trees, perhaps so that cubs can learn the scent of the resident male, and at these locations we have a higher probability of photographing family groups. Because we had good estimates of birthdate, these cub photographs will be used to illustrate how to estimate cub age using camera trap photographs.

Table 1. Minimum number of adult tigers, litters of cubs and total number of cubs photographed during surveys in combined areas of LZ, MHL, SVHL, and ZT. Numbers in parentheses are totals added retrospectively when some litters were discovered after surveys end.

Age/Sex	2017	2018	2019
Adult females	11	11	11
Adult males	8	7	10
Total adults	**19**	**18**	**21**
Sub-adults	3		1
New litters	1(2)	1(2	5
Cubs	3(6)	3(6)	12

Our overall program goal is to continue to develop our holistic programme for tiger conservation in the Lazovsky Zapovednik (LZ), Zov Tigra National Park (ZT), and adjacent areas. Wildfires, driven by severe drought that continued through 2019, threatened tiger habitat in 2018. While the 2019 winter was very dry, late snowfall provided much needed moisture and there were no wildfires in tiger habitat this spring, although we will remain vigilant as the autumn fire season approaches. In October 2018, we identified two tigers (a male and female) from photographs given to us by government rangers charged with responding to conflict situations. The tigers had been killing cows near a village for several months in 2018 and the camera trap photographs are helping us understand the age, sex, and body condition of the conflict animals and try to mitigate. The female was a 3-year old born on LZ and the male was unknown to our study. During the 2019 survey (as late as April 2019), we were relieved to have identified both animals many kilometres away from the village and both in remote areas away from livestock and people.

The following images provide examples of our to date results in 2019:

Figure 5. A dark stain on a leaning birch tree from intensive scent marking by two male eventually resulting in displacement of long-time resident "Yasha" by challenger "Freddy" who has since been photographed in close contact with resident female Sabrina. We noticed all the local scent marking trees have darker stains during these transition period.

Figure 6. Resident territorial male "Yasha" in 2017 (above) and new territorial male "Freddy" (Below) in 2019 photographed in the same location.

Figure 7. The last photograph of Yasha, estimated age 13-14 years old, in April 2019, in a location several kilometers from his former territory. Yasha is well known for having no eye shine from one eye.

Figure 8. Fourteen-year-old resident female "Sabrina" with her fifth litter. Estimated cub age 2-3 month old cubs and born in April- May 2019; apparently fathered by Freddy. Sabrina's four preceding litters were apparently fathered by Yasha when he was territorial male.
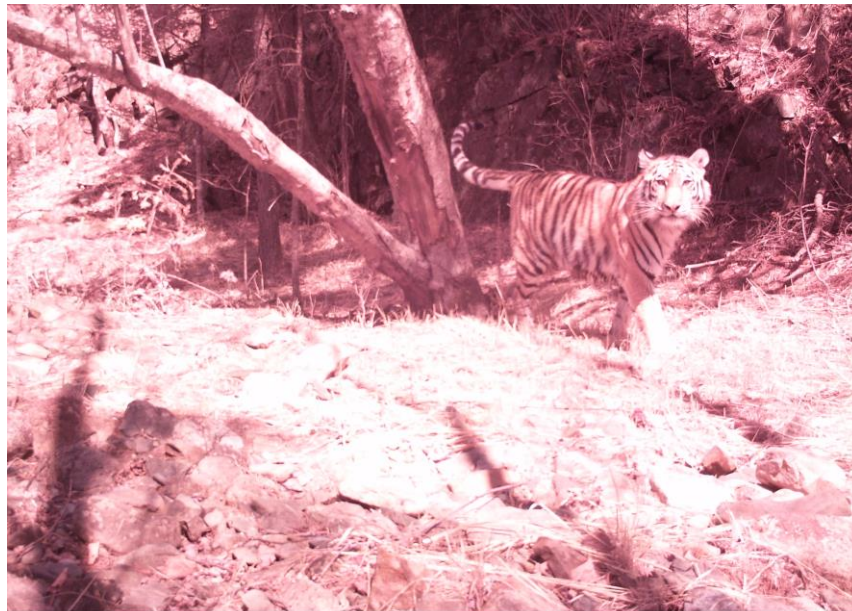
Figure 9. A series of 5 cub photos from 5-6 months of age in November 2018 to 9-10 months of age in March 2019 photographed in Lazovsky Zapovednik. This litter belongs to Female "Lucky".

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Figure 10. Adult female (top) and male (center and bottom) tigers photographed feeding on a domestic cow they had killed in October 2018. These camera trap photographs were given to us by government rangers charged with responding to conflict situations. These tigers have been killing cows near a village for several months in 2018 but these are the first images of them. Camera trap photographs are helping us understand the age, sex, and body condition of the conflict animals and try to mitigate. The female is a 3-year old born on LZ (top photograph and also shown on the title photo last photographed in April) and the male is an adult later photographed in a remote area near the ZT boundary also in April (bottom photo).

Figure 11. A mild 2019 winter gave way to good reproduction of populations of tiger prey such as wild boar and sika deer.

Anti-poaching

We collaborate with the UALZZT Director and WCS to implement SMART in the protected areas providing funds for Ranger per diems and a computer Database Specialist whom is responsible for SMART data management and monthly reporting. We also provided support for Inspector patrol logistics including equipment, uniforms, and fuel for patrol and project vehicles. So far in 2019, one meeting was held with head Rangers and the PA director to discuss SMART progress.

Due to the remoteness of our conservation landscape, UALZZT anti-poaching rangers often lack the technical capacity to protect species from poaching because they cannot respond

quickly to intelligence or real-time information about potential threats. To counter this problem, we worked with partners ANO AMUR (with funds provided by WildCats Conservation Alliance) and UALZZT, to create rapid response teams (RRT) capable of responding to illegal incursions within the remote protected area conservation landscape. In 2018, the RRTs were equipped and trained to use ATVs, snow mobiles, trailers for hauling equipment, uniforms, and poacher cams to ensure the fastest response to threats. In 2019, we equipped them with 2 additional GMS poacher cams and 10 regular poacher cams for use with cell service is lacking. Three new inspectors were trained to use ATV and snow mobiles.

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Figure 12. Known deer poachers photographed with a poacher-cam in the act of stealing our camera trap used for tiger monitoring.

Figure 13. As part of our support for anti-poaching and RRT in UALZZT, we donated poacher cams, flashcards, and batteries.

Wildlife health monitoring

ZSL has been collecting blood samples from small mammals in LZ for several years as part of a study to developed a wildlife disease risk assessment for leopard reintroduction. This year, working with partners Wildlife Vets International, we successfully published a book in Russian Language entitled "Disease Risk Assessment for the Amur Leopard Reintroduction Programme in the Russian Far East" (DRA), authored by 12 specialists including ZSL's Misha Goncharuk as first author and Linda Kerley as 8th author. The DRA is also in English as an unpublished report (John Lewis as first author of the English version).

Figure 14. ZSLs vet, Misha Goncharuk, with 300 printed copies of Disease Risk Assessment of Amur Leopards for the reintroduction programme in the Russian Far East. These books were distributed by each of 8 authors to interested readers. First developed in English, the Russian version is more accessible to the public were leopards will be reintroduced.