A Year-end Report to the WildCats Conservation Alliance from the Zoological Society of London

Amur Tiger Conservation in Lazovsky Zapovednik and Adjacent Areas, 31 Jan 2018 – 31 Jan 2019

Image: Adult female Amur tiger "Izabella", estimated age 4-6 years old, photographed using a camera trap in Lazovsky Zapovednik, March 2018.

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 following provides a summary of our progress in over the past year. 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. Population monitoring results for 2018 reveal slightly fewer adult tigers but good reproduction in the area, but preliminary results for 2019 reveal increases in ZT and the adjacent areas. The fourth year of monitoring efforts in the unprotected area between LZ and ZT provided evidence that tigers are surviving and reproducing in those areas as well. Our aim is to continue to focus on combating threats in protected areas (most importantly poaching and wildfires) and, in turn, stabilize 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

Our Amur tiger conservation project has seen some important achievements over the past year. 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 educational activities. 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 in 2018 from sources including US Fish and Wildlife Service Rhinocerus and Tiger Conservation Fund and the Indianapolis Zoo Conservation Fund.

Our key achievements against objectives in January-December 2017, with supplemental information from January-April 2018, are described below:

Monitoring of Amur tigers

Over the past 11 years (2008-2018), 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.

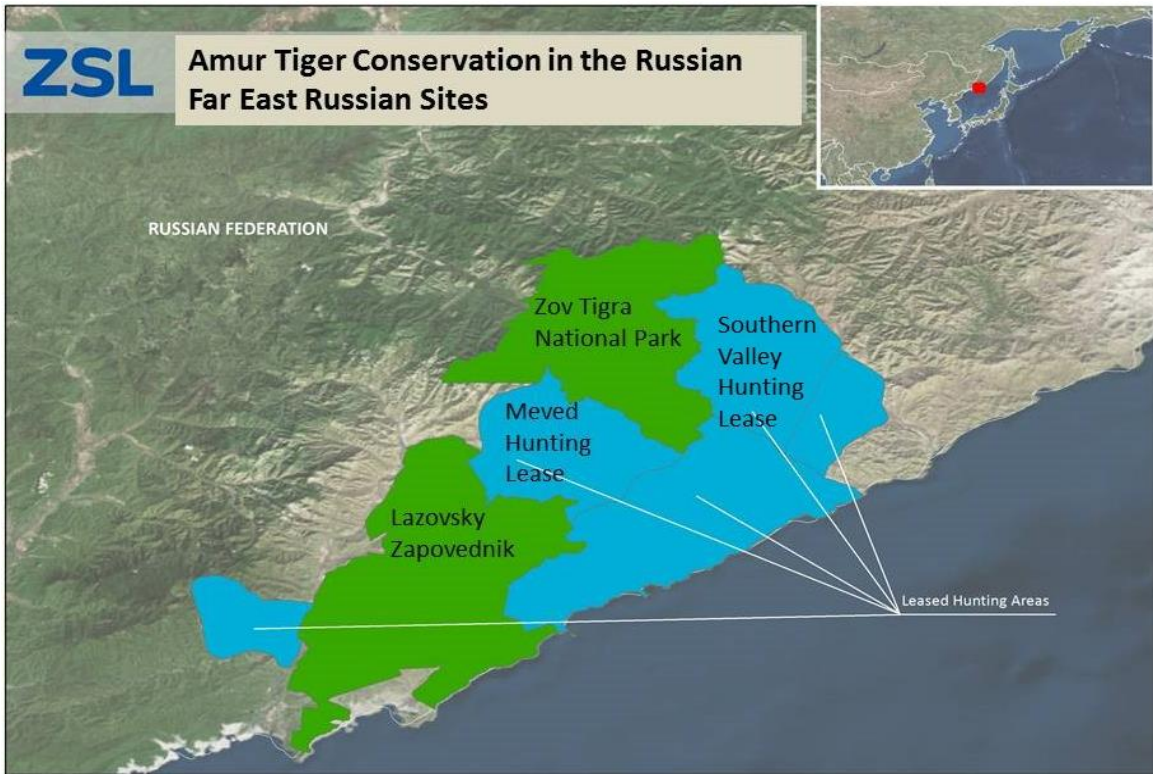

Figure 1. ZSL Russia's Amur tiger conservation landscape, including Lazovsky Zapovednik (LZ), Medved Hunting lease (MHL), Southern Valley Hunting Lease (SVHL), and Zov Tigra National Park (ZT).

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 survey over a 90 day period between January and May 2018 after all camera traps had been set in the survey area (hereafter referred to as the "2018 tiger survey") operating 60-paired camera trap stations in LZ, 28 in ZT, 25 in MHL, and eight in SVHL (Figures 3). Forty camera traps were left set 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: Two ZSL employees setting camera traps for tiger monitoring survey.

For the 2018 camera trap survey conducted in combined areas LZ, ZT, MHL and SVHL we estimated 18-20 adult tigers and 0.61-0.65 adult tigers / 100 km^2 analyzed using the program SPACECAP for capture-recapture closed populations over a period of 10,890 trap/days, and 315 sets of photographs of tigers. The estimated tiger density is similar to other protected areas in the Russian Far East. The minimum number of tigers identified from photographs was 18 adults: eleven females and seven males; two new litters both with 3 cubs each (estimated birthdate May and July 2018), and two litters of 3 cubs born in 2017 and (11 to 13 months of age) and still traveling with their mothers. Only in April 2018 did we discovered the second litter of three cubs born in 2017 but not detected until 2018. Mother tigers can be secretive and difficult to photograph during short tiger surveys. This example illustrates the value of supplementary trap days which provided valuable information on reproduction.

Comparisons with surveys from previous years show a slight decrease in adult tigers (from 19 adults in 2017 to 18 adults in 2018; Table 1) due to the disappearance of one 7-year old male

from ZT. However, reproduction and cub survivorship was good with all six 1-year old cubs from two litters photographed alive and two of the six photographed again at 17 months of age. Both of these litters (in LZ) are significant because 1) we have monitored one mother "Sabrina" since 2009 and this is her fourth litter of three cubs at her estimated age of 12 to 13 years (the oldest known amur female lived to be 14 years of age when she was killed by poachers), and 2) the second litter was born to mother “Tanya” and is the first successful reproduction in the Sharokia river area of LZ since intense poaching in 2009-2012. Information on survivorship and lifetime reproduction for tigers is rare and provides a measure of a healthy reproducing population. Reproductive depression and long recovery time after poaching has been recorded for tigers in other areas.

Table 1. Minimum number of adult tigers, litters of cubs and total number of cubs photographed during the 2017 and 2018 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
Adult females	11	11
Adult males	8	7
Total adults	**19**	**18**
Sub-adults	3	
New litters	1(2)	1(2)
Cubs	3(6)	3(6)

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 using tiger population monitoring results to measure the effectiveness of conservation activities. Wildfires, driven by severe drought, threatened tiger habitat in 2018. In April- May, when forest fires burned over 10,000 hectares of ZT’s precious coniferous forests, UALZZT rapid response team (RRT) (supported by ZSL’s Russian Program) were able to save three 1-month old tiger cubs found by Rangers while fighting fires on the edge of a burn. Fresh adult female tiger tracks in

the area informed the expert RRT that the mother might return to her cubs. Rangers acted quickly to put out the fire while keeping a safe distance from cubs to minimize disturbance to the animals and for their own safety. From information gathered during long-term monitoring and recent photographs of a lactating tigress, we suspected that the cubs belong to resident female “Kim” who we have monitored since she was a cub. On 3 November, we were pleased to discover that the litter has survived; evidenced from camera trap photographs of the family group not far from the burned area.

The following map (Figure 4), and camera trap photographs from the recently completed surveys illustrates how we continue to monitor reproduction, dispersal, and recruitment over generations as part of our long-term monitoring work.

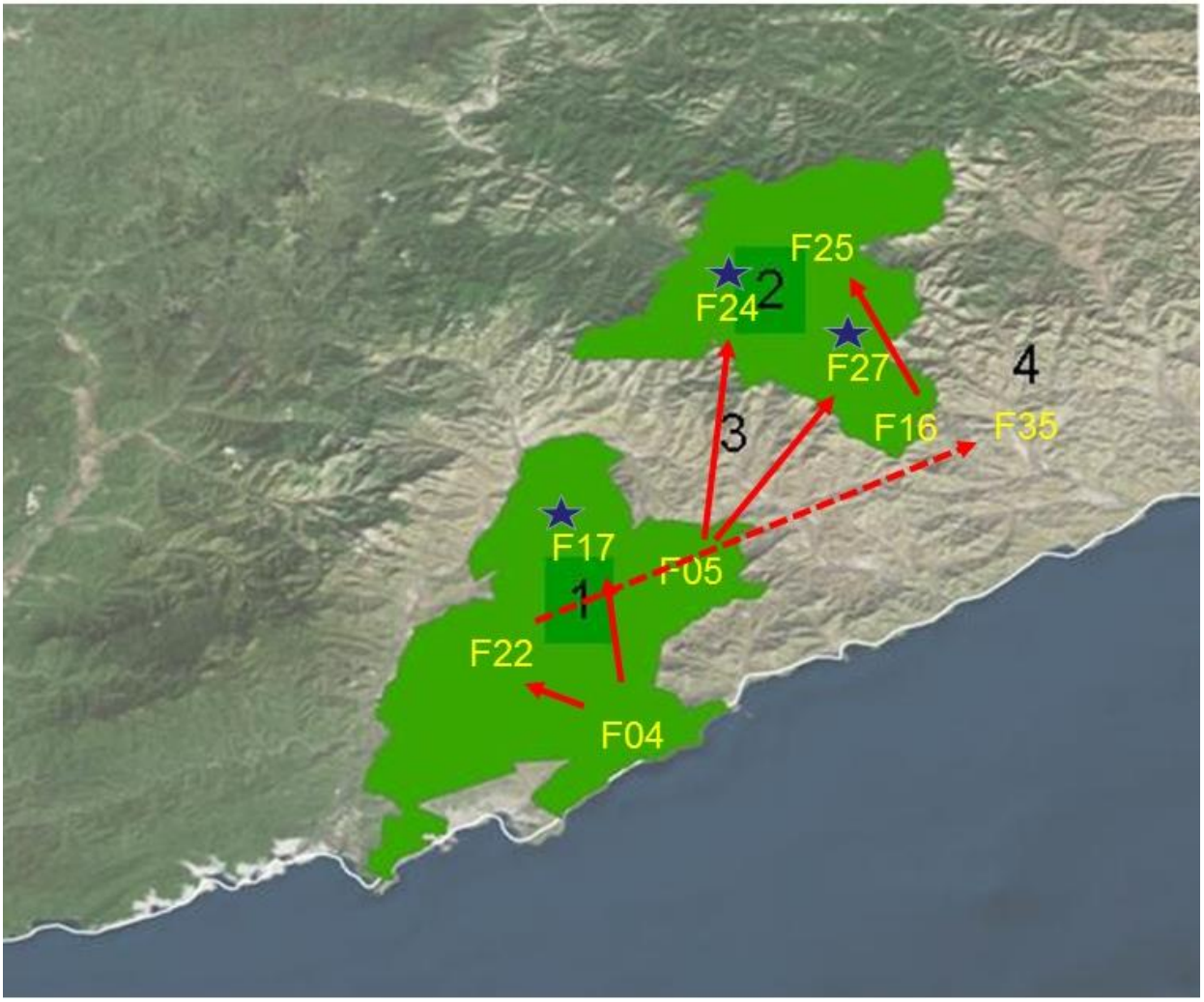

Figure 4. Resident female tigers (in yellow), their dispersed female offspring (indicated with solid red arrows pointing away from mothers) detected in our survey areas, third generation dispersing female offspring (indicated in dashed red arrows) detected in our survey areas, and young litters still traveling with their mothers (blue stars); all monitored with camera traps in LZ (1), ZT (2), MHL (3), and SVHL (4) from 2008-2018.

Figure 5 and 6. Resident female F4 "Sabrina" (top) with one of three cubs (above) and all three cubs (below) at a scent-marking tree in LZ January 2018. Their estimated birthday is June - July 2017. We have monitored Sabrina since 2008. Night time photographs of tigers with infrared flash on camera traps make tigers seem white, but they are normal colored brown with black stripes.

Figure 7. One of Sabrina's 1-year old female cubs from her fourth litter photographed in June 2018 scent marking a traditional marking tree.

Figure 8. The second of Sabrina's 1-year old female cubs from her fourth litter photographed in July 2018 investigating the same traditional marking tree shown in Figure 10.

Figure 9. Sabrina (front) and her 1-year old male cub from her fourth litter photographed in June 2018.

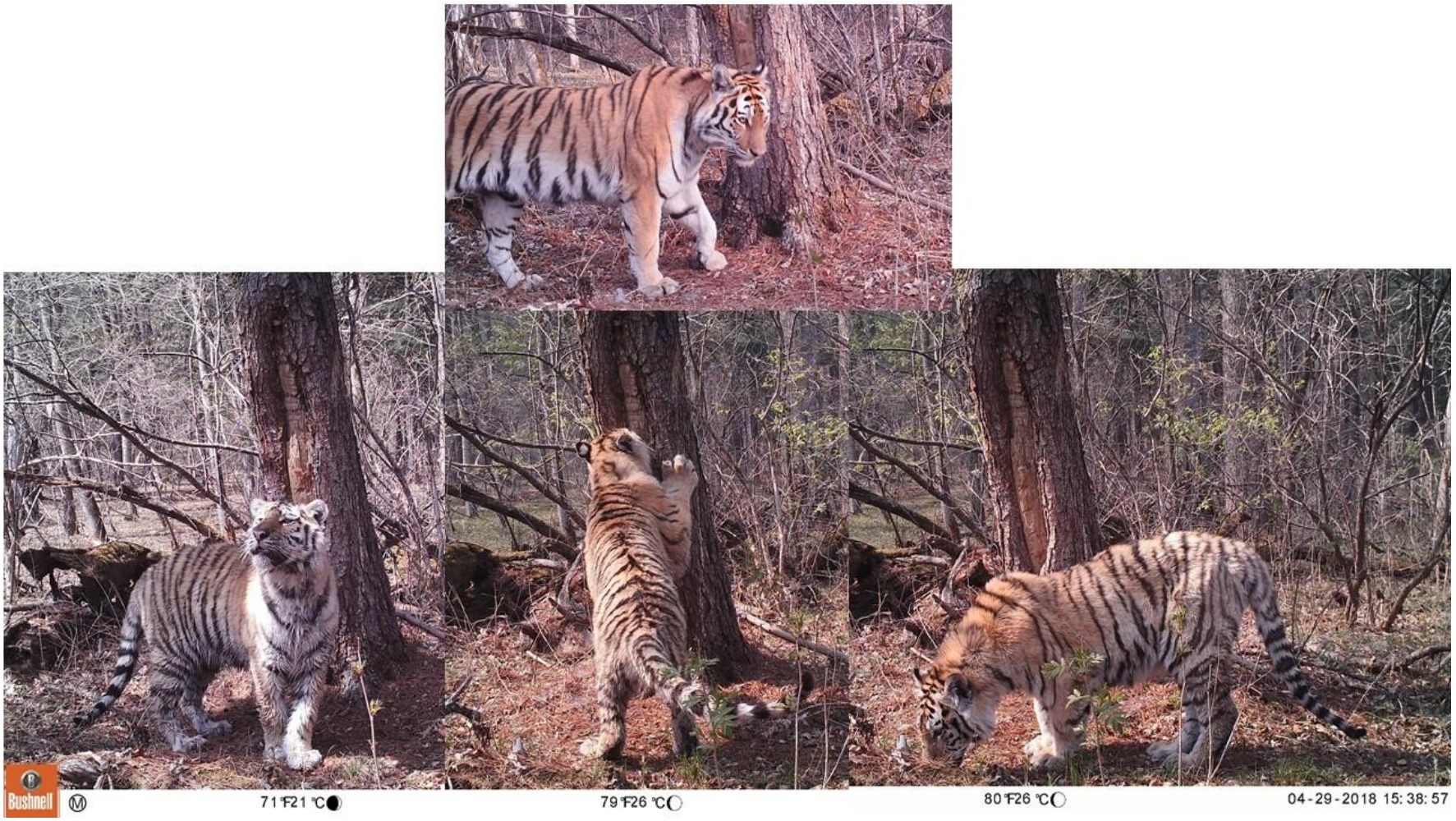

Figure 10. Three male cubs (bottom images) from F30's (Tanya) (Top image) litter at 9-10 months of age in April 2018. This is the first successful litter produced in Sharokia river area of LZ since intensive poaching in 2009-2012. We have monitored Tanya since 2016.

Figure 11. We detected that F19 (photographed here in September 2017) had a hurt left front paw and in these photos she is limping and holding her foot under her. We found tracks of a limping tiger as late as February 2018, and suspect it was her.

Figure 12. UALZZT and ZSL's rapid response team preparing to fight fires and shown here filling backpack water sprayers from available water source in remote ZT in May 2018.

Figure 13. Forest fire in ZT conifer forest in April 2018.

Figure 14. Smoke from fires in an overlook of Zov Tigra National Park May 20, 2018. The red arrow shows where three one-month old cubs were found on May 29 near a burned area. Nearby tracks indicated that the mother was still present and quick action by Rangers assured minimal disturbance while making sure no fires were still burning in the area. Fires were officially out on May 30th.

Figure 15. Female tiger "Kim" appears to be lactating in this photograph taken in July 2018 in Zov Tigra National Park not far from where the cubs were found and where she was photographed in 2016-17 with her prior litter.

Figure 16. Female tiger "Kim" with two of three 6-month old cubs photographed in November 2018 in Zov Tigra National Park not far from where the cubs were found by RRT rangers and where she was photographed in 2016-17 with her prior litter. Even poor quality photographs like these provide vital information for conservation actions.

Figure 17. Female tiger "Lucky" with three 4-6-month old cubs photographed 19 November 2018 in Lazovsky Zapovednik. We were pleasantly surprised to find her with a new litter of cubs.

Figure 18. Adult female (top) and male (bottom) tigers photographed during camera trap monitoring. These tigers had been identified killing cows near a village for several months in 2018. In October they were photographed eating a domestic cow and we were able to identify them by comparing photos. 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 and the male is unknown. The government Inspectors are working with landowners and government rangers to remove farrell livestock

in hopes the tigers will move to another location. In March 2019, we photographed the male 30 km north and in a remote area where we hope he will stay out of trouble.

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. Quarterly meetings were held with head Rangers and the PA director to discuss progress.

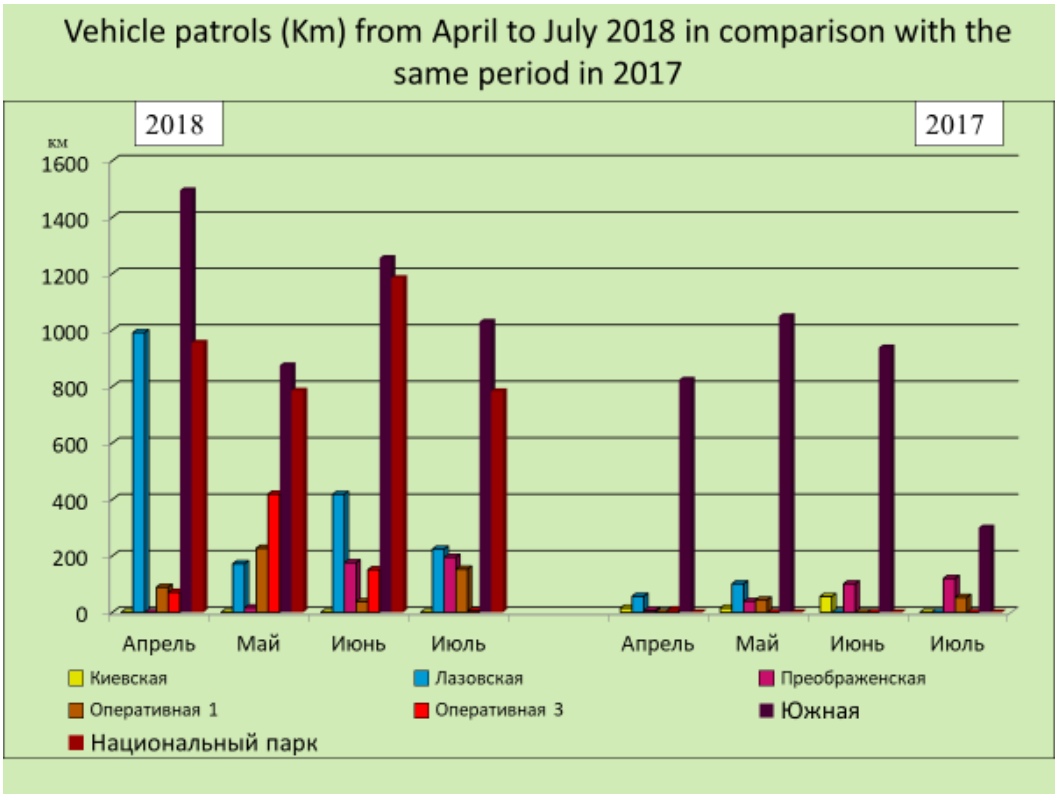

Figure 19. An example of information generated by SMART reports is a graph comparing vehicle patrols conducted in April – July to compare 2017 and 2018. Due to high forest fire danger in 2018, Rangers conducted more vehicle patrols in that year compared to 2017.

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, this year 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. 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. RRT have already proven to be valuable during the fire season in 2018 when they successfully put out fires and saved a litter of tiger cubs (see above under monitoring).

Figure 20. One snow mobile being loaded into a truck for transport to UALZZT after being purchased in Vladivostok.

Figure 21. Donating ATV's to the UALZZT for RRT after being purchased by ANO AMUR.

Figure 22. RRT ATV on patrol in ZT.

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, we began using camera traps and transect surveys to estimate badger and raccoon dog densities alongside disease sampling in order to estimate the prevalence of targeted disease in the environment. Understanding disease presence and dynamics will help us clarify the risk of disease transmission to tigers and leopards. We are currently in the process of publishing our finding in Russian so that it will be available for the reintroduction, if it goes through.

Figure 23. An illustration of the difficulties of field work in remote areas of LZ and ZT.

Use of funding

For this grant we received £30,000; £28,000 for project managers salary and £2,000 for vehicle repairs. As of December 2018, we have spent £28,000 on salary and £2,000 on vehicle repairs.