



## **Trips to Pri-Amur Region to Check on Status of Released Cubs: February-March 2015**

### **Introduction**

Between February 2012 and February 2013 eight tiger cubs were brought into captivity in Primorskii and Khabarovskii Krai from at least four litters. Two died shortly after capture, but the other six were kept in enclosures separated from human activities and provided opportunities to learn how to hunt wild prey. At dispersal age (about 18 months) all six were released in the spring of 2013 (Zolushka) and 2014 (Svetlaya, Borya, Kuzya, Ustin, Ilona). Zolushka was released in Bastak Zapovednik, Svetlaya and Ustin were released in Zhuravliniy Zakaznik (Wildlife Refuge) and Ilona, Borya, and Kuzya were released just south of Zhelundinskiy Zakaznik in Amur Oblast.

There were actually two different but related goals associated with this effort. First, the program represents an attempt to determine whether it is possible to rehabilitate and release wild orphaned tiger cubs back into the wild. Secondly, and, perhaps more importantly, the decision to release these cubs into the Pri-Amur Region represents an attempt to recolonize lost tiger habitat. Although tigers occasionally show up in the Jewish Autonomous Region and Amur Oblast, there has not been a permanent resident population in either region for at least thirty years. This release program represents the first stage in trying to recover a population in this former range of Amur tigers.

We set several “targets” as indicators of success in this rehabilitation and recolonization process. Concerning rehabilitation, evidence of success would be marked by: 1) evidence that tigers are successfully killing wild prey in the two months immediately following release; 2) no evidence that tigers are relying on domestic animals as a food resource, or that tigers are attracted to human settlements or humans in any way; and 3) survival through the first winter (winter usually being the most stressful period for tigers in Russia). Concerning recolonization, the two key indicators of success would be: 1) high survival rates of tigers released into the wild; and 2) evidence of reproduction by released animals.

Our goals in these trips in March 2015 were, first and foremost, to assess rehabilitation target 3 (survival through the first winter). Our objective was to document evidence of kills, and if possible, develop an index of kill rate and food intake based on kill rate and size of prey killed. To do this it would be necessary to find all kills in a given period, or be able to model kill rates from evidence associated with clusters of kills. Secondly, our objective was to look for evidence of reproduction. Only Zolushka is approaching age of first reproduction (youngest known age of first reproduction in wild Amur tigers is 3.5 years), so determining the reproductive status of Zolushka is a priority. In addition to looking for tracks, collection of scats may provide some evidence of reproductive status based on hormone content of the scats. Therefore, finding scats of Zolushka is also a priority.

In this report we provide a brief review of the status all tigers released in the Pri-Amur from 2013-2015, but focus primarily on the results of our trips there in March.

## **Itineraries, Staffing, Equipment**

Trip 1. From February 3-8 Petr Sonin (Severtsov Institute) worked with Bastak inspector Ivan Polkovnikov in search of tiger sign in Bastak Zapovednik, covering the Ikura and Bastak river basins. No tracks of Zolushka were found, but tracks of an adult male were found, along with bedsites, scentmarks and excrement deposited by him. Based on the multiple sets of tracks made by the male along the upper Bastak River (the male passed through at least 7 times) as well as the extensive marking, it was clear the male used this territory extensively through the middle part of the winter.

*Trip 2.* On March 6 Dale Miquelle (WCS) traveled with zapovednik inspector Ivan Polkovnikov in Bastak Zapovednik looking for sign of Zolushka and the resident male. On March 7-9 Nikolai Rybin (WCS) continued working with Polkovnikov in search of Zolushka along the eastern boundary of the zapovednik and the interior. Snow was very deep in Bastak Zapovednik in March (over a meter in most places) and was probably very difficult for tigers to travel through.

*Trip 3.* On March 14, 2015 six people set out from Primorskiy Krai to assess the status of tiger cubs released in Amur Oblast and the Jewish Autonomous Region. Four people from the Wildlife Conservation Society (Alexander Rybin, Vladimir Melnikov, Evgeny Gizhko, and Dale Miquelle) and one person from Severtsov Institute (Petr Sonin) traveled from Terney and Vladivostok in three vehicles (WCS vehicles) and two snowmobiles (one owned by WCS, one by Severtsov Institute). The team arrived in Birobidzhan on March 16, met with head of Okhotnadzor Alexei Nikolaevich Feoktistov, and headed south in the Jewish Autonomous Region. One group (Miquelle-Sonin) stayed in Bidzhan and traveled to the Zhuravliniy Zakaznik to check clusters from Svetlaya (March 17-18) with Okhotnadzor Inspector Vladimir Mishkaryov. The other group (Rybin, Melnikov, Gizhko) traveled to Amurzet, met Sergey Drapikovskiy and Valeriy Cheryshnev from Okhotnadzor, and investigated the last location of Kuzya before his collar failed. Both teams met up again in Bidzhan late on March 18, and returned to Birobidzhan on March 19. On March 20th one team (Sonin-Miquelle) traveled to Arkhara, met with Khinganskii Zapovednik officials (Vyacheslav Kastrikin) and checked clusters of Ilona from March 21-23 with the assistance of Alexei Antonov and Dennis Kochetkov (scientific staff of Khinganskii Zapovednik). The second team returned to Khabarovsk on March 20 to purchase a replacement tire, and spent March 21-23 checking clusters of Borya in the northwest corner of the Jewish Autonomous Region. On March 24<sup>th</sup> the teams met up again and all but Miquelle traveled by snowmobile with assistant director of Science V. Kastrikin to check clusters of Ilona in the southeast corner of Khinganskii Zapovednik. March 25-26 were spent returning to Primorye.

The last big snowfall in this region fell between February 22-23 (and in some places February 24). This snow buried all tracks, and likely buried most kills made by tigers. Therefore we focused on checking clusters of locations after these dates. When convenient we tried to check some earlier clusters, but generally found most of these sites under deep snow, and would require a second visit after snowmelt.

## Results

**Zolushka.** Neither the excursions by Sonin, nor Miquelle nor N. Rybin revealed any evidence of Zolushka, although Sonin found lots of sign of the resident male. Only in late March, as we were returning from Amur Oblast, we heard from Ivan Polkovnikov that he had returned to Bastak to search again, and this time found tracks that match those of Zolushka, as well as those of the male (in different locations). Additionally, we learned from Alexei Nikolaevich Feoktistov (Head of Okhotnadzor) that tracks of Zolushka commonly appeared in his hunting lease this winter, which is situated on the western boundary of Bastak Zapovednik. He reported that he had seen tracks of Zolushka in every month of the winter, and suspected that she spent the majority of her time outside the zapovednik this winter. A priority for the future will be setting out camera traps in this hunting lease to try to document movements of Zolushka outside the zapovednik. Unfortunately, no excrement has been collected in recent months, which means we have no new information on the reproductive status of Zolushka. More information will be collected by following tracks and use of camera traps. But most importantly, it appears Zolushka made it through a tough winter that brought very deep snow to Bastak Zapovednik – a good sign that she will survive long into the future.

**Ustin** was captured and removed from the wild on December 27, 2014, after repeated predations on dogs and other domestic animals. Ustin had left his release site and traveled eastward, eventually arriving on Ussuriskiy Island opposite the city of Khabarovsk on November 2, 2014. He actually crossed the Ussuri River and was in city limits of Khabarovsk during the night of November 8 before returning to the island that morning. He made several kills on the island (including at least one dog) but was blocked from crossing back across the Amur River by flowing ice. If he had been captured and returned to his release site at this time, Ustin may have survived in the wild, as he had not yet become habituated to people. Unfortunately, on November 11, he was able to cross the international border into China, and spent 33 days there, feeding on goats and dogs, and becoming acclimated to humans. At first he stayed on the island, where researchers were trying to provide live bait for him. However, he was able to cross a small channel and raided a goat farm, killing more than 15 goats in two nights. He then traveled south to the outskirts of Fujian city before returning to the island. On December 14 he returned to the Russian side of Ussuriskiy Island, and then crossed the Ussuri River (now frozen) on December 18. From that point, he remained close to the villages of Kazakevichevo and Bychikha near Bolshe-Khekhtsirskii Zapovednik feeding mainly on dogs. On December 26, staff of Inspection Tiger and Wildlife Conservation Society traveled to this region, and on December 27 they captured Ustin, and returned him to Alekseevka Rehabilitation Center. From there, he was shipped to the zoo in Rostov-on-Don. All other five rehabilitated tigers remain in the wild in the Jewish Autonomous Region or Amur Oblast as of March 2015.

**Kuzya.** After a return from China in early December, Kuzya moved. The GPS collar worn by Kuzya stopped functioning on February 19, 2015. We were able to reach that last location by extensive snowmobile travel on March 17<sup>th</sup>. There had been one heavy snowfall in the region (February 22-23<sup>rd</sup>) after the collar failed, and thus tracks of Kuzya could not be found at the last location. Nonetheless the team was able to find evidence of a kill – extensive amounts of wild boar fur. This evidence suggests that Kuzya is still alive, and it is possible that the VHF component of the collar is still functional, making it possible to track Kuzya on the ground. But with the snow shortly disappearing, the only effective way to monitor his activities may be via camera traps. Because Kuzya spent extensive time in Svetlaya's home range since his return from China, it is highly likely

that he is aware of her presence. In fact, there were two situations in which it is possible they either came into direct contact, or crossed each other's path. On January 1, at 0900 (local time) Kuzya and Svetlaya were approximately 930 m from each other. An hour later, they were approximately the same distance apart, but had essentially exchanged locations, so there is a good chance they encountered each other when exchanging locations. Later, on February 2, Kuzya left a cluster (possible kill) and crossed the line of travel of Svetlaya from two days earlier (January 31) before returning to the kill site. Given the line of travel of both of them, it is highly likely that Kuzya crossed Svetlaya's trail, and would therefore know of her presence. Since the primary objective of dispersal of male tigers is to find female tigers (and the absence of a dominant resident male tiger), it would make sense for Kuzya to stay in the general vicinity of Svetlaya. Therefore, it is possible that setting out camera traps for Svetlaya may eventually also result in the capture of Kuzya on film.

**Svetlaya.** With the exception of a few excursions, Svetlaya has remained close to her release site in Zhuravliniy Zakaznik, and has spent the winter in an area of approximately 1000 km<sup>2</sup>, with the release site representing her southeastern boundary. On March 18<sup>th</sup> at approximately 14:30 we were able to hear the VHF signal of Svetlaya's collar at 248° from the cabin (Pasika) where we would spend the night. The signal was in the general direction of a cluster 22 (Table 1) that we decided not to visit. The next morning (March 19<sup>th</sup>) at 09:30 her signal was clearly heard more to the north, at 310° from the cabin. The variation in signal strength suggested she was active, and in the vicinity of Cluster 129 which we had checked the day before.



Photo 1&2. Kills of Svetlaya: 1) adult female wild boar; 2) remains of two wild boar piglets (two skulls adjacent to each other).

We were able to check 7 clusters of locations from Svetlaya, including six after February 20<sup>th</sup> (Table 1). Two of the seven must be checked again (both were from mid-February, and covered in deep snow). At four of the seven sites we found 5 kills – Svetlaya killed two wild boar piglets at one site (43) in a wild boar nest. In total, between February 19<sup>th</sup> and March 12<sup>th</sup> she killed three wild boar piglets, one adult female wild boar, and one adult male roe deer. Another cluster not checked (45.2) likely will represent at least one more kill. If that is the case, Svetlaya made six kills in twenty-two days, for a kill rate of one every 3.7 days. While kills most were small (wild boar piglets and a roe deer), it certainly appears that she was making sufficient numbers of kills to remain in a positive energy balance.

Several scats presumably from Svetlaya were collected, which will allow an assay of hormone levels.

Prey densities appeared to be high in the region, with an abundance of wild boars. Svetlaya appears to be very capable of killing sufficient numbers of wild prey, is likely in excellent condition and will likely make it through the winter.

Table 1. Clusters of locations (> 10 locations within 100m of each other) investigated in winter 2015. Clusters with empty "Result" column were not visited.

Tiger	Cluster #	Latitude	Longitude	Start_Date	End_Date	WP_#	Result	Age
Kuzya		48.0877456	130.8433963		2015.02.19		wild boar kill - sex/age unknown	unknown
Svetlaya	5	48.2484	131.4937	2015.03.11	2015.03.12	42	roe deer adult male	> 4 years
Svetlaya	20	48.1457	131.4853	2015.03.08	2015.03.08	12	tracks found-likely bedded here	
Svetlaya	4	48.1697	131.4861	2015.03.06	2015.03.07	37	wild boar piglet	< 1 year
Svetlaya	18	48.2102	131.3857	2015.03.04	2015.03.04	13		
Svetlaya	8	48.2317	131.4822	2015.02.28	2015.03.01	129	wild boar female	adult
Svetlaya	10	48.2035	131.5299	2015.02.23	2015.02.24	26	no sign of tiger tracks- only wild boar tracks	
Svetlaya	28	48.2138	131.4819	2015.02.24	2015.02.24	10		
Svetlaya	13	48.2286	131.5547	2015.02.22	2015.02.22	45.2		
Svetlaya	3	48.149	131.4899	2015.02.19	2015.02.20	43	two wild boar piglets killed	< 1 year
Svetlaya	12	48.2426	131.4684	2015.02.16	2015.02.16	28		
Svetlaya	22	48.2322	131.4431	2015.02.15	2015.02.15	12.1		
Svetlaya	6	48.2084	131.4613	2015.02.13	2015.02.14	45	nothing found but under deep snow	
Borya	33	49.1726	131.0829	2015.03.11	2015.03.12	14		
Borya	18	49.1902	131.1382	2015.03.09	2015.03.10	19	wild boar piglet	< 1 year
Borya	4	49.236	131.1129	2015.03.04	2015.03.08	80	two kills - adult and young wild boar	Adult + < 1 year
Borya	12	49.237	131.1105	2015.03.06	2015.03.07	33.1	Bedsite	
Borya	28	49.205	131.1421	2015.02.27	2015.03.04	29.1	Bedsite	
Borya	13	49.1965	131.1394	2015.03.02	2015.03.03	28	wild boar piglet	< 1 year
Borya	2	49.2202	131.1397	2015.02.25	2015.03.01	88		
Borya	7	49.2171	131.1575	2015.02.23	2015.02.24	39	Bedsite	
Ilona	8	49.163	130.4361	2015.03.11	2015.03.12	21	wild boar -unknown age/sex	unknown
Ilona	9	49.0941	130.4075	2015.03.09	2015.03.10	20	roe deer - unknown sex/age	unknown
Ilona	16	49.0906	130.4205	2015.03.08	2015.03.09	18	fresh tiger tracks near boar nest	
Ilona	15	49.0883	130.5358	2015.03.05	2015.03.06	44	wild boar yearling	1-2 years
Ilona	3	49.0871	130.5346	2015.03.03	2015.03.04	30	Bedsite close to kill at cluster 44	
Ilona	25	49.116	130.4948	2015.03.01	2015.03.02	14.3	tiger bedsite in boar nest	
Ilona	29	49.1083	130.5169	2015.03.02	2015.03.02	11	tiger bedsite in snow	
Ilona	10	49.1448	130.4528	2015.02.27	2015.02.28	22	roe deer - unknown sex/age	unknown
Ilona	17	49.1494	130.4298	2015.02.25	2015.02.25	19	no bedsite but recent tracks of tiger	
Ilona	1	49.1539	130.4391	2015.02.23	2015.02.24	73	roe deer - unknown sex/age	unknown
Ilona	34	49.0919	130.4412	2015.02.20	2015.02.21	12.3		
Ilona	45	49.1539	130.4857	2015.02.19	2015.02.20	12.4		
Ilona	18	49.1653	130.3934	2015.02.17	2015.02.17	14		
Ilona	13	49.0832	130.5152	2015.02.14	2015.02.15	28	wild boar piglet	< 1 year
Ilona	11	49.083	130.513	2015.02.14	2015.02.15	27	Bedsite close to kill at cluster 28	
Ilona	Zap_11	49.09779	130.63275	2015.02.05	2015.02.06	ip_11 (30.	wild boar	unknown
Ilona	Zap_10	49.091645	130.4273	2015.01.15	2015.01.18	57	wild boar piglet	< 1 year
Ilona	Zap_6	49.128	130.4283	2015.01.13	2015.01.14	16	wild boar piglet	< 1 year
Ilona	Zap_8	49.1457	130.4339	2015.01.10	2015.01.11	38	wild boar piglet	< 1 year
Ilona	Zap_7	49.1068	130.438	2014.12.27	2014.12.28	Zap_7	wild boar piglet	< 1 year
Ilona	Zap_4	49.1242	130.4287	2014.12.23	2014.12.25	Zap_4	wild boar piglet	< 1 year
Ilona	Zap_5	49.1191	130.4278	2014.12.19	2014.12.20	Zap_5	wild boar piglet	< 1 year
Ilona	Zap_9	49.1086	130.4202	2014.12.15	2014.12.19	Zap_9	wolf	unknown
Ilona	Zap_3	49.0962244	130.4521619	2014.12.08	2014.12.11	Zap_3	wild boar piglet	< 1 year
Ilona	Zap_1	49.1034998	130.4261424	2014.12.02	2014.12.05	Zap_1	wild boar piglet	< 1 year
Ilona	Zap_2	49.1015402	130.4230445	2014.12.01	2014.12.02	Zap_2	wild boar piglet	< 1 year

**Borya.** Borya spent much of the winter in fairly inaccessible regions of Amur Oblast, but in early February he began an extensive foray west and south, eventually (in March) taking him into the northeast corner the Jewish Autonomous region just north of the village of Khingansk. We attempted to check locations of clusters in this region. Deep wet snow (over 1.5 m in places) made access to this high elevation region extremely difficult. We were able to check six clusters of locations, and identified four kills (one site had two kills - an adult female wild boar and a wild boar piglet). The other two kills were of wild boar piglets (Table 1).

We were able to check all but two of the larger clusters (> 12 locations) of Borya after the last snow (February 24<sup>th</sup>) (16 days). One cluster not checked (88) was likely a kill – the other likely just a bedsite. If we assume 5 kills over this period (one not checked yet), it would indicate a kill rate of one kill every 3.2 days. Given the deep snow conditions in this region, Borya was lucky to encounter a group of wild boar and was able to successfully kill a number of them. As we left the area, Borya was also leaving – he had apparently gotten onto a forest road and was traveling west, back towards where he had spent most of the previous summer and fall, and first part of the winter.

Borya was the only tiger that appeared to be in a difficult situation. The area where he had spent the last three weeks retained very deep snow into mid-March, which was clearly difficult for Borya to travel through. Following his tracks, our staff observed that he often lay down to rest. Nonetheless, he was able to maintain a high kill rate during this difficult period. Hopefully, Borya will be able to survive the next few weeks as snow melts, and find his way back to lower elevations and areas with higher concentrations of ungulates. He is probably in the most difficult situation of the 5 cubs released in the region.

***Ilona.*** Ilona spent most of the summer in an area just northeast of the main highway between the villages of Arkhara (in the south) and Novobureyskii (in the north), but in fall moved south and eventually settled into Khinganskii Zapovednik. This was a fortuitous move, as the forested uplands of Khinganskii Zapovednik are covered largely in oak forests which had an abundant acorn crop this year, bringing an incredibly high density of wild boar to the forested region of the reserve. In combination with only moderately deep snow, conditions were ideal for Svetlaya to spend the winter there.

Several scats presumably from Ilona were collected, which will allow an assay of hormone levels.

In four days we checked a total of 12 clusters and located six kills: 3 roe deer of unknown sex/age; one wild boar piglet, one yearling wild boar, and one wild boar of unknown age (Table 1). It appeared as wild boar quickly visited kill sites once Ilona had left, scattering and consuming all remains, making delineation of sex and age of kills difficult.

While a few clusters between February 15<sup>th</sup> and March 12 (26 days) still have not been checked, we can conservatively estimate a minimum kill rate of one kill every 4.3 days. .

In addition the clusters we investigated, earlier in the winter Khinganskii Zapovednik staff investigated and found kills at eleven cluster sites from December 2014 and January 2015 (Table 1). Interestingly, one of those kills was a wolf that was killed and eaten between January 15-19<sup>th</sup>. In total, 75% of the 17 kills found for Ilona this winter were wild boar, and 10 of the 13 wild boar could be identified as wild boar piglets.

Ilona appears to be in good shape – she has spent the winter in an area with very high abundance of wild boar, appears to have focused on small prey (mostly young wild boar) but has maintained a high kill rate, at least for the portion of the winter that we can measure so far. She should come through the winter with no problems. Snow is not too deep in Khinganskii Zapovednik, and was melting fast as we left.



Photos 3 & 4. Photograph of Ilona taken on December 7, 2014, and remains of a wolf killed by Ilona shortly after, on December 15, 2014. Both photographs courtesy of Khinganskii Zapovednik.

## Summary

Evidence suggests that all five tigers still remaining in the Pri-Amur Region will likely survive the winter of 2015. The only animal that seems questionable is Borya, as he is currently in an area of very deep snow and low prey numbers. However, he has managed to make kills through mid-March, and since we left, he has also moved out of that area to lower elevations, so is likely to survive as well. Five of six of the released tigers therefore will likely meet all three targets of the rehabilitation process: 1) they all demonstrated the ability to make kills of wild prey during the first two months after release; 2) they all have generally stayed away from people, domestic animals, and human settlements. The minor only exception was Borya, who killed two young domestic cows in late summer 2014. He also killed (but did not eat) a dog that pestered him in the forest. Since then, all evidence suggests that Borya has been regularly making kills of wild ungulates as have all the other tigers. 3) Based on the evidence provided in this report, it appears likely that all will meet the third and final target of surviving the 2015 winter. Therefore, in all likelihood four of the tigers will successfully live through their first year (Borya, Kuzya, Svetlaya, Ilona) while Zolushka is approaching the second anniversary of her release into the Pri-Amur region.

We plan to return to the region in mid-April, with the goal of all locating kills – especially of Svetlaya and Ilona - made in winter 2015. This will allow us to accurately estimate kill rates and forage intake rates for an extended period of the winter, which should provide a useful indicator of the energy balance of these tigers during the winter period.

Continued monitoring will be important to document tiger activities, movement patterns, and most importantly, to document reproductive activities in the near future. Successful reproduction would be the ultimate sign that recovery of tigers in the Pri-Amur is underway.

## Acknowledgements

This work was conducted as part of the Russian Geographical Society's "Program for the study and conservation of the Amur tiger in the Russian Far East," which is conducted as part of the "Permanent Russian Academy of Sciences Expedition to Study Animals of the Red Book of the Russian Federation and other Critical Fauna of Russia." Data on monitoring of tiger cubs released in the Jewish Autonomous Region and Amur Oblast has been conducted jointly by the Wildlife Conservation Society (WCS) and Severtsov Institute of Ecology and Evolution (Russian Academy of Sciences), as well as with Inspection Tiger. IFAW and Phoenix have provided support for earlier monitoring and support of cubs while in captivity.