Dear Friends and Colleagues,

In what seemed like a rather quiet period, (not just from us, but from our cats) September-October had several major milestones ï a new leopard joined our study and one old collar was replaced on a well known cat. In addition, our researchers visited several kill site clusters *(locations where snow leopards have made successful kills)*, and our collaring camp moved yet again, this time from 15 km east of the Base camp to about 30 km west of it, in the Toson-Bumba Mountains. This new area is where Shonkhor, Saikhan, and a female we call Agnes and her cubs live as well as countless other snow leopards yet unknown to us. Here is an update, along with a little bit of information about what we are learning from this incredible study. We hope this takes you closer to the research activities at the Gobi.

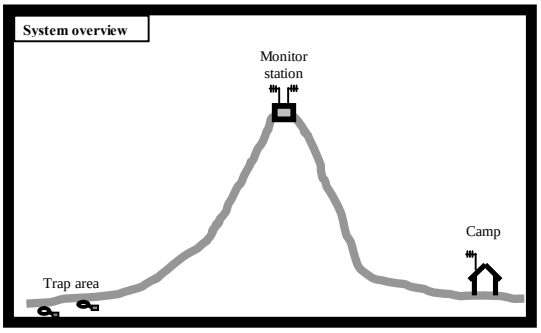
Tsagaan Reappears

Tsagaan (above) and Khashaa (left) have overlapping cluster sites, which make us wonder if they are sharing a meal or interacting in other ways. (Right) ï Khashaa rubs on the rocks in what I call the óspiderô photo.

In the camp situated next to Ganaaôs Ger (our friend who named Khashaa), the alarm went off on the new system we fondly call óSnow leopard Scoutô (Irbisni Ilch in Mongolian). It was 0610 hrs on the September 18, 2010, and the alarm claimed that one of the snares had been triggered. Orjan packed his capture gear and set out to the location of the triggered snare. Rather than a goat, (there was a weekend last spring where Orjan had to remove 16 goats from snares and reset each one) this time the snare held a snow leopard. It was a pleasant surprise to see Tsagaan, one of the large adult males we have come to know as part of the study in the past two years. Tsagaan was captured and collared with the last of our Northstar collars in March 2010. Unfortunately, his collar never switched on and we received no GPS locations from it during the last 8 months. This has been one of the frustrating trends for this make of collar. One of the reasons why we were so thrilled to see Tsagaan was so that we could switch to the new Vectronics collar! **Within weeks of placing the new collar on Tsagaan, we received some astounding information on his movements and interactions with other snow leopards sharing his home range.** Simultaneous uplinks separated by just about 16 meters indicate that **Tsagaan shared a cluster with Khashaa, and it is likely that they may have shared a meal!** *(A cluster is what we call a series of data points overlapping in one spot, depicting that a cat has not moved from a single location for an extended period of time. This can indicate many things,*

but most often that the snow leopard has made a kill and is eating.) This óshared clusterô is yet to be investigated, but our field team will visit the site to see if it is indeed a kill site and what story they can unravel by signs and other observations. Why havenôt we confirmed if this is a kill site yet? It is slightly delayed because the cluster of location signals came from the top of the highest mountain in Tost, one that our field team has christened as Mount Brad, in honour of SLTôs Executive Director, Brad Rutherford. Making that hike will take some time! The fact that Khashaa and Tsagaan appear to have overlapping clusters opens avenues to explore what social interactions they might be having. Given the lack of knowledge about the breeding biology and demography of snow leopards in the wild, we will continue to learn a great deal more about them and how their behaviour and inter-individual interactions compare to those of other felids ï especially now that we have more females collared.

Irbisni Ilch



The one-of-a-kind 'snow leopard scout' monitor system performs beyond expectations! In each of the collaring situations mentioned in this update, the snow leopard scout system endearingly named óIrbisni Ilchô, has signalled an alarm with 100% accuracy. In the Tsagaanôs capture, the system reported a trigger signal which results due to the transmitterôs plunger coming out as planned with the óthrowing armô of the snare. In the second capture, the antenna actually came off of the transmitter and the signal was lost. The system is programmed in such a way that this lost signal was detected and triggered an alarm which enabled us to attend to the snow leopard in an extremely short span of time. The 24x7 vigilance of the óIrbisni Ilchô has not only enabled our researchers to get the proper amount of sleep during the nights (no longer having to wake up every three hours to manually check the signals of the snares), but has also ensured that the stress to the animals is reduced significantly, as on both captures Orjan was able to reach the site in less than an hour! This technology was developed for this project by Orjanôs brother, Torbjörn, and is the only system of its kind!

A New Snow Leopard Spirit Joins the Study

Another significant milestone was the collaring of a new female, fourth in the study, and third with an active collar at this point. She is extensively photographed and known to us for being Zaraaôs companion. In the last camera trap photos procured from the field in August, Zaraa was found to be moving around with a slightly larger individual, most likely to be her mother! **The new female is named Tenger, which means Sky Spirit in Mongolian.** This is an ode to her spirit and character that makes her a successful mother. By observing Zaraaôs movements, she (and her

Zaraa, pictured here, and her mother Tenger, are offering a first-ever opportunity to learn about cub dispersal and mother/cub interactions in snow leopards.

mother) seems largely nomadic with several core areas within their 400 km^2 home range. Zara and Tenger are together and their clusters have very few location points, indicating that they donôt seem to spend too much time at kill sites. There could be many reasons for this; one possible explanation is that because they are two adult individuals sharing one kill, they may simply finish off the food quickly and therefore leave the site quickly. Another possible explanation could be that this is just their own individual ómode of operationô to go with their possibly nomadic movement patterns, given their age and sex. All of these ideas are being discussed as we try to interpret the data and ground truth the kill sites, but will only be established with time, as we continue to obtain more data from their collars. **We hope that Tenger and Zaraa will help us understand the dispersal of a young female from her mother, as and when it happens in the future, which will be another first for snow leopards!**

Collarless – Khavar leaves Aztai's range and the overall study!

Aztai, wearing one of the Vectronics collars, had been working hard to defend his home range from Khavar. We were curious what would happen with the two cats during next mating season. However, in late October, Khavarôs collar malfunctioned and prematurely dropped off.

Aztai and Khavar seemed to be doing what they do bestð patrolling their home ranges and making regular kills. The updates had been regular for these two until the last week of October when we received a mortality signal from Khavarôs collar. These collars use special sensors called ó3D accelerometersô to determine if the collar, and hence the cat, is moving. If the collar does not detect movement within at least 12 hours, it sends out several mortality signals within a few hours. Despite what seems like a sophisticated technology, false mortality signals have been sent rather frequently in the recent past when an individual snow leopard was in fact sleeping for a long enough period of time. Therefore, we know to follow up with these signals with an investigation rather than assume mortality. We follow any mortality signal with a procedure that includes sending a team to the last known location after a certain period of time has passed without any movement in the GPS locations. This time, when we received the mortality signal from Khavarôs collar, our worries were slightly enhanced because Khavarôs cluster was overlapping in space AND time with that of Aztai. Knowing that Khavar is a young male and Aztai is a scarred, experienced old male, the worries were not completely unfounded. Upon investigation, Orjan reported that the cluster was indeed a kill site. It looked like it was Aztai who had perhaps killed and eaten the animal which made a cluster of his locations. Although we are pretty sure that Khavar is fine, unfortunately it was determined that Khavarôs location cluster was caused by the fact that his collar dropped offï and the drop off was six months too early. The collars that we have installed on the snow leopards come with a programmable drop-off device that should trigger the collars to open at a specific pre-scheduled

date and time. The collars are programmed to drop off after 52 weeks, around the time we expect to replace them. This was a premature drop-off, for reasons unknown as of now. It is unfortunate that we will miss out on information about his movements with respect to those of Aztai, especially around the forthcoming mating season, unless of course we are able to collar him again. As we looked at data from the recent location points, Khavar had just started doing what Shonkhor, Saikhan and Devekh didð walk out on expeditions. He recently embarked on his first expedition towards the Northern edge of the Toson Bumba Mountains. Even his recent locations seem to be relatively sparser than earlier, indicating that he was perhaps beginning to explore terrain outside the ósafeô core zone where he patrolled until recently. Hopefully we will meet Khavar again in the future! Until then, we wish him well.

Differences in the how much space they use…

Khashaa and Zaraa, two of the female snow leopards we have been monitoring for several weeks now, have shown distinctly different patterns in their locations. While Zaraaôs movements span over 400 km^2, those of Khashaa seem to be focused around a small area of just about 40 km^2. We hope to understand the factors behind these differences between location patterns in the coming months as we learn more about the movement, intra-specific interaction and hunting behaviour of the collared cats.

Camp moves to Toson-Bumba Mountains – many plans ahead

The satellite camp in Tost Mountains, shown above, has been packed up and moved to Toson-Bumba. This will be the location where Orjan will focus the collaring study until the end of December.

Immediately following the collaring of Tenger, we moved our ósatelliteô collaring camp to Toson-Bumba. About 15 snares have been set up in the mountains around the new collaring camp and óIrbisni Ilchô is keeping a 24x7 track on these new snares while Orjan and Elin visit more clusters to characterize and classify hunting habits and habitats. Up to about 70 clusters have been visited so far since last spring when we undertook this new goal. In the upcoming weeks we also plan to analyse movement patterns of individual snow leopards around kill sites and relate it with the habitat, size and species of the kill, and season. In the second week of November many of the Mongolia staff, including Bayara (Director of SLT Mongolia), Puji (Senior Field Biologist), and Sumbe (research assistant and camp manager) will visit the South Gobi in order to participate in a training led by visitor Jens Karlsson. Jens is coming from the Wildlife Damage Centre (VSC) of Grimso Research Station in Sweden with vast experience in dealing with livestock depredation by wild predators. He will provide training to the leaders and participants of the Livestock Insurance Program in South Gobi as well as staff, to help them better understand the composition of species involved in depredation.