Snow Leopard Conservation Grants, Snow Leopard Network

FINAL REPORTS FOR 2014 PROJECTS

DUE: 15 FEBRUARY 2015

Please submit your final report by the due date above. We would appreciate it if you could follow the suggested format below. Additionally, please send us copies of any detailed technical report(s), papers, and other output arising from this work. Please refer to your original proposal for items such as objectives, methods, etc. unless those were substantially altered during the course of the work. If so, please explain why.

Final Report on "Confirming Snow Leopard Presence in Hovsgol Aimag, Northern Mongolia"
Rebecca Watters, BioRegions International, 2014
In collaboration with the Northern Rockies Conservation Cooperative, the Ulaan Taiga Protected Areas Administration, and the Wolverine Foundation.

1. Executive Summary: *No more than 750 words. Please describe the original goals and the final results of your project. This may be used in press releases and other publicity material about the Grants Program, so please write it for the general public who may not have scientific background.*

The project "Confirming Snow Leopard Presence in Hovsgol Aimag, Mongolia" sought to gain photo documentation of snow leopards in the Sayan Range in the Darhad Valley of Hovsgol Aimag, Mongolia, following detection of a track in 2013. Although herders in the region have long insisted that snow leopards are present in these mountains, no robust scientific documentation has been recorded since the 1960s. The track detected in April 2013 was found in the snow at high elevation and was verified by a number of snow leopard experts, leading to an interest in capturing the cat on camera. Working in conjunction with the Ulaan Taiga Protected Areas administration, this project established camera stations across the north-eastern arc of mountains around the Darhad Valley, in the drainages adjacent to the track detection site, as well as other drainages nearby. Cameras were set up in early June and taken down in August. Rangers and staff from the protected area assisted with selecting camera locations, putting up cameras, and using GIS to map wildlife sign and images obtained from the field, representing capacity-building within the parks' administration. No snow leopards were detected on the cameras, but we did find one possible scrape and picked up several scat samples that are still out for genetic analysis. We also interviewed a ranger who found a track this spring in an adjacent drainage to that where the track was found in 2013, and talked to herders who claimed to have seen snow leopards over the past several years. The track detection report seems reliable, although the herder stories were more ambiguous. Numerous other valuable images of wildlife were captured on camera, including ibex, elk, sable, short-tailed weasels, golden eagles, and a number of bird and rodent species. We also collected brown bear scat while in the field, and turned it over to researchers building a database of Mongolian brown bear genetics – this sample represented one of only four from the region, so turned out to be valuable. Finally, we captured images of two poachers on one of the cameras, which contributed to enforcement activities for protecting wildlife in the protected areas.

The project also faced several challenges. Setting cameras in appropriate locations proved difficult due to heavy snows the winter before; some of our ideal sites were snowed in through July, while snowmelt created risky conditions at other sites. We had technical issues with three of the cameras, and user error with one additional camera. We were unable to run cameras for the entire time proposed (through October)

due to visa issues for the PI; however, we will re-establish camera sites in summer of 2015 and run cameras through the winter, since those visa issues have now been resolved. Although we did not capture a snow leopard image over the course of the work, we did document numerous other wildlife species, made a significant contribution to ongoing work on Gobi and other brown bear species in Mongolia, and spent eight weeks on intensive capacity-building with protected areas' staff and rangers. We enhanced valuable relationships in the region, successfully built the profile and knowledge of snow leopards among staff and rangers, and laid the foundation for ongoing monitoring of carnivores, including snow leopards, in conjunction with the protected areas administration in the future. We plan to continue to try to document snow leopards in this ecosystem in the coming years, and extend sincere thanks to the Snow Leopard Conservation Grants program for giving us the opportunity to lay the groundwork for these activities.

2. Objectives: *What was the purpose of the project? How was it expected to contribute to the knowledge or conservation of snow leopards, their prey, or habitat?*

The objective of this project was straightforward: we wanted to document presence in the Mongolian Sayan Range in northern Hovsgol Aimag, Mongolia, a region where snow leopards have not been scientifically confirmed since the 1960s.

Currently the status of snow leopards in this range, in both Mongolia and Russia, is suspected but not confirmed. Confirmation would lead to a new phase of research and conservation planning in the region. The Ulaan Taiga protected areas' administration, which is responsible for managing the three vast protected areas that encompass the Sayan Range around the Darhad Valley of Mongolia, is highly motivated and enthusiastic about researching and protecting wildlife, making them the ideal lead partner on work to monitor and conserve the species in the Darhad region. An iconic species like the snow leopard would provide added focus for overall work on ecosystem conservation, the development of wildlife tourism, and possible economic development projects like the Snow Leopard Trust's marketing of herder products elsewhere in snow leopard range. Demographics and ecosystem use would probably also be somewhat different from the rest of Mongolia, given the differences in the landscape and habitat in the Darhad region, so would provide additional knowledge of snow leopards' adaptive capacity.

This is also a transboundary region, since the Sayan Range extends north into Siberia. Since Mongolia and Russia are enjoying a renewed period of cooperation, it could be an opportunity to develop a transboundary snow leopard project (although Americans would probably have to take a back seat/behind-the-scenes role in this process, given current geopolitical tensions.)

3. Methods: *Describe the methods you used in detail, so that someone else could repeat the work, or, avoid the problems that you encountered.*

Approximate area of survey in northern Mongolia (Darhad Valley, Hovsgol Aimag). The white line represents the border with Russia. Some areas where we had hoped to survey, to the east and the west of the demarcated area, were off-limits due to border patrol concerns.

Panthera loaned twelve of their specially-designed cameras for our use, and in addition the PI had eight Reconyx cameras of her own. In conjunction with the Ulaan Taiga Protected Areas' administration, we selected camera sites based on proximity to two snow leopard track detections (one in April of 2013 by a team of American biologists, another in spring of 2014 by a park ranger, in adjacent drainages), proximity to areas with a natural prey base (as determined by c. 15 years of ungulate surveys, and local knowledge of ibex habitat), and suitable habitat (generally high elevation, ridgeline areas with minimal human activity.) At the microsite level, we selected passes, saddles, or ridgelines that the partner ranger - a former hunter – identified as wildlife travel routes. On the advice of individuals experienced with Panthera cameras, we established two cameras at each site, for a total of six sites that straddled ten drainages.

We set up camera sites beginning on June 10th, and removed them from August 20th. We had hoped for a longer season on both ends, but abnormally heavy snowpack kept the higher peaks inaccessible from the

PI's arrival in country in May, until June, and on the other end the PI was unable to obtain a visa to remain in country longer than the allotted visa-free three months for Americans. Because the cameras were on loan and couldn't be left in country for indeterminate amounts of time, we removed them rather than leaving them with the protected area. We also elected to set up cameras in a smaller area than we had originally hoped due to time limitations and a desire to leave the cameras out for at least eight weeks (with ten days travel on each end to set up and retrieve the cameras, additional field time at more widespread locations would have been difficult for the schedule if we wanted to leave the cameras up for significant amounts of time.) Finally, we faced some restrictions at the insistence of the border patrol office, which has to approve all travel into the region closest to Russian border, and which did not want us setting up cameras in certain locations.

Expeditions into the backcountry were conducted on horseback. We reached a region at the head of a drainage, established a base camp, and scaled ridges or peaks to site individual locations on foot. Much of the high terrain was still snow-bound in June when the camera sites were established, and we witnessed multiple rockslides in which whole sides of mountains fell away as the snow melted out on sunny afternoons. Many of these peaks consist mostly or entirely of precariously-balanced talus which was challenging to scale and potentially unsafe. Flash floods and heavy snowmelt made river crossings on horseback precarious. Storms rolled in quickly, and once we were hit by ground-lightening when we got stranded on a bare ridge in a thunder storm. The rangers were nervous about climbing in this terrain and we all spent a lot of time making peace with our mortality. For future reference, working in these mountains is rigorous.

At high elevation, the country is barren enough that we had to be creative in our use of materials as we set up the cameras. We took wooden stakes with us from lower elevations, but these proved difficult to haul up the mountains, were impossible to drive into the ground on the ridges since it was all rock, and were also very visible and out-of-place at some locations, leading to concerns about wildlife noticing and avoiding them. Five out of the six camera sites that we established used rocks; this worked surprisingly well as we were able to shift large pieces of talus to set the cameras at the right heights and establish "blinds." Nevertheless, it's evident from the photos that animals were very aware of the cameras, and curious about them; since the recorded wildlife was conscious of the cameras, one wonders whether other wildlife may have avoided them. At each site we established two cameras at roughly perpendicular angles to each other and to a "lure" rock, which we sprayed with Calvin Klein "Obsession" and catnip oil. Each round of setting up and taking down cameras took approximately ten days. We left the cameras up for about eight weeks, give or take a few days depending on the schedule for setting up and removing them.

In two cases, cameras were wet on retrieval, showing a progression from being fine when the cameras were set up, to completely fogged and distorted images at the end of the operation period. Seals were intact and desiccant had been refreshed for all cameras prior to deployment, so we are not sure why this happened. A third camera simply failed to work, for reasons that are still not clear. Since Panthera cameras do not have a viewing screen or a viewfinder, we inadvertently set up a fourth camera at an angle which captured too much of the sky, and within two days of deployment the camera card was full – entirely of pictures of clouds scudding along the horizon and grass waving in the wind. A fifth camera captured 2500 images of a golden eagle sitting directly in front of the lens for an hour and a half, feathers rustling in the wind, and that card too was quickly filled. Although we experimented with these cameras in the US prior to field deployment in Mongolia, they are finicky and require a great deal of exact knowledge to use effectively, including calibration of the sensitivity of the trigger settings, and what is being captured in the field of view. On the other hand, they take beautiful, vivid photographs – but you have to know what you are doing.

The late snowpack meant that several of the sites identified by our ranger as wildlife travel routes remained snow-bound through late June/early July. Whereas sites that were snowfree showed wildlife activity as predicted, the snowbound sites showed no wildlife, other than birds, until after the snow melted out. Another unanticipated limitation was a mid-July holiday that took approximately 600 local residents to a revered freshwater healing spring in the middle of the drainage where we originally detected tracks in 2013. The springs are located just below treeline but hikes up to waterfalls and the pass above the springs are

popular for the week that this retreat lasts. This is a yearly occurrence that could significantly disrupt wildlife movement patterns in the area where we had established our cameras. This is also where we photographed two men with guns, apparently unaware of the cameras or disinclined to disturb them, during the period of the festival. In short, this influx of people probably had a negative effect on detection probability.

In addition to setting up the camera traps, we surveyed for tracks and scat as we hiked and rode. We picked up eight scat samples across the study area, including three at the site where we detected tracks in April of 2013. One of these samples was clearly a bear scat, and we passed that on to the Gobi Bear Research Project for their genetics work. The others were sent out for DNA analysis, and we are awaiting the results. When we retrieved the cameras, we found what might have been a scrape close to one of the cameras.

While the camera stations were running, the PI remained in the town of Ulaan Uul working with the Ulaan Taiga Protected Areas administration's rangers and staff, conducting GIS and database management training, helping develop tourism materials, and giving the occasional English lesson to those staff responsible for working with tourists or foreign researchers. She also conducted field trainings in the use of GPS and data sheets, and spent time working on plant and bird inventories.

Finally, we also interviewed a ranger who had detected tracks in spring of 2014 in a drainage adjacent to the one where we detected tracks in spring of 2013, and herders who claimed to have seen either tracks or snow leopards over the past few years.

4. Results: *Please describe in detail the results of your project. Please illustrate clearly how your stated goals and objectives could be met. You may wish to include tables or graphs in this section if appropriate. This section will be very important to explain the value of these grants to funders of the Snow Leopard Conservation Grant Program. Please be clear, concise, and thorough.*

We did not detect snow leopards on camera during the study. We did find one possible scrape. Seven scat samples are currently out for genetic analysis; we do not have an estimated time for completion of this analysis, but will contact the Snow Leopard Network (and adjust this report) if snow leopard DNA is found.

A partial species list of other wildlife detected on camera includes:

Ibex (*Capra sibirica)*
Elk (*Cervus elephas*)
Sable (*Martes zibellina)*
Short-tailed weasel *(Mustela erminea*)
Golden eagle (*Aquila chrysaetos)*
Chough (*Pyrhhocorax pyrhhocorax)*
Redstart (*Phoenicurus phoenicurus)*
Raven (*Corvus corax*)
Himalayan accentor (*Prunella himalayana*)

Wolf, elk, brown bear, boar, and roe deer were also documented in multiple locations, either visually, through scat, or through tracks, over the course of the fieldwork, although none were detected on camera.

See attached photos for visuals.

All wildlife locations, photographically documented or sighted in the field, were recorded and entered into the Ulaan Taiga Protected Areas' administration's database and GIS map of wildlife detections.

Interestingly, the photos show little evidence of wildlife interest in the scent-lure that we used as an attractant. Whether this is due to precipitation washing it away (unlikely since we were able to smell it with our inadequate human noses even after eight weeks), or some other factor, we are not sure, but wildlife seemed disinclined to investigate.

In our interviews, the ranger said that he had followed the tracks detected in spring of 2014 to a roe deer carcass that the carnivore had been feeding on. The site was at a lower elevation, closer to the human-inhabited floor of the Darhad Valley, but the ranger was certain that these were not lynx or wolf tracks. Interviews with herders who claimed to have seen tracks or else large cats over the past several years were more ambiguous, with reports of "big, strange tracks" near herds of livestock, and/or of "dark animals" seen at a distance. One reliable individual, another ranger, stated that several years ago, a Tsaatan reindeer herder hunting up on the pass where we had seen the tracks in 2013 saw a snow leopard. He did not shoot it because it was an unfamiliar animal and he was unsure of how it would behave, or react to being shot, or how to kill it most efficiently. He said it ran off up the side of the slope in one of the feeder drainages along the pass. Without speaking directly to the hunter, it's difficult to evaluate this story, but it's one of many, collected over the past five years, that highlight local encounters with snow leopards by people (mostly hunters) who tend to know wildlife pretty well. In the past we have also shown people a series of cards with wildlife photographs on them, but without names of any kind, and asked them to sort the cards into piles of animals that they've seen, and animals that they haven't. Significant numbers of people identify snow leopards visually and put them in the "animals seen" pile. So despite the failure to detect snow leopards with this camera project, we still believe that they are at least occasionally present in this ecosystem.

Although we failed to detect snow leopards, we want to emphasize that resources for any type of systematic wildlife survey for anything other than a few priority species (ibex and argali) are slim, and very few non-invasive technological methods (cameras, genetic analysis) have ever been deployed in this region. So detections and collection of genetic samples from species such as brown bear and whatever comes out of the additional scats are valuable. The brown bear scat was of particular use to the Gobi Bear research project, which is trying to build a database of genetics for all of Mongolia's bears, in hopes of better understanding and conserving the species. Ongoing work on wolverines in the Darhad could also benefit from genetic samples collected on this expedition, and DNA from lynx and/or wolves is of interest to the protected areas and also the Mongolian National Academy. Detections of species like elk and ibex add data points to ongoing ungulate work in the protected area. The project provided an important chance to train rangers in the field and staff in the office. So even undetected, snow leopards have served as an important umbrella species in learning more about wildlife populations in this region, and moving conservation forward.

5. Discussion: *Please evaluate your own work. What did you learn that could help others wishing to do similar projects? How do you see the results being applied to conservation? What additional work is now needed based on your findings?*

This was an excellent experience in organizing a research project that balanced rigorous fieldwork, capacity-building, and particular scientific objectives. We faced some logistical problems due to circumstances largely beyond our control (snowy winter, inaccessibility of the study site for longer than anticipated, technical challenges with the cameras, and the PI's host institution not signing a Memorandum of Understanding quickly enough to get a visa) but the overall experience of working with the protected areas administration was positive and provides a basis for continuing work to detect snow leopards and monitor wildlife in this ecosystem. With rangers and staff participating in planning and execution of the work, we also feel that this kind of camera study, with another year of training, could be replicated by the protected areas administration in different parts of the park, and to meet various research objectives. Staff require additional training on use of GIS and databases, but we will continue to work on these in coming years.

The project could have benefited from a longer field season, both in terms of the time that cameras were left out, and the extent of habitat that we could have covered if we had time for additional 10-day expeditions to set up and take down cameras. This would have raised the possibility of detection significantly and also boosted our understanding of other wildlife in the system. The serious limitations of working in this remote and rugged terrain should not be underestimated, but the experience of being in those mountains on wildlife research is unparalleled. I also cannot speak highly enough of the director, staff, and rangers of the Ulaan Taiga Protected Areas – they are dedicated, intelligent, enthusiastic colleagues who will apply what they've learned about camera work, study design, GIS, and field expeditions to future work to conserve the ecosystem and wildlife. This re-emphasizes to our team that close working relationships with local institutions are key.

Since this field season was somewhat curtailed, I will continue to keep the Snow Leopard Network apprised of results, if and when we do get a snow leopard on camera in the course of our ongoing work, and/or when we obtain snow leopard DNA from scats or hair snares.

6. Photographs: *If you have good photographic (preferably digital) images of your project that we could use to advertise the Grants Program, please submit them at this time. Please be sure to include a brief description of the photo and provide the credits for the photographer.*

If you have any questions on the format or other aspects of your final report, please contact us at grants@snowleopardnetwork.org.

Final reports and digital images should be emailed to grants@snowleopardnetwork.org.

Possible scrape found near one of the camera sets. Hand is seven inches long from wrist to tip of middle finger. Droppings are ptarmigan, so depression could also have been made by a bird, though the site was very exposed for a nest site. Photo credit Rebecca Watters

Pack horse on pass, nearby the place where the scrape was found.

View from first base camp of peaks and passes where camera stations were set.

Field assistant Tsend Nyamin next to a mineral lick where ungulates dig out a soft stone to eat.

Ranger Ulzii spraying ‘Obsession’ onto a rock as a lure. Background shows snow depth, which was fairly consistent across the ridge. This site collected very few photos other than birds, as the snow remained until late July, presumably making travel difficult for anything larger.

Select photos from camera traps. All should be credited Rebecca Watters/Panthera/Ulaan Taiga Protected Areas.

Short-tailed weasel.

Ibex fleeing.

Ibex investigating second camera at a site. At this particular site, the cameras were set so that this camera captured the second camera. The ibex were very aware of the second camera and based on the time-stamps, this male spent about 45 minutes staring at it.

Sable.

Golden eagle. Camera trigger sensitivity was set so that we obtained 2500 images of this bird over the course of two hours as its feathers rustled in the wind.

Ibex on one of the three cameras that malfunctioned. This image is more or less legible (it would be nice to be able to tell what that second animal in the background is – probably another ibex, but hard to be sure) but images taken a week later were completely blurred out.

Two cow elk.