

The Telegraph

The snow leopard: ghost of the mountains

Snow leopards face the threats of poaching, habitat loss and diminishing prey. In remotest Mongolia, a research team is keeping tabs on this iconic and elusive species



One of the research team's hidden infra-red cameras captures a pair of snow leopards in Mongolia's South Gobi province Photo: Courtesy of SLT/PF

By [Nigel Richardson \(http://www.telegraph.co.uk/journalists/nigel-richardson/\)](http://www.telegraph.co.uk/journalists/nigel-richardson/)



7:00AM GMT 16 Dec 2010

The trail bike kicked up a plume of dust as it approached across the high desert steppe of south-west Mongolia. Orjan Johansson dismounted, unclipping the body protectors that made him look like the action hero of a computer game. 'There was a leopard in the valley last night,' he said. 'I put my finger in the pee this morning and it was wet.'

Nobody said anything, we just thought it: if the traps had been built yesterday, we might have got one. We might have joined the tiny number of people alive on this planet who have seen a snow leopard in the wild. This most elusive and mysterious of big cats comes along only slightly more often than a unicorn, and if you are not prepared you can regret it for the rest of your life.

The one person not troubled by regret was Johansson himself, for in the history of biological research into *Panthera uncia* no one has had more physical contact with wild snow leopards than this 33-year-old PhD student from Sweden. From 1982 to 2008 biologists succeeded in capturing only 15 snow leopards (for the purpose of attaching radio or GPS collars) in their natural habitat. In the past two years a further 12 have been caught by one man, Johansson, a research associate at the Grimso Wildlife Research Station, which is affiliated to the Swedish University of Agricultural Sciences in Uppsala. He is, in the words of Dr Koustubh Sharma, the conservation biologist supervising the Swede's groundbreaking work in Mongolia, a 'snow leopard catching machine'.

Johansson represents the sharp end of the world's first long-term ecological study into the charismatic leopard, about which far less is known than any other of the big cats. Co-sponsored by two US-based non-profit organisations, the Snow Leopard Trust and Panthera, the programme is now in its third year and scheduled to run for at least 15 years. In late August of this year – as summer in the high desert shaded into chilly nights and misty dawns – I joined Johansson and his backup team in their remote mountain camp.

The J Tserendeleg Snow Leopard Research Centre is located in a mountain range in Mongolia's South Gobi province. In the far south-west of the province the Gobi Desert rises and crumples into a series of east-west ridges and valleys known as the Tost Mountains. This area, 75 miles long and 10 to 20 miles wide, is hardly classic snow leopard country, being neither particularly high – about 7,000ft – nor heavily snowbound in winter. But, for reasons that are not entirely understood, it sustains a high density of snow leopards. Based on his work of the past two years, Johansson puts the figure at more than 20.

[Snow leopard born at Indian zoo \(http://www.telegraph.co.uk/earth/earthvideo/7678751/Snow-leopard-born-at-Indian-zoo.html\)](http://www.telegraph.co.uk/earth/earthvideo/7678751/Snow-leopard-born-at-Indian-zoo.html)

[Chasing the snow leopard \(http://www.telegraph.co.uk/travel/safariandwildlife/holidays/7164452/Ladakh-Chasing-the-snow-leopard.html\)](http://www.telegraph.co.uk/travel/safariandwildlife/holidays/7164452/Ladakh-Chasing-the-snow-leopard.html)

The research centre comprises a base camp, where the ancillary team of biologists, researchers and volunteers stay a few days at a time and where I made my home for a week, and Johansson's camp, which moves around depending on where he is working. At the end of August his camp was located nine miles from base camp (hence the trail bike) among a complex of flat, narrow valleys and jagged ranges of rock.

Here golden eagles and lammergeyer vultures soar above the ridge lines, and snow leopards descend from those ridges under the cloak of night to cross from one range to another. 'There's a lot of sign here,' Johansson said, meaning the various indicators that betray their presence – not only urine, as he had seen that morning, but also images caught on automatic cameras, scrapes (in the ground, created when they kick their back legs), pug marks (paw prints), and scat (faeces).

Today was the start of a new collaring season for Johansson. The collars, equipped with GPS and costing more than £2,500 each, are highly sophisticated but they are programmed to drop off the animal when the batteries die after about one year. Only three of the collars he had previously attached were transmitting properly so it was time to capture and collar more cats. By mid-December he hoped to have 10 fully functioning collars beaming back the location and movement of snow leopards for many miles around.

This ongoing programme, the first of its kind, is yielding invaluable data on snow leopards' home ranges (now known to be hundreds of square miles), kinship, genetic diversity and seasonal movements, and represents some of the most important and dramatic animal conservation work being undertaken anywhere on the planet in the early 21st century. The irony is that, bar Johansson himself, few of the biologists and researchers involved in it had even caught a glimpse of a snow leopard (and neither, of course, had I).

These snow leopard virgins included Koustubh Sharma, who has worked with tigers in India and completed his PhD on the rare four-horned antelope, the SLT's conservation programmes director Jennifer Snell Rullman, and Bayarjargal Agvaantseren, who for the past 11 years has been at the forefront of community-based efforts to save the snow leopard and whose name in Mongolia is practically synonymous with the big cats. This omission may strike you as analogous to the Barcelona fan who has never set foot in the Camp Nou stadium, but the difference is that you can't

just buy a ticket. You have to get seriously lucky. And on the morning that Johansson rode up to tell us of the snow leopard presence the night before, even hardbitten scientists felt their luck had just tiptoed past them in the dark wearing a grin as wide as the Cheshire Cat's.

There are compelling reasons why the snow leopard is seldom seen. For a start there are not many of them left. In the past half-century their numbers have steadily diminished because of erosion of habitat and depletion of prey. During last winter, the worst in Mongolia for decades, some 10 million head of livestock died, and the effect on the snow leopards' prey base (chiefly a wild goat called ibex, and argali sheep) is not yet known.

But by far their biggest problem is depredation by man, despite their being an officially protected species. Poachers hunt them for their skins and for various body parts that are used in traditional Chinese medicine, while herders kill them in retaliation for the killing of their livestock. And in Mongolia a new threat looms. The government has granted a tranche of licences to foreign mining companies to look for coal in the district that includes the Tost Mountains. Should coal mining proceed there – as it already has on the plain nearby – the effect on the local snow leopard population will be catastrophic.

Estimates put the number currently living wild in the world at between 3,500 and 7,000 – far fewer, for example, than the population of domestic cats in a medium-size British town. Snow leopards are included in the Convention on International Trade in Endangered Species Appendix I, which is the critical list of 800 species threatened with extinction, and classified as 'Endangered' on the International Union for Conservation of Nature Red List of Threatened Species.

Their inaccessible and inhospitable habitat casts them further into the shadows and margins. The snow leopard, which weighs between 55 and 100lb, generally lives at altitude along the horseshoe of high peaks that encircle central Asia, from the Altai Mountains in the north to the Himalayas in the south. Nominally belonging to a dozen countries, including Pakistan, India, Nepal and China as well as Mongolia, this is a realm that has more affinity with clouds than with nation states. Not only is its natural habitat remote but the snow leopard is also nocturnal and crepuscular and its camouflaged fur is highly effective – they are next to invisible to the human eye from any kind of distance.

The snow leopard's coat – shading from smoky yellow to silver-white and overlaid with grey-black markings – seems to have a certain shape-shifting quality. 'When I've worked with them close-to, they're white, but from a distance they blend in with the rock,' Johansson told me with a shrug. 'I don't know how it works.' To enable them to cope with the altitude and mountainous terrain, nature has bestowed upon snow leopards deep chests that house powerful lungs, large nasal cavities, short, strong forelegs, long hind legs and the longest tail, in relation to its body, of any cat.

The tail – 35-40in long, as soft as pashmina and as heavy as rope on a galleon – is a wondrous appendage, used as both scarf and counterweight. Courtesy of this tail the snow leopard in motion is as finely balanced as a gyroscope, and as stealthy as mist. Dr Sharma showed me footage of one walking. Inadvertently it sets a stone rolling with one paw, and in the same movement bats the stone to a standstill so as not to make the slightest noise.

This combination of extreme rarity, striking physique and ghostlike grace gives the snow leopard unique cachet with humans. Western conservationists rally to its power as a 'flagship species', a charismatic presence around which awareness of wildlife issues can be raised, and the computer giant Apple even considered it sufficiently hip for 'the world's most advanced operating system' to be named in its honour.

It has also given its name to one of the great English-language travel books of the past 30 years, Peter Matthiessen's *The Snow Leopard*, in which his quest to see one in the mountains of Nepal becomes a metaphor for an inner,

Buddhism-inspired journey of the soul. It is often forgotten, in the clouds of acclaim that have swirled around the book, that Matthiessen failed in his quest. He did not see a snow leopard. His rationale for this failure was something I had been trying to take on board while in Mongolia, in anticipation of my own failure: 'If the snow leopard should manifest itself, then I am ready to see the snow leopard,' he wrote. 'If not, then somehow (and I don't understand this instinct, even now) I am not ready to perceive it... and in the not-seeing, I am content.'

Orjan Johansson was aware of the semi-mystical aura surrounding the snow leopard, and the irony was not lost on him that a by-product of this long-term research project will be a certain demystifying of the ghost of the mountains. 'We don't know anything about them,' he exclaimed. 'How many cubs they have. How long they stay with their mothers. What they eat, even. We need this basic ecological knowledge as a base for good conservation practices. In a way we're taking away the romantic picture, the mystique, which is sad, of course. But we can't have them be like the unicorn, that nobody ever sees.'

Johansson was talking in his camp, where I was helping him build his snares. His camp was a ger – a traditional Mongolian nomad's yurt, circular and made of felt. They can be surprisingly luxurious inside, with carpets, televisions and stoves. Johansson's was a utilitarian space. Stacked in boxes were the tools of his trade: camera traps (triggered, like burglar alarm sensors, by heat and movement), GPS collars and the ironmongery needed to make snares.

A calendar featuring portraits of the Swedish royal family hung from a wall (August was Queen Silvia, but it wasn't a decorative choice, he said, just the only calendar he could find in Sweden at short notice). A bowl of pet food betrayed the presence of *Felis catus* (a domestic cat), though she was currently out hunting in the mountains. 'The cat's called Friday,' Johansson said, 'because I feel like Robinson Crusoe out here.'

From the moment he builds the first trap of a new collaring season his life becomes by necessity ascetic and exhausting. Each trap is connected to a transmitter tuned to its own VHF frequency. When a trap is sprung it sounds an alarm in Johansson's ger – always at night, for the wild creatures of the mountains are nocturnal. There are plenty of false alarms – a fox or goat – but in any case he must get to the trap site without delay in order to minimise the time the animal spends in the snare. As autumn turns to winter, and temperatures nosedive to -25C, the routine leaves him increasingly lonely, cold and sleep-deprived. 'I've done 31 days with no one around, and that sucks,' he told me. 'Your face muscles don't work properly because you haven't been speaking. I have conversations with myself: Shall I have spaghetti today? Yeah, that'd be good.'

He usually has some contact with base camp, though the biologists and researchers there tend to come and go, and he does have neighbours. Lower down the valley, and in adjacent valleys, live a scattering of herder families in gers who graze small flocks of goats and sheep on gruel-thin pastureland. Every herder I spoke to had lost goats and sheep to snow leopards. 'At least four or five a year,' one of Johansson's neighbours, 35-year-old Battur, reckoned. 'But since the Snow Leopard Trust came we do not trap [and kill] them any more.'

The SLT has been doing sterling work in creating disincentives for the killing of snow leopards. Last year it inaugurated a livestock insurance scheme, and since 1999 Bayarjargal Agvaantseren has been coordinating an initiative called Snow Leopard Enterprises. Women from about 400 households are now involved across Mongolia, producing handicrafts that are sold at zoos and conferences in the US and in Europe. Last year sales exceeded £80,000, and all funds flow back to the herders. A condition of payment is that if a snow leopard is trapped and killed, the women living in the administrative area where it happened will forfeit a bonus. The scheme has already proved itself: last year a herder who killed a snow leopard was pressurised by the local community into compensating local women for the loss of that year's windfall. He also faces a life-destroying fine of thousands of pounds.

As a result of such initiatives herders are getting the conservation message. Down the valley, Johansson negotiated with another neighbour, Garaa, over the proposed location of his new snares. 'If it's no trouble I will stay and build the traps here,' the Swede told his neighbour. 'Otherwise I will return in October when you have moved down the valley to your winter pasture.' But the herder said it was no trouble. He promised he would keep his goats away from the snares – and would it be possible, he asked shyly, to come and have a look if a snow leopard was captured?

Trap building is an art and a science. First of all you have to find evidence of traffic, in particular the urine sprays that snow leopards leave for others to pick up. If you were facetious you might refer to these sprays as wee-mails and this is precisely the analogy chosen by Dr Sharma to describe the valley where Johansson had decided to build his traps. 'It is like a very active Facebook page right now,' he said.

Stalking along a wall of rock on one side of the valley, Johansson said, 'All cats like following walls – think of your cat at home. It's a good place to scout the valley from. So let's follow this wall.' He stopped where the rock wall turned sharply inwards. On the corner was an overhang. On the underside of the rock he indicated the dark urine stain and dropped down on all fours, turning himself into a snow leopard. 'They will sniff this and rub their face in it.' He pointed out the faint prickle of white hairs clinging to the rock. 'And then they turn round and pee.' He reversed up to the rock and raised his backside to demonstrate. 'So this is a good place for a trap.'

He remained within the psyche of the snow leopard for several minutes while deliberating on the precise spot to site the trap, then worked with delicacy and method, like a bomb disposal expert in reverse, to build it. When the leopard steps on the trigger it throws up a snare that tightens in a noose around its leg. Made of semi-rigid steel aircraft cable, the snare cannot tighten beyond a certain point and will not cut into the leg. It is in turn attached to a steel spring that is firmly anchored in the ground, and to the transmitter that sends out the alarm signal.

The welfare of the animal is Johansson's absolute priority. The throwing arm of the trigger is positioned so it cannot fly up and hit the leopard. There are swivels and a limiter on the spring so it cannot entangle the leopard nor spring back in a whiplash effect. And he takes a hammer to any sharp rock edges that the leopard might cut itself on as it twists and turns in its efforts to escape.

When he had completed our first trap he stood back, narrowed his eyes and stared at the snare site. All I could see was a faint, craterlike outline in the dirt. 'What do you think?' he said. 'Shall I move that rock?' Without waiting for a reply he bent and moved it – half an inch – like a painter squinting at a canvas and making minute brushstrokes of adjustment. By 7pm the sun had gone from the valley, the wind had got up and we had built four traps.

Johansson ate at base camp that evening. He had not seen Cat Friday for two days, and feared she had been killed. He did not appreciate the fearful symmetry inherent in the idea of the little cat being taken by the big. 'I liked Friday. I had her for two years. It kind of sucks,' he said gloomily, contemplating a lonely autumn.

After supper he clipped the body protectors back on and rode back to his ger. The arrangement was that if a trap was sprung in the night he would call base camp on his satellite phone and we would drive over to the valley in the camp vehicle. I went to sleep with my socks on. At midnight the satellite phone sounded deafeningly in our ger. My legs were out of the sleeping bag and into my trousers before Dr Sharma answered it. Sharma listened and then said, with admirable calmness in the circumstances, 'We've got a snow leopard.'

It was a female and she had been caught in the first trap we had built. Johansson had darted her by the time we got there. She lay unconscious and blindfolded on a camouflaged survival blanket beneath a perfect half-moon and nine

bobbing head-torches. I saw what Johansson meant about the coat. It glowed white, seeming to return with interest the light that beamed down on her.

For seven of the nine of us present it was our first wild snow leopard. We hovered in awe, taking photographs and not believing our luck. I stroked the tail and scooped a hand under it to feel the heft. In the chiaroscuro effect of the light from our headlamps and the looks of rapt attention on our faces, the scene resembled Rembrandt's painting *The Anatomy Lesson of Dr Nicolaes Tulp*.

Meanwhile, Johansson and Sharma worked deftly and quietly on the body on the blanket, measuring and weighing her, taking blood and hair samples, cleaning up minor wounds and fitting the GPS collar, while keeping her eyes moistened and checking her vital signs every 10 minutes. Johansson, who was in his element, said at one point, 'This is like a family reunion.'

Two hours after being detained in our world the snow leopard melted back to her own, having received the antidote to the knockout dart. For the record, she weighed 79lb, her body was 45in long and her tail 38½in. Her age was put at between four and six, she had suckled, though not recently, and the data now being sent back by her collar will be of untold benefit to the long-term conservation of this beleaguered species. But she kept some secrets to herself. You can't hang beauty on a weighing scale, nor hold up a tape measure to grace.

Postscript Johansson's cat, Friday, was alive after all. He found her living with a herder family in the next valley and claimed her back. The collared snow leopard was named Khashaa. You can follow her progress at snowleopard.org (see under Blog) where you can find out more about the Snow Leopard Trust and make donations. See also panthera.org.

Nigel Richardson flew to Mongolia on Korean Air ([koreanair.com \(http://www.koreanair.com/\)](http://www.koreanair.com/)), via Seoul, and is indebted to Panoramic Journeys (01608-811183; [panoramicjourneys.com \(http://www.panoramicjourneys.com/\)](http://www.panoramicjourneys.com/)) for arranging his travel within Mongolia. Additional reporting by S Bolortuya

© Copyright of Telegraph Media Group Limited 2011