

# MEET RUSSIA'S COOLEST CAT

The world's rarest big cat haunts the frozen forests of the Russian Far East, but few people have ever seen it. **JOHN GOODRICH** tracked down the Amur leopard to build a picture of its life and help save it from extinction.

## THE EXPERT

JOHN GOODRICH is a conservation biologist for the Wildlife Conservation Society. He has lived in Russia since 1995, where he conducts research and conservation projects on tigers, leopards, bears and lynx.



## THE LOCATION

Amur leopards are found in the Russian Far East. The area is blanketed in temperate deciduous forest similar to that found in the north-eastern US, and is just an hour's drive north of Vladivostok.



Padding through the deep snow, an Amur leopard looks for signs of prey – deer or wild boar. Note the thick, shaggy coat, which provides essential warmth in this icy part of the world.



# HOW TO STUDY AMUR LEOPARDS

Scientists employ a variety of methods to study this rare and elusive animal.

**I WAS SUDDENLY** wide awake, my senses tingling. Had I heard something? The faint glow of pre-dawn light filled my tent, softened by the layer of frost that had formed along its sides. The forest was silent, as if listening as intently as me. A Ural owl hooted in the distance, but the bird is common here and wouldn't have awakened me. No – it was something else, something that made the hairs on the back of my neck prickle.

As I drifted back to sleep, a deep, guttural sound with a cadence like mythical lumberjack Paul Bunyan's saw shattered the silence. 'Whaa-haa! whaa-haa! whaa-haa!' I snapped back awake as a shiver ran down my spine and a smile spread across my face. I'd never heard the noise before, but I recognised it instantly and felt, in that moment, like the luckiest guy alive. I was listening to the rarest cat in the world – an Amur leopard – calling from a ridgetop not 500m away. Ten minutes later, he called again, closer and louder now. I lay in my tent listening to him for nearly an hour, until his calls faded as he moved off along the ridge to the north-west.

## PHANTOM CAT

Very little is known about this secretive leopard. It moves through this dense forest in Russia's Far East like a ghost, almost invisible, making it one of the most difficult animals to study. By following tracks in the snow and examining prey remains, local scientists have managed to piece together some information about its movements and dietary habits, but only during the winter. What the species does for the rest of the year remains a mystery.

I slid out of my sleeping bag, wincing as I pulled on stiff, frozen boots, and went to the cook tent, where my fellow crew members were chatting excitedly about the morning's serenade. For us, the event was of particular significance: we were here to capture these animals, tattoo them discreetly with an identification number and give them a complete health examination before releasing them back into the wild. Our aim was to study their ecology in an attempt to understand what we could do to protect these magnificent cats.

The field work, which had begun a few days earlier, is part of a project involving the Wildlife Conservation Society and the Russian Academy of Sciences Institute of Biology and Soils, with assistance from the US Laboratory for Genomic Diversity and the Zoological Society of London. We had already been studying Amur leopards for four years by means of camera-trapping, which allowed us to estimate numbers and collect crude data on their movements. But this was not enough. We needed to carry out an intensive study, and after years of hard work



**TRAP AND DART** Leopards are captured in harmless foot snares, which are placed on trails they frequent or near trees they mark. The animal is then shot with a dart containing an anaesthetic. It soon falls asleep and can be examined (see far right) or tagged.



**CAMERA-TRAP** As a leopard can be identified by its unique coat pattern, photos help scientists to count and assess the wild population. Cameras placed at key points in the cats' territory take photos whenever an animal wanders near and breaks an infra-red beam.



**RADIO-COLLAR** So far, this technique has only been used on the region's tigers. A radio-collar is fitted to an anaesthetised animal so it can be tracked by scientists using radio-receivers. Researchers hope to fit collars on leopards eventually.



**PREY EXAMINATION** Leopard and tiger kills, such as this sika deer, enable scientists to plot the cats' movements. They also help them to judge overall numbers of predators in the region and possibly their size and age.



Once a leopard is under sedation, the scientists collect a variety of information, including blood for genetic and disease analyses, weight, body measurements and age, and each animal receives a full medical examination. The animals are then released unharmed back into the wild.

to obtain funding and research permits, we were finally making a start.

The leopard *Panthera pardus* is the most widely distributed cat in the world, but the Amur subspecies *P p orientalis* is the northernmost and, with only about 30 individuals left in the wild, the most endangered. The majority of these roam the temperate deciduous forests that cover the far south-eastern corner of Russia.

Like their southern relatives, Amur leopards

are threatened by poaching, habitat loss and prey depletion. But here in the frozen north, they must face the additional burden of long, harsh winters with waist-deep snow and temperatures that plummet to -30°C.

As if that wasn't enough, the leopard has one more obstacle to overcome – it shares its forest home with the world's largest cat, the Amur (Siberian) tiger, an intolerant

neighbour with whom it must compete for food. Knowing that two of the world's most endangered cats depend on the same forest for survival presents us with a significant conservation challenge: do tigers have a negative impact on leopard populations? If so, how can we protect both species, side by side in the same ecosystem? We hope that our research, which includes the tigers, will provide a solution.

## THE HUNT FOR THE LEOPARD

After breakfast, we set out to search the ridgetop for traces of the leopard we had heard that morning. On the game trail along the edge of the ridge, we found fresh scrapes – marks made by an individual deliberately scratching the ground with his claws to leave visual and scent marks for other leopards that may pass by later. The fact that he was calling and marking so much suggested he was excited about something. Perhaps he was hot on the

trail of a female in oestrus or an intruding male, but because many of his scrapes were located on points with a good view of our camp, I wondered if he was protesting about our incursion into his domain. In any event, this was an ideal place to capture a leopard, so we spent the next two days preparing traps.

## MEMORABLE MEETING

Our leopard returned 10 days later. As I approached one of the traps that morning, something was amiss. I could see the cable where it was attached to the tree. Hadn't it been disguised with bits of moss? Then something flashed across the trail in front of me, so fast I thought I might have imagined it. But an image of spotted yellow fur burned in my mind. Heart pounding, I took a few steps forward and cautiously peered over the edge of the embankment – a pair of fierce yellow eyes glared back. I was amazed at how calm he was, despite being caught in our snare, and

how beautiful. With his thick, almost buff-coloured fur and long tail, he reminded me of a snow leopard.

He gave a low growl. I backed away to gather my colleagues and prepare for the capture. A short time later I fired a tranquiliser dart,

**Something flashed across the trail in front of me. An image of spotted yellow fur burned in my mind.**

hitting him with a soft pop, and 10 minutes later he was sound asleep. We quickly went about our business. We collected blood and sperm, and conducted a thorough physical examination to look for signs of disease and harmful levels of inbreeding, both of which are common threats to populations as small as the

Amur leopard's. We weighed and measured him – 45kg and 212cm from tip of nose to tip of tail. He was small, but his worn, stained teeth and high degree of gum recession suggested he was 10-12 years old – a mature adult. He was very likely the same animal that had awoken us several days earlier.

Our procedures took nearly an hour, and the leopard began to stir just as we were finishing. I took a final moment to admire him. His coat was slightly stiff, suggesting he was not 100 per cent fit, but there was no cause for alarm – he was quite fat and clearly in good health.

We slipped away to let him wake up in peace, and he was soon up and moving. Back at camp, the centrifuge (a device that separates cells using centrifugal force) whirred late into the night as we analysed his blood and sperm samples, and prepared them for storage in liquid nitrogen. We compared our new photos of him with those previously taken by camera-traps (individuals are easy to identify ►

## DID YOU KNOW?

The Amur leopard can perform prodigious jumps, leaping 3m vertically and up to 6m horizontally. This is a huge asset when ambushing scarce prey in the Russian wilderness.



A wild Amur leopard deftly crossing a river in early autumn.

FACTSHEET

# AMUR LEOPARDS

*Panthera pardus orientalis*



THE BASICS

- » **LENGTH** Males 2.2m; females 2m.
- » **WEIGHT** Males 50-60kg; females 30-35kg.
- » **DIET** Sika and roe deer, wild boar and small mammals, from weasels to badgers and even leopard cats.
- » **BREEDING** All year round, but the degree of seasonality is unknown. Six cubs possible, but it's thought two or three is most common.
- » **HABITAT** Mountain forests with deep snow for much of the year.
- » **DISTRIBUTION** Far south-east of Russia. A few animals stray across the border into China and perhaps North Korea.
- » **STATUS** Critically endangered.

WHAT MAKES AN AMUR LEOPARD DIFFERENT?

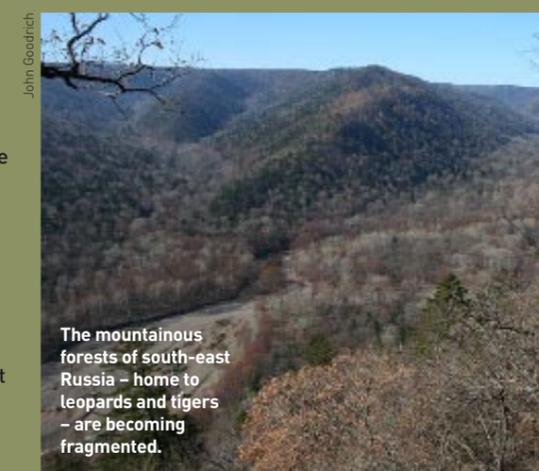
Though similar in stature and strength to other leopards, the Amur subspecies is subtly different from its southern Asian and African cousins:

- » The rosettes (spots) on an Amur leopard's coat have much thicker black borders and are more widely spaced than those of other leopards.
- » The colour of their fur alternates seasonally, appearing lighter in the winter and changing to a more reddish-yellow in the warmer months.
- » Fur length also changes to suit the temperature. It can measure 2.5cm in the summer, but can grow as long as 7cm in winter to provide extra warmth.
- » Extra long limbs allow the animal to walk through the region's deep snow with greater ease.

THREATS TO THE SPECIES

Amur leopards are under pressure on several different fronts:

- » **DIRECT POACHING** by hunters who sell the leopards' skins to wealthy Russian and Asian businessmen. The leopards are also killed because they are perceived as competing for targeted animals such as deer and boar. Many are shot in retaliation for preying on domestic animals.
- » **POACHING/OVERHUNTING** of their prey. This is at least as important as the poaching of the leopards themselves. Legal hunting of deer and boar is probably sustainable, but quotas are far exceeded by poachers who sell the meat on local black markets.
- » **HABITAT LOSS** and fragmentation through logging, deliberately-started fires (used to convert forest into grassland) and urban and agricultural development. These activities have reduced suitable habitat for the leopard and isolated the remaining population from the large tracts of potential habitat in the north.



The mountainous forests of south-east Russia – home to leopards and tigers – are becoming fragmented.

- » **TINY POPULATION** Because there are so few leopards remaining (as few as 30) factors including inbreeding depression and natural problems such as disease or even a very bad winter may have devastating impacts on the population.

Yuri Shibnev/ZSL/WCS

by their spot patterns, which are as unique as a human fingerprint) and learned that, ironically, he was the first Amur leopard we had ever photographed, four years earlier. Looking at the photos we'd taken since then, we learned that he covered a territory of at least 85km<sup>2</sup> and had been caught on camera-traps 18km apart. This confirmed that he was the dominant male in the area.

He spent the next day holed up on a cliff a few kilometres from the capture site, then he moved on. A week later, he returned and spent a day and a night not far from our camp. Once he'd departed again, I went in search of his

tracks and other clues to his behaviour.

I followed his trail to the base of a low cliff, flushing a flock of crows from the ground. Their presence was a sure sign of a kill. I moved in slowly but noisily to avoid surprising and provoking an aggressive response from a tiger, bear or other leopard that may have usurped the feast. I soon discovered a skull and a pile of fur – the only remains of a badger he had devoured during the night.

Like a detective at a murder scene, I scrutinised the area for evidence, analysing tracks, strands of hair, tooth marks and blood to piece together the sequence of events. A patch

of flattened leaves sprinkled with leopard hairs indicated the spot where he'd lain in wait – a common hunting tactic employed by leopards – about 10m above the badger's den.

A picture began to develop in my mind. I could see the leopard crouched, motionless

**A skid mark and drops of blood revealed where he hit the badger; a pile of hair where he plucked his victim.**

except for his twitching tail tip, tensing as the badger emerged. He waited until his quarry had relaxed and was rooting among the leaves, then silently moved in. He pounced, his feet touching the ground only once before he struck the badger, dispatching it with a single bite to the neck. He then carried the carcass a few metres away to eat. A skid mark and a few drops of blood revealed where the leopard had hit the badger, and a pile of hair where he had 'plucked' his victim before consuming it.

Badgers are an important food source for Amur leopards because they are abundant, relatively slow moving and, in the autumn, pack a thick layer of calorie-rich fat. Other significant prey species include sika and roe deer and wild boar, but leopards are opportunists and will take just about anything, including dogs, which occasionally lands them in trouble with the locals.

However, the leopards' taste for sika deer, which are farmed in the area, is the greatest cause of conflict. These fenced in, semi-

## ANOTHER CAT IN CRISIS: THE AMUR (OR SIBERIAN) TIGER

Studying this tiger's behaviour and ecology has helped its conservation.

The Siberian Tiger Project began in 1992, when Russian and American biologists fitted a radio-collar to an Amur tiger for the first time. Our goal was to collect data for use in conservation planning. Since then, we have collared over 50 individuals and followed our first tiger, Olga, for 13 years until she was killed by poachers. Olga and the others have taught us a huge amount about what these cats need to survive. For example, we have learned that tigers here require 10 times more space than Bengal tigers in India because densities of prey are naturally low. Indeed, male tigers may patrol an area as large as 2,000km<sup>2</sup>.

Sadly, we have also learned that most tigers are killed by poachers and their parts

sold to Asian traditional medicine markets. However, Russia's tiger population has been stable for the past 10 years and its vast wilderness habitat is still intact. We are optimistic, and our goal for the next 10 years is not just to maintain tiger numbers, but increase them.



John gets to grips with a drugged tiger.

A. Rubin