The Banff Crag & Canyon

The rare and elusive wolverine

By Hamish MacLean
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MIR-WTI-Parks CanadaSkinned beavers are hung on trees to attract wolverines that can be studied as part of a research project on the elusive creature.

Wolverines cover large distances, male wolverines lead solitary, territorial lives — and the elusive members of the weasel family are notoriously difficult to study.

But a study entering its first year is proposing to do just that over the winter in Banff National Park.

Delivering a talk titled, Wolverines: Shrinking spaces for a wilderness wanderer, Dr. Tony Clevenger was at the Canmore Seniors' Centre to talk of the upcoming study and to enlist the help of "citizen scientists" at the Alpine Club of Canada event.

Clevenger received funding from the Alpine Club of Canada's 2010 environment fund for this work.

"Without a doubt they're the least understood mammal in North America today," Clevenger said of wolverines. "And that's no small feat when you consider that in the last 50 years there has probably been $500 million, close to $1 billion, spent on wildlife research in North America."

He said that the mammals have been little studied until the last five years and that most of the information now known about wolverines has been learned since 2007. Nevertheless, he pointed out that their situation is dire.

"Wolverines are in a difficult situation today, they're experiencing, really, a 'double whammy,'" he said. "They're experiencing fragmentation of their habitat, alteration of the landscape where they live, plus a warming climate.

"And add to that the fact that we know very little about what wolverines need to survive and their habitat requirements."

Clevenger spoke of a recent U.S. study that shows a correlation between declining wolverine populations and a declining snow pack.

"Their explanation was that with a lower snow pack there's greater survival of ungulates through the wintertime, which means less food for the wolverine and that with the lower snow pack, the females aren't able to dig their dens down deep enough to ensure survival of their young."

Wolverines, he said, are really being looked at now as the land equivalent of the polar bear.

"We would think that this is really a stronghold in the Canadian Rocky Mountains, we really don't know," he said. "But we need to know something about the population, their distribution — their occurrence over the mountain parks. And also we need to know about the impacts of this major transportation corridor through what looks to be a pretty healthy population."

Clevenger, a research biologist for Western Transportation Institute (WTI) at Montana State University, received his PhD after studying bears in Spain, but has worked in Banff National Park since 1996, spending a lot of time focusing on the Trans-Canada Highway and its impact on wildlife.

Wolverines, Clevenger said, are more sensitive to disturbances in their habitat than grizzly bears.

He said the animal has problems crossing two-lane highways, not to mention four-lane highways.

"(They have) just a real aversion to humans and human disturbance," he said. "It's really important for these populations to remain intact by maintaining this connectivity over this large landscape.

"The biggest reputation the wolverine has is for how much it can travel, over such large areas, there are just huge, huge movements by these animals, particularly the males," he said. "Different from grizzly bears, whose home ranges overlap, wolverines are territorial. And they are constantly marking and defending the space that they use."

He said that the average range of a male would extend from Calgary to Olds and Sundre to Strathmore, though the area

would be transplanted on a mountain range. Within that adult male's range there would typically be between two and five adult females.

Sub-dividing populations, through the construction of highways or other human infrastructure, creates fragmented sub-populations and increases the mammal's chances of extinction locally, Clevenger said.

Maintaining large areas for the animals to move in is important, but also on a finer scale, he said, it is important to maintain points, such as the wildlife crossings of the Trans-Canada Highway to allow animals to avoid the pitfalls associated with the potential barriers.

The final stage of wildlife crossings of the Trans-Canada Highway, scheduled for completion in the next two years, is an important stage of work for the crossings too, he said. Rather than like the previous sections that exist in the lower Bow Valley, this work stretches into the sub-alpine areas farther west along the highway.

"It really enters into unique habitats different to what the Trans-Canada Highway has been mitigated to before," Clevenger said. The stretch of the valley that will see the next phase of wildlife crossings established is home to both lynx and wolverine. The situation for wolverines in the lower 48 states of the United States, Clevenger told the crowd of roughly 60, "is pretty bleak."

There are he said roughly 150 wolverines in that area and in December U.S. Fish and Wildlife services will make a decision on whether to list the species as endangered in the states. And, he said, that according to his colleagues there, the listing is very likely. And so there has, Clevenger said, never been a more urgent time for better information about wolverines in the Canadian Rockies. And to look at Wolverines here in the context of unprotected Alberta and British Columbia lands where wolverine populations are declining faster.

While some feel that the animals look like small bears, or small wolves, wolverines are a member of the weasel family as are badgers, marmots and skunks.

The 10-kilogram to 15-kilogram animals are found in sub-alpine and alpine habitats, "Some of the most remote, rugged areas left in the Canadian Rocky Mountains," he said.

Wolverines are perfectly adapted to cold, snowy climates. Their huge feet and claws allow them to walk on top of the drifts that others might struggle through.

Their big claws are key to their survival, he explained. Their main prey over the summertime is the hoary marmot, which they need to dig for. Necropsies have found that the "supercharged animals" have extra large internal organs, and Clevenger recounted one scientific writer's statement that when it was removed, a wolverine's stomach, "felt like a sack of gravel."

It was filled with chewed up bones of the kills of larger predators.

"The hyena of the North," he said, gets a lot of marrow and red blood cells and concentrated nutrients from the remains of cougar and wolf kills.

He said that the survival strategy for wolverines is likely that if they cover enough ground, they will find something to eat.

"It may not be the best meal in the world, but it will fill their stomach," he said. "We're also finding that where there are more carnivores, more predators — wolves and cougars — preying on elk and deer and mountain goats and leaving some of the remains behind, that's a meal for a wolverine."

Clevenger said the reason, he believes, that the animals have not been studied for so long is that there has been a paradigm for a long time that if you want to study animals, you have to capture them, mark them, and put a radio collar on them.

"And I think we've known for a long, long time that that's just impossible for wolverines," he said. "If you're lucky you might be able to catch one, but the technology wasn't very good with the collars — sometimes they would slip off, and so people gave up on them.

"They literally fell through the cracks in wildlife research."

(In answering a question after his talk he also said that such research would be prohibitively expensive.)

There have been some collared studies though, one male (known as M56) made it 541 km from one national park in the United States to another travelling through a series of protected areas.

"How it did that, I don't know," Clevenger said of the long journey over a variety of terrain. The animal moved as far as 45 kilometres in 24 hours. And when it arrived in Colorado it was the first wolverine in the state since 1919, Clevenger said. It received national media attention in the states and, Clevenger said, still lives in northern Colorado.

Another collared male, M3, summitted Mt. Cleveland — the highest peak in Glacier National Park — the GPS, which supplied researchers with information every 15 minutes, recorded a 1,500-metre elevation gain in 90 minutes.

"The most amazing thing is that it did this in the middle of January," Clevenger told the crowd. "Then it took off, apparently, and went north into the Flathead, crossed into Waterton, came back into the northern part of Glacier National Park and beat up on a few males in the area."

The primary question for researchers is how to study such a wide-ranging population, he said.

The non-invasive method that Clevenger will employ was initiated over 10 years ago, but has been improved upon over the last five years.

"Hair traps" avoid the capturing and drugging of animals — researchers never have to see the animals. The method allows researchers to survey over huge areas, covering large populations. Clevenger called it ideal for the rare species that occurs in low densities over large spaces.

Hair traps involve convincing animals to pass through, or over, a piece of barbed wire by means of providing an attractant. The small pieces of hair that are left behind as animals pass by the wire on their way to the attractant gives researchers a sample of the animals' DNA. (The DNA samples can identify the species, the gender — and can identify different individuals. With a large sample researchers can begin to look at genetic relationships.)

Clevenger and his crew will use skinned beavers nailed to a tree approximately two metres above the ground, with a loop of wire that spirals up the tree so that wolverines can reach the meat provided by going under or over the wire.

The systematic stratified design for the study will see the sites for hair traps dispersed over the Trans-Canada Highway at Castle Junction to the west boundary of Yoho, including a 25-kilometre buffer on both sides in a 10-kilometre by 10-kilometre grid.

One result of the study will be to check the DNA collected on either side of the highway to see if there are indeed two distinct populations living on either side.

Once wolverines have been discovered in the transportation corridor they will be snow tracked in an attempt to determine how they deal with a fenced highway with crossing structures.

Part of the goal for Clevenger is to make people aware of the situation. And he said that the group of researchers would be supplying Alpine Club of Canada backcountry huts with wolverine identifying cards so that backcountry users can help them to record wolverine sightings should they occur. There is a similar sighting report protocol available online at wolverinewatch.org.

The questions Clevenger and his crew will answer will be: How does the Trans-Canada Highway affect wolverine movement across the highway, how does it affect dispersal — genetic flow, genetic structure. And the mitigation aspect: how does the unfenced, unmitigated section of the Trans-Canada Highway affect the movement of wolverines.

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