A lifetime of bears: Canadian biologist in awe of the clever, powerful — and vulnerable — creatures

BY ED STRUZIK, POSTMEDIA NEWS JULY 4, 2011

This bear, named Mary, lived well into her 20s until she was shot by a poacher in 2002.

WHITEHORSE WILDLAND PARK — In the spring of 1999, biologist Gord Stenhouse captured a healthy, six-year-old grizzly bear on the east slopes of the Rocky Mountains. G16, as she came to be known, was one of 18 animals he got in the first year of a study designed to determine the number of bears in a 5,352-square kilometre area along the east boundary of Jasper National Park.

For nearly three years, Stenhouse and his colleagues were able to track G16 with the help of a satellite collar that transmitted her movements several times a day. But when the collar fell off in 2002 because of a failing battery that triggered the release, they never saw or heard from her again.

G16 could well have been alive when Stenhouse and I set off by helicopter this spring to search for more animals. Grizzly bears can live well into their 20s.

But given her propensity to roam the Whitehorse Wildland Park area where there are mines, roads and clear-cuts in the adjacent regions, there was a chance she may have been one of the more 250 grizzly bears in Alberta known to have been legally shot, poached, or killed by predators, cars, trucks and trains over the past 10 years.

It is warm and windy when pilot John Saunders fires up the engine of the helicopter that day in Hinton. By the time we fly over Fiddle Pass to get into the Whitehorse wildlands, light rain, mixed at times with snow, is falling.

Saunders has just radioed in to tell the folks at the Cheviot coal mine what we are up to when we spot a female and her cub racing into a stand of spruce trees along the slope of an alpine valley. Seeing that she isn't wearing a satellite collar, Stenhouse decides to capture her.

This is a tense time for the capture crew, especially for University of Alberta biology student Terry Larsen, who has the task of shooting the bear with a tranquillizer dart from the doorless side of the helicopter.

First, Saunders drops me and Stenhouse off on a nearby mountaintop to lighten the load. Then, when Larsen successfully darts and downs the animal 15 minutes later, we are brought back to the scene.

Well aware that the bear could suddenly rise from its slumber and charge, Stenhouse and Larsen move in with a rifle, making as much noise as they can to ensure the bear is fully tranquillized. When they find the animal's breathing is slightly laboured, they administer oxygen much as a doctor would for a patient in distress. Then they check if the animal is thermally stressed as a result of the helicopter chase.

Time is of the utmost importance in cases such as this. The crew has less than an hour to draw blood, get hair samples, weigh the animal and do whatever else they need to do before the drug begins to wear off.

Stressful as it is for everyone involved, it doesn't help that the cub, almost as big as her mother at this stage, is lurking in the background, calling for her.

"Keep an eye out," Stenhouse reminds us as Saunders takes off once again, this time to pick up University of Calgary veterinary scientist Nigel Caulkett. "Yearling cubs can do some stupid things when they get separated from their mothers."

In the meantime, Larsen checks for a tattoo that is put on the gums of every bear that has been captured over the years. It turns out to be G16. She is now 18 years old, weighs 104 kilograms (230 pounds) and is apparently in good health.

"This is really good to see that an animal like this can live for 18 years or more in an area like this," says Stenhouse. "It suggests that in spite of what some people fear, there is still a future for grizzly bears in this part of Alberta."

Thirty years ago, when he was a student conducting research on Canada geese in the Hudson Bay Lowlands, Stenhouse never dreamt that his future would lie in the study of bears.

But a turning point occurred in the middle of a spring snow squall when he found the lens of his spotting scope filling up with white. Hunkered down on the treeless tundra, he realized right away that what he was seeing was not snow. It was a polar bear walking slowly through the nesting area, eating the eggs of the Canada geese that had scattered in all directions.

"The bear was about 30 metres away when I stood up," he recalls. "When the bear saw me, it stood on his back legs to get a sense of who or what I was. We both looked at one another for a minute and then the bear continued his travels, foraging on eggs. It was a magnificent sight. I knew then that I wanted to study bears."

From that point on, Stenhouse did all he could to find opportunities to work with Edmonton polar bear scientists Ian Stirling, Nick Lunn and others in the Arctic at the time. When a biologist position opened up in the Northwest Territories, he applied and quickly accepted the offer.

The first time I saw Stenhouse in action, he was in a hotel in Churchill, Man., in 1983, trying to get a good night's sleep before we headed out to his polar bear research camp on the west coast of Hudson Bay. It was cold and snowing, as wintry as one would expect in November.

Shortly after midnight, I awakened to the sound of someone screaming outside my main floor room. Looking out the window, I was startled to see a polar bear dragging a man by his head. When the animal stopped and gave the man a shake, I ran down the hallway, banged on Stenhouse's door and yelled: "Gord, Gord. A polar bear is outside killing a man outside my room."

The first response was not the one I was expecting. But when I banged on the door again a lot harder, insisting I was serious, Stenhouse emerged from his room shirtless and armed with a shotgun. He ran to the front door of the hotel to see what he could do, while I hurried off to the front desk to call the RCMP.

By the time Stenhouse got outside, a woman was whacking the bear with a broom. Realizing the situation was spiralling out of control, Stenhouse took a moment to figure out his next move. It was too dangerous to shoot from where he was standing. Just then, someone fired a couple of shots from across the street, and the bear went down.

It was too late, however, to save the victim. A good part of his skull had been torn apart. Blood had spilled everywhere.

Polar bears attacks such as this one had been rare in Churchill up until this point. People had been charged by animals in the past, but only one person — a teenager who was throwing rocks at an animal — had ever been killed.

The blood-soaked tracks leading to the scene of this attack suggested that the victim had been scavenging through the remnants of a burnt-down hotel in the middle of the night when the bear came around with the same idea.

Relatively safe as the situation was in Churchill up until then, it was not the case in the Northwest Territories in the 1980s. At oil, gas, mining and scientific camps along the Arctic coast, an increasing number of bear and human confrontations was resulting in people getting seriously injured and too many bears getting killed.

Realizing that no one had a plan to prevent this from happening, wildlife officers began pushing hard for a program that would find ways of detecting and deterring polar bears before it was necessary to destroy them.

That's what had brought Stenhouse to the west coast of Hudson Bay in 1983.

Cape Churchill was a good a place to begin his research. After spending several months fasting on land, polar bears here have learned that this is one of the first places on the Hudson Bay coast where the platforms of ice they need to hunt seals begin to form. On any given day in late November, dozens of very hungry bears can be seen prowling the shoreline waiting for this to happen.

For three years, Stenhouse and veterinary student Marc Cattet travelled to Cape Churchill armed with an arsenal of weapons and deterrents — riot guns, projectiles, flares, thunder flashes, sound systems, a microwave detection unit and electric fence — to see what could be done to detect and deter bears. (The most effective methods vary according to situation and circumstance.)

Inhumane as it might have seemed to subject polar bears to this kind of deterrence, their research, and that conducted by biologist Peter Clarkson afterward, resulted in a dramatic drop in polar bear mortalities and fewer problem bears in Churchill being locked up for the summer in a dark cell.

Stenhouse didn't think it would be a big change when he moved to Alberta in the mid-1990s to work on grizzly bears for the provincial government. In many ways, grizzly bears and polar bears are pretty much the same animal.

But he soon found that following a polar bear across the flat sea ice is a lot less complicated than tracking a grizzly bear that can move from a forest environment through a mine site before crossing a road into the mountains and alpine country in a single day.

Given the economic stakes at play, he also found it hard coming up with ways of managing grizzly bears in an environment that was increasingly being carved by roads, recreational areas and industrial developments.

When Stenhouse's data suggested there were a lot fewer bears than most people thought, no one was happy. Hunters deeply resented the ban on hunting that was imposed a few years ago, and industry was reluctant to significantly change the way it did business. At one point, the situation got so politically charged that it looked as if Stenhouse might lose his job.

In the end, there was no denying that grizzly bears were in trouble outside of the north Jasper/Willmore/Grande Cache region where most of the province's animals are concentrated. Marco

Festa-Bianchet, an independent scientist who was called in to evaluate the data, recently confirmed that for the province of Alberta.

(According to the province, there are 691 grizzlies in Alberta. However, the estimate from DNA tests is 582 bears.)

The techniques Stenhouse uses now to study bears are a lot more reliable than they were 30 years ago when biologists had to fly for hundreds of hours in fixed-wing planes to track the movements of a handful of radio-collared animals for just a short time.

Nowadays, he and other biologists use GPS collars that allow them to remotely track the movement of many more animals several times a day over a much wider area for 365 days a year.

"The data we get now bears no resemblance to the data we got back then," says Stenhouse. "Now we have the information we need to tell what habitat bears use most at different times of the year and what corridors they travel along to get from one place to another.

"When we overlay these maps of bear movements on top of those that show where industry and forest companies are or plan to be, it allows for some significant management options that we didn't have before."

Stenhouse, 55, has handled so many bears over the years that he finds it hard to keep track of some of them. A few, however, stand out.

Biologists, for example, rarely give names to the animals they handle, but one polar bear that Stenhouse and Nick Lunn caught on Southampton Island in 1985 was so big and burly — he weighed in at 810 kilograms (1,800 pounds) — that they nicknamed him "Stan." Stenhouse keeps a picture of "Stan" on the wall of his office in Hinton.

By way of comparison, the biggest grizzly bear Stenhouse has come across in Alberta was a male weighing close to 360 kg (800 pounds).

The grizzly bear that most impressed Stenhouse was one he saw running effortlessly down a mountainside with a bighorn sheep in its mouth. It was no surprise the bear had the highest testosterone levels that they have encountered so far in an Alberta grizzly.

Stenhouse has seen a grizzly bear eat an elk while a pack of hungry wolves tried to move in. He has watched in amazement as a bear climbed a 2,700-metre peak in the depths of snow and ice for no apparent reason. And he was utterly spooked when he was bushwhacking along the banks of a stream, tracking a bear that was walking though the Hinton golf course while men and women were putting on greens.

Most humbling perhaps was the sight of a small 110-kg bear that had killed a huge quarter-horse before burying it in the ground.

"It looked like a front-end loader had gone in there and buried that horse," he said. "It was a sobering reminder that these are awfully powerful animals."

One thing that Stenhouse is constantly reminded of is how smart and resourceful these animals can be. Bear G02, for example, was a small 83-kg (185-pound) female bear that was 23 years old when Stenhouse was trying to recapture her so he could replace the satellite collar she had been wearing for a year.

The data he got from that collar showed she was habituated to the south part of Jasper National Park.

Even with the GPS that could pinpoint exactly where she was, this bear somehow managed to evade him for 10 days straight.

"Each time she'd hear the helicopter, she'd run into the forest and hide under a spruce tree and look up at us, aware perhaps that we could not fly down through the trees," says Stenhouse.

"She wouldn't leave until we left the area. I was getting frustrated spending so much money on helicopter time trying to get this one animal. Finally, we tracked her down in a small, snow-filled alpine bowl in Jasper. There wasn't a tree anywhere around.

"But do you think I could find a brown bear in a big patch of white snow? After about a half-hour of looking, we were getting low on fuel. Just as we were turning to head home, the pilot spotted something moving on a narrow ridge at 9,400 feet (2,820 metres), which is getting pretty high up in the Rockies. It was her."

When the pilot turned the helicopter around, they found her lying on her belly, pretending to be a rock.

Seeing that she was in too precarious a spot to be handled safely, the pilot did all he could to try to move her down onto flatter terrain. But she would not be budged. With no other option, Stenhouse decided to shoot a tranquillizing dart into her, thinking she would then walk down on her own before the drug kicked in.

Little did he know that she would walk up another 10 metres, forcing him to do some serious mountaineering to get to her once they found a place to land.

The drugs that biologists use now are much safer than they were 30 years ago when pioneering scientists like Ian Stirling were occasionally forced to take the extreme measure of giving a polar bear artificial respiration to get them breathing again. But no drug, it seems, is guaranteed to be strong and safe enough to deal with a female trying to protect her cubs.

Stenhouse found that out one recent fall when he and his team were trying to recapture a female bear that had two yearling cubs with her.

Since bears are larger in the fall, this bear required two darts to get her down. Once she was asleep and safe to approach, the team began working on the bear to change the collar and gather samples.

All went according to plan until the two cubs arrived on the scene, bawling for their mother. When the female heard the cubs, she somehow shook off the effects of the powerful drug, stood up and started moving in their direction.

"Of course, when she stood up our team was right beside the bear and we all moved away," says Stenhouse. "Unfortunately I moved away in a direction that put me in between the cubs and the female. Not a choice spot by any means. The female bear walked towards me and called her cubs. After looking at me for a few moments, at very close range mind you, she moved back into the forest with her cubs following closely behind. It ended well but it was a tense moment."

Stenhouse has learned a lot of things about bears over the years. But one of the more troubling studies he, Cattet and others have done was one that suggests captured bears are vulnerable to a potentially deadly syndrome called capture myopathy. This is a catastrophic muscle meltdown that happens when some animals overexert themselves trying to escape from a leghold trap.

Cattet got the idea of looking into this a few years ago when Stenhouse phoned to tell him he had recovered the carcass of a grizzly bear that had been captured in west central Alberta just 10 days earlier.

The animal had such a severe case of capture myopathy that its chest, bicep and pectoral muscles were pure white and brittle as chalk.

Now a wildlife researcher and veterinarian with the Canadian Co-operative Wildlife Health Centre in Saskatoon, Cattet decided to examine blood and tissue samples he collected from 127 grizzlies caught in Alberta between 1999 and 2005.

Much as Cattet didn't want to believe it, the results showed a significant number of those animals caught in a snare were showing signs of serious stress for alarmingly long periods after they were processed and released back in the wild.

Inconvenient a truth as that was, the study convinced Stenhouse that he had to rely on less invasive means of studying the animals. Now more than ever before, he and his colleagues are using bait and barbed wire to snag hair from the animals so they can extract DNA. They are also collecting fecal samples that offer similar information. No longer do they use snares. Instead they use culvert traps fixed with alarm systems that signal when a bear has been trapped.

"As soon as the door of the culvert trap comes down, we get a call on our cellphone," says Stenhouse. "In one case, we arrived on the scene in less than 20 minutes. Whether we get a call or not we check the traps at least once a day."

Having spent the better part of 30 years studying bears, Stenhouse is convinced there is still a lot for him and others to learn, particularly when it comes to managing bears in environments inhabited by people and industry.

"Bears have a remarkable ability to adapt to environmental change and conditions," he says. "Grizzly bears, for example, have a trait that we refer to as delayed implantation. This relates to the fact that although female bears mate in the spring, the fertilized embryo does not attach to the uterine wall until the bear enters the den the following fall. The embryo will only attach if the female bear has enough body fat reserves (usually around 20 per cent) to successfully reproduce.

"If the food conditions for the bear that season have been poor and adequate fat reserves are not present, the bear will reabsorb the embryo and not have cubs. This adaptation allows the female bear to try to reproduce the following year and not produce cubs that she is unlikely to be able to nurse and raise in poor physical condition. We do not fully understand what the mechanism is that allows the bear to make this decision from a physiological perspective, but it is a marvellous adaptation."

Grizzly bears, he points out, are also able to den for up to five months. While they are denning they do not urinate or defecate. They rely entirely on fat to see them through.

"During hibernation there is a limited blood flow which reduces the amount of oxygen provided to vital organisms," he said. "Even so, hibernation does not damage the heart or brain. That may be because bears produce a compound called hibernation induction trigger (HIT), which appears to slow cellular metabolism and reduces the need for oxygen. This adaptation may hold clues to help reduce impacts of stroke and heart disease in humans. In fact, the bear hibernation process may hold other clues to help scientists address the impacts of long-term space travel and bone density loss."

Since the first phase of that project ended seven years ago, Stenhouse's research efforts have morphed into something much bigger. No longer is he simply counting bears along the Jasper/Wilmore/Grande Cache Wilderness corridor. He and colleagues at several universities in Canada and the United States are homing in on everything and anything that might help wildlife managers figure out what they and industry leaders need to know to prevent grizzly bears from suffering the same fate as woodland caribou.

Grim as the picture sometimes seems to be here in Alberta, Stenhouse remains hopeful.

"I am optimistic about the future of grizzly bears in Alberta," he says. "In Sweden, for example, you have a large density of grizzly bears on a landscape that includes many people and settlements, and active forest management. They have a well regulated and managed grizzly bear hunt right now, and they have recovered their population from a low of about 130 bears in 1930 to 3,500 bears today.

"If we can reduce the current levels of human-caused grizzly bear mortality in Alberta and work with forest management companies to understand and improve habitat conditions for grizzly bears, I am confident that we can recover provincial grizzly bear populations."

The last time I talked to Stenhouse, he mentioned the DNA samples that had been taken from another bear this year came from G16's sister, which had given birth to two cubs.

"A few days after you were with us, both these sisters had their cubs feeding on either side of the same mountain a few kilometres from the capture site," he said. "It'll be interesting to see if these sisters and their cubs meet up this summer to spend some time together.

"Strange as that might seem, we have learned that siblings can and do meet up with each other occasionally. I liken it to our families gathering at the cottage every summer."