



Living Smart With Wildlife



CSI Bear: Scientists take grizzlies to the lab

If a bear poops in the woods, Gordon Stenhouse wants to know about it.

The Alberta biologist has been collecting grizzly bear data for the past 11 years as part of the Foothills Research Grizzly Bear project's \$13 million study. His work has led to the creation of one of the most complete grizzly bear studies in the world, having sampled 85 per cent of the best bear habitat in the province and helped biologists get a better understanding of these iconic creatures.

Several techniques are being used to study the grizzly bears, however Stenhouse is best known for his DNA mark and capture technique. The team sets up a barbed wire fence surrounding an attractant. Once the bear enters the fenced area, the animal's hair is caught and sent to a lab for DNA testing. The technology is able to identify individual bears.

"It's like a CSI crime lab. We can identify the genome type for the individual animal," Stenhouse said.

His DNA work, accompanied with habitat extrapolation work, led Stenhouse to predict there are less than 500 bears across the province - however his work is still ongoing. That number is much less than the educated guess of 1,000 the province took in 2002. Stenhouse contests it's extremely difficult to come up with an exact number, but his number is purely based on scientific research, and will be reviewed by an independent third party before it's presented to the Alberta government.

His research demonstrates that some sectors of the province have very healthy grizzly bear populations, while others - specifically those close to human development - need help. Most grizzly bear fatalities take place within 500 metres of a roadway.

"There are no areas to find hundreds of bears that will take us up to 1,000," Stenhouse said.

"Survival rates decline as open access increases," Stenhouse said. "As you have more access to high quality bear habitat, this is the result."

Research is also discovering that bears under stress are reproducing at much lower rates. His team has begun monitoring the relationship between landscape changes and stress levels, measured through cortisol levels.

"We found females who haven't had cubs in nine years...How we change the landscape and stress bears has an impact on their health" Stenhouse said. "The stress level in Banff bears is three times higher than bears in Hinton."

Of the bears the team has counted, Stenhouse's research showed there were about 92 bears in the Canmore/Banff zone, which included Kananaskis Country.



PHOTO: Gordon Stenhouse

"When you look at data from the Bow Valley, much of it is in a park setting," Stenhouse said.

The grizzly bear team also identified core habitat locations throughout the province. Using a set of parameters such as food abundance and proximity to roads, the team was able to build predictive models that calculated the best bear habitat in the province. Stenhouse relied on GPS data to better understand how the bears were moving through these landscapes. About 280,000 GPS data points were plotted as part of the study.

"We provided analysis to the government, who were able to delineate core and secondary grizzly bear zones," Stenhouse said.

Using graph theory modelling - which was developed by Wal-mart to determine best routes for delivery trucks - the team also studied how bears moved through the landscape, and how those movements were affected by human development. To further that data, cameras were attached to collared grizzly bears. While Stenhouse has reduced his collaring numbers, the cameras took pictures every 15

minutes which painted a vivid, sometimes heartbreaking picture of a bear's life.

"We had one mother who stayed with its cub for five days after the cub was shot by a poacher," Stenhouse said, noting that the cameras provide insight that regular GPS collaring data could not.

In the end, Stenhouse's research is painting a new and complete picture of grizzly bears, which he sees as more than a top of the food chain predator.

"They represent wilderness to me and are a part of our Alberta heritage."



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