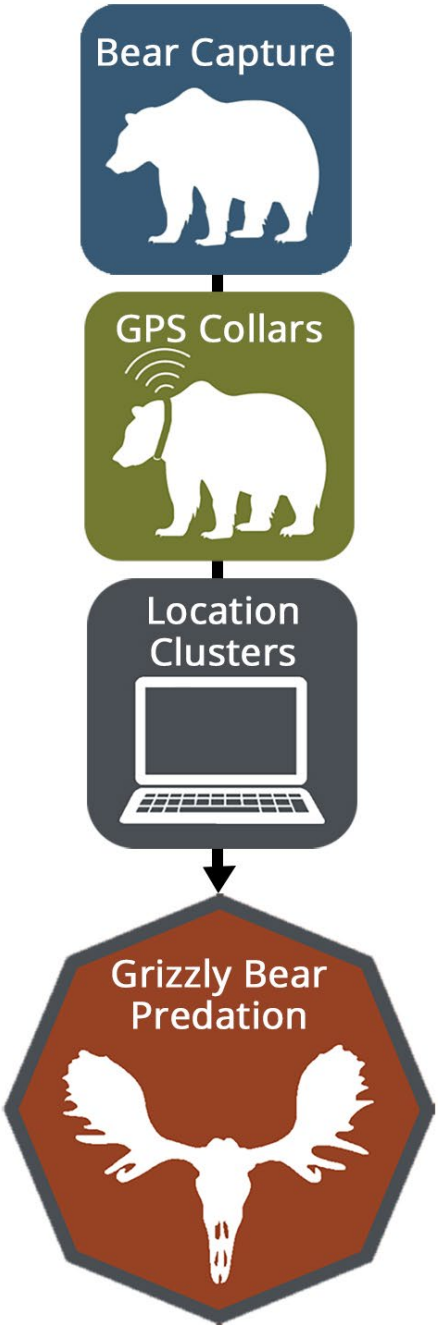
QuickNotes
the information note of fRI Research
fRI Research
Informing Land & Resource Management

Grizzly Bear Predation Part 2: predation behaviour and its influence on grizzly bear health

Part one covered which landscape variables—from forestry to caribou ranges to forest type—are chosen and avoided by grizzly bear and their prey. This allows us to predict how human activity and other disturbances might affect the predation opportunities for grizzly bear on moose and elk. We predicted some results (e.g. moose select areas with more forest harvested), while others turned out to contain a lot of fascinating nuance (e.g. female bears with cubs were more likely than males to select areas with lots of moose).

We filtered two years of grizzly bear GPS locations to find the places where a bear was lingering, and presumably doing something other than just passing by. Then we spent two years bushwhacking to 1128 of these location "clusters" to find out what the bears found so interesting.



Bear Predation Behaviour

It turns out the answer is digging beds and sleeping, about two thirds of the time. Next most common were signs of foraging at just under one third of sites. This could include ransacked berry bushes, dug up ant mounds and shredded stumps, or inconspicuously clipped vegetation. However, it wasn't rare to find evidence of either scavenging or predation: between scattered bones, partially buried prey, and scat containing hair, there was evidence of predation at just over 13% of clusters that we visited.

It turns out our focus on moose and elk as prey species was justified. 53 moose (39 of which were yearlings) and 20 elk (16 yearlings) made up the vast majority of prey remains. Deer took third place with 12, and all the others like sheep, hares, and other bears only came to 13 all combined. Clearly what affects moose and elk availability might be important for understanding grizzly bear populations.

One interesting thing was how much the predation behaviour differed between bears. We followed 29 for this study and three of them—two males and a female—were very enthusiastic meat eaters, each leaving more than 10 sets of prey remains. By contrast, three were herbivores as far as we can prove, having no clusters with either animal remains or scat with mammal hair. On average, 40% of clusters with prey remains were visited by adult males, the most of any age-sex class. They were followed by females younger than three at 23% of meat feeding sites. For the really big moose and elk, 51% of the time it was an adult male grizzly bear that was there.

These observations of over a thousand clusters are just a fraction of all the locations we have data for, but it is a good enough sample that we were able to go

For more information on this or other Grizzly Bear Program publications, please contact: Gord Stenhouse.
Tel.: (780) 865 – 8388, Email: gstenhouse@friresearch.ca or visit gbp.friresearch.ca

back to our location dataset and pick out the grizzly bear movement patterns that strongly indicate ungulate predation or scavenging behaviour. We then tested that on a subset of the cluster sites and found that variables like time of day and the amount of time at a site allow us to predict, with quite good accuracy, which clusters have an ungulate carcass, and even how large it is. We can now apply this to the millions of locations in our entire dataset spanning over 20 years and a much wider swath of Alberta than we could ever visit on foot.

The Link between Forestry and Predation

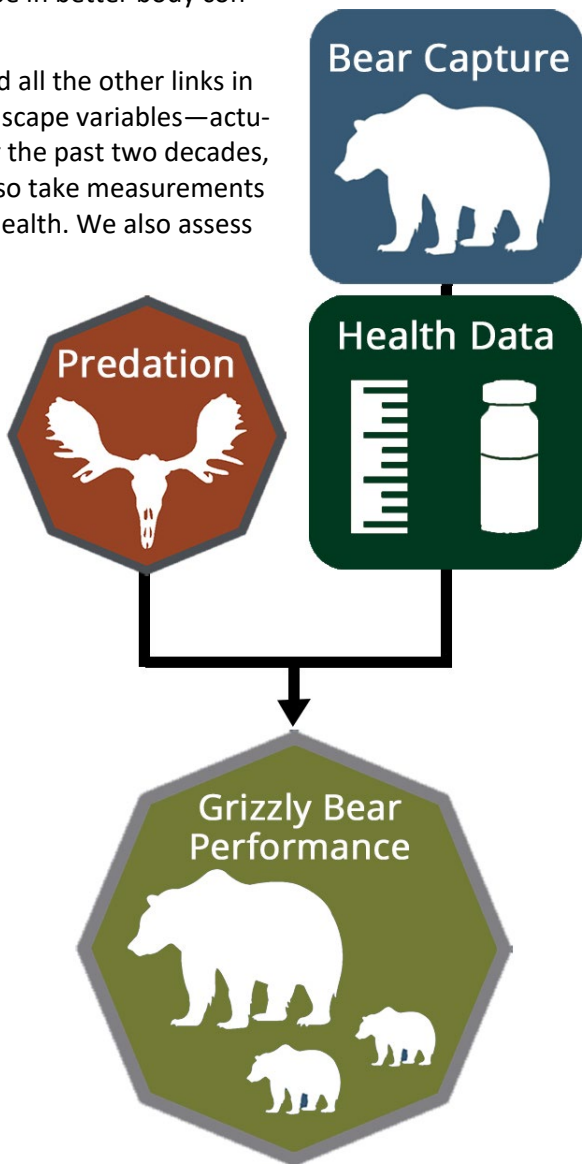
We had already established in part one that, at least for some of the year, moose and grizzlies were selecting areas with more forest harvesting, increasing the opportunities for predation around areas with forest harvesting. But now we can see what is really going on. Moose remains were most common in the uncut forest just outside the harvest blocks and other forest edges.

The Link between Predation and Body Condition

We know that moose and elk can be a critical source of protein for grizzly bears in Alberta, so we suspected that individuals that are more successful hunters and scavengers would be in better body condition, and for females, able to have more cubs.

For the final stage of this project, we found out what predation—and all the other links in the chain from prey abundance all the way back to forestry and landscape variables—actually means for grizzly bear populations. We can do this because over the past two decades, as we have captured grizzly bears to fit them with GPS collars, we also take measurements of body size and collect biological samples to determine the bear's health. We also assess and track the reproductive status of females.

By comparing bear length, weight, and body condition with how frequently they hunted and scavenged prey, we found that eating more meat likely led to female bears being larger and in better condition, which is critical for having more cubs and for those cubs to survive. The influence of consuming meat was important: young females that ate more meat could weigh as much as the average adult female.



Summary

This project brought together decades of fieldwork, many datasets, and new GIS techniques to draw a line all the way from landscape variables and forestry to grizzly bear population performance.

The overall story is that wet, open, northern, and harvested areas are used by moose and elk, that grizzly bears take advantage of this at key times of the year (spring and fall), and that this helps female bear body condition, supporting the overall population.

Terry Larsen led this project. Gord Stenhouse has overseen the Grizzly Bear Program since its inception. This work couldn't have been done without the tireless efforts by dozens of field crew members.

For more information on this or other Grizzly Bear Program publications, please contact: Gord Stenhouse
Tel.: (780) 865 – 8388, Email: gstenhouse@friresearch.ca or visit gbp.friresearch.ca