



Evidence of grizzly bear predation on a black bear in Hayden Valley

by Kerry A. Gunther and Mark J. Biel

Both grizzly and black bears live in Yellowstone National Park. In this and other areas where grizzly bears and black bears are sympatric (share habitat), temporal isolation and behavioral differences tend to reduce direct competition between the two species. In the Greater Yellowstone Ecosystem, grizzly bears are generally most active from dusk until dawn, while black bears are most active during the daytime. Grizzly bears evolved to forage in open meadow habitats, whereas black bears are primarily adapted to living in forests. Grizzlies also have longer claws and larger shoulder musculature than black bears, making them more efficient at foraging roots and ground-dwelling small mammals abundant in open meadows. Grizzlies are generally larger than black bears, and are much more aggressive in defending themselves and their offspring from predators, including other grizzlies. Black bears typically escape predators by running into forest cover or climbing trees.

On August 2, 1998, park visitors looking for grizzly bears from Grizzly Overlook in Hayden Valley observed some ravens on a carcass on the northeast side of the Yellowstone River. Upon focusing their spotting scope on the carcass, they could clearly see the partially consumed remains of a black bear in the tall grass next to the river. The visitors reported the presence of the carcass to Canyon area rangers, who immediately forwarded the report to the park's Bear Management Office. We received permission from the rangers to canoe across the Yellowstone River to

examine and retrieve the carcass. Accompanied by biological technician Christie Hendrix and park ranger Keith Gad, we canoed across the river to the carcass. Although the dead bear was not visible to motorists along the road, a large number of park visitors immediately pulled over to watch as we launched the canoe, creating a large canoe-jam. We paddled downstream and across the river and pulled the canoe up onto the bank next to the black bear's carcass to examine it. The carcass was that of an adult male weighing (minus the eaten tissue) 171 pounds. Prior to being consumed, the bear had likely weighed over 200 pounds. The bear had canine puncture wounds to the head and nose, as well as a crushed skull and left eye socket.

The wounds were consistent with those that would have been inflicted by a bear or other large predator. When fighting, bears will often bite each other on the nose in an effort to neutralize their opponents' weapons (teeth). We also found two bear scats containing vegetation next to the carcass. The predator that had killed and partially consumed the black bear had likely defecated these scats while feeding on its carcass. We collected the scats for DNA analysis to aid in determining the species of the predator that had killed the black bear, then loaded the carcass and two scats into the canoe and ferried upstream back across the river to the large aggregation of people that had congregated to watch. After letting the visitors see the bear, and explaining possible scenarios of what may have happened, we loaded the carcass into our truck, covered it with a tarp, and headed back to Mammoth.

We took the bear's carcass to Neil Anderson at the Montana Fish, Wildlife and Parks Wildlife Laboratory in Boze-



Black bear as found by river.



Hayden Valley landscape, a couple of miles upriver from where the black bear was found.

man, Montana, for necropsy. Neil was able to measure one set of canine puncture marks he believed were caused by the lower canines of the predator that killed the black bear. The center-to-center distance of these canine puncture marks measured 59 mm, too large to have been from an adult wolf, mountain lion, or average-sized black bear. Measurements taken from reference skulls show that canine widths in that range are typical of average size, adult male grizzly bears in the GYE, although we could not completely rule out a very large adult male black bear as the predator. The identification of the predator that killed the black bear as a grizzly (based on the canine width of wounds found on the black bear's head) was later supported through laboratory analysis of DNA extracted from the bear scats collected at the kill site. We sent the scats to Dr. Lisette Waits at the University of



Head of mauled black bear.

Idaho for analysis, and DNA extracted from the scats indicated that they were, in fact, from a grizzly bear.

When threatened, black bears typically run to forest cover or climb a tree. In this case, the nearest climbable tree to the site where the black bear was killed was a single dead snag on a small island in the middle of the Yellowstone River over 70 meters away. The nearest climbable live trees were approximately 130 meters away on the opposite shore from the bank where the black bear was killed. The nearest climbable trees that could be reached without swimming were almost 1,000 meters northeast of the kill site. This observation lends insight into what can happen to black bears that wander too far from forest cover in areas occupied by grizzly bears, and why we rarely see black bears in the large, non-forested areas of YNP such as Pelican and Hayden Valleys, where grizzly bears are common. 🐾

Kerry Gunther is Yellowstone National Park's Bear Management Biologist. He oversees bear-human conflict resolution and bear research and monitoring throughout the park, and has worked in YNP for 19 years. He has also worked in grizzly and black bear research and management for the U.S. Forest Service and the U.S. Fish and Wildlife Service. Kerry holds a B.S. in biology with minor studies in earth sciences from Northland College in Wisconsin, and an M.S. in Fish and Wildlife Management from Montana State University. He has published papers on bear management, bear-human conflicts, bear-inflicted human injuries, impacts of recreation on grizzly bears, and grizzly bear predation. He is the recipient of the 1997 Sigurd Olsen Environmental Achievement Award. In his spare time he enjoys photographing polar bears in the arctic and sea kayaking in Baja.



Mark Biel is the Field Biologist for Yellowstone National Park's Bison Management Office. He assists in coordinating bison research and monitoring in and around the park and is overseeing the vaccination approach study for the eventual implementation of a bison brucellosis vaccination program within the park. Mark has worked for the National Park Service since 1993 in the Bear and then Bison Management Offices. He received his B.S. in Animal Science with minor studies in animal nutrition and equine management from Michigan State University and his M.S. in animal nutrition and equine exercise physiology from the University of Illinois at Champaign-Urbana. In his spare time, Mark enjoys horseback riding, woodworking, hiking, and fishing. He and his fiance, Alice, live in Gardiner, Montana.

