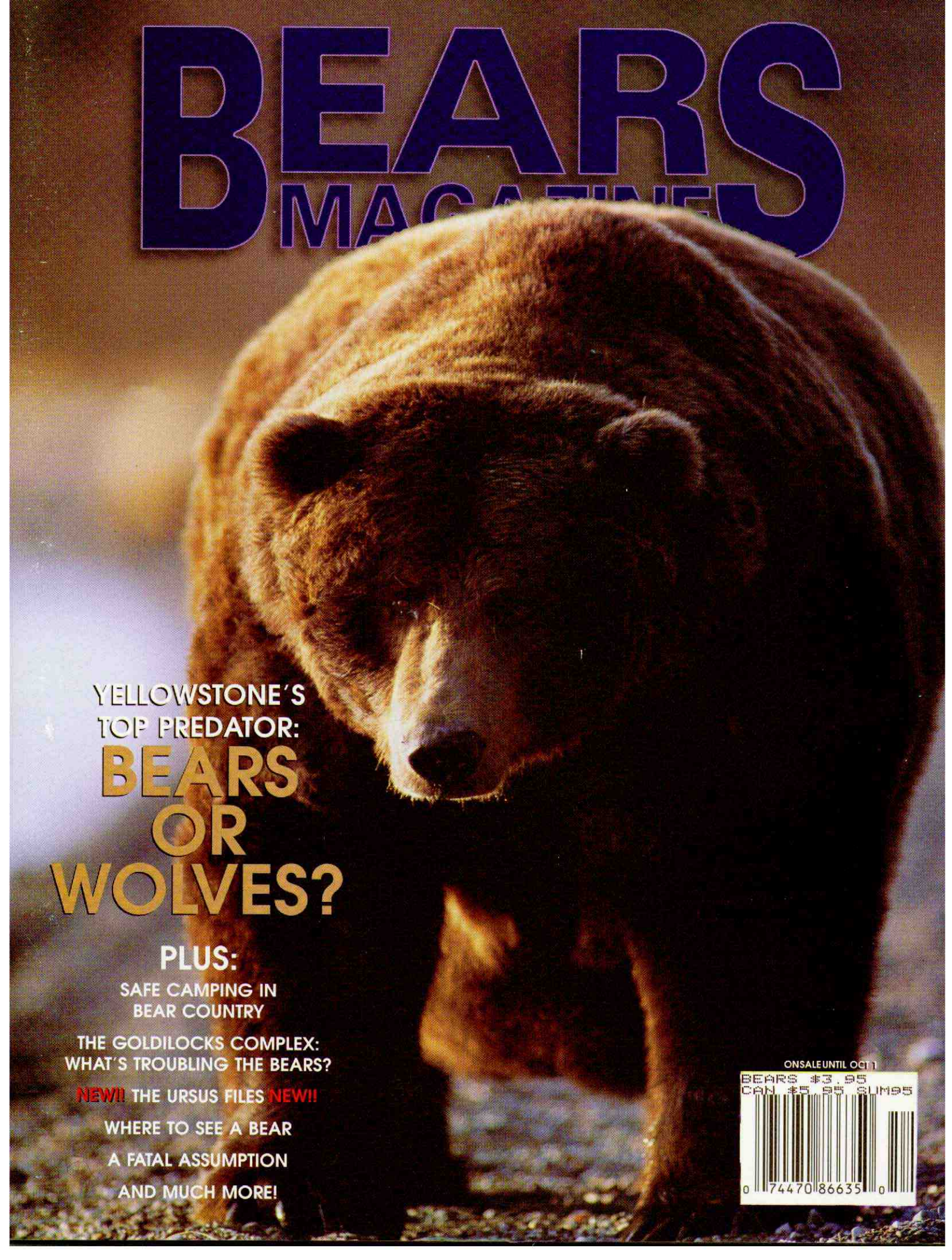
BEARS MAGAZINE



YELLOWSTONE'S TOP PREDATOR:

BEARS OR WOLVES?

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YELLOWSTONE'S

TOP

PREDATOR:

BEARS OR WOLVES?

After an acclimation period to the high altitude of Yellowstone's Lamar Valley, the first 14 returning wolves started their free-roaming occupation on March 21, 1995. The timing was right: most grizzlies were still in hibernation. The wolves were given a chance to get their feet on the ground and come out swinging. And that they did by killing an elk up Soda Butte Creek near Yellowstone's northeast entrance.

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INSET WOLF PHOTO: MICHAEL H. FRANCIS

– BY JAMES C. HALFPENNY, Ph.D. –

PREDATORS

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But by the next day, the proud possessor of the carcass was a grizzly. Would this be the pattern of their competition between the wolves and the bears?

This unfolding bout has been hailed as the fight of the century, pitting the heavy and middle weight champions of the world against each other—in and for the Yellowstone arena. The home town, heavyweight champ, *Ursus arctos*, a.k.a. *U. horribilis*, silvertip or grizzly, weighs in at about 450 pounds for males and 350 pounds for females. The challenger and, as of January 12, 1995, returning middle weight champ, *Canis lupus*, a.k.a. gray wolves, weighed in at averages of 103 pounds for males and 92 pounds for females. Yes, you may be sure that there are occasionally giants among the contenders, but few grizzlies in the Yellowstone ecosystem ever weigh over 700 pounds and the largest returning wolf was only 122 pounds.

The bout, sanctioned by the Endangered Species Act, recognizes grizzlies as a threatened species and the wolves as endangered. For this bout, however, the wolf will be classified as experimental, non-essential! In certain situations, ranchers may kill wolves harassing livestock or federal agents may trap and move wolves to new locations for transgressions against the livestock industry or depredation on wildlife.

This no-holds-barred fight pits not only males, but females and their offspring, against each other. Winner take all! OR could there be a stalemate—the ecosystem shared by both species living and thriving together?!

Grizzlies and wolves inhabited Yellowstone together for a millennia before "civilized" humans arrived. It is impossible to know population densities or how the two species worked out as neighbors. As early European explorers and settlers crossed the West, they quickly dispensed of what they viewed as vicious predators—wolves and grizzlies. One of the last strongholds for these predators was the Yellowstone ecosystem.

Hunting and trapping in the park accounted for many dead wolves. Strychnine poison probably took the heaviest toll as it was used largely to lace winter-killed carcasses when grizzlies were in hibernation. After the U.S. Army took over Yellowstone, the wolf population rebounded and increased notably by 1914. Then, the U.S. policy of predator extermination began in ernest! The last wolves were gone by about 1930. The total number of wolves killed for those last years, 1914 to 1930, reads: Montana 413, Wyoming and South Dakota 508, and Yellowstone National Park 136. The last wolf in the Greater Yellowstone Ecosystem was killed in 1943 by Leo Cottenoir, a sheepherder, on the Wind River Indian Reservation. Since then, sporadic wolf sightings were reported and one wolf was killed in 1992 by Jerry Kaiser, but there were no documents of breeding and self-sustaining packs. Now the people of the United States are returning the wolves to their rightful home.

The bout of the century should be considered only as normal ecological competition between two predator species. That competition can take many forms, which we may categorize as direct and indirect interactions. Direct interactions are the most spectacular and what people usually consider when they think about encounters between fierce, wild predators—fights to the death. Certainly, I know that in head-to-head combat, an adult wolf would seldom win against an adult grizzly, but it is important to remember that there are means other than direct combat by which one species might cause the extinction of its opponent. Consider, for example, predation on young and reducing available habitat such as den sites.

When we talk about competition between species, we refer to

results at the population level, that is the totality of all members of the species. To cause extinction of an opponent, the entire population must be reduced below its breeding ability to recover. Of course, that is of little consolation if you're the losing individual of a fatal fight.

We find recorded in the scientific and popular literature only about 100 reports of direct interactions between our contenders. In some interactions, grizzlies win, while in others, wolves win. A win may constitute successfully killing your opponent, and wolves can do that. From the Soviet Union, we know of a three-year-old brown bear that was killed by wolves, and from Alaska we know that wolves occasionally kill bears. In Riding Mountain National

PHOTO MICHAEL H. FRANCIS

Park, Canada, wolves have been known to dig out hibernating black bear cubs from their dens and kill them. Even the wolves smaller cousin, the coyote, can successfully kill bear cubs. The excellent video by Bob Landis, *Song Dog*, shows six coyotes in Yellowstone successfully taking a black bear cub away from its mother while she attempts to defend it. But that is not always the case, as in Algonquin Provincial Park where a black bear killed an adult wolf.

Perhaps the most serious confrontations occur when animals are defending their young. Adolph Murie, great naturalist of Denali National Park, Alaska, reported an interesting encounter when an adult male grizzly approached a wolf den to 100 yards before being detected. The wolves quickly attacked, driving the bear away. It would go a few jumps, but then have to turn to protect its backside. Surrounding the bear, one wolf would dash at it from one side diverting its attention, while another wolf would attack from a different side. The quick wolves easily avoided the grizzly's lunges. The wolves harassed the bear for about thirty minutes before it left. Murie would score this round a draw.

At feeding sites, confrontations can go either way. Murie believed that most confrontations over food went to the grizzlies, and said, "...not infrequently the grizzlies discover wolf kills and unhesitatingly dispossess the wolf and assume ownership." In the remarkable grizzly bear video by Lance and Belinda Peck, *Grisan*, a Gone Wild production, a grizzly is seen driving a wolf off a carcass.

Steve Fritts, wolf ecologist for the U.S. Fish and Wildlife Service, has compiled a list of 70 direct interactions. When on a kill, bears successfully defend their own kills in about 40 percent of the encounters. However, in fights or chases between the two species, wolves won 40 percent of the time and bears only 20 percent, while the rest were indecisive. In Denali, when wolves harassed bears or tried to take their cubs, the bears typically retreated. At ungulate carcasses, wolves won 9 of 19 interactions with grizzlies.

Food resources may even be shared. Ray Paunovich filmed a wolf in Yellowstone in October 1992 that was sharing a bison carcass with a grizzly and coyotes. The wolf did keep a wary eye on the bear though. Fritts reports two instances of both wolves and bear on the same kill at the same time. Again it looks like the round is a draw.

The outcome of direct encounters between these large predators is dependent on many things including age, sex, presence of young, prey availability, hunger, individual aggressiveness, and previous experience with other members of the encountered species. Certainly every bear has an individual personality and may have a bad day, any day. Predicting the outcome of any particular encounter then becomes guess work at best, and on any given day either species may be the winner.

Since wolves seldom kill cubs and bears seldom kill wolves, populations are not easily affected by direct encounters. In Alaska, Canada, and the former Soviet Union, no evidence suggests that the occasional impact to the entire population is minimal. All rounds, so far, are draws.

–Indirect Interactions

Indirect interactions are important to the population dynamics of

carnivores and can easily result in extinction. Exploitation of available food may be a critical issue between these two predators. Grizzlies in the Yellowstone ecosystem benefit from the availability of elk and bison. They scavenge 30 to 100 percent of winter-killed carrion, prey heavily on winter-weakened ungulates, kill large numbers of new-born elk calves each spring, occasionally kill adult animals during the summer, and routinely prey on adult bull elk during and after the rut. Depending on the harshness of the previous winter, there may be as many as 15,000 to 20,000 elk on the Northern Range of Yellowstone each year. The presence of so many elk in Yellowstone clearly appears to benefit grizzlies.

Pre-restoration estimates suggest that the Yellowstone ecosystem can support about 100 wolves consisting of 10 packs of up to 10 wolves each. When deer, elk, moose, and bison ranging the heart land of this ecosystem are counted, that amounts to about 220 ungulates per wolf in the winter and around 360 per wolf in summer when animals migrate back to the high country of Yellowstone. Prey to predator ratios this high are believed to provide adequate food for both species and to be sufficient to prevent much competition. It is estimated that the presence of 100 wolves may reduce ungulate numbers by less than 20 percent.

The question is, might wolves reduce the number of elk to a critically low level for bears during any season? Perhaps the post-hibernation period is the most critical season. Post-winter numbers of 12,000 to 16,000 still appear to present a large prey base to be shared by both wolves and bears. Additionally, bears often usurp fresh kills from wolves, thus taking advantage of the wolves' effort to obtain elk that a single bear might not have been able to get.

Then, there are bison (a.k.a. buffalo). Currently around 6,000 animals roam Yellowstone and weigh upwards of a ton. Adult bison are seldom preyed upon because of their size, but both wolves and bears have been known to take bison, especially the weak and sick. Most scavengers cannot take advantage of a bison carcass because they cannot bite through the thick hide. Both competitors have the strength and weapons to open a bison carcass for scavenging. The competition for bison carcasses might be real, but bears often displace the wolves from kills and shouldn't be harmed much by this additional competition.

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Definite trade offs exist between caloric value gained by grizzlies from usurping kills made by wolves and potential loss of calories because of reductions in ungulate population. However, since ungulate reductions may not be too substantial, adequate animal protein appears to be available for both predators. If anything, the bears will gain from the relationship by stealing the wolf kills.

Also bears are really omnivores and can use other foods. While vegetal foods are sparse in the spring, there is potential for grizzlies to supplement their diet with roots, white-barked pine nut caches, grasses, ants, and even pocket gopher caches. In fact, most grizzly populations do not have the advantage of a large, winter-killed ungulate food base each spring and survive well on alternate food sources. Carnivore ecologists from the Soviet Union, where brown bears and wolves still exist together, report having observed very little effect of wolves on bears because bears are omnivorous and can use herbaceous foods as protein.

To rate this match up, a panel of judges consisting of 15 North American expert wildlife ecologists was chosen. After tallying the points awarded by each judge, there is agreement—NO CLEAR VICTOR. The judges suggest "that changes in behavior and distribution of ungulates as a result of wolf restoration will be minor." Presiding referees, Dr. Christopher Servheen (U.S. Fish and Wildlife Service) and Dr. Richard Knight (Interagency Grizzly Bear Study) ruled "...available information suggests little if any effect on population numbers from wolf-bear interactions. We expect some initial changes in bear-ungulate relations, but change would be gradual and grizzly bears are likely to suffer minimal effects."

The match is still in progress and "bears" further watching. Grizzlies did get the first points by usurping at least two kills. The 1994-95 winter was hard on ungulates and many carcasses were available for scavenging in the spring. Also, ungulate herds are expected to do well this summer, providing future protein sources for our favorite charismatic, megafauna predators. Exactly as planned, the wolves have been roaming and learning their new home in the Greater Yellowstone Ecosystem. Round 2 may go to the wolves, as they now have sired two litters of pups providing for future generations.

While there may be occasional direct encounters, most predators have a working truce preventing many battles. If you are a predator, you cannot afford to sustain an injury which might make it impossible for you to obtain food. For predators, they simply walk away from a fight whenever they can! Grizzlies and wolves should successfully share the Yellowstone ecosystem and both should prosper—if people leave them alone! But that is another article.

Dr. James Halfpenny, a scientist and environmental educator, owns A Naturalist's World, a company dedicated to providing educational programs, books, slide shows, and videos about ecological important subjects. Author of A Field Guide to Mammal Tracking in North America, Winter: an Ecological Handbook, and the video, Living among Ice Bears, Jim has taught outdoor education and environmental programs since 1961.

Jim currently resides in the Greater Yellowstone Ecosystem where he spends as much time in the field as is possible, especially on his cross-country skis.

Song Dog is available through The Yellowstone Association, P.O. Box 117, Yellowstone National Park, WY 82190