

## Significant Findings of Gordon Haber's Wolf Research

### Social Attributes

Wolves are perhaps the most social of nonhuman vertebrates. Wolf family social ties are unsurpassed, even among humans. Wolves will go to tremendous effort to remain with their families (relocated wolves have traveled hundreds of miles to return to their families).

Each individual wolf has its own personality, and their ability to express emotion becomes obvious after one watches the same individuals even for a short time.

Wolves are monogamous, and their reproductive bonds are at the heart of wolf social organization.

As they become finely tuned to their territories, each wolf family group will develop its own unique adaptive behaviors and traditions; taken together these can be considered a culture.

Wolf social organization and success are based on two evolutionary strategies that are rare among vertebrates: (1) Cooperative breeding/rearing—nonreaders altruistically the breeding pair, as well as cooperatively nurse, babysit, teach, guard, and raise pups; and (2) cooperative hunting—adults cooperate in stalking and killing prey.

Wolf groups do not often accept unfamiliar wolves trespassing into their territory, but will adopt newcomers at times, especially if the group has been fragmented and reduced by human exploitation.

Deaths from intergroup fighting do occur but appear to constitute only 10 to 20 percent of a family group's total natural (non-human-caused) winter losses from death and dispersal.

Wolves howl to communicate with other group members, to locate one another, to announce their return from a hunt, whether they or other members of the group are in pain or distress, (e.g., caught in a trap), to energize the group after a rest, as a form of socializing that helps to maintain important bonds, to express a range of emotions, to advertise their territorial boundaries, and simply for the joy of howling.

Play is a very important form of maintaining social bonds (in addition to chorus howling, etc.), and wolves usually play at least every thirty minutes.

Wolves cross large rivers by reading the currents to project their own float path and then let the currents take them diagonally across with minimal effort.

Ravens follow wolves to scavenge on the remains of their kills and often taunt young wolves into chasing them [chapter 6].

Behavior that is fearless and curious of humans (such as along the Denali National Park roads) is nonthreatening and natural for wild wolves—not evidence of “habituation.” It is the fearfulness they learn from human persecution that is not natural [chapter 10].

The Toklat family group in Denali National Park is at least forty-three years old, and most likely over seventy years old. This ranks the Toklat wolves as one of the two oldest-known, longest-studied large mammal groups in the wild [chapters 1, 14].

Individual wolves are important, and total numbers in an area say little about the health and integrity of wolf populations. Loss of significant individuals, such as alpha adults or helper females, from trapping or hunting can lead to long-term effects in wolf family groups, causing loss of hunting and socializing traditions, loss of dependent pups, dispersers, and, ultimately, loss of the group [chapter 11].

## Raising Pups

Wolf dens are elaborate, deep, honeycombed series of burrows and entrances that are used year after year. All members of the group are involved in preparing the dens. They include play areas for the pups, rest areas and lookouts for adults only, socializing areas for hunting departures and arrivals, and a maze of interconnecting trails, spread over as much as fifty acres [chapter 3].

During intervening periods most wolf dens are also used by other animals, including foxes, ground squirrels, porcupines, and wolverines. Burrows at

some sites were probably excavated originally by ground squirrels and were later enlarged by foxes, then wolves [chapter 9].

Many dens in Denali National Park may have been used for thousands of years or longer. Archeological evidence indicates that at least three ancient wolf den sites in Denali were also shared with humans from three thousand to ten thousand years ago [chapter 3].

Raising new pups at a den is social glue for wolves, without which wolves seem most likely to split apart and disperse at a time of the year when some young adults are already predisposed to disperse [chapter 3].

Yearlings develop some of the closest bonds with the new pups, and their close care of the young pups is one of the manifestations of the wolves' sophisticated cooperative breeding behavior, in this case a form of "helping" that also amounts to a division of labor [chapters 3, 4].

Adult wolves engage in deliberate teaching, particularly of two-to-three-month-old pups. Older wolves take them on short "puppy walks" to better acquaint the pups with the world outside the natal den [chapter 4].

Loss of significant adults (and teachers) can cause groups to lose unique hunting abilities, the ability to hunt certain prey at all, the ability to find winter kill, and the ability to maintain their territory [chapter 8].

In some wolf family groups, such as the Toklats, that rely heavily on the most challenging prey like moose and sheep, pups require a two-to-three-year period to learn from older, more experienced wolves. If they are denied this, by loss of the adults, then their very survival is at stake. Much of this learning amounts to traditions that are refined over time, behavior that helps adapt the group to the specific resources and other conditions of its area [chapter 4].

Pups progress through four fairly distinct phases in learning how to hunt: (1) hesitation and fear for the first few months after homesites are abandoned in the fall; (2) exuberant (and ineffective) overreaction to prey in midwinter; (3) effective participation, with adult guidance at about one year old; and (4) effective hunting at two to three years old [chapter 4].

This prolonged period of dependency of pups on adults, about 25 percent of their total life span, provides the means by which knowledge can be passed from one generation to another. This is a general characteristic of intelligent animal societies, including our own. And as with the young of many primitive human societies, young wolves have the added advantage of being raised in an extended family, where the presence of many adults caring for them—not just one or two parents—exposes them to the broadest possible opportunities for learning [chapters 3, 4].

## Hunting

Wolves can spot prey from at least eight miles away, anticipate and intercept potential prey escape paths, and drive prey into difficult escape terrain for capture [chapter 7].

Wolves are not indiscriminate killers but are deliberate and careful about which animal to pursue. For scavenged winter carcasses they eat parts as they thaw and may have to wait for thawing before consuming it all, if they are not interrupted by humans [chapter 7].

Wolves are able to distinguish subtle differences between the fittest potential prey and those that may not be so fit. As a result, the weakest tend to be culled from the population first. Only about 5 percent of wintertime wolf-moose encounters in Denali resulted in an attempt to kill the moose, but most kill attempts were successful [chapter 7].

Wolves have been observed to encircle a moose and hold a standoff for up to seven days, until the moose collapses in exhaustion [chapter 7].

Scavenging of winter-killed ungulates is a primary source of food for wolves. Denali wolves scavenged, rather than killed, about three-quarters of the moose they ate, and about half of all the caribou and sheep they ate. Scavenging can contribute up to 85 percent of wolf diet in harsh winters with high winter-kill. Wolves commonly dig to frozen carcasses under the snow, as deep as ten feet or more, into hard-packed drifts and avalanches [chapters 7, 8].

Wolves can communicate to other group members the location of a prey kill site, allowing other members to find it, even when it is as far as eight miles away [chapter 4].

While resting at the den, adults will often ignore prey that wander through the area [chapter 5].

Wolf groups have been observed consuming twelve-hundred-pound moose within forty-five minutes and a two-hundred-pound Dall sheep ram within twelve minutes [chapter 7].

Wolves develop unique hunting traditions that fit their territories and aren't used by any other wolf groups. When a family group is lost, their unique hunting traditions are often lost as well [chapter 7].

### Humans Killing Wolves

For wolves, shooting and trapping causes significant impacts—lasting long after numbers have recovered—on wolf family social structure, behavior, hunting patterns, distribution, territories, genetic variations, and mortality patterns of survivors and recognizers [chapters 10, 11].

While natural mortality (e.g., winter, starvation) is proportionately greater in pups and yearlings, hunting and trapping takes proportionately more adults, and alpha adults, as these individuals often lead hunts and forays. Thus, human-induced mortality has a greater negative impact on wolf families than natural mortality [chapter 11].

Killing wolves doesn't usually reduce overall predation on ungulate populations. Other predators like bears fit the vacant niche, and wolf reproduction increases after alpha adults are lost. If a family group is fragmented due to hunting/trapping losses of alpha adults, other pairs are able to get away with mating, thus resulting in more, not fewer wolf pups overall. This means that the hunting/trapping and aerial killings by which hunters have tried to reduce wolf numbers are instead most likely to have the opposite effect: to increase them [chapter 12].

Wolves compete with brown bears for prey (such as moose calves in spring), harass bears away from moose calving areas, and steal carcasses of animals that bears have killed. Thus, a reduction in wolves in such areas will not necessarily lead to a reduction in overall predation of ungulates but might actually increase predation [chapter 9].

Other than relatively light and sporadic subsistence use in areas where it is a traditional practice, it is clearly best to not allow any harvest of natural wolf populations [chapter 12].

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