Chapter 1 - Introduction

Overview

This paper presents information on the gray wolf (canis lupus) and examines wolves in different environments and under different management techniques to arrive at conclusions of what are the best methods of management. Wolf management involves ecology, biological degradation and preservation, ethics, politics and economics. Wolves fulfill the predator niche in ecosystems. Lack of wolves can lead to biological degradation as the prey animal population is unnaturally large. The Endangered Species Act gives Americans the responsibility of preserving species. Wolves are intelligent and live in family groups. Killing them brings up ethical issues. Wolves need large areas for habitats. These areas may overlap with human occupation. Wolves are part of eco-tourism and, as such, have economic impacts. Wolf management has ranged from extirpation to complete protection (Boitani, 2003). This thesis examines who the stakeholders are in Yellowstone, Alaska, New York and across the country. It addresses questions such as the following: Who should make the decisions regarding wolf reintroduction and management? What role should the federal and state governments play? In answering these questions, the paper presents information from relevant scholars, draws conclusions, and offers recommendations for wolf management across the country.

Problems Associated with Wolf Management

Boitani (2003) contends wolves are complicated animals that have different habitats according to the time of year. Generally decisions about their management are made by experts but their management is really multidisciplinary. Management decisions should

be made from the input of several kinds of people ranging from biologists to the average citizen. According to Boitani many people know a little about wolves, yet base decisions on their little knowledge. Even neighboring states do not cooperate regarding wolf management. In order to have wolves, humans and wolves may have to integrate much more than they do now.

Background and Significance of Problem

If wolves are to be in proximity to humans, they need to be managed. According to Deborah Kleese (personal communication October 2006), the wolves in Yellowstone National Park are extremely managed with problem wolves being captured and released multiple times. In the past, wolves were "managed" by extirpation in all of the 48 continuous states with a small population left in Minnesota (Lopez, 1978; Carbyn, Fritts, & Seip, 1995) Europeans have a long history of fear of the wolf as a perceived or real danger to people and their livestock. Whether or not wolves will prey on livestock when they can prey on wild animals remains debatable. Phil Delphey, wildlife biologist for the U.S. Fish and Wildlife Service in Minnesota, speculates that wolves are "happiest" preying on wild animals. Mr. Delphey doubts a wolf would pass a deer to kill a cow (personal communication, January 8, 2007).

There are at least two different approaches to wolf management: Haber's and Mech's. Haber (1996) wrote of his concerns that wolf management was based purely on quantitative rather than qualitative judgment. Haber's concerns include that wolves are highly social, intelligent beings. He believes indiscriminate killing disrupts their social groups, which are typically families. Killing adult wolves with dependent puppies is tantamount to killing the puppies, which are dependent on the adult wolves for a quarter

of their life expectancy. He suggests that humans should operate from the standpoint that wolf control is not necessary and then it will be easier to do when absolutely warranted. Mech (1995), on the other hand, has stated some wolf control will generally be necessary. Haber approaches the issue from an ethical/biological standpoint, while Mech is more pragmatic.

Another approach, the environmental (land) ethic, takes a holistic view of ecosystems and the contributions of species to their ecosystems. Berger, Stacey, Bellis, and Johnson (2001) write about the effects of the lack of wolves on plants and consequently birds. In the land ethic the absence of wolves in their native ecosystems has had a greater environmental effect than expected. By the 1930s wolves were all but eliminated from the lower 48 states of the U.S. (Boitani, 2003; Lopez, 1978; Tolme, 2007). Now all these scholars are finding that the extirpation of wolves may have been harmful not only to them but to a variety of other species. The extirpation of wolves and grizzly bears from their former areas seems to have had a dramatic effect. Hoofed animals (ungulates), native or other, may pop up in areas without predators and reproduce to the food carrying capacity of the region. Ripple and Beschta (2005) have observed that ungulates affect vegetation by eating and by trampling on it -- especially in riparian zones, areas around streams and rivers. The change in vegetation makes the habitat different, which affects which birds and other creatures will nest there. Over grazing also leads to erosion ultimately clogging streams and affecting fish.

This top-down effect in the food chain is called *trophic cascade* and appears to be the case in the Rocky Mountains where moose were studied (Berger, Stacey, Bellis & Johnson, 2001). The idea of having humans hunt moose in place of wolves does not

work because humans, wolves, and bears all hunt differently and choose different prey individuals. Humans are usually more concerned with getting a trophy male. Wolves and bears also prey on calves and weaker moose. It can be extrapolated that the extirpation of any predator will have far reaching effects, not just the removal of the predator as a competitor of humans (Welsch, 2006).

As observed by Ripple and Beschta (2005), the idea of trophic cascades (though not so named) goes back to Aldo Leopold who observed 100 deer eruptions across the country after the extirpation of large predators. In *A Sand Country Almanac*, Leopold describes the food pyramid and the deleterious effects of lopping off its top. Welch (2006) discusses the trophic cascade in the Lamar River Valley – aspen trees stopped growing around the time wolves were extirpated. Welch's paper credits the wolf with the restoration of the valley. Wolf predation impacted the elk, which impacted the aspen. Young trees died in the absence of wolves because elk took the time to eat them. When Welch wrote his paper, trees were younger than 10 or older than 80 years, but there were no trees during the time there were no wolves. The existence of trees correlated with the existence of wolves. Willows and cotton wood as well started showing up in 2001. Wolves had been reintroduced in 1995 and 1996. Once again it was not the same to have humans act in the stead of wolves. As observed by Welch (2006), Elk behavior is not the same in the presence of humans as it is in the presence of wolves. Elk will not graze in one place with wolves near by, presumably because they fear wolves. They will not eat the trees down to nothing. Trees did not come back when elk were killed by people because presumably elk do not fear people enough to inhibit their grazing.

In addition to managing existing wolves, there is the question of managing reintroduced wolves. The obligation to reintroduce wolves stems from the Endangered Species Act of 1973, which encourages the reintroduction of endangered species to their former habitats.

Even when there is agreement on managing the number of wolves, there is disagreement on the methods: Should lethal or non-lethal methods be used? Which wolves should be taken? Wolf management has been an issue in Alaska for at least a century. In Alaska definitions of “trapping” include direct and aerial hunting in addition to traditional trapping. Haber (1996) says the public kill has as much deleterious effect on wolf populations as government control. He contends that wolves are highly intelligent, emotional, sensitive beings that have come to trust humans in Denali National Park, Alaska only to have this trust betray them when they step outside the park and become legal quarry for hunters and trappers.

Forbes and Theberge (1996) bring up the issue of zoning as a management technique – having various zones for wolves differing by size and tolerance to wolves. Because of the roaming nature of wolves and the habitat they need (where their prey is and goes), the theory of zoning needs to be explored. There are small and large scale zoning practices and both have advantages and disadvantages. Zoning is classifying areas differently. As with so many wolf policies, the best zoning may be a combination of large and small zones with wolf corridors between smaller zones.

Stakeholders in Wolf Management

Stakeholders in wolf management are persons with any interest in the issue. These people include ranchers, politicians, naturalists, conservationists, and biologists.

According to the U.S. Fish and Wildlife Service (USFWS), currently decisions on wolf management are made at the federal level with the exception of Alaska. When wolves are delisted from the Endangered Species List (state by state), individual states will take over the management, but they will need approval of their plans from the federal government first.

Attitudes towards wolves vary with proximity to the wolf and education. The more likely one is to encounter a wolf, the less positive the attitude. People with the most positive attitudes towards wolves are young, urban college students (Anderson, Hill, Ryon, & Fentress, 1996). Wolf management is especially challenging because of the extreme polarity of views on wolves. The Director of the International Wolf Center in Ely, Minnesota, recently wrote that the wolf pendulum swung to the right before 1970, to the left after that, and now is in the middle (International Wolf Center, 2006). In other words wolves were not popular before 1970, became very popular in the 70's and that people have mixed views at present. It will be interesting to see in the coming years what humans do with wolves as control shifts from the federal to state governments.

Conservationists worldwide can learn from each other. Lewis et al. (2000) state: "If any lesson can be learned from past failures of conservation in Africa, it is that conservation implemented solely by government for the assumed benefit of its people will probably have limited success" (p. 194). The same point has been made in other writing about wolf conservation. Fritts et al. (2003) observe laws generated outside local jurisdictions cause resentment and are seen as an intrusion into local affairs. However, when local people are invested in conservation, be that by jobs or opinions, there is much more cooperation.

There is a wide range of opinions on and reactions to wolf management in wild systems. Because wolves do not live in a vacuum, one cannot accurately discuss single species management. How humans manage wolves depends on how humans manage the prey of wolves and other species in their relative ecosystems. Some people feel it is inappropriate to manage wild species. Ranchers recognize the need to manage wolves to avoid depredation (wolves preying on livestock). The Alaska Department of Fish and Game (2007) sees a need to control wolves to increase ungulates for recreational (non sustenance) hunting.

Wolf Depredations

Fritts et al. (2003) claim depredations on livestock continue to be a *major* [emphasis added] problem in wolf conservation. They say wolves prey on domestic animals in every country where the two coexist. In the American West, losses of livestock increased following the depletion of bison, elk, deer and other ungulates and the replacement of those species with cattle and sheep. Whether or not depredations are a major problem depends on whom one reads. Other sources describe wolves walking amid cattle. Yet other sources say wolves prefer wild prey because it acts like prey. Most experts agree that wolves that get a taste for domestic prey are difficult to cure from the habit. Losses around Yellowstone were not what they had been projected to be. Fritts et al. (2003) note although they are increasing in some of those areas, wolf depredations involve less than 1% of available livestock, and less than 1% of producers within wolf range experience losses to wolves each year (p. 306). Smith (2005) relates how in 1916 livestock industry spokesman Wallis Huidekoper said “It is a well-known fact that stock-killing individuals among wolves are only a small proportion of their kind

inhabiting a given area" (as quoted in Smith and Ferguson, p. 46). According to the U.S. Department of agriculture statistics, of the 104 million head of cattle raised in 2005, wolves killed 4,400. By contrast digestive problems caused 648,000 deaths and dogs caused 22,000 (as cited in Tolme, 2007).

Management of livestock is vital to its survival. Untended livestock in remote pastures sustain the highest losses from wolf depredations in both North America and Europe. Fritts et al. (2003) note when wolves prey on livestock, some form of wolf management is inevitable, whether lethal or non-lethal, legal or illegal. However, no consistently effective non-lethal method is anticipated soon. The use of guard dogs and shepherds is somewhat effective as is killing problem wolves. Killing of all wolves in the area is not warranted. Selective killing makes the most sense in terms of a compromise. Fritts et al. (2003) go on to say that wildlife managers are sometimes pressured by livestock producers to exercise more lethal control than needed or allowed by law. Clear guidelines governing how wolf control actions can be conducted make the jobs of field personnel easier.

Do wolves have value?

Whether or not one believes wolves have intrinsic value, they definitely have economic value. The annual regional economic losses from the Yellowstone and Idaho wolf reintroductions were predicted to be $187,000 to $465,000 in lost hunter benefits: licenses and the infusion of hunter money into communities. However; the yearly gain turned out to be $23 million per year in increased tourist expenditures (Fritts et al., 2003, p. 299).

Fritts et al. (2003) note The International Wolf Center in Ely, Minnesota, brings an estimated $3, million benefit to the local economy each year and stimulates the equivalent of sixty-six full-time jobs. Estimates of the value of simply knowing wolves exist have been made at about $8 million.

Where can wolves live?

Everything about wolves is controversial, from their value to where they can live. Fritts et al. (2003) cite several examples of wolves living in close proximity to humans. They go on to say that wolves are not dependent on wilderness, but are dependent on their ability to avoid humans and human attitudes towards them. However, Haber (1996) asks if the animals living in close proximity to humans are truly wolves, not in a taxonomic sense, but in the ethical sense of “Is this how a wolf should live?” To many people, the wolf is a symbol of wilderness; wolves at garbage dumps surviving marginally is not a picture painted of them. Not only wolf management, but the very essence of wolf, brings up ethical questions about humans’ notions of wilderness.

According to Fritts et al. (2003) there has been an apparent increase in aggressive encounters since 1970. These encounters have been attributed to greater protection for wolves and increased wolf numbers, combined with increased visitor use of parks and other remote areas. They comment, ”Even allowing for exaggerations and fertile imaginations, it is now clear that even non-rabid wolves sometimes attack humans” (p. 303) . They go on to give many statistics involving Europe, Eurasia and India but this paper confines most discussion to the United States.

The next chapter examines the reintroduction of wolves to the Greater Yellowstone Ecosystem (GYE). Chapter 3 looks at wolf management outside

Yellowstone in places like Alaska where wolves are abundant but not in a national park. Chapter 4 discusses the possibility of the reintroduction of gray wolves to the Adirondack Park, and Chapter 5 discusses findings, draws conclusions, and makes recommendations.

Chapter 2 Wolf Management in Yellowstone National Park

> The memory of number 10 lived on in his progeny—eight little wolves born to his mate, Number 9,…He remains in many ways an ideal icon of this reintroduction, both a symbol of the extraordinary strength of wolves—their ability to thrive if given half a chance—and at the same time, a reminder of how frail such vitality can be in the face of humans who would wipe them from the earth. (Smith & Ferguson, 2005, p.62)

Introduction

This chapter covers the reintroduction of wolves to the Greater Yellowstone Ecosystem (GYS), giving the history of the originally reintroduced wolves up to 2005. Both McNamee (1997) and Smith and Ferguson (2005) have documented the return of the wolf to Yellowstone in their books. The books have different tones and both are worth reading. McNamee focuses more on the human dynamics of the reintroduction and Smith and Ferguson focus more on wolves and their behavior. This chapter discusses parts of these books that apply most to the management of wolves in Yellowstone. Smith and Ferguson's book, *Decade of the Wolf,* gives detailed analysis and narratives of the past ten years of the Wolf Recovery Project. As a spotter and darter, Smith personally handles more that a dozen wolves a year. At present Smith is the wolf project team leader.

Smith recounts how long before wolves were reintroduced to the Greater Yellowstone Ecosystem in 1995, they were being managed (Smith & Ferguson, 2005). The GYS was chosen for its wide-open spaces and because the wolf used to inhabit that area. The wolves were captured and blindfolded like hostages in Canada with a one-way ticket to GYS. They were stressed to the max and even their final soft release

into a pen was held up in court for hours while the wolf veterinarians worried for the wolves' lives.

According to Smith, the first shipment of wolves for GYS consisted of three packs (Smith & Ferguson, 2005). To consider the project successful there needed to be three breeding pairs for a number of years. To avoid limiting the gene pool, wolves were captured from different packs and special attention was paid trying to get an alpha pair or create an alpha pair with the hoped union of an alpha female and an alpha male. An alpha pair is the pair, male and female, that is the breeding pair. These are the dominant or leader wolves in the pack. In almost every pack the use of acclimation pens seemed to reduce movements following release, and at the same time, "helped maintain familial ties…. A second year of release was used to increase genetic diversity" (Smith & Ferguson, 2005 p. 57).

McNamee (1997) also details the reintroduction of wolves in his book, *The Return of the Wolf to Yellowstone*. McNamee wrote about people and Smith and Ferguson (2005) wrote about wolves. These books are much the same except for the emphasis on either people or wolves. Smith and Ferguson focus more on the wolves' stories. According to the Yellowstone Resource Center (2005), in 1994 there were no wolves. After wolves were reintroduced in 1995 and 1996 they reproduced and now there are more than 300 wolves. These simple facts belie the Herculean efforts taken by a select group of people to reintroduce the wolves and the hatred some still feel toward them. The founding wolves that died were killed by humans by accidental car injuries or intentional shootings. One can tell from McNamee's descriptions that the wolves meant far more to the men and women involved than just work. Although they were numbered

as is typical of biological studies, the numbers came to represent names. Different people expressed distress over the loss of “10” the alpha male paired with “9” that was part of the original introduction. It is impossible to remain aloof and unattached from these beautiful creatures. Consequently McNamee describes the wolves in very anthropomorphic language. Halfpenny (2003) says the wolves were numbered out of respect for them and to be less anthropocentric. However, he questions what the wolves would want to be called and this defeats the purpose of trying to think of the wolves as mere objects.

Another source of information is a report produced each year by the Yellowstone Resource Center. The 2005 report was particularly useful because of its recent nature. The yearly reports are important to the stakeholders in the reintroduction who are cattlemen, sheep farmers, conservationists, residents near by, people of the affected states, the greater US and lastly the entire world. The Endangered Species Act does more than protect endangered species. It says that these animals should be reintroduced (as much as possible) to their native ranges. Before extirpation by white men by 1950, wolves ranged freely over much of the lower 48 states with a strong hold in northern Minnesota. Wolves prey on animals humans want, hence all the controversy. Wolf numbers were strong in Alaska and continue to be so.

According to Deborah Kleese, the wolf is the direct ancestor of the family dog (personal communication, October, 2005). Many sources support this fact. This relationship may account in part for wolf popularity, which was at an all time high during the mass media event of the release of wolves in Yellowstone. On the other hand, some peoples’ fear of wolves is engrained from stories like “Little Red Riding Hood” and “The

Three Little Pigs." Wolf advocate or not, the world watched as the wolf project team made its first management decision in the park.

According to Smith and Ferguson (2005) and McNamee (1997), the first management decision to be made in the park was what type of release to use. Smith explains that soft releases use acclimation pens. Wolves have a strong homing response. The project team was afraid the wolves would try to go back to Canada. The team hoped by keeping them in the pens for a few weeks the wolves would become accustomed to their new surroundings. The team was puzzled when the wolves did not leave the pens once they were open. Once a hole was cut in the back of the pen (one that people had not used) all but one of the wolves exited the pens. Smith explains, "The reason for using soft release in Yellowstone has to do with how close the national park is to cattle and sheep ranches…. The pens were an attempt to soften, or attenuate, this strong behavioral response" (Smith & Ferguson, 2005, p. 48). The pens kept them from running away, so they may have reinforced their fear of humans and it was several years before a Yellowstone wolf came close to humans.

Behavior

Halfpenny (2003) states that foremost wolf biologists like Mech, Haber, Smith, and Lopez know wolves cannot be managed without knowing their behavior. Consequently management is based on studies of wolf behavior and how it affects other animals – vertebrate and invertebrate. According to the National Park Service, roughly one third of the Yellowstone wolves are collared and monitored each year in order to observe behavior. Most are fitted with radio collars, but a few are fitted with global positioning collars, which use satellites to show precise locations (National Park Service

as cited in Yellowstone Resource Center, 2006). Radio collars are used because of the size of Yellowstone (some 2 million acres). Research is conducted drawing on the example of work done in Isle Royale, Michigan. According to Deb Guernsey, data manager for the wolf project team, forms are constantly revamped because new questions are always arising (As cited in YRC, 2006).

Smith comments that when a gunner in a helicopter darts a wolf for collaring, the helicopter peels off to give the animal time to go down to reduce stress (Smith & Ferguson, 2005). This strategy too, is part of management. If the alpha female is darted, the alpha male will hang around and can be collared as well. The opposite is not true. Blood samples and measurements are taken from darted wolves to study their ancestry and condition: age, weight, and physical measurements.

The Yellowstone Resource Center (2006) states that radio tracking is a staple of professional wildlife biology, but it still requires field work. Some desk work can be done by affixing wolves with global positioning system (GPS) collars, which can pinpoint where a wolf is at any given time. It is doubtful the GPS collar will entirely replace radio tracking because one costs ten times that of a radio collar and lasts for months as opposed to years. Although it is difficult and expensive to trap and collar a wolf, this tracking strategy will continue. With the GPS collar there is no actual sight involved so the researchers do not know the surroundings of the wolf, and can only hypothesize what it is doing when it is in one spot for a period of time.

The YRC (2006) reports that wolves are more difficult to track in the summer because of the lack of snow and the smaller nature of prey, but sometimes denning sites can be observed from roads making it possible for the general public to see pups

from April to July. Kill sites are more difficult to find in the summer. Prey analysis is conducted chiefly by analyzing scat from denning and rendezvous sites. In the winter, kill sites can be found more easily and the effect on scavengers can be studied. Lone wolves frequently survive for a few months by scavenging, but usually die due to starvation. In 2005 choice of prey seemed to change to include more bull elk and fewer calves and cows. Kill rate seemed to be about one kill per month per wolf, or roughly equivalent to the nutritional needs of a wolf, belying the notion that wolves kill more than they need to eat (YRC, 2006). According to Smith, summer kill rates are about 25 percent lower than winter rates (Smith & Ferguson, 2005). This rate has been hypothesized and is probably due to needing fewer calories to survive.

Halfpenny (2003) says sometimes wolves do kill more than they need and speculates this is because they plan to come back to the kill and/or cannot see how many prey are being killed during the chase. Varley says wolves are “hardwired” to take as much prey as possible because they plan to revisit the kill site. (Personal communication, February 2007)

The YRC (2006) states that wolf management in Yellowstone includes education and traffic control. Denning sites may be closed off for a square mile to prevent disturbing the wolves and to protect people. Wolves in viewing range of roads represent a challenge as the management does not want them to become habituated to cars and people. However, they do want people to see them and become educated about them. According to the report the chief cause of wolf mortality is intraspecific strife (wolves killing each other), a far cry from what it used to be and still is in Alaska where humans are the main cause of mortality.

Smith reports that in the first year of capturing wolves from Canada, as many members as possible from three separate packs (for the three acclimation pens) were captured (Smith & Ferguson, 2005). This procedure was done to try to avoid breaking the family bonds between animals and in so doing stress them less than by grabbing individuals at random. The total was fourteen wolves. The next year, wolves were taken from four family groups in British Columbia totaling 17 animals that were brought to the U.S.

The question of reintroduction has made strange bedfellows as political issues can. Smith notes, the wolves were eventually classified as “experimental, nonessential,” which allowed more management flexibility than under the “endangered” listing (Smith & Ferguson, 2005, p. 27). This classification meant that northern wolves migrating south would become less protected as they crossed into the experimental, nonessential zone. Smith and Ferguson (2005) write

> This was plain bad science, the litigants [against the designation] claimed –and even worse, bad management. Yet more than a dozen of the best North American wolf scientists thought otherwise, calling the experimental designation a reasonable tool for getting the job of reintroduction done without placing unnecessary burden on local residents. (p. 27)

Wolf designation was not the only management issue to arise. When wolf 9 had pups outside of Yellowstone National Park an interesting management question came up (Smith & Ferguson, 2005). Should she and her pups be left where they were because they were wild or relocated to the park to increase the natural wolf population? In the end, they were relocated to Yellowstone. Without her mate, 10, 9 would have been hard pressed to care for the pups. (Ten had been shot illegally.) Smith describes in harrowing detail the decision to move 9 and her pups back to the park and how it was

accomplished. He notes that there are tremendous differences among individual wolves and between packs and a range of pack behavior depending on the circumstances. Fully half of the wolf population lives in a quarter of the park. There is less conflict in the interior of the park because there are fewer wolves and less overlap of territories. The data in Yellowstone suggests that wolves kill to keep minimally fed and not more when there is more prey.

Wolf Number 20's death illustrates another long standing policy (Smith & Ferguson, 2005). She was the first wolf casualty in Yellowstone to be picked up by means of a pack mule. This sort of recovery reflects a management policy of Yellowstone, where, with few exceptions, wolf project members travel the backcountry by traditional means of pack mules.

According to Smith, Canadian wolf researchers working in Algonquin Park, Ontario have thought of wolf populations as being " self-regulatory," their numbers controlled in part simply through the elimination of rivals. If this is the case, it has management implications. Skirmishes between packs seen in other places in North America seem to be the result of lack of prey. "Though it's hard for us to say for sure, perhaps even with plenty of food on hand, wolf territories can only be compressed so much before conflicts begin to erupt "(Smith & Ferguson, 2005, p. 76).

Smith relates that only when animals are hurt by humans is it considered appropriate to intervene, such as a wolf being hit by a car (Smith & Ferguson, 2005). At first the growth rate in wolf population was 40 to 50 percent. Due to protection in Yellowstone, 17 of 19 packs formed since 1995 are still around. Pack size seems to be related to size of prey with larger packs being needed to bring down larger prey.

According to Smith there are “hot spot” viewing areas such as the Lamar Valley along the northeast entrance road. Although 20,000 people are seeing wolves in Yellowstone each year, “We’ve no clue…how many fewer people are actually coming to hunt because of a perceived loss of game”(Smith & Ferguson, 2005, p. 105). Wolves that have not experienced persecution show no aggression, seeing humans as neither prey nor threat.

The park’s response to wolves killing elk near human buildings is to tell humans to be careful with food, keep dogs on leashes and bring them in at night, and not to run if approached by a wolf (Smith & Ferguson, 2005). Smith is convinced that the visibility of Yellowstone wolves is a good thing. Smith suggests that wolves’ most important contribution to science is seeing what their effect is on an entire ecosystem. They were in Yellowstone before the Europeans but the ecosystem was not so named, let alone studied. The “wolf effect” is dramatic. Most of what is being studied is the wolf’s interaction with prey. In Yellowstone this means chiefly elk. This impact is not just how wolves affect elk by eating them, but how they affect elk behavior and distribution merely with their presence. This effect is what Welch (2006) describes as the “ecology of fear.” The wolf is a predator at the top of the food chain, which means it can affect things indirectly as well as directly—a phenomenon that is part of the trophic cascade.

Ripple and Beschta (2005) also note that because of on-going willow recovery, (which may be due to the presence of wolves), beavers have migrated downstream into the national park. Beavers make dams that make ponds that produce habitat for fish and birds. And so it goes. Willow recovery seems connected with wolf reintroduction. The areas immediately around beaver ponds and streams are known as riparian zones,

which are associated with song birds and are the only places where certain animals can survive.

The YRC says other important subjects being studied are the scavengers that benefit from wolf kills. Not fewer than twelve species have been counted (Smith & Ferguson, 2005). In addition to feces and urine, the remains of animals (including wolves) help nourish the earth and plants that are eaten by ungulates, and so the energy cycle is complete. Smith notes “The diversity wolves help support means a healthier, more resilient system” (Smith &Ferguson, 2005, p. 127).

Smith argues that contrary to statements claiming that wolves are having an adverse effect on elk populations, these populations varied greatly before the reintroduction of wolves and were going down (Smith & Ferguson, 2005). Today there are six major elk predators in Yellowstone, which will continue to influence the elk population. Wolves and elk co-existed in the northern Rockies for thousands of years. Smith also notes because of the short-term nature of grants and the opportunity to publish papers, most observations are done in the short term now. Adolph Murie, the father of modern wildlife management, conducted long-term observation in the field. Observations made over decades at Isle Royale yielded different results each decade showing the value of long-term studies. “Population dynamics matter. But then so do individual narratives” (p. 168).

Defenders of Wildlife cautions, in terms of keeping domestic animals safe, the most successful efforts focused on prevention by using a deterrent in the field with sheep and cattle: combine shepherds with multiple guard dogs as is done in parts of Europe. This strategy has all but eliminated predation by wolves. With horses, the

liberal use of bells and mixing in mules seems to help. Smith reports, “Mules have a well-earned reputation for being bold and cantankerous towards wolves, which tends to send the wolves hightailing off to less disputed ground” (Smith & Ferguson, 2005, pp.174-175).

Scholars note that the full impact of the reintroduction of the wolf remains to be seen (Ripple & Beschta, 2005; Welch, 2006). If fewer ungulates means more aspen and other trees; this change, in turn, could lead to less bank erosion, consequently producing more fish, which could lead to more grizzlies and so on. It is very complicated and indicates the thread of the web of life, that intricate interconnectedness that exists in an eco-system. To date there does seem to be some recovery of aspens in the Lamar valley.

Smith observes the reintroduction of wolves to Yellowstone can be divided into three stages:

1. First decade shows some population growth and little dispersal with some wolves staying in natal packs for 4 to 5 years, a number of packs enjoying multiple litters, and a large prey base
2. In the second decade there are lower individual weights and survival rates, more inter-pack conflict and more dispersal
3. In the third decade and beyond (prediction) there is a decline in population of wolves and elk then reaching an equilibrium with the environment. There are a number of variables in any stage depending on events like wildfires and disease (Smith & Ferguson, 2005).

When the population seems stable, the wolves will probably be delisted from endangered species list, which may involve “recreational harvest outside the park” (Smith & Ferguson, 2005, p. 171).

The Future

According to Smith, an attractive place for reintroduction seems to be the “broad sweeps of forest comprising northern New England” (Smith & Ferguson, 2005, p. 183). These areas are mostly owned by paper companies. Wolves can live in a working forest that supports populations of deer and moose. Smith says the following criteria are needed for reintroduction: a core protected area that is devoid of humans and livestock and has abundant prey. Smith’s requirements are useful in examining the feasibility of reintroducing wolves to the Adirondacks. Even if wolf populations reach equilibrium with the environment, they will continue to be managed, in the sense that they will continue to be studied along with their effects on their surroundings and other animals.

In a recent article in National Wildlife author Tolme (2007) quotes Smith as saying he has to be a sociologist as well as a biologist. Smith makes forays into remote hunting areas to try to educate elk hunters about wolves. Wolves have been blamed for dropping elk numbers, but bear and mountain lions also prey on elk and in 1996 Montana increased the elk-hunt quota “specifically targeting cows to control over population” (Tolme, 2007, p. 24). Smith used to write for scientific journals, but says writing popular literature and speaking to people is just as important for getting out the truth about wolves. The wolf reintroduction project not only places a high priority on gathering scientific information, but also is concerned about preserving the aesthetics of

wild nature. (Smith & Ferguson, 2005; Yellowstone Resource Center, 2006; McNamee,1997).

Halffpenny (2003) observes that much of Yellowstone wolf management also involves people management. Potential problems arise when wolves become habituated to humans. It is a gross act of unethical behavior to feed wolves or to do anything that changes their regular behavior. Habituated wolves usually have to be destroyed for fear of a bad encounter with a human.

The reintroduction of wolves to Yellowstone National Park was highly successful. The population went from the few wolves that were reintroduced to hundreds. Wolves are studied via observation and collaring them. Wolves were labeled experimental to allow greater flexibility of management. The relationship between wolves and other animals is complicated, but does seem to be positive.

Preserving the aesthetics of wild nature is not the foremost thought on the mind of many a politician. Economic and safety issues also need to be addressed. The next chapter discusses wolf management outside Yellowstone where these issues are hotly debated.

Chapter 3 Wolf Management outside Yellowstone

This chapter examines wolf management outside the relative confines of a national park where more issues come into play, issues like depredation, hunting, conservation, and recovery. This broader view of wolf management does not mean that these issues are not important in Yellowstone, only that they are perhaps more difficult outside a national park.

Recovery of Wolves

Part of wolf management is recovery. The U.S. drafted four recovery plans for four subspecies of wolf that were recognized before 1995: (a) the Eastern timber wolf, (b) the Northern Rocky Mountain wolf, (c) the Mexican wolf, and (d) the red wolf (Boitani, 2003).

Boitani describes the four plans as follows:

1. The eastern timber wolf recovery plan. This plan was finalized in 1975, revised in 1990 and in 1992 (USFWS). The plan includes increasing the Minnesota population to a minimum of 1,251 wolves and reestablishment of a second population of at least 100 wolves for at least 5 years in Wisconsin and Michigan. The plan zoned Minnesota and suggested different recovery targets for each zone…The recovery plan succeeded, with population in Minnesota, Wisconsin, and Michigan currently more than double the recovery minimums and the process of delisting is underway.

2. The northern rocky mountain wolf plan. This plan was approved in 1980 and revised in 1987; it defined recovery as at least ten breeding pairs of wolves inhabiting northwestern Montana, Yellowstone National park, and central Idaho for 3 successive years. “In Montana, natural recolonization from Canada was considered the best method for recovery and that has occurred. Reintroduction was prescribed for Idaho and Yellowstone.” (Boitani, 2003, p. 337)

3. The Mexican wolf (Canis lupus baileyi) plan. The Mexican wolf has been considered extinct in the United States since the 1970s. The subspecies was listed as endangered in 1976. Between 1977 and 1980 four males and one pregnant female were captured in Durango and Chihuahua and moved to the US to establish a captive breeding program. When Boitani wrote, the reintroduction was underway with the wolves listed as experimental and non essential as in Yellowstone to allow greater flexibility of management.

4. The red wolf plan. According to Phillips et al. wolves were captive bred and reintroduced with limited success. Since they were captive bred, they had more contact with humans than the Yellowstone wolves and had to have their predatory skills honed by being provided with live prey. Only 21% of the releases with known outcomes were successful.

Phillips et al. (2003) point out that red wolf management was intensive with most of the wolves being radio collared and many of them, at least initially, being treated for parasites. The larger the population became, the less important each individual wolf became and consequently the parasite program was discontinued.

Great Lakes Region

According to the USFWS (2006), in 2000 the Minnesota legislature passed and their governor signed into law a wolf management plan to take effect upon the delisting of the grey wolf in that state. To date the wolves have not been delisted. Some key points of the management plan are that it does allow for killing of wolves under special circumstances, like predation or fear for one's life, but that there will be no open hunting season on wolves. There is a minimum population to be reached but no maximum. Although habitat management is not specifically addressed, managing habitat for prey of wolves will inevitably benefit wolves.

With wolf numbers in Minnesota and Michigan having reached goals set by the federal government, the individual states have written management plans for when the federal government delists wolves from the Endangered Species List (ESL) (United

States Fish and Wildlife Service, 2006). De-listing was recommended in March of 2006 for newly formed Western Great Lakes Distinct Population Segment (DPS). It had been recommended earlier, but was held up by objections because the great lakes states were grouped with the eastern states.

Edberg (2006) writing for the International Wolf Center reports, USFWS's Regional Listing coordinator, Ron Refsnider for the Great Lakes Region, sees two main objections against de-listing wolves in the Great Lakes region. One is that the states will not have as strict rules as the federal government and wolf populations will go down when there are seasons for hunting and trapping. If this actually happened, the federal government could relist wolves. The other argument is that definitions of adjectives in the Endangered Species Act are subjective. For example, whether or not wolves have "recovered" is debatable since humans now occupy a great deal of the space previously inhabited by wolves. If litigation is started it will put any decisions on hold indefinitely until the litigation is resolved.

Minnesota and Michigan

Both Minnesota and Michigan wrote wolf management plans years ago looking forward to when the wolves would be de-listed (USDFW, 2006). Currently, only federal agents can destroy or relocate wolves except under specific circumstances having to do with fearing for one's life. Wisconsin's plan written in 1999 focuses on prevention and mitigation regarding depredation by wolves. Euthanasia as opposed to public hunting was wildly favored by the public.

Phil Delphey, Minnesota Wildlife Biologist, said there are roughly 3000 wolves in his state and about 150 to 200 are killed each year due to depredation (personal

communication January 8, 2007). By special permit from the Department of Wildlife Services, federal agents trap the wolves in leg-hold traps and then shoot them. Because of the number of wolves killed in the last couple of years, the market for wolf carcasses and parts has been saturated. Delphey speculates that wolves are preying on livestock less because of the abundant deer population in Minnesota. “A wolf is not likely to pass up a deer to go after a cow”(P. Delphey, personal communication, January, 2007). A report by Boitani (2003) says about five percent of Minnesota’s wolf population is killed each year to keep livestock depredations in check, at an annual cost of $255,000 in 1998. Steel jawed foot traps are used to capture essentially all problem wolves in Minnesota and Wisconsin.

According to Delphey (personal communication, January, 2007) there is no management per se in Michigan or Wisconsin because the wolf is still listed as endangered in those states. When the state plans are approved and the wolves delisted, then the state plans will go into effect. Boitani (2003) summarizes the great lake states’ plans saying: Wisconsin, Michigan, and Minnesota, after extensive consultation and public participation, have approved management plans for their recovering wolves. These plans aim to manage the recovery of wolf populations after delisting from the federal Endangered Species List “by identifying clear objectives, approaches needed, time frames, costs, and means required” (Boitani, 2003, p. 333).

Northern Rocky Mountain States

Boitani (2003) states that in Montana, 42 percent of wolves taken for control were taken with traps, and 58 percent were captured by helicopter. Helicopters can be extremely effective tools, either to dart and drug wolves or to kill them. A variety of methods will work best to balance wolf conservation with livestock production.

Michigan has developed a management plan similar to the Minnesota plan with a couple of notable differences (Boitani, 2003). Although no maximum number of wolves for the upper peninsula has been defined, a maximum *cultural carrying capacity* will be determined by public opinion. The Michigan plan does not discuss lethal control. Both plans call for considerable research on wolves in the first five years after delisting. The Michigan plan does not call for shutting down permanent roads, but asks that temporary roads (like for logging) be obliterated after their usefulness is over.

In the contiguous U.S., where the wolf is listed as either “endangered” or “threatened,” only government agents can legally kill or translocate wolves. With the exception of “experimental /nonessential” populations in the northern Rockies, Arizona, and New Mexico where they can be shot by livestock owners if found in the act of killing livestock (USFWS, 2006).

Northern Rocky Mountain Wolves

In 1995 the USFWS reintroduced 15 wolves into Idaho and the following year an additional 20 wolves were reintroduced (USFWS, Gray Wolf, 2007). Since that time their numbers have grown to between 500 and 600. The Idaho state plan calls for maintaining 15 packs. In December 2005 Idaho had at least 36 verified breeding pairs and 61 packs well distributed across the state. Although the USFWS says their goal is

to maintain healthy wolf numbers and get the wolves de-listed, Defenders of Wildlife says Idaho is poised to kill as many as 80 percent of its wolf population after gaining full control of wolf management. According to Defenders of Wildlife (Save America's Wolves, 2006), the new Governor of Idaho, Butch Otter, is prepared to shoot a wolf himself and has sanctioned a plan to kill 54 of the state's 65 packs. If protections of these wolves are taken away, these plans could be put into action. In light of the fact the wolves have been in Idaho for the last ten years, the reduction plan seems rather drastic.

In Montana and Idaho wolf management is already conducted largely by the states. According to the Idaho Department of Fish and Game (2007), since January 5, 2006 Idaho has had primary responsibility for wolf management in the state. Idahoans have acted in the stead of USFWS to use lethal and non lethal wolf management and deal with conflicts between livestock owners and wolves. Wolves north and south of Interstate Highway 90 are treated differently. Those south are treated as experimental, non essential, and those north are treated as endangered. Special permits can be obtained that allow certain individuals to take wolves when they are attacking or harassing livestock or animals used to raise livestock (horses and guard dogs). "When feasible and legal, the state would propose hunting wolves to provide opportunity for harvest of wolves, as well as to reduce problems with livestock and to maintain a balance between wolves and their prey" (Idaho Department of Fish and Game, p.1, 2007). But who should decide what the balance should be between wolves and their prey?

On December 19, 2006, U.S. Fish and Wildlife Director Dale Hall told then Idaho Gov. Jim Risch that Fish and Wildlife would publish a notice by the end of January 2007 to start the de-listing process (USFWS, 2007). Once delisted, the federal government will continue to aid and oversee the states' management plans. "Wildlife Services will be the primary agency responsible for wolf depredation and control" working closely with Idaho Fish and Game livestock operators (For Wolves Organization, 2007).

Idaho has an agreement with the Nez Perce Tribe for a "significant role" in wolf management and a wolf harvest agreement. "Montana and Idaho Fish and Game departments will coordinate closely on wolf management and pack activity along the border" (Idaho Department of Fish and Game, p.1, 2007). "The USFWS interprets the Endangered Species Act to mean that the **three states,** Idaho, Montana, and Wyoming, have to provide wolf management plans and establish state laws that satisfactorily provide these protections"(United States Fish & Wildlife Service, p.1, 2007). The Northern Rocky Mountain Wolves are considered to be a Distinct Population Segment (DPS) and are not separated per se by state although each state is supposed to maintain a population of at least 100 wolves according to the federal management plan.

The Idaho Fish and Game website (2007) requests reports of wolf sightings or depredations and gives the names of the proper contacts. Idaho and Montana's plans have been accepted by the USFWS. Wyoming's has not (USFWS, 2007). In July 2005 Wyoming petitioned the federal government to de-list wolves. The USFWS refused and Wyoming's Game and Fish Department responded in an October 2006 press release available on their web site (Wyoming Game and Fish Department, 2007). The press release discusses the number, 22, of ungulates lost per wolf each year but does not

discuss the benefits of predators. Cleveland, the head of Wyoming's Game and Fish Department, is convinced his management plan will work for wolf management. He cites continued wolf population growth and having reached and gone beyond recovery numbers initially set by the USFWS. Cleveland accuses the USFWS of selectively using data to support their view and not being fair to Wyoming.

In a press release, July 2006, from the USFWS, the department said current Wyoming law defines wolves as predatory animals, a status that will not protect the wolf. The department is looking for adequate protection of the wolf outside Yellowstone National Park with a minimum number of breeding pairs and a certain population in winter.

The USFWS explains that the minimum recovery goal for wolves in the northern Rocky Mountains is a total of 30 breeding pairs and at least 300 wolves, with Montana, Idaho and Wyoming each sustaining a minimum of 10 breeding pairs and 100 wolves for a minimum of three consecutive years. This goal was attained in 2002. By the end of 2005, 1,020 wolves and 71 breeding pairs were estimated in the northern Rocky Mountains. The problem is not with the number of wolves, it is with Wyoming's lack of protection for the wolves should the state be given control over wolf management.

Delisting of the Northern Rocky Mountain (NRM) wolves was not supposed to happen until Wyoming, Idaho, and Montana all had wolf management plans approved by the US Fish and Wildlife Service. Now, January 1, 2007, it seems like wolves may be delisted in Montana and Idaho and have Wyoming wait until their officials negotiate a management plan with the USFWS that will be approved.

Writing for the Casper Star Tribune, Whitney Royster (2006) (which source?) reports that not only does Wyoming not want as many wolves as it has, but also wants the federal government to eliminate about 16 packs outside of Yellowstone before the state takes over management. According to Royster, the governor of Wyoming, Dave Freudenthal said reducing the number of packs has always been an objective of the state. Royster goes on to report that reducing the number of packs runs contrary to the entire push for reintroduction ten years ago in Yellowstone. Meredith Taylor of Wyoming Outdoor Council called the idea "a recipe for relisting." (www.wyomingoutdoorcouncil.org/news/releases/docs/2004-02-10.php). Taylor said managing for the minimum number of wolves would be more expensive than letting wolves live unless they got in trouble.

According to Nova, 2007, Ed Bangs, wolf recovery coordinator for the lower 48 states for the Fish and Wild life Service, said in the last 10 years, about 550 wolves have been killed because of preying on livestock. He said how many wolves a state chooses to maintain is at that state's discretion as long as the state meets the federal standard (www.pbs.org/wgbh/nova/wolves/bangs.html).

The problem with delisting two out of three states is that the Northern Rocky Mountain Distinct Population Segment of wolves includes wolves in Wyoming. In fact, given the mobile nature of wolves, some of the same wolves probably inhabit all three states at various times. There is apparent problem in letting the population of these wolves get so far above the minimum and then proposing to kill them to bring the population down to the minimum standard.

Writing for Defenders of Wildlife, Stone (2006) reports new successes in non-lethal wolf control led to zero wolf related livestock losses for ranchers in the Yellowstone area. A news release out of Boise, ID stated, some local ranchers teamed with Defenders and Fish and Game representatives to proactively eliminate wolf depredations on sheep. Using solar powered electric flagging barriers, the ranchers were able to create temporary barriers around their sheep at night. More traditional methods of range riders and watch dogs were also employed. The Bailey Wildlife Foundation Proactive Carnivore Conservation Fund has contributed more than $275,000 to local ranchers and communities to help them use non-lethal measures to protect livestock from wolves and the Trust has paid more than $715,000 to local ranchers to compensate them for verified livestock losses.

Mech (1995) notes that ironically being totally against wolf control may lead to not having wolves introduced to some areas at all. Populations might not be willing to accept wolves with no control over them (as cited in Fritts et al., 2003). Wolf recovery plans recognize the need for public support. Control programs were initiated to protect livestock. Fritts et al. (2003) suggest “the economic and political dynamics are the same whether wolves affect privately owned livestock or publicly owned wildlife that humans depend on” (p. 315).

Wolf Management in Alaska

Alaskan wolves, numbering six to seven thousand may be legally taken during hunting and trapping seasons with bag limits and other restrictions; an estimated 15 percent are harvested annually (Boitani, 2003). In Alaska wolves fall under the management of the Alaska Department of Fish and Game – the state, not the national

government. Once wolves are delisted from the endangered species list, their management will fall to each state that has a healthy wolf population. In 2003, the Alaska Board of Fish and Game, Division of Wildlife Conservation wrote a report on Wolf Management. Wolf management in Alaska varies by region. Each of 26 regions submitted an independent report, but the reports had similarities. All regions involve wolf control, which amounts to killing wolves for a variety of reasons. Livestock is nearly nil in Alaska so most of the reasons have to do with trying to regulate wolf populations to in turn regulate their prey populations. Usually the aim is to decrease wolf populations to increase ungulate populations for people. Fritts confirmed wolves are killed to help increase caribou herds where caribou are needed for direct sustenance and where being a guide for caribou hunting is a source of income for Alaskans (Fritts, personal communication, January, 2007).

Managing prey populations is tricky business, however, as responses in prey numbers are not immediate. There is also an ethical component since human manipulation of wolf numbers assumes human knowledge of results. Prey-predator relationships are complicated enough without throwing humans into the mix. Some biologists believe prey-predator populations can reach equilibrium on their own without the interference of humans (Mech & Boitani, 2003)

According to the Alaska Department of Fish and Game (2006), the wolf is recognized to be economically and culturally significant. Wolves are managed for human uses, which include hunting, trapping, photographing, viewing, listening, and scientific and educational purposes. “We recognize the aesthetic value of observing wolves in their natural environment as an important human use of wolves” (Alaska

Department of Fish and Game, 2003, p. 155). The Alaska management regional reports estimate wolf populations using everything from aerial tracking to extrapolation from other populations to anecdotal evidence from trappers. There are no limits placed on trapping and only some on aerial hunting. Boitani (2003) contends Alaskan wolf management does not come close to satisfying everyone.

Fish and Game people give seminars on trapping and snaring and the importance of wolf sealing (having wolves accounted for after killing). Wolves are killed for personal use and to sell. Since the wolf has a highly evolved family structure, it is difficult to imagine that each death does not have impact on some pack particularly if a dominant male or female is killed (Delphey, personal communication, December 2006; Haber, 1996). Packs have broken apart in the absence of leadership. Experts disagree on the degree of effect each death has on a wolf pack. Haber (1996) believes the impact of losing an alpha male or female can be devastating, Mech (1995) thinks wolves adapt. Based on reading about the behavior of Yellowstone's wolves, they are both correct. When an alpha member was killed, sometimes packs disintegrated; other times the pack reformed with a different leader.

According to the Alaska Board of Game, Wolf proposals, the following goals were adopted:

1. Ensure the long-term conservation of wolves throughout their historic range in Alaska in relation to their prey and habitat.

2. Provide for the broadest possible range of human uses and values of wolves and their prey populations that meet wildlife conservation principles and which reflect the public's interest.

3. Increase public awareness and understanding of the uses, conservation and management of wolves, their prey and habitat in Alaska.

The Alaska Board of Game goes on to note that wolf management activities in Alaska include the following:

1. Conduct wolf predation control reduction programs as directed by the commissioner and the Board of Game.

2. Provide trapper education programs to improve trapper skills, ethics, and regulatory compliance.

3. Model the potential effects of wolf predation on ungulates within each unit.

Wolf control, both lethal and non lethal, has taken place in various areas and prey populations have increased, though to what extent this is because of wolf control is not known. As quoted by the Alaska Department of Fish and Game (2002), Regelin, Director, Division of Wildlife Conservation, says, “Beginning in November 1997 and extending to April 2001, the department sterilized the alpha males and females in wolf packs in the control area and moved subdominant wolves to other locations. The caribou population increased from 22,000 to 38,000 during this period.” According to Regelin, “Since 1995, under terms of intensive management law, the Board of Game has authorized wolf control in five areas where ungulate populations have declined to low levels. The non-lethal program in the range of the Forty-mile caribou herd is the only program that had been implemented.” [at the time of the report June 2002].

Regelin, as cited by the Alaska Department of Fish and Game (2002), concludes (among other things) that both the American and Alaskan publics are more accepting of non lethal wolf management, but it is not practicable in most of Alaska. Control has to be by region – No one plan will work for the entire state; the department will never again conduct widespread and continuous wolf control – the public does not want their wildlife managed in this manner; wolf management is complex, because sociological considerations are more influential than biological information.

Defenders of Wildlife (Save America's Wolves, 2007) emphasizes that lethal control has been increasing in Alaska with the growing use of aerial assault on wolves. This gunning is permitted by persons with special trapping permits acting as state agents in areas where the state has determined to decrease wolf populations (E. Fritts, personal communication, December, 2006). Fritts notes these persons pay for their own fuel. Defenders (Save America's Wolves, 2006) points out that snowmobiles (machines) are also used in wolf pursuit.

The Alaska Department of Fish and Game (2007) states on its web site that the Alexander Archipelago Wolf is in danger of falling to unsustainable populations if conservation measures are not taken. Logging in the Tongass National Forest is causing the depletion of black tailed deer (the main prey of these wolves) and threatens the wolves. Their existence is also threatened by hunting and trapping and mortality due to increased contact to humans via more and better roads. Putting restrictions on logging, closing some roads and regulating the building of other roads would go a long way to maintaining populations of this sub species of wolf in south east Alaska.

Boitani comments

> The wolf management plans being implemented in Alaska and Canada have been widely sensationalized and exploited by the media…Controversy increased when a greater protectionist sentiment led to public questioning of classic methods of wolf management , which until the 1960s and early 1970s basically meant wolf control [killing] sponsored by the state. Public opinion was split between acceptance and non acceptance of wolf populations being controlled by government action for the benefit of a particular social group—namely, hunters. (2003, p. 338)

Aerial hunting had been prohibited in Alaska since 1972 but was replaced with land and shoot. According to Defenders of Wildlife wolves are still hunted by helicopter, The International Wolf Center in Ely, Minnesota verified this but cautioned against being involved with organizations that exploit people's emotions (W. Medwid, personal communication, December, 2006)

Fritts (2006) writing for Alaska's Dept. of Fish and Game, says aerial taking of wolves by state agents does not come under the heading of hunting. She contends that Alaska does not conduct nor condone such practice, but then goes on to say the department is exempt from the law about aerial hunting since it is conducting control. New information will be posted on their web site in the near future

Defenders of Wildlife (Save America's Wolves, 2007) calls the aerial control a barbaric slaughter carried out by trophy hunters. Fritts (2006) says the people who do the killing are agents of the state and have to obtain trapping, not hunting licenses. She also notes that these control agents pay for their own air fuel and supplies. Alaska's department of Fish and Game has carried out five programs aimed at increasing ungulates for other wildlife and hunters. Ungulate and wolf populations have endured these programs.

In 2003 Boitani wrote: "Intensive government control of wolves is now declining. New techniques of wolf density control, such as the surgical sterilization of free ranging wolves are promising but far from providing a viable alternative to classic methods" (p. 339). "Classic methods" means killing wolves in some way or another. It is now four years later and government control of wolves is on the rise. Boitani contends that part of wolf management is people management and that how wolves are managed

depends in large degree on how people perceive and feel about wolves and what level of rationality and acceptance people can show. He believes the public should have a role in management especially as watch dog over natural resources.

Management of Captive Wolves

Lori Schmidt, wolf curator at Ely Minnesota's International Wolf Center observes that pack dynamics are not the same in captivity as in the wild (Schmidt, personal communication, December, 2006). In the wild, packs consist of parents and one or two years of off spring and dispersal is an option. This is not an option for the captive wolf, nor is breeding. Wolves are given nutritional supplements and protection from heart worm and treatment for other worms. All these factors make captive wolves about ten pounds heavier than their wild counterparts. According to Schmidt, the ambassador wolves are spayed and neutered to prevent over population of captive wolves. Three-month-old pups are introduced to the pack every four years. These pups are human reared from the age of 12 days. Although there is structured dominance in the pack, fighting is rare. Dominance signals can be as subtle as ear and tail position to something more physical like pinning a subordinate member. Schmidt said the use of the phrase "alpha pair" is no longer used in the scientific community. Rather this pair of wolves is called the dominant pair or the parents. It is worth noting that other field biologists are still using the alpha terminology. The wolves are fed on their natural diet of feast or famine, allowing them to gorge, cache and interact over a large carcass once a week. Older animals are fed a smaller quantity more frequently depending upon nutritional issues and age. The wolf enclosure is 1.25 acre with 10 foot fencing with 45 degree angled overhang.

As noted wolf management involves more than biology, especially when the wolves are in proximity to humans. Their management ranges from complete protection as in Yellowstone to killing them to cull their numbers as in Alaska in an attempt to raise the number of their prey. Wolf recovery has been successful in various states with wolves under the protection of the federal endangered species law. Some wolves have to be killed where livestock is produced. In most instances only federal agents are allowed to kill wolves. In Alaska wolves are under state control and are killed to increase ungulate populations. The next chapter looks at the feasibility of reintroducing wolves to the Adirondacks and what the ramifications for management in New York that would mean.

Chapter 4 Wolves in the Adirondacks?

This chapter examines the feasibility of reintroducing wolves to the Adirondacks and, if done, what that would mean in terms of wolf management in New York. The chapter is based in large part on a feasibility study conducted in 1999. Other sources referred to this source as the original document.

According to Jane, a volunteer at New York's South Salem wolf center, people are still in the Middle Ages regarding attitudes towards wolves. "When coyotes are present in West Chester, children are not allowed to play in fenced school yards" (personal communication, December 2006).

Wherever there can be controversy, there will be. Even the kind of wolf considered to be reintroduced to the Adirondacks is in question. According to a story in the Sunday Leader-Herald, May 23, 2004, a man named Russ Lawrence shot dead the first confirmed wolf in a century in Edinburg, NY (as cited in Associated Press, 2004). The creature brought many theories but no proof of wolves having returned to the Adirondack Park (AP). The kill touched off a new round of debate on whether or not to bring the wolf back to upstate New York. Websites and newspapers cannot begin to go into the depth of discussion of wolves and coyotes that scientific papers do.

Suffice it to say there are differences between eastern and western coyotes. Eastern coyotes are larger and appear to have wolf genetic material. They are not likely to be coydogs (hybrids of dogs and coyotes) because of the ubiquitous nature of dogs. Eastern coyotes may also be larger through natural selection because they kill larger prey, white tailed deer (New Hampshire Department of Wildlife, 2006).

Review of 1999 Report

In 1999 Defenders of Wildlife paid for a study on the feasibility of reintroducing wolves to the Adirondacks (Paquet et al., 1999). The study was conducted by independent researchers: Paul C. Paquet, James R. Strittholt, and Nancy L. Stauus of the Conservation Biology Institute for the Adirondack Citizens Advisory Committee. Sophisticated models were made taking into consideration among other factors, season of the year and proximity to humans. Wolves are known to be disturbed by humans within a kilometer.

According to the study's findings, wolf habitat varies greatly between the summer and the winter based on snow fall. The higher peaks become excluded from appropriate habitat during the winter (Paquet et. al., 1999). Elevation affects habitat distribution. Although the northeast and northwest parts of the Adirondacks appear to be good habitat for wolves, adding in the factor of roads (used to simulate human encounters) made these areas less suitable. The report also indicates that wolves move less during the summer because of denning behavior. Wolves prefer deep soil with good drainage and water nearby as they often prey on beaver. Pristine conditions (pre human) were compared with existing conditions. Existing conditions ruled out much of the habitat that was considered secure under pristine conditions. Viable, well-distributed wolf populations are dependent on abundant and stable ungulate populations. Minimum deer density required to support a wolf pack is about one deer per square km. However, if given a choice, wolves seek higher densities. Because wolves avoid humans, wolf mortality can be higher than expected if their prey winters near humans. "Most of the

high-density areas [of prey] in the eastern portion of the Adirondack Park (AP) lack adequate security for wolves. Wolves attracted to these areas would likely be killed or displaced by human caused disturbances" (Paquet et al., 1999, pp. 24-25).

Paquet et al. (1999) point out beaver are an important source of prey during the summer when wolves are feeding their pups. Although there seems to be plenty of prey in the Adirondack Park, not all of it would be available to wolves, because much of it is located where humans reside. "Overall, 44 percent of the AP shows low prey suitability, followed by 30 percent for moderate and 26 percent for high" (p. 26). In addition, different areas are suitable for wolves in summer and winter because of likely snow depth. "Without humans, wolves would likely prefer most of the areas where towns exist today" (Paquet et al. 1999, p. 28).

The report also observes that roads are both a deterrent and an attraction depending on the season (Paquet et. al., 1999). In Alaska wolves may avoid roads by staying as much as 5 km away from them. Roads can impede normal travel and dispersal in summer or supply convenient travel routes in winter bringing wolves to where they would likely not arrive under pristine conditions. The same is true of snow mobile trails. Roads can also be a source of direct mortality. Results would be different if travel were restricted on roads. In general the more roads, the fewer wolves. The absence of wolves is probably due to mortality and avoidance. Wolves also were occupying areas in Minnesota and Wisconsin where they had not been present for decades. This was attributed to better human attitudes towards wolves and legal protection for wolves.

Paquet et al. (1999) also noted that human activity influences the behavior and survival of wolves. Wolves generally occupy areas with fewer than 4 humans per square km (31). Road density may be a better indicator of where wolves will be since even if people do not live in an area, roads allow access for hunting. Wolves prefer wooded areas over agricultural areas or at least areas with some trees.

Paquet et al. (1999) emphasized even areas that have people visit them affect wolves with wolves avoiding areas with high level of disturbance. However, wolves do not always avoid attractive habitats. “The presence of artificial food sources also attracts wolves and reduces avoidance of human activity” (p. 32). Because snowmobile trails would be advantageous for wolves in highly suitable areas, wolf encounters with humans would be likely in some areas.

Another factor described in the report is that, with the exception of the Rail Road spur that bisects the Five Ponds Wilderness, rail roads do not appear to be a danger for wolves in the AP. Primitive land classification was given the highest score of wolf suitability (Paquet et. al., 1999).

After modeling wolf pack mobility in winter and summer, the researchers made the following generalizations:

1. Movement patterns differ between summer and winter conditions.
2. Winter movements patterns are more direct
3. During the summer, movement out of the AP to the east (as defined in the report) is not possible.
4. Movement during winter (when it is more likely) is more difficult for wolves than during the summer.
5. A large percentage of land areas within the AP is prohibitively costly to wolf movement. (Paquet et. al., 1999 pp. 36-37)

Conclusions of Report

The report made the following conclusions and recommendations:

1. The ultimate factor determining population viability for wolves is human attitude. Based on other wolf reintroductions, a relatively few individuals can cause a reintroduction to fail.
2. Wolves require an adequate and accessible prey base. The report suggests this exists though not all prey would be available to wolves.
3. Wolf packs require well distributed patches of secure and high-quality habitat exposed to fewer than 1,000 people or events/month. The report suggests the AP has enough habitat to maintain a small population of wolves.
4. Wolf packs must have opportunities to move safely among high-quality habitats contained within their home ranges. Because the AP is highly fragmented some territory could not be used by wolves i.e. some areas would not be accessible to wolves because of human activity precluding access.
5. In human-dominated landscapes, regional subpopulations of wolves need to interact by dispersal or long distance forays. While linkages within the AP appear adequate, linkages with other grey wolf populations are tenuous at best, making long term survival questionable. When wolves cannot disperse and intermingle with other populations, there is the danger of genetic isolation.
6. Undisturbed and secure denning and rendezvous sites are necessary to sustain a population of wolves. With protection, this should not be a problem in the AP.

7. When wolves are initially reintroduced, their travel patterns are exaggerated. This would lead to initially higher mortality. Populations would have to be augmented for a period of years to offset this higher than normal mortality.
8. Within the primary home range of wolf pack, permanent human densities should be less than 0.4 people/square km. Wolves would likely not be able to spread outside the park even though in doing so would decrease their contact with humans.
9. Wolf packs require a very low road density within core use areas. The contrast between the AP and the regional landscape does not favor persistence of wolves.
10. Road density requirements can be met in the AP but not outside of the park.
11. Traffic volume on highways accessible by wolves should be below 2,000 vehicles/day, which would allow wolves to move across the roads. Traffic volume had not been calculated at the time of the report.
12. Speed limits on roads and railroads accessible to wolves should be less than 70 km/hr. Special speed zones would need to be put in place at crossing areas and speed limits lowered on several roads.
13. Ideally, major highways that exceed traffic volumes and speed limits should be elevated or buried where important wolf habitat or travel linkages are traversed. All wildlife would benefit from at least under or over passes.
14. Diseases introduced by domestic animals are a potential threat to the viability of wolf populations (Paquet et al., 1999, pp. 37-40).

The report goes on to conclude that the reintroduction of grey wolves is not viable in the AP and to question even if it were if the gray wolf should be reintroduced if the species was not previously present. Some evidence suggests that the pinnacle canid was the red wolf, not the gray wolf, and now this spot is filled by a coyote hybrid.

Because of the relatively short nature of the Yellowstone Wolf Project, it is too early to say if it will produce sustained wolf populations, but every indication is that it will. As in the Yellowstone case, wolves from different regions could be relocated to New York to help ease the question of genetic stagnation. Despite the rather grim outlook portrayed in the report, Defenders of Wildlife still considers the AP a viable place for gray wolf reintroduction.

Reactions to Report

Hutchinson, writing for International Wolf in the summer of 2001, said experts disagree on the feasibility study's findings. Paquet reaffirmed his conclusions stating that his group believed that the goal of any wolf reintroduction is to establish wolves permanently without depending on people adding to the population.

On the other hand, Mech of the Biological Resources Division, U.S. Geological Survey (as cited in Hutchinson, 2001) agreed that there is enough prey and land, but disagreed on how long the wolf population could sustain itself. Mech also suggested the infusion of new genes by bringing in some Canadian wolves every 5-10 years. Mech pointed out that a wolf population on Isle Royale has been going strong for 50 years and this is an island with inbred wolves. Mech agreed the true nature of the preexisting wolf would have to be ascertained

In truth, these comments sound less like a difference of opinions on the facts and more a difference of opinions on the nature of reintroduction and how much human manipulation is desired. A wolf reintroduction to the Adirondacks would involve considerable human intervention and involvement. The Adirondacks is fragmented unlike Yellowstone. More wolves would be needed every few years (at least initially) to broaden the gene pool. Nothing in the report really addresses handling wolves that left the park or possible human-wolf interactions.

The final chapter will discuss, conclude and make recommendations on wolf management based on the preceding chapters.

Chapter 5- Discussion, Conclusions, and Recommendations

Ethics vs. Biology

Different circumstances and locations require different management. Wolves that do not live around humans need minimal or no management. Wolves in close proximity to humans need to be managed according to the needs of their ecosystem and the needs of stakeholders. In recovery operations, each individual wolf is important. From the human standpoint, as populations increase, the importance of the individual dwindles. Other authors stress the need to assess the effects on individual loss to pack structure (Gehring, TM; Kohn, BE; Gehring, JL; Anderson, EM, 2003). According to Leopold as cited in Callicott, 1992, the survival of the species is more important than the survival of any particular individual. In pure land ethics humans would be considered as a species no more important or less important than the wolf. Humans do not operate from this vantage point. Biology, sociology, and psychology all play roles in wolf management. No animal produces such diametrically opposed views as does the wolf.

According to Theberge, 2000, “A wolf can travel hundreds of kilometers but it cannot negotiate urban sprawl or cross picket lines of hate … At the turn of the twentieth century, two-thirds of New York State was nude. Now that figure has been halved…There is still room for the wolf on the land, but is there room for the wolf in the human psyche?” (p.32, p. 41).

In an essay reflecting on the possible return of the wolf to the northeast, McKibben, 2000, suggests that advocates want the wolf back as part of the mania of consumerism – that the wolf is one more commodity to complete the image garnered

with a “pack of Marlboros and an SUV.” This may in part be true, but then McKibben goes on to note that humans need the wolf to jolt them into the real world, not the world of self absorption. If this is true, it is still a selfish reason – something humans need. If the wolf is to be brought back to the Adirondacks or Maine or Vermont, it should be brought back because of its intrinsic value and to make the ecosystem complete.

While the wolf has generated income in Yellowstone, it was not reintroduced for that reason. The Yellowstone ecosystem was not complete without wolves. If coyotes have learned to hunt in packs and are fulfilling the role of the apex predator in the Adirondack Park, the wolf is not needed there particularly since which wolf to bring back is a topic of debate. “Currently, we have no evidence that the gray wolf ever lived in the Northeast,” writes Theberge (2000, p. 27). Others contend there are no separate wolf species but that the wolf in Algonquin and the southern Red Wolf are hybrids of the gray wolf and coyotes.

This hybrid issue was extensively covered in the 1999 feasibility report done on wolf reintroduction to the Adirondacks (Paquet et. al. 1999). I have to question the motive for reintroducing wolves if they will mate with coyotes and the hybrids that presently live in the AP. Apparently these hybrids have developed wolf-like characteristics and are larger than the western coyote which the gray wolf considers prey.

> Some biologists have speculated that the larger size of the eastern coyote is due to natural selection for more efficient predation on larger pry, specifically deer. Selection based upon the size of prey, versus selection to handle deep snows, versus nutrition – these three possibilities cannot be separated easily. Canid adaptability in eastern North America well may involve them all (Theberge, 2000 p. 57).

Theberge, 2000, also observes that there are other differences between the eastern and western coyote as well. The eastern coyote/hybrid also has learned to hunt in packs and fills the wolf niche by eating white-tailed deer. The only animal it does not eat that wolves will, is the moose. Beaver were absent in coyote diets in the Adirondacks until the late 1980s, but since then they have been known to constitute up to 15 percent of summer diets.

In his essay “An Ecologist’s Perspective” Theberge, 2000, reflects at length about the possible return of the wolf to the northeast. As many other writers point out, the issue is not always is there room for wolves, but is there room for wolves with people. Theberge studied extensively in Algonquin Park in Ontario, Canada where there is no protection for the wolf outside of the park. The main cause of wolf mortality in Algonquin is human killing based chiefly on ignorance and hate. In Algonquin, aggression from other packs had accounted for only four deaths when Theberge wrote his essay. This is surprising for two reasons: (a) aggression among packs was the main cause of death listed in the 2005 Yellowstone study and (b) packs over lap a great deal in Algonquin. These results may be attributable to the animals’ hybrid nature as coyotes are more accepting of interlopers.

According to Theberge, 2000, there is enough prey in the Adirondacks for wolves as in the Adirondacks the deer population is roughly twice the size of the deer population in Algonquin. In general, the more prey the more wolves. Though this is not true in terms of numbers, the figures work out in terms of biomass. More prey biomass, more wolf biomass.

Environmental Ethic

Theberge, 2000, however, is inconsistent in his thread of thought saying an ecosystem will function with the lack of the wolf, but that the wolf is needed for the integrity of the system. This statement does not appear to be the case if the coyote/hybrid is fulfilling the wolf niche. On the other hand, Paquet et al.'s statement: "From an ecological perspective, the functional niche of a summit predator may be more important than which species fills the role" contradicts their argument *not* to reintroduce gray wolves. If it does not matter what animal is the apex predator, then why not the gray wolf even if it were rarely in the AP? Genetic information suggests that the Canadian wolf/red wolf (C. lycaon) was common in New York before extirpation. Questions as to the completeness of the ecosystem arise if the coyote hybrid is fulfilling the role of the apex predator. Considering the debate from the stand point of environmental ethics, it is not necessary to introduce the gray wolf to the Adirondacks.

According to Hicks, wildlife biologist for the state Department of Environmental conservation, "If they're [the wolf and coyote] filling essentially the same niche, does it make a difference whether we call it a coyote or a wolf? I guess it's whatever makes you feel better" (as quoted by the Associated Press, May 23, 2004).

Interpreters of the Endangered Species Act may think otherwise. However, given the problems the west is having with its wolves/humans, I think it would be unwise to reintroduce gray wolves to land as fragmented as the AP. Donnelley (2001) also questions the wisdom of bringing the gray wolf to the Adirondacks by raising issues of management and wolf welfare.

“In the long run would our journeying north (in thought or reality) serve us better spiritually and ethically than returning wolves to their old Adirondack home, where they may no longer fit so well, with limited or diminished prospects for the future?” (Donnelley, 2001, p. 197).

If the motive for reintroducing the gray wolf is to repel coyotes and the hybrids, then it is still questionable because it involves more human manipulation of the environment to suit their conception of “wilderness.”

In any event capturing and stressing wild wolves from Canada does not seem warranted to populate the Adirondacks in light of the other problems of population fragmentation and a lack of a dispersal route north or east. Pockets of isolated wolves are almost certainly doomed for eventual extinction due to a lack of gene pool and it is questionable whether or not a pure wolf even exists in the northeast.

If wolves and coyotes will continue to naturally interbreed in the east, should humans interfere? I think not. How would humans prevent hybridization? With fences? This would defeat the entire purpose of reintroducing wild wolves.

In Algonquin where wolves are not protected outside the park, human, not natural, selection is taking over. According to Theberge, 2000, wolves that can stay out of snare lines and hide so as not to be shot are favored over wolves with other traits. This statement is really conjectured since it is not known that the wolves who survive are not the same wolves nature would select, but the point is well taken. Since life expectancy in Algonquin is low, parent wolves are less experienced which leads to more pup mortality. “Many studies of social canids and primates have demonstrated the importance of experience in the care and raising of young” (Theberge, 2000, p. 44). In

Ontario trappers are not restricted by quotas, nor do they have to report their kills. “No other jurisdiction in Canada, and few in the world, has such appallingly out-of-date, exploitive wolf management policies” (Theberge, 2000, p. 47).

Defenders of Wildlife, the organization that funded the 1999 feasibility study (discussed in Chapter 4), still is in favor of restoring wolves to the northeast. Spokesmen of Defenders were discouraged but not disheartened by the 1999 report, which did not advocate the restoration of wolves to the Adirondacks. What additional resources are available and whether or not different results in further studies would be obtained are questionable. Even wolf expert Mech recognizes the need for gene infusion from Canadian wolves every 5 to 10 years (as cited in Hutchinson, 2001).

Theberge, 2000, observes, “We may never be able to distinguish wolf from coyote from hybrid based on genetics and morphology, and may always be tripping over the definition of a species. But based on ecological role, a definable wolf might again occupy the Northeast” (p. 62). Perhaps it already does.

According to the USFWS (Idaho), 2007, King, regional director for Fish and Wildlife Service in the Montana, Idaho, Wyoming region, says some arguments against killing wolf packs are emotional. Of course they are. Humans are emotional and so are wolves. Smith and Ferguson, 2005, write about human characteristics of wolves:

> The fact that wolves are highly independent…yet at the same time fiercely loyal to the pack, represented a behavioral ideal to cultures who valued both individual freedoms and social responsibility. Likewise the extraordinary dedication wolves show in caring for pups, with virtually every adult in the pack engaged in those duties from roughly May to September was hardly lost on the native tribes who shared land with them (Smith & Ferguson, 2005, p. 30).

Discussion and Conclusions

No matter how diligently we may try to be solely rational, it is our emotional nature which makes us human. It is best not to divest ourselves from our emotions lest we become less than human. All the dimensions of wolf management need to be considered in order to manage wisely and in consideration of all stakeholders. Though geographically removed, I am a stakeholder in the management of wolves in Wyoming. I am not a livestock owner, but I understand their needs as they should understand mine. I have a need to know that wild creatures have the ability to live and let live in the environment free from harassment so long as they are not a danger to life and limb. While I care about each wolf, I recognize the need to care more for the ecosystem of which that wolf is a part. I would manage wolves by taking the subordinate members (non alpha) when absolutely necessary. Packs are like humans and need their leaders to function properly.

The management of wolves is exceedingly complicated and must take into consideration biological facts as well as economics, sociological issues and emotional issues. Though it would be best to manage wolves from the land ethic, this will never happen as long as humans see themselves as above nature rather than a part of it. Managing for viable populations of wolves does help to ensure complete ecosystems since wolves are an apex predator in the trophic cascade. Wolves should be managed so that they have sustainable populations; not just so that there are a few surviving. Regan and Singer (2003) note that surviving is not the same as living. According to

Haber (1996) subtle qualitative changes may ultimately lead to extinction even in the presence of seemingly healthy numbers.

Defenders of Wildlife (Save America's Wolves, 2007) argues Wyoming may be an example of wolf management gone bad. Wolves have been allowed to multiply to far above the minimum number proposed for successful reintroduction. Now Wyoming wants to drastically reduce existing numbers to numbers originally given by the federal government. This action would, in fact, mean the slaughter of many hundreds of wolves. A more reasonable course of action seems to be to destroy only those animals found to be problems in terms of depredation, as is being done in Montana (Defenders of Wildlife, 2007). Compromise on everyone's part is in order.

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