

Idaho Wolf Conservation and Management Plan

Prepared by:

Idaho Legislative Wolf Oversight Committee,
as amended by the 56th Idaho Legislature, Second Regular Session

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Table of Contents

Executive Summary 4

Introduction..... 7

Wolf Ecology 8

Physical Characteristics..... 8

Reproduction 8

Territories..... 8

Dispersal..... 8

Population Growth..... 9

Mortality..... 10

Food Habits..... 10

Depredation on Livestock and other Domestic Animals..... 14

Competition with other Predators and other Endangered, Threatened, or Candidate Species..... 16

Responsibilities of Affected Agencies and Entities..... 17

Wolf Management Goals 18

Wolf Population Objectives 18

Incidental take 19

Wolf Management..... 20

Compensation for Livestock Depredation 22

Wolf Population and Prey Base Monitoring..... 22

Wolf-dog Hybrids and Captive Wolves..... 24

Interagency Coordination..... 24

Evaluation of Plan..... 24

Budget 25

Literature Cited..... 26

Response to Reviewer Comments 31

List of Figures

Figure 1: Wolf distribution in Idaho, 2001 (Nez Perce Tribe, unpublished data).6

List of Tables

Table 1: Summary of Wolf Management Actions5
Table 2: Idaho wolf population statistics 1995-2001 (USF&WS, Nez Perce Tribe correspondence).....9
Table 3: Kill rates of wolves in Yellowstone National Park during early and late winter (Phillips and Smith 1997, Smith 1998). 13
Table 4: Age structures of elk and deer in wolf-killed samples compared with proportions in the population (adapted from Vales and Peek 1995). 13
Table 5: Number of confirmed and probable wolf-related livestock losses investigated by USDA Wildlife Services in Idaho, FY1995-2001 (Graves 2001). 16

Notes

In responding to comments from technical reviewers, the Committee listed notes at the end of this plan for each substantive technical comment. These notes are cross-referenced in the text where they apply. Since the technical review and the Committee’s response, the plan has been amended by the Idaho Legislature.

Wolf Oversight Committee Background

The Idaho Legislature’s Wolf Oversight Committee that drafted this plan was created in 1992 (HB 773) as established by the wolf EIS participation plan dated February 1992. Members of the Committee sharing co-authorship of this plan, as amended by the Legislature, are:

Jack Lavin, co-chair
Stan Boyd, co-chair
Ted Hoffman
Jim Peek

Bob Loucks
Cameron Wheeler
Laird Noh

Executive Summary

The goal of this conservation and management plan is to ensure the long-term survival of wolves in Idaho while minimizing wolf-human conflicts that result when wolves and people live in the same vicinity. Conservation of wolves requires management. Management for wolves means ensuring adequate numbers for long-term persistence of the species as well as ensuring that landowners, land managers, other citizens, and their property are protected. The Idaho Constitution, Article 1, Section 1, states: “All men are by nature free and equal, and have certain inalienable rights, among which are enjoying and defending life and liberty; acquiring, possessing and protecting property; pursuing happiness and securing safety.” The Governor's Office of Species Conservation shall begin immediate discussions with the U.S. Fish and Wildlife Service to define how the rights guaranteed by Article 1, Section 1, will be preserved and recognized. Without management, conservation is overcome by conflict. The State of Idaho is on the record asking the federal government to remove wolves from the state by the adoption in 2001 of House Joint Memorial No. 5. The position reflected in House Joint Memorial No. 5 continues to be the official position of the State of Idaho. However, in order to use every available option to mitigate the severe impacts on the residents of the State of Idaho, the state will seek delisting and manage wolves at recovery levels that will ensure viable, self-sustaining populations.

- 1) Manager – Idaho Department of Fish & Game (IDFG) is charged by statute with the management of Idaho’s wildlife (Idaho Code §36-103). Tribes in Idaho, however, manage wildlife with authorities that are similar to, but separate from, the State of Idaho. In managing wolves, IDFG shall consult with the Tribes.
- 2) Classification or Status of the Wolf – In order to protect wolf populations by enforcing regulations and issuing citations for illegal take and by limiting and regulating legal take, wolves will be classified as either a big game animal, furbearer, or special classification of predator that provides for controlled take after delisting, at the discretion of the Idaho Fish and Game Commission (IC§36-201).
- 3) Population Objectives – Wolf population estimates are, at best, approximations, and establishment of specific population sizes to be maintained is not realistic. In most instances, wolves can be managed similarly to how (*note 4, p. 31*) other large native mammalian predators (black bears and mountain lions) are traditionally managed. IDFG will manage wolves within the state according to the chart on page 5 (Table 1). If it can be shown that wolves can expand their range without causing unacceptable conflict, they will be allowed to do so. However, population growth is unlikely to be controlled by sport hunting. In general, regardless of their location, wolf packs that are not creating conflict will be allowed to persist.
- 4) Monitoring – Wolf numbers, distribution, and breeding success will be determined to assure the long-term survival of wolves in Idaho. Monitoring will rely on more intensive methods with fewer wolves and less intensive methods with larger populations.
- 5) Wolf Depredation Management – U.S. Department of Agriculture (USDA) Wildlife Services, in cooperation with IDFG, will take an incremental approach, guided by wolf numbers, to address wolf depredations. When the wolf population is low, more conservative methods will be applied whereas increasingly more aggressive control will be applied as numbers increase. Upon delisting, every individual has the right to protect their person and property, on private, state, and federal lands from wolf depredation.

- 6) Zones – The plan does not require zone management; however, IDFG may establish management zones as experience with wolf management dictates (*note 2, p. 31*).
- 7) Advisory Committees – If requested by entities within a Region, IDFG shall create wolf management advisory committees.
- 8) Education – Establish a strong public education program that emphasizes wolf biology, management, conservation, and presents a balanced view of the societal impacts and costs of wolf reintroduction. Input from economic sectors will be included in the presentation of the overall wolf educational component to be presented at any educational presentation.
- 9) Funding – Because wolves are considered a species of national significance, the plan relies on Federal funding for adoption and implementation.

Table 1: Summary of Wolf Management Actions

Less than 15 Packs Management	More than 15 Packs Management
<p>IDFG conduct review of management policy to determine if changes are needed to maintain wolf population.</p>	<p>Wolves managed under IDFG Commission regulations, similar to black bears and mountain lions. Wolf plan updated in the same process as all other species plans.</p>
Control	Control
<p>Depredation control becomes increasingly stringent until at <10 packs it reverts to the control plan specified in the final rule (50 CFR Part 17, page 80270). In the unlikely event the number of packs in Idaho falls below 10, depredations will be addressed with nonlethal control unless unusual circumstances absolutely necessitate the use of lethal control to end the depredation problem.</p>	<p>Depredation control is treated like all other large mammalian predators.</p>
Monitoring	Monitoring
<p>Monitoring becomes increasingly intensive to the point that each pack contains some radio-collared individuals and reproduction and survival in each pack is monitored on a regular basis.</p>	<p>Monitoring is done primarily by indicators such as wolf depredation complaints, autumn scent station surveys, telemetry, winter track surveys, and other observations of field personnel.</p>
Listing under ESA	
<p>Listing remains a possibility for wolves if they are likely to become endangered as determined by Section 4 of the ESA (16 USC 1533) (<i>note 1, p. 31</i>).</p>	

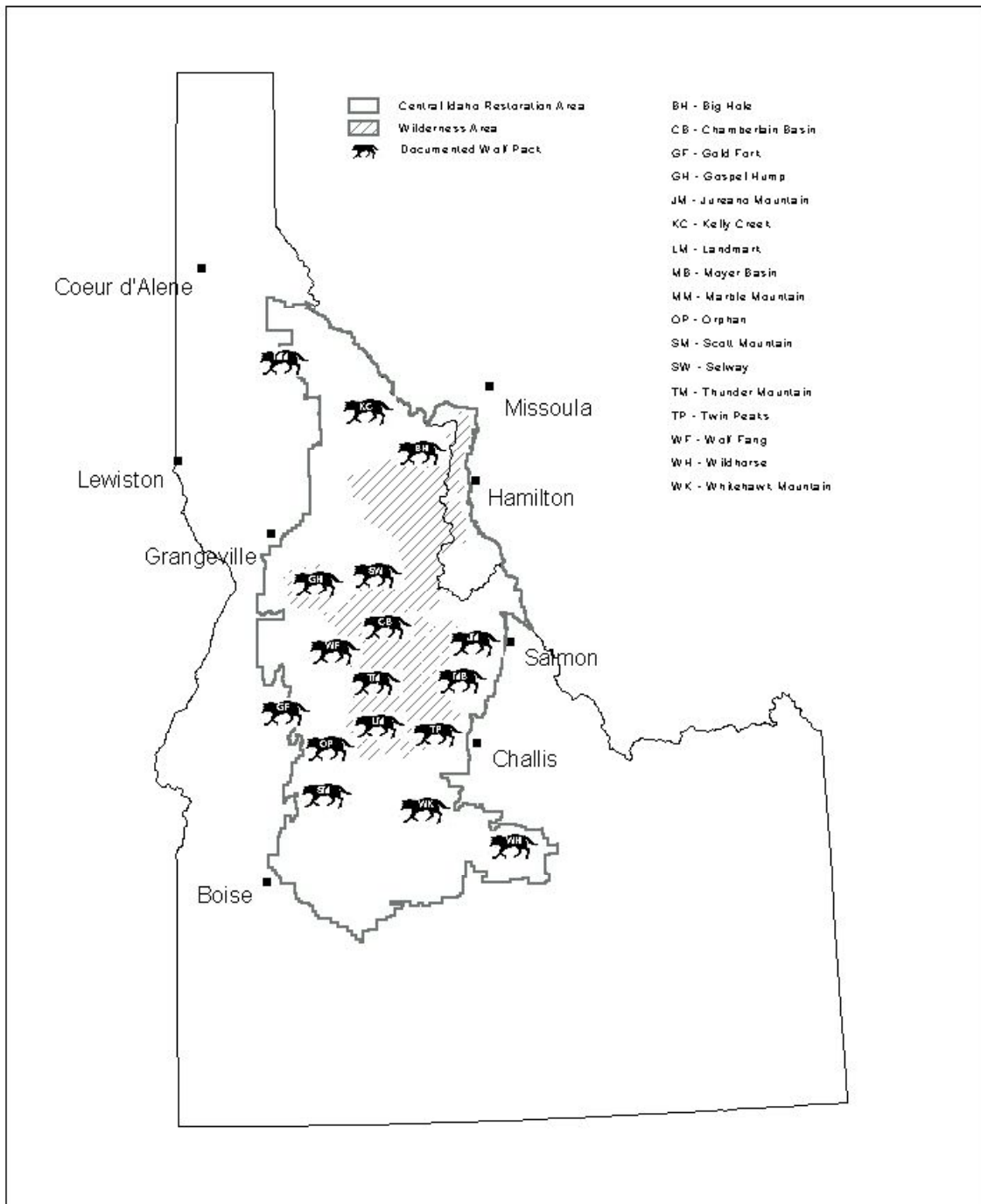


Figure 1: Wolf distribution in Idaho, 2001 (Nez Perce Tribe, unpublished data).

Idaho Wolf Conservation and Management Plan

Introduction

In January 1995 the U.S. Fish and Wildlife Service (USFWS) reintroduced 15 wolves into Idaho under the provisions of Section 10(j) of the Endangered Species Act (ESA) (USFWS 1998). Twenty more were released in 1996. All introduced wolves were radio-collared and were monitored after release by the Nez Perce Tribe under contract with the USFWS.

Efforts to create an acceptable state plan for wolf management in 1995 were unsuccessful due to the inability of all parties involved to reach a consensus on a plan that was acceptable to the USFWS. Additionally, Federal funding for the Idaho Department of Fish and Game (IDFG) to accomplish wolf-related management functions lacked certainty. In absence of an acceptable plan, IDFG was prohibited by state statute (Idaho Code §36-715) from further involvement in wolf recovery.

Following the reintroductions in 1995 and 1996, the wolf population grew steadily through reproduction and natural dispersal (Figure 1). In 1998, 12 packs produced 10 litters, and in 2000, 15 litters were produced. Thus the central Idaho recovery area had attained its share of the population criteria established in the 1987 Northern Rocky Mountain Wolf Recovery Plan (USFWS 1987) necessary to initiate the delisting countdown. However, for wolves to be delisted from the ESA in the Northern Rockies, the USFWS must complete a status review and determine that listing is no longer warranted pursuant to Section 4 of the ESA (16 USC 1533). The USFWS determined that 2001 was the second year in which 30 breeding pairs of wolves inhabited the area of Montana, Wyoming, and Idaho.

In preparation for delisting, the Idaho Legislature chartered the Legislative Wolf Oversight Committee to prepare an Idaho post-delisting Wolf Management Plan to facilitate the transfer of management authority to the state following delisting (*note 1, p. 31*).

IDFG is charged by statute with the management of Idaho's wildlife (Idaho Code §36-103(a): "*All wildlife, including all wild animals, wild birds, and fish, within the state of Idaho, is hereby declared to be the property of the state of Idaho. It shall be preserved, protected, perpetuated, and managed. It shall be only captured or taken at such times or places, under such conditions, or by such means, or in such manner, as will preserve, protect and perpetuate such wildlife, and provide for the citizens of this state and, as by law permitted to others, continued supplies of such wildlife for hunting, fishing and trapping.*"). This plan will enable the transition of the management of the gray wolf back to the IDFG as either a big game animal, furbearer, or special classification of predator that provides for controlled take after delisting. This classification will enable IDFG to provide protection for wolves as well as consider the impacts of wolves on other big game species, those sectors of the economy dependent upon sport hunting, livestock, domestic animals, and humans.

Wolf Ecology

Physical Characteristics

Gray wolves are large predators that were once common throughout the western United States. Many people imagine the gray color phase when they think of wolves, but gray wolves may range in color from black to nearly white. About half of the wolves in the northern Rockies are black. Most wolves stand about 26” to 32” tall at the shoulders and are from 4.5’ to 6.5’ long from nose to tail tip, with the tail comprising 13”-20” of the length (Mech 1970). Males average 90-110 lbs and females average 80-90 lbs (USFWS 1994).

Reproduction

The pack is the basic social unit in wolf populations. Packs are formed when 2 wolves of opposite sex develop a pair bond, breed, and produce pups. Wolves typically do not breed until 22 months of age (Mech 1970). Breeding usually occurs only between the dominant male and female in the pack, but occasionally, a male may breed more than one female and more than one litter may be produced by a pack (Ballard et al. 1987, Smith 1998). For example, 13 litters were produced by 10 wolf packs in Yellowstone in 1997 (Smith 1998). In one of those packs, 3 females produced litters (Smith 1998).

In the northern Rockies, wolves breed between late January and early March. Usually between 2 - 9 pups are born between late March and late April after a 63-day gestation period. Wolf packs may be sensitive to disturbance by humans during this period. Following the reintroductions of 15 wolves into Idaho in 1995 and another 20 in 1996, 3 litters (11 pups) were born during spring 1996. Six litters (32 pups) were produced in 1997, and 10 litters including 52-56 pups were produced in Idaho in 1998. Litter sizes averaged 5.1 pups from 1996-1998 (Mack and Laudon 1998).

Territories

By about October, pups are mature enough to travel with adults, and packs begin to move throughout their territories. In most populations wolves occupy exclusive territories that they defend against intruding wolves. Some overlap may occur. Wolf pack territories in Idaho ranged from about 200 – 700mi² (average = 359mi²) during 1995 through 1998 (Mack and Laudon 1998).

Dispersal

In low-density populations, wolves may disperse just outside of their pack's territory into an unoccupied area, find another lone wolf of the opposite sex, and form a new pack (Fritts and Mech 1981). In some cases, however, young wolves disperse hundreds of miles. For example, a radio-collared female wolf from Glacier National Park, Montana was shot 520 miles north of its natal pack's territory (Ream et al. 1991). Wolves disperse at ages ranging from 9-18 months or older (Packard and Mech 1980), but dispersal of yearlings in late winter is common. Boyd et al. (1995) estimated the average age of dispersing females was 23 months, and the average age of dispersing males was 33 months in the Rocky Mountains of the United States and Canada. The

furthest recorded dispersal of a wolf from the central Idaho recovery area to date was the 160 miles traveled by a lone male that had traveled extensively within the Idaho recovery area after its release in 1995 until it dispersed into Montana in 1998 (Mack and Laudon 1998).

Population Growth

Protected wolf populations at low density can increase rapidly if prey is abundant. Starting in 1986 when the first pack of wolves denned in Montana in over 50 years (Ream et al. 1989), the naturally recovering wolf population in Montana increased at a rate of 22% per year through 1994 (Fritts et al. 1995). Keith (1983:66-67) concluded that an annual increase of 30% is probably the maximum rate at which wolf populations are likely to increase in the wild over a period of several years. However, newly recolonizing or reintroduced populations have been documented to increase at much greater rates over a period of several years where prey was abundant (Phillips and Smith 1997, Mack and Loudon 1998). Social interactions intensify among wolves as population density increases, and at some level, social factors interact with food competition and reduce or prevent population growth (Mech and Packard 1980, Keith 1983, Fuller 1989). Such intraspecific territorial conflict already appeared to have begun affecting wolf numbers and distribution in parts of Yellowstone National Park by 1996 and 1997 (Phillips and Smith 1997, Smith 1998). Combined effects of wolf density and prey density are strongly related to growth rates of wolf populations (Keith 1983, Fuller 1989).

Wolf populations in Idaho grew steadily starting with the 15 wolves reintroduced in 1995 and 20 more added in 1996. Wolf numbers increased from 14 at the end of 1995 to 192, including 62 pups, at the end of year 2000 (Table 2).

Table 2: Idaho wolf population statistics 1995-2001 (USF&WS, Nez Perce Tribe correspondence).

Year	Minimum # Litters Produced	Minimum # Breeding Pairs ¹	Minimum # Pups produced	# Documented Mortalities ²	Year-end Population Estimate
1995	0	0	0	1	14
1996	3	3	11	3	42
1997	6	6	29	0	71
1998	10	10	52	8	115
1999	12	10	≥54	22 ³	154
2000	15	10	≥62	23	192
2001	16	14	82	13	261

1 – # Breeding pairs = # of male-female pairs that produce a minimum of 2 pups that survive to December 31 of the year of their birth.

2 – Includes only documented mortalities of radio-marked wolves.

3 – Includes documented and suspected mortalities.

Mortality

In areas with minimal killing of wolves by humans, the primary causes of mortality are disease and poor nutrition of pups or yearlings, and death of adults caused by attacks from other wolves (Pletscher et al. 1997). Mortality in populations unexploited by humans can average about 45% for yearlings and 10% for adults. Mortality of pups in exploited populations can reach 80% (USFWS 1994). Beginning in autumn, wolf mortality is most influenced by the degree of legal and illegal exploitation or control by humans. Over-winter (October-March) mortality within packs ranges from 0-33% for a minimally exploited population to 14-88% for a heavily exploited population (USFWS 1994). Established wolf populations can apparently withstand human-caused mortality of 28-50% without declining (Mech 1970, Ballard et al. 1997, Keith 1983, Fuller 1989, USFWS 1994).

A total of 18 deaths of wolves were confirmed in Idaho between 1995 and 1998. In 1999, 11 wolves died from human-related causes including 6 killed in depredation control actions, and 5 died of natural or unknown causes. In 2000, 23 known mortalities were recorded, including 17 caused by humans, 1 natural and 5 of unknown origin. Ten of the 17 human-caused mortalities included control actions involving wolves depredating on domestic livestock (U.S. Fish & Wildlife Service et al. 2001). In winter 1999-2000, at least two wolves were illegally poisoned with compound 1080 in Lemhi County. Human-caused mortality, legal and illegal, will continue to be the major cause of wolf deaths in Idaho. As the population increases, the numbers of wolf deaths will likely increase as well.

Food Habits

Wolves are effective predators and scavengers that feed primarily on large ungulates throughout their range (Murie 1944, Pimlott 1967, Mech 1970, Van Ballenberghe et al. 1975, Carbyn 1983, Ballard et al. 1987, Gasaway et al. 1992, Boyd et al. 1994). Ungulates comprise nearly all of the winter diet of most wolves. Of ungulates killed during winter by wolves that colonized northwestern Montana since the mid-1980s, 63% were deer (60% white-tailed deer and 3% mule deer), 30% were elk, and 7% were moose (Boyd et al. 1994, Kunkel et al. 1999). Wolves elected white-tailed deer wintering areas and selected deer over elk and moose (Kunkel et al. 1999). An established population of wolves in northwestern Montana and southeastern British Columbia was responsible for the annual mortality of 6% of female white-tailed deer and 3% of female elk (Kunkel 1997, Kunkel and Pletscher 1999).

In Yellowstone, elk made up 89% of the 449 kills made by wolves during winters 1995-1997 (Phillips and Smith 1997, Smith 1998). The pattern has been similar since then (U.S. Fish & Wildlife Service et al. 2001). In 2000, 281 elk (87%), 10 bison (3%), 4 moose (1%), 5 deer (3%), 4 coyotes (1%), 1 wolf, and 17 unknowns (5%) were determined to be killed by wolves during the mid-winter observation period. Composition of elk kills was 34% calves, 34% cows, 19% bulls, and 13% unknown. Bison kills included 3 calves, 1 cow, 1 bull and 4 adults of unknown sex. Remains of voles, ground squirrels, snowshoe hare, coyotes, bears, insects and vegetation were also found in wolf scats (Smith 1998).

Near Salmon, Idaho, elk made up an estimated 90% of the wolf kills (n = 40) found by biologists working on a predation study for Lemhi County and IDFG (Husseman and Power 1999).

Smaller animals become more important in the diet of wolves during the snow-free months, but ungulates remain the main food source. Small animals typically consumed by wolves include beavers, marmots, ground squirrels, snowshoe hares, pocket gophers, and voles. Porcupines, ruffed grouse, ravens, coyotes, striped skunks, and golden eagles have also been killed by wolves (Boyd et al. 1994).

Estimates of consumption by wolves during winter vary widely depending on availability of food and other factors (Mech 1970, Fritts and Mech 1981, Weaver 1993). Average winter consumption by wild wolves probably averages about 9 lbs. of food per wolf per day (Fuller 1989, Weaver 1993, USFWS 1994). Although wolves are capable of consuming large amounts of food in a short time, such quantities are not always available. Wolves often go several days without eating.

Prey selection and frequency of killing by wolves varies greatly depending on many factors including pack size, snow conditions, the diversity, density, and vulnerability of prey, and degree of consumption of the carcasses (Kunkel 1997). Snow depth and wolf density best explained the annual variation in kill rate in northwestern Montana (Kunkel 1997). Based on studies with the most similar species and diversity of prey (Carbyn 1983, Keith 1983, Boyce 1990, Vales and Peek 1990, Mack and Singer 1992), wolves are projected to kill about 16.5 ungulates per wolf per year in Idaho where they are expected to feed primarily on mule deer and elk (USFWS 1994).

During the first 3 years of an intensive predation study in Yellowstone, wolves killed at a rate equivalent to ~ 10.7 kills/wolf/year during early winter (Table 3) (Phillips and Smith 1997, Smith 1998). The rate increased to ~ 23.3 kills/wolf/year by late winter (Phillips and Smith 1997, Smith 1998). Elk made up 90% of the wolf kills examined.

Wolves in Idaho are expected to be less reliant on elk and more reliant on mule deer and white-tailed deer compared to Yellowstone where primary alternative prey options are bison and antelope. However, in the first year of a winter predation study near Salmon, Idaho, deer made up only 10% of the prey killed by the Moyer Basin and Jureano Mountain wolf packs during winter, significantly less than their proportion of abundance (Husseman and Power 1999). Wolves selected calf elk in excess of their proportion of abundance in the population (Husseman and Power 1999, Kuck and Rachael 1999).

Husseman and Power (1999) estimated a kill rate during the first season of their study of 1 kill per pack every 3.4 – 3.5 days, or the equivalent of $\cong 12.4$ kills/wolf/year. However, Husseman and Power (1999) believed their figures likely underestimate the actual kill rate because rough topography and tracking conditions made it impossible to locate, identify, and recover all kills made by these two packs during the study period. If the estimated kill rate and prey consumption estimated during winter remained consistent throughout the year, the 17 wolves in 2 packs in the study area would be expected to kill approximately 211 ungulates per year in Game Management Unit 28, of which approximately 190 (90%) would be elk. Impact at this level of intensity would

result in the mortality of approximately 5.7% of the estimated population of 3,336 elk inhabiting this area in 2001 (Unsworth and Nelson 2002).

Carbyn (1987) documented that wolves prey on calf elk in excess of their proportion of abundance in the population. Wolves selected older and younger deer and elk than did hunters in northwestern Montana (Kunkel et al. 1999). Vales and Peek (1995) examined several studies that reported the age structure of deer and elk killed by wolves compared to the estimated age structure of the deer and populations (Table 4). In several studies wolves were documented to take old deer in excess of their proportion of abundance in the population, and wolves tended to take elk calves in excess of their abundance in the population (Table 4; Kunkel et al. 1999). Husseman and Power (1999) similarly reported wolves taking elk calves in excess of their proportion of abundance in the population. Fifty-eight percent of elk killed by wolves near Salmon, Idaho during winter 1999 were calves (Husseman and Power 1999); whereas, calves comprised approximately 17% of the elk population in the area at that time (Kuck and Rachael 1999).

Kill rates of wolves may vary widely by area and from year to year depending upon primary prey species, prey abundance, and weather conditions, among other factors. Most often the effects on prey populations that are attributable to wolf predation are unknown because of the lack of information on population dynamics of the prey populations and the rates of other mortality sources. However, Kunkel and Pletscher (1999) documented that predation by wolves and other predators (i.e., mountain lions, grizzly bears, black bears, coyotes, and humans) on ungulate species in northwestern Montana appeared to be mostly additive to the effect of other mortality factors and that predation appeared to be the primary factor limiting the growth of deer and elk populations.

Although wolves feed primarily on large, wild ungulates, they occasionally do kill livestock and other domestic animals (Fritts and Mech 1981; Fritts and Paul 1989; Fritts et al. 1992; Bangs et al. 1995, 1998).

Table 3: Kill rates of wolves in Yellowstone National Park during early and late winter (Phillips and Smith 1997, Smith 1998).

Year	Season	# Wolves	# Kills/30 days	# Kills / Day	# Kills/wolf/year
1995	Early winter	22	14	0.47	7.8
1996*	Early winter	32	47	1.57	17.9
1997	Early winter	62	41	1.37	8.1
	3-yr avg. rates:			1.14	11.2
1996	Late winter	18	35	1.17	23.7
1997*	Late winter	29	55	1.83	23.0
	2-yr avg. rates:			1.50	23.4

1 – 90% of kills were elk. Other kills included small numbers of bison, moose, mule deer, antelope, beaver, and a mountain goat.

* Weather conditions during winter 1996-1997 were particularly severe.

Table 4: Age structures of elk and deer in wolf-killed samples compared with proportions in the population (adapted from Vales and Peek 1995).

Location	Species	Fawns/Calves		% Adult ¹		% Old ¹	
		%<1yr		Wolf	Pop	Wolf	Pop
NE Minnesota ²	WT deer	17	26	68	73	15	1
NW Minnesota ³	WT deer	34	33	35	62	31	6
E Ontario ⁴	WT deer	30	35	65	63	5	2
W Ontario ⁵	WT deer	17	20	61	52	22	28
Jasper N.P. ⁶	Mule deer	62		31		7	
Jasper N.P. ⁶	Elk	41		32		27	
Riding Mtn. ^{7,8}	Elk	34	19	26	41	40	40

1. Adult = 1-7; Old = > 7 years of age.

2. Mech and Frenzel 1971a. Population from hunter harvest.

3. Fritts and Mech 1981. Population from hunter harvest.

4. Kolenosky 1972. Population from hunter harvest.

5. Pimlott et al. 1969. Population from road kills.

6. Carbyn 1975. No population estimates available.

7. Carbyn 1980. Population from hunter harvest.

8. Carbyn et al. 1987. Wolf kills, 1975-1986.

Depredation on Livestock and other Domestic Animals

Depredation on Livestock. U.S. Department of Agriculture Wildlife Services (2000) summarized depredations by wolves on livestock in Idaho (Table 5). The number of investigations has increased from 2 in 1995, following the introduction, to 55 in 2000. Confirmed, probable or possible wolf-related cases also increased from 6 in 1996 to 37 in 2000. Of these wolf-related cases, a total of 176 sheep and 35 cattle were confirmed as being lost to wolves over the 5-year period. The number of sheep lost has varied between 5 and 57 per year. The number of cattle varied between 1 and 15 per year and has increased each year. Probable losses, defined as losses showing evidence of possible involvement by wolves, but not sufficient to confirm, have varied between 0 and 10 sheep and 1 and 9 cows per year. These losses are considered minimum estimates attributed to wolves.

Actual wolf predation losses are considerably higher than confirmed and probable death losses. When a wolf pack establishes a territory in a range livestock grazing area, the number of unexplained, missing livestock increases markedly. Prior to the establishment of the Jureano Pack territory west of Salmon, the Williams Basin Grazing Association (WBGA) historically lost 3-5 calves (average 4) annually from about 700 cow-calf pairs. After establishment of the Jureano wolf pack near one pasture of the allotment in 1996, WBGA reported 21 unexplained missing calves in 1997. In 1998 and 1999 WBGA did not use the pasture near the home site and the number of missing calves returned to normal. Despite the observed increase in unexplained, missing calves, no wolf depredations were confirmed or reported on the WBGA in 1997. On the adjacent Diamond/Moose Allotment (DMA), livestock losses have increased from a pre-wolf average of 2% in 1994-96, to 3% in 1997, to >7% in 1998 following wolf establishment. Of five permittees on the allotment, calf losses were highest in 1998 (16%) for the permittee that grazed cattle nearest the Jureano pack home site. Although both confirmed and probable wolf depredations were documented in 1997, 1998, and 1999, the number did not approach the number of unexplained, missing calves.

Wolf-caused calf mortalities are difficult to detect in range livestock areas. Heavy cover, large pastures, great topographical variation, and complete carcass consumption by wolves cause increasing degrees of difficulty to timely detection of wolf kills. The proportion of wolf-related depredations that go undetected or unconfirmed is unknown and will vary by area. In a research trial conducted on the DMA grazing allotment near Salmon (Oakleaf, et al., 2000) using radio collars on one third of the calves grazing the allotment, only 1 of every 5.8 confirmed wolf kills would have been detected without radio telemetry. Canadian wolf researchers (Bjorge and Gunson, 1985) were able to recover only 1 of each 6.7 missing cattle in their study. The number of unconfirmed depredation losses attributed to wolves will likely remain a contentious issue in the future. If wolves are to be accepted as part of the natural fauna, however, a method to compensate livestock operators for these losses needs to be established. In the interim, a wolf depredation compensation committee within the Office of Species Conservation will establish an equitable compensation procedure.

Some scientific information suggests that further effects of wolf predation include stress-related loss of body condition in harassed herds and subsequent decreases in pregnancy rates and

weaning weights (Stricklin and Mench, 1989). Range cattle seeking to escape wolves may leave areas where they are supposed to be and disrupt grazing management plans which may result in economic loss or penalties from state and Federal land management agencies. For some ranchers, the cumulative effects of wolf predation may cause losses sufficiently severe that livestock production in some areas becomes untenable. Although the impact of wolf predation to the entire livestock industry of the state is expected to be small, the impact to individual operators can be devastating. Upon delisting, every individual has the right to protect their person and property from wolf depredation, on private, state, and federal lands.

Defenders of Wildlife paid \$49,746 in compensation to livestock operators in Idaho for confirmed or probable wolf-related losses from 1995-2000 (Table 5). Defenders of Wildlife also offers assistance intended to mitigate or prevent conflicts between wolves and livestock. It is unknown if Defenders of Wildlife will continue to compensate ranchers after delisting.

USDA Wildlife Services has responded in a timely manner to complaints involving wolf depredations. One person with extensive experience with wolf depredations has been assigned to the Boise office. Adequate funding for Wildlife Services is critical. Current funding is at \$200,000 (\$100,000 from USFWS and \$100,000 from Wildlife Services) for the Idaho, Montana and Wyoming wolf depredation management program. Costs for this program were \$16,000 in 1996, \$20,000 in 1997, \$36,820 in 1998, \$77,772 in 1999 and \$135,880 in 2000 (Graves 2000). Depredations are reported across the range of the wolf where it encounters livestock, but are most prevalent in Custer and Lemhi Counties.

Depredation on other domestic animals—Dogs. The adversarial relationship between wolves and domestic dogs is well known in North America and around the world (Mech 1970, Fritts and Paul 1989, Skancke 1996). Wolves have been documented to seek out and kill domestic dogs (Fritts and Paul 1989), and livestock guarding animals are trained to protect stock by aggressively pursuing encroaching predators. We expect the number of reports of wolf attacks on domestic dogs to increase in proportion with the wolf population.

During the period 1995-1996, 3 dogs were confirmed killed by wolves in northwestern Montana and 4 were confirmed killed by wolves in the Yellowstone area (Bangs et al.1998). Four dogs were also confirmed killed by wolves in central Idaho during that period (Bangs et al.1998), including a hound killed by a pack of wolves after it crossed fresh wolf tracks while trailing a mountain lion near Salmon. The hound broke off the mountain lion tracks and pursued the wolf tracks for a short distance before catching up with the pack. During winter 1999, another lion hunter reported losing 4 hounds to a wolf pack in northern Idaho during the night while the hounds were holding a lion at bay in a tree (K. Lawrence, Director of Wildlife Management, Nez Perce Tribe, pers. commun.). At least one livestock guarding dog was killed by wolves in 1999 and 2 others were injured (Graves 1999).

Table 5: Number of confirmed and probable wolf-related livestock losses investigated by USDA Wildlife Services in Idaho, FY1995-2001 (Graves 2001).

Fiscal Year	# Reports Investigated	# Confirmed, probable, or possible ⁴ wolf-related cases	# Confirmed Losses ²		# Other Probable Losses ³			Compensation Paid ⁵
			Sheep	Cattle	Sheep	Cattle	Horses	
1995	2	0	0	0	0	0	0	0
1996	6	6	30	1	0	2	0	\$5,185
1997	11	8	29	1	0	0	0	\$3,761
1998	17	12	5	8	4	9	0	\$5,180
1999	50	31	57	10	10	5	0	\$15,297 ⁶
2000	55	44	55	15	3	2	0	\$20,033 ⁷
2001	34	29	62	11	2	9	0	\$7,904 ⁸
Totals	141	94	176	35	17	16	0	\$57,360

1 – Does not include other unsubstantiated a loss in which there was insufficient information to implicate involvement of wolves.

2 – Confirmed losses are defined as those cases in which there was reasonable physical evidence that an animal was actually attacked and/or killed by a wolf.

3 – Probable losses are defined as having some evidence to suggest possible predation by wolves, but lacking sufficient evidence to clearly confirm predation by wolves. A kill may be classified as probable depending on a number of factors such as: A.) Has there been any recently confirmed predation by wolves in the same area or nearby? B.) How recent had the livestock owner or his employees observed the livestock? C.) Is there evidence (telemetry monitoring data, sightings, howling, fresh wolf tracks, etc.) to suggest that a wolf may have been in the area when the depredation occurred? All of these factors, and possibly other, are considered in the investigator's best professional judgement.

4 – Possible/unknown classification is defined as lacking sufficient evidence to classify an incident as either confirmed or probable wolf predation. The Possible/unknown classification is designated if it is unclear what the cause of death may have been but predation by wolves could not be ruled out. Possible/unknown predation may include cases where counts show abnormal numbers of livestock were missing or had disappeared above and beyond past experience, and where other known cases of wolf predation have occurred previously in the area.

5 – Compensation paid by Defenders of Wildlife.

6 – Includes \$1,698 of hay paid to a Clayton, Idaho rancher so he wouldn't turn his livestock onto an allotment that had an active wolf den and \$1,801 paid to ranchers in the Montana portion of the Central Idaho wolf recovery area.

7 – Compensation paid for 19 cattle, 56 sheep, and 1 guard dog.

8 – Compensation for 12 calves, 1 cow, 6 lambs, 6 ewes, 1 guard dog.

Competition with other Predators and other Endangered, Threatened, or Candidate Species

Wolves presumably interact in various ways with other predators and other species of concern. Wolves compete indirectly with other predators by preying on the same prey species, but have also been documented to kill mountain lions (Boyd and Neale 1992; Boyd et al. 1994; T. Ruth,

Hornocker Institute, in prep.). Likewise, wolves have been documented to kill coyotes (Boyd et al. 1994, Crabtree and Sheldon 1999) and researchers occasionally report observing wolves harassing bears in attempt to chase them off ungulate carcasses. It is likely that other large predators also occasionally usurp kills from wolves. Lions visited or scavenged about 3% of wolf kills while wolves visited or scavenged 20% of mountain lion kills (Kunkel et al. 1999). However, little is known about the frequency and effects of these interactions among wolves and other predators, other endangered or threatened species, or species that are candidates for listing as endangered or threatened. The Department will attempt to investigate these relationships to the extent possible as the wolf population increases.

Responsibilities of Affected Agencies and Entities

The Governor of the state of Idaho has charged his Office of Species Conservation to work in partnership with the governors of the other states and other regional partners to ensure the delisting and long-term management of wolves across the 3-state area. The governor's stated intent is consistent with the intent of this plan to prevent the wolves from becoming relisted (*note 1, p. 31*).

IDFG is charged with preserving, protecting, and managing the State's wildlife resources for the use and enjoyment of all people, now and in the future. IDFG is responsible for managing all fish and wildlife species, except threatened and endangered species and some migratory birds, under applicable state and federal laws.

Tribes with reservations or reserved rights in Idaho manage fish and wildlife species with authorities that are similar to, but separate from, the State of Idaho. The Nez Perce Tribe has done a commendable job, in conjunction with the USFWS, of managing wolf recovery efforts in Idaho since 1995. During wolf recovery, under contract with the USFWS, the Nez Perce Tribe has, in a very professional and successful way, provided such services as wolf monitoring, communications with affected and interested parties, and research. Upon delisting, IDFG shall clearly delineate roles and responsibilities of the several participating agencies and shall do so in consultation with the Nez Perce Tribe.

Natural resource land management agencies such as the USDA Forest Service (USFS) and the Bureau of Land Management (BLM) are responsible for managing lands for various goods and services, including providing the habitat necessary to maintain fish and wildlife species. Close coordination is necessary between IDFG and the land management agencies to meet the objectives of each agency. The mission of the USFWS is to conserve, protect, and enhance threatened and endangered fish and wildlife and migratory bird species and their habitats for the continuing benefit of the American people. Their programs include protecting and restoring animals and plants in danger of extinction.

Through a Memorandum of Understanding with the Idaho State Animal Damage Control Board, USDA APHIS Wildlife Services is responsible for dealing with a wide variety of wildlife damage problems including predation on livestock. After delisting, including during the first five years, the Wildlife Services Agency of the U.S. Department of Agriculture, in cooperation

with the Idaho Department of Fish and Game, will be responsible for depredation management necessary for the protection of private property.

Wolf Management Goals

1. Manage wolves according to the chart on page 5 (Table 1) to ensure that wolves will not become re-listed under the Endangered Species Act. The wolf population will be managed at recovery levels that will ensure viable, self-sustaining populations until it can be established that wolves in increasing numbers will not adversely affect big game populations, the economic viability of IDFG, outfitters and guides, and others who depend on a viable population of big game animals. If the population falls below 15 packs, institute remedial management measures (*note 1, p. 31*).
2. Assure that resident wolf populations are able to interchange with wolves in adjacent states and provinces, thereby making Idaho's wolves part of a larger metapopulation. It is expected that adjacent states and provinces will also encourage this interchange.
3. Manage wolves as part of the native resident wildlife resource. This species will be managed similar to other large mammalian carnivores resident in Idaho.
4. Minimize wolf-human conflicts by coordinating with USDA Wildlife Services to achieve prompt response to notifications of wolf depredation and prompt resolution of conflicts.
5. Establish a strong public education program that emphasizes wolf biology, management, and conservation and presents a balanced view of the societal impacts and costs of wolf reintroduction. Outreach should be professionally based and should address all issues concerning conservation and management and present a balanced view of the impacts of wolves on big game species, those sectors of the economy dependent upon sport hunting, livestock, domestic animals, and humans. It is expected that Idaho Fish & Game will solicit cooperation and advice from all vested interests in developing educational materials. The cost of wolf reintroduction will be presented as a part of any public education program including direct and indirect costs.

Wolf Population Objectives

Wolf numbers and distribution within the state will be managed per the chart on page 5 (Table 1) in order to prevent the wolf from being re-listed under the Endangered Species Act. Wolf population estimates are approximations, and establishment of specific population sizes to be maintained is not realistic. The resources required to determine population sizes across Idaho are prohibitively high. However, in specific areas of concern, wolf population sizes may be determined in order to more effectively manage the species in these areas.

Wolf management programs will influence the size and distribution of the population, although it will fluctuate with the availability and vulnerability of native prey. Where wolves are causing depredations, their distribution and numbers will have to be altered. When circumstances cause

declines in the natural prey that are demonstrated as being attributable to wolf predation, management may be needed to temporarily reduce populations. In most instances, wolves can be managed similarly to how other large native mammalian predators are traditionally managed. However, sport hunting has not proven effective in the past to effectively manage wolf populations. The IDFG is authorized to evaluate and use sport hunting or any other means necessary to maintain wolf populations at recovery levels that will ensure a viable, self-sustaining population until such time as all impacts are known.

In the unlikely event the population falls below 10 packs, depredations will be addressed with nonlethal control unless unusual circumstances absolutely necessitate the use of lethal control to end the depredation problem. Except for the lethal control measures, wolf management will revert to the same provisions that were in effect to recover the wolf population prior to delisting (50 CFR Part 17, page 80270).

Incidental take

Human-related accidental deaths of wolves (capture myopathy, automobile accidents, etc.) are expected to occur occasionally, and inadvertent take of wolves by hunters and trappers during the course of otherwise legal actions is not expected to adversely affect wolf population objectives. In an effort to minimize such accidental take of wolves, IDFG will include a section on wolf identification, and a brief history of the reintroduction and conflict created thereby, as part of all required hunter education classes and provide similar information to all trapping license buyers.

Hunters are responsible for accurately identifying their target before pulling the trigger. Cases of incidental take due to “mistaken identity” of the intended quarry will be subject to the same penalties applicable to other illegally/accidentally taken big game species. Incidents of illegal take deemed deliberate shall be punishable under the rules of illegal take of wildlife (Idaho Code §36-1402 and §36-1404). If convicted of a flagrant violation involving the killing, illegal possession, or illegal waste of a trophy big game animal as defined in Idaho Code §36-202(h), restitution must also be paid to the state for each wolf so killed, possessed, or wasted at the cost specified in Idaho Code §36-1404. *Note: appropriate changes in Idaho Code would be required to include wolves under these sections.*

Although wolves may occasionally be captured inadvertently in traps legally set for other furbearer species, relatively few people participate in trapping in Idaho (608 Idaho trapping licenses were sold in 2000). Little of the trapping effort is likely to be conducted with such methods or equipment that cause wolves to be vulnerable to capture. However, in the event that the frequency of nontarget capture is deemed unacceptable (exceeding the lethal capture of >4 wolves per year), IDFG may consider implementing trap-size restrictions (maximum jaw spread not to exceed 5 ½” or the equivalent of #3 Victor) on land sets and implementing a 36hr minimum check requirement for trappers using traps of that maximum size on land-based sets in the core area. IDFG may further consider implementing restrictions on the use of snares in occupied wolf areas to require all neck snares set in these areas to be equipped with break-away snare locks designed to hold coyotes or similar sized furbearers (e.g., bobcat) but release large nontarget species such as wolves or ungulates accidentally captured by a leg. After adoption by the Idaho Fish and Game Commission, specific rules and restrictions will be published in the

furbearer trapping regulations section of the Upland Game Seasons brochure. Mandatory trapper education classes would be considered for all new trappers, including first-time nonresident trapping applicants, and education could be provided to all trapping license buyers on protocol for releasing an inadvertently captured wolf and/or contacting IDFG for assistance. Any incidental capture must be reported to IDFG within 5 days of the incident. The complete carcass of any wolf lethally injured as a result of a nontarget capture must be salvaged and turned over to IDFG. The hide and skull will remain the property of IDFG.

Wolf Management

Wolves, when delisted, will become a component of the native resident wildlife in Idaho. The designation of the wolf as a big game species, furbearer, or special classification of predator that provides for controlled take provides legal authorization for Idaho Department of Fish and Game to manage the species. Management includes inventory; predator-prey research; harvest monitoring; cooperation with agencies, individuals, tribes, other states, and Canada; control to reduce depredations; and dissemination to the public of current, accurate information. In Idaho, hunting and trapping may be considered in the future when populations are at levels that justify public taking. If this is proposed by IDFG, there will be opportunity for full public comment and decisions will be based on sound biological data. Hunting of wolves may be authorized when necessary to meet big game harvest objectives and eliminate conflicts, while at the same time maintaining wolves at recovery levels that will ensure viable, self-sustaining populations.

Monitoring wolf populations is the cornerstone of a management program. Wolf numbers, distribution, and breeding are to be monitored. Monitoring of selected packs is best done with radio telemetry. Radio-collared animals should be maintained in carefully selected packs that are distributed across the occupied range. Packs that are predisposed to depredation on domestic livestock should be included with the eventual goal of predicting or anticipating circumstances when depredations are most likely to occur and proactive management may be initiated.

Counting and estimating other parameters of the total wolf population will likely be difficult, as it is with other large mammalian carnivora. Annual changes in abundance will be indexed with indicators including wolf depredation complaints, scent station surveys, winter track surveys, and other observations of field personnel in all agencies. Additionally public observations will be solicited and incorporated into the annual index in a reliable way. As other inexpensive and efficient monitoring techniques become available, these will be incorporated into the annual index. It is expected that this index will represent a minimum estimate of the wolf population. Models that aid in prediction of numbers should be developed and incorporated as well. Work on other mammalian carnivora designed to assess populations will be monitored for its potential application to the wolf population. If management zones, similar to game management units, become helpful to IDFG as experience with wolf management dictates, then such zones may be established (*note 2, p. 31*).

Distribution patterns of the wolf population range from monitoring the movements of individually marked individuals representing study packs to see how their home ranges change, to documentation of the presence of packs using observations of field personnel and the public. Scent station and winter track surveys will also provide information on wolf distribution.

The distributions of study packs that persist in a given area are expected to become predictable relative to prey movements and other factors as experience in monitoring grows. Continual monitoring will be needed to determine the pattern, but when it can be predicted with some degree of reliability, changes in that pattern will need to be explained and will provide additional insight into their management.

Production/survival and pack size is best estimated using radio-collared individuals to locate packs at regular intervals. However, observations of field personnel and the public will also be solicited to provide additional information on other packs that are not regularly monitored. The major mortality factor accruing to wolves throughout their range is humans (Fuller 1989). Thus, the human dimension is ultimately the most important component in management of this species. Efforts to reduce illegal take and depredations on livestock will involve timely release of accurate, factual, and objective information. Monitoring of packs predisposed to causing depredations and close coordination with livestock operators will be required. Illegal taking of wolves will be difficult to prevent, but is potentially the major impediment to restoration and orderly management of this species. Rigorous enforcement of laws and regulations in order to minimize illegal take, and to reduce adverse public perception of management will be needed.

When legal harvest is planned, harvest monitoring will be based on a requirement to report the location and sex of animals taken, similar to requirements for mountain lions and bears. It is anticipated that Idaho Department of Fish & Game will incorporate plans to assist in reducing depredations as part of the management plan. If wolves are harvested from study packs, the effect of harvest should be factored into conclusions drawn from those packs. Distribution of the wolf harvest would be monitored similarly as with the other carnivora.

In the future, wolf management will have to evaluate the effects of predation on native prey, specifically other big game (National Research Council 1997). This consideration is being progressively incorporated into more progressive wolf management plans in Canada and Alaska. When adverse weather patterns representing combinations of drought and severe winter depress native ungulates, predation in combination with harvest may inhibit big game population recovery. Temporary reductions in predator populations, by removing those wolves affecting the big game population, may be needed to assist in restoration of prey populations in conjunction with habitat management (Kunkel and Pletscher 2001). This will require monitoring of native ungulates at levels that identify population trend and specific causes of mortality, and goals for population levels of both predator and prey. Again, public information and involvement will be important.

Annual census of selected, important prey populations within the range of study packs should be conducted. It is extremely important that annual census of these populations is conducted in order to detect trend and eventually to aid in developing predictions of population size and trend. Trend data on prey populations collected before wolves were reintroduced are also important.

Factors that affect prey numbers, including weather, habitat conditions, predation, and hunter harvest, need to be fully assessed for these selected populations. Some study packs will inevitably range into neighboring states and British Columbia. Coordination in their monitoring

with those jurisdictions, including the wildlife agencies, associated tribes and land management agencies will be needed.

Eventually a wolf population size range will be reached that appears to be compatible with other uses of the prey base and is at levels that are tolerable as far as livestock depredations are concerned. This level will be ascertained with the population indices that may be used to estimate minimum numbers present, and will consider the distribution of wolves as well. Depredation management considerations will be involved in ascertaining the distribution and numbers of wolves within the state.

Compensation for Livestock Depredation

Following delisting, claims for compensation for domestic animals killed by wolves should continue to be paid by Defenders of Wildlife.

Other wolf related losses are probably occurring. Decrease in weaning weights, pregnancy rates, and disruption of ranch activities are examples of possible losses.

Because such compensation is difficult to determine and is controversial, the Governor's Office of Species Conservation is working with a well-balanced interim advisory committee including individuals with expertise in these areas and individuals representing the various interests involved. OSC and its advisors are working with a research project to evaluate compensation policies world wide to assist them in developing policy for making compensation determinations in Idaho. OSC is also exploring all possibilities for preventing depredation by any means that proves effective, feasible, and acceptable.

Federal compensation for such losses is appropriate because the state, due to federal law, may be required to allow livestock losses to continue in some instances in order to avoid decreases in wolf pack numbers such that the population becomes threatened. The wolf population is of national interest. The costs of maintaining that population should not be unfairly borne by the state or a few individuals. If those few individuals who suffer losses because of prolonged depredation on their herds are not compensated, the goal of a stable wolf population will suffer. If people fear for their livelihood and the loss of their home and family business, cooperation with wolf management programs will be reduced and individuals may be tempted to take wolves illegally.

Wolf Population and Prey Base Monitoring

Wolf numbers, distribution, and breeding success will be estimated and compared with management goals. The monitoring program should focus on selected packs from representative areas across the state as support dictates. Annual, long term monitoring of selected packs allows for assessment of changes, an understanding of factors affecting pack size, and eventually, prediction of pack size relative to major influencing factors. Packs that are predisposed to depredation on domestic livestock need to be included, with the eventual goal of being able to predict or anticipate circumstances when depredations are most likely to occur so proactive management can be initiated. Close coordination among the tribes, IDFG, and USDA Wildlife

Services will be imperative. Sharing of information is essential to a flexible and responsive management program that protects wolves and livestock.

Monitoring of selected packs is best done by radio-collaring one or more individuals. The monitoring program will plan to trap and collar individuals from selected packs on a regular basis to account for battery failure, collar loss, and dispersal of collared individuals from the selected pack.

Monitoring of prey populations, especially the deer species and elk, will need to be continued. Similar to the predator, annual census of selected, important prey populations should be conducted by IDFG and compared with data collected prior to wolf reintroduction. It is extremely important that annual census of these populations is conducted in order to detect trend and eventually to aid in developing predictions of population size. Factors that affect prey numbers, including weather, habitat conditions, predation, and hunter harvest, need to be fully assessed for these selected populations. Population size estimates plus sex and age ratio data are minimum information to be obtained from prey monitoring. More specific information on age structure, both of the hunter harvest and wolf take, is desirable and should be obtained when concerns about the level of wolf predation are raised. Wolves may currently be adversely affecting ungulate populations. The Idaho Fish and Game Commission, with assistance from the Governor's Office of Species Conservation, shall begin immediate discussions with the U. S. Fish and Wildlife Service to define unacceptable levels of effect on ungulate populations by wolf predation; specifically, they will define how these effects would be measured, and will identify possible solutions.

IDFG and the state legislature will seek the assistance of the Idaho congressional delegation to obtain federal funding sources to pay for the cost of wolf management (e.g., in FY2001, Interior appropriations budget contained \$188,000 for prey base monitoring). If the Idaho Congressional delegation is unsuccessful at providing ongoing adequate funding to cover the cost of wolf management, the State of Idaho is under no obligation to manage wolves. Provided, however, the State of Idaho is not precluded from using state resources to eliminate or control wolf related conflict. IDFG will additionally seek funding from outside entities, including wolf advocacy groups, to aid in all wolf management efforts. The Governor's OSC is currently working with IDFG, the Idaho Outfitters and Guides Association, and others to begin closer monitoring of prey populations now, so that better data will be available to managers over time after delisting (*note 1, p. 31*).

As wolf recovery progresses and the number and distribution of wolves increases throughout the state, the reliance on radio telemetry alone to monitor populations, pack establishment, and distribution will become increasingly inefficient. An increased emphasis on public reporting of wolf sightings and sign observations will be crucial to effectiveness of any long-term monitoring program. IDFG will develop a long-term periodic monitoring program using public sighting information, density estimates, GIS, etc., that are similar to programs developed in Minnesota.

IDFG will coordinate monitoring of wolves that border or range into neighboring states or other political boundaries with the wildlife staff of the affected states, Tribes, and land management agencies.

Wolf-dog Hybrids and Captive Wolves

Although wolf-dog hybrids are not likely to survive through winter if released into the wild, the presence of released captive wolves or released or abandoned wolf-dog hybrids presents several potential problems. Such animals are probably more likely to resort to depredation on livestock or other domesticated animals and are likely to associate more closely with humans than wild wolves. Because hybrids or released captive wolves would be difficult or impossible to distinguish from wild wolves based on physical characteristics, any negative encounters between people and these animals in the wild will invariably be attributed to wild wolves. Additionally, there is a possibility that the existence of such animals could potentially pollute genetic purity of wild wolf populations. Any release of such animals is against state law (Idaho Code §36-712 and §36-1401) and will not be tolerated. If behavior and/or physical appearance of any free-ranging wolf-like canid are suggestive of such origin, the animal will be promptly removed from the wild. Lethal means may be used for removal if necessary.

Interagency Coordination

Upon delisting, IDFG will coordinate monitoring of wolves and their impact on other wildlife populations. IDFG will coordinate among the federal and state land management agencies, USDA Wildlife Services, the Governor's Office of Species Conservation, the USFWS, and the Nez Perce Tribe in their respective roles in wolf monitoring during the 5-yr. post-delisting monitoring period as required by the ESA. IDFG will coordinate monitoring of wolves that border or range into neighboring states with wildlife staff's of those states.

Evaluation of Plan

This plan must be flexible enough to be compatible with the dynamics of society and wildlife management. The plan must satisfy the needs of the State of Idaho in its efforts to minimize the impact of wolves on the Idaho outfitting industry, Idaho sportsmen, a diverse public and all others affected by wolf introduction. IDFG will update this plan periodically and submit any changes to the Idaho Legislature as if it were a new plan submitted for approval, amendment or rejection under Section 36-2405, Idaho Code.

Budget

Annual cost projections that follow are estimates of IDFG and USDA APHIS Wildlife Services implementation, operation, and maintenance expenses of the wolf management program and cost for compensation for wolf-caused livestock losses (*note 3, p. 31*).

Personnel		
1	Project Coordinator + benefits and overhead	\$60,000
6	Technicians + benefits and overhead @ 8 months (1,385 hrs max. each)	\$116,000
Wolf Monitoring		\$200,000
	(aircraft rental, vehicle, fuel & repair, telemetry equip., etc.)	
Wolf Management*		\$20,000
	(coordinate wolf capture, handling & instrumentation w/ USDA Wildlife Services, training, harvest season proposal development and input processes, implementation of hunts, tagging of hides, lab work.)	
Enhancement of Ungulate Monitoring		\$100,000
Education / materials		\$50,000
	(Hunter & Trapper education, public information updates, travel expenses for requested talks, updates, etc., and prep. of presentation materials.)	
Overhead on all IDFG non-Personnel costs @ 28.1%		
	\$ 325,000 x 0.281 =	\$ 91,325
Wolf Control		\$100,000
	(USDA APHIS Wildlife Services through Idaho State Animal Damage Control Board)	
Depredation Compensation		\$ 100,000
<hr/>		
Estimated Total Annual Budget:		\$837,325

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Response to Reviewer Comments

1. Numbers of Wolves Before and After De-listing.

Reviewers were divided on whether wolves are more likely to fall below our minimum numbers or to exceed them, and at least 1 reviewer questioned whether federal action on the de-listing of wolves is warranted at certain population levels. These comments raise issues about our chosen population minimum, hunting, federal decisions on listing, and monitoring effects on prey. Our response, and any resulting change in the plan, is briefly explained below.

The concern about the population exceeding the minimum came from reviewers who are expert with full-fledged wolf populations, which inclines us to favor that concern (Mech 2001). At the same time, we recognize the need to clarify our numbers. In short, if the population falls below 15 packs, we will begin instituting remedial measures, and if it falls below 10 packs, we will revert to the control plan currently specified in federal rules (50 CFR 17).

If the wolf population shrinks and remains low, the committee does not presume whether wolves would be re-listed under the ESA. To consider re-listing, the USFWS will follow whatever procedures are current under Section 4 of ESA. To remain clear of any possible confusion about the number of wolves necessary to de-list the currently listed populations, the committee does not presume how wolves will be de-listed, noting that the Governor's OSC is currently working with the USFWS and a 3-state partnership to determine that.

Knowing the effect of wolves on big game is obviously central to the goal of managing that effect; therefore, we clarified that the Governor's OSC and IDFG has begun developing better methods for monitoring prey.

2. Zones

One reviewer suggested establishing a general zoning of the state. The committee previously considered such an approach and decided against it; however, IDFG has the option to create zones, similar to game management units currently used for big game, as experience with wolf management may dictate.

3. Budget

Reviewers who mentioned budgeting were split: one saying our budget is too high, the other too low. The committee notes that the budget will be scrutinized fully during various appropriation debates and stands by its proposal.

4. Managing wolves similarly to how bears and lions are managed.

One reviewer saw inconsistencies in the wolf plan regarding the idea of managing wolves similarly to how Idaho manages bears and lions. Wolves will be managed similarly to bears and lions, but not exactly as bears and lions are managed. The differences are the strong national interest in wolf management (evident in the federal wolf program) and the fact that wolves, unlike bears and lions, will be a recovered threatened species.

5. Monitoring

The committee has provided only guidance to IDFG, knowing that the department will develop the detailed monitoring program. The committee agrees with reviewers that monitoring is fundamental to successful management and expects IDFG to maintain the most current techniques and reliable results that the budget supports. Recent information from Minnesota suggests, for example, that instead of using harvest rates to index wolves (such as it is done for

lions), a mail-survey of wolf observations may give better results if paired with estimates of pack size and distribution. Size and distribution of packs likely will be estimated in the course of monitoring effects of wolves on big game populations.

6. Education

Agreeing with reviewers who stressed the importance of education and the need for more specifics, we inserted a reference to the Living with Carnivores program now underway as an example of a balanced, legitimate program that would fulfill the committee's interest in education.