

**Idaho
Wolf Conservation
and
Management Plan**

DRAFT!

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Idaho Legislative Wolf Oversight Committee
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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. In 1998, 12 packs produced 10 litters, thus the central Idaho recovery area reached 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, a minimum of 10 pairs of wolves must produce litters in each of the 3 recovery areas for 3 successive years and other protections must be in place in accordance with the Final Experimental Population Rule (Federal Register 1994). Therefore, under present regulations, it will be necessary for the northwestern Montana and Yellowstone recovery areas to also attain their respective goals before delisting can proceed.

Before wolves can be delisted, the USFWS must approve an Idaho post-delisting wolf management plan that does not jeopardize the continued persistence of wolves in the state. Because of that requirement, the Legislative Wolf Oversight Committee concluded that preparation of an Idaho post-delisting Wolf Management Plan should be initiated to facilitate the transfer of management authority to the state following delisting.

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 or furbearer after delisting.

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. 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 reduces 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 42 at year-end in 1996, to 71 at year-end in 1997. Including the 52-56 pups produced in 10 litters in 1998, there were approximately 115 wolves at the end of year, with 14 potential breeding pairs going into 1999 (Table 1).

Table 1. Idaho wolf population statistics 1995-1998 (Mack and Loudon 1998).

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					

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. 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).

Of the 35 wolves originally released in state in 1995 and 1996, 8 deaths have been confirmed (23%) and the status of additional 4 (11%) is uncertain. Two of these deaths were confirmed to be illegal killings, 2 were ruled to be the result of natural causes, 1 was killed accidentally during a control action intended to capture a wolf that had been implicated in depredation on livestock (Mack and Laudon 1998). Causes of death of the remaining 3 could not be determined.

From 1995 through 1998, 9 of 11 (82%) known mortalities of wolves (including originally reintroduced wolves and their offspring) were human caused. Illegal killing accounted for 5 of 11 (45%) known mortalities of reintroduced wolves and their offspring (Mack and Laudon 1998).

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). 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).

In Yellowstone, elk made up 89% of the 449 kills made by wolves during winters from 1995-1997 (Phillips and Smith 1997, Smith 1998). Small numbers of moose, deer, antelope, bison, beaver, and a mountain goat were also documented to have been killed by wolves in Yellowstone (Phillips and Smith 1997, Smith 1998). 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.

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. 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 2) (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 ≈ 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 approx. 190 (90%) would be elk. Impact at this level of intensity would result in the mortality of approx. 4% of the estimated population of 4,400 elk inhabiting this area in 1999 (Kuck and Rachael 1999).

Carbyn (1987) documented that wolves prey on calf elk in excess of their proportion of abundance in the population. 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 3). 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 3). 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 2. Kill rates of wolves in Yellowstone National Park during early and late winter¹ (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 3. 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	
		Wolf	Pop	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.--USDA APHIS Wildlife Services (formerly Animal Damage Control) conducted 50 wolf depredation investigations in Idaho during FY 1999 compared to 17 investigations in 1998, 11 in 1997, 6 in 1996, and 2 in 1995. Of 50 reported attacks on livestock in 1999, 15 were confirmed as wolf predation. An additional 4 incidents were deemed probable wolf predation.

One hundred-twenty-one sheep and 22 cattle were confirmed killed by wolves from FY1995 through FY1999, and the deaths of an additional 32 sheep, 39 cattle, and 2 horses may have involved wolves but could not be confirmed (Table 4).

Actual losses associated with wolves may have been considerably higher, but causes could not be identified or confirmed because carcasses were not found in time to determine cause of death or no evidence could be found to explain livestock disappearance. The proportion of wolf-related depredations that go undetected or unconfirmed is unknown (see Appendix 1). The number of unconfirmed losses attributed to wolves will likely remain a contentious issue in the

future. A research project was initiated by the Nez Perce Tribe, University of Idaho, and other cooperators in 1999 in an effort to quantify these losses. Research results should be available in 2001.

A private organization, Defenders of Wildlife, paid \$14,126 in compensation to livestock operators in Idaho for confirmed or probable wolf-related losses from 1995 through 1998 (Table 4). In addition to payments to compensate for wolf-related livestock losses, Defenders of Wildlife also offers other forms of assistance intended to mitigate or prevent conflicts between wolves and livestock. It is unknown if the Defenders of Wildlife's compensation program will continue after delisting.

The ability of Wildlife Services to respond effectively and in a timely manner is extremely important, and as wolf populations increase in Idaho, the problems created by this expanding population are also expected to increase. Adequate funding for responding to wolf depredations, depredation compensation, and monitoring is critical. Currently, \$200,000 (\$100,000 from USFWS and \$100,000 from USDA/APHIS) is available to the 3-state area of Idaho, Montana, and Wyoming for wolf damage control efforts. In fiscal year 1998, costs associated with responding to wolf depredation reports in Idaho were approximately \$40,000 (Graves 1999). This amount increased to approximately \$70,000 in FY99 (Graves 1999).

Ranchers believe (Wagner 1988), and some scant scientific information suggests, that further effects of predation include stress-related loss of body condition in harassed herds and decreases in pregnancy percentages and weaning weights (Stricklin and Mench 1989). Some ranchers also believe that cattle seeking to escape wolves may leave areas where they are supposed to be and disrupt grazing management plans, leading to damage of range resources which would result in economic loss and/or penalties from state or federal agencies. These effects may be more significant than the actual physical losses due to wolf kills. For some ranchers, these cumulative effects may cause sufficiently severe loss that livestock production becomes untenable (see anecdotal account in Appendix 2).

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 4. Number of confirmed and probable¹ wolf-related livestock losses investigated by USDA Wildlife Services in Idaho, FY1995-1999 (Graves 1999).

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
Totals	86	57	121	20	14	16	0	\$29,423

1 – Does not include other unsubstantiated losses 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.

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. 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

In the event that the federal rule regarding delisting is modified to treat the delisting threshold as some number of breeding pairs distributed among the states of Idaho, Montana, and Wyoming, the Governor of the state of Idaho or his designees shall be authorized to develop a cooperative agreement with the governors of the other states that would ensure the management by the 3 states is coordinated to prevent the wolves from becoming relisted.

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.

Wolf Management Goals

- 1.) Preserve wolf populations in perpetuity at a sufficient level to ensure they will not fall below the level required for delisting/relisting under ESA. IDFG will manage wolves within the state to ensure at least 10 packs (as defined by state and federal wildlife managers) with established territories are present.
- 2.) Maintain viable wolf populations by ensuring free interchange and intermixing of wolves in Idaho with wolf populations in Montana, Wyoming, and Canada. Such intermixing will protect wolves from vulnerabilities associated with isolated populations. The state of Idaho expects to see an equitable distribution of the wolf population within the 3-state recovery area.
- 3.) Manage wolves in concert with other wildlife species through application of similar techniques and processes used for other species. Wolves will be managed at levels compatible with ungulate populations, habitat conditions, and the management objectives for their primary prey species (elk and deer).
- 4.) Minimize wolf-livestock conflicts by coordinating exchange of information with USDA Wildlife Services to achieve prompt response to complaints of wolf depredation and resolution of the conflict.
- 5.) Work aggressively to maintain deer and elk hunting opportunities in occupied wolf range by monitoring wolf distribution and ungulate recruitment to breeding age stock and population rate of increase to detect impacts of wolf predation on prey populations.
- 6.) Promote a strong public education program for wolves, the role and effect of predation, conflicts between wolves and other important resources, and the need to manage wolves. Educational efforts should be quality, professionally-based efforts that address all issues involved with wolf conservation and management. Materials that are developed should be presented to an advisory group composed of all vested interests.

Wolf Population Objectives

Wolf numbers and distribution within the state will be managed with an objective of maintaining between 10 and 20 packs of wolves. Wolf population estimates are at best 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 as other large native mammalian predators are traditionally managed. Population objectives are not needed to effect these management activities.

Wolf Protection

The best protection for wolves will be an effective education program that increases public understanding of the management and conservation of this species. If at anytime wolf population numbers or reproductive success (i.e., number of packs) falls near the lower threshold of 10 packs, nonlethal methods to manage wolves will be preferred to ensure a minimum of 10 packs of wolves produce, and successfully rear, litters annually. If pack numbers fall below 11, a general review of current wolf management policy should be conducted with the goal of supporting pack populations. However, as with the federal experimental population rule in force prior to delisting, killing wolves or otherwise removing them from the wild may be considered if a conflict is unusually severe when there are more than 6 packs present in the state. When depredation occurs on public land when there are fewer than 6 packs, depredating females and their pups would be captured and released at or near the site of capture, one time prior to October 1. If depredations continue, or if 6 or more packs are present, females and their pups may be removed.

Sport harvest would not be permitted if the wolf population was close to the threshold of 10 packs and agency control would be used exclusively to address wolf-related problems.

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 natural history 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 (623 Idaho trapping licenses were sold in 1998). 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 sport 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

Management will be conducted under a philosophy of aggressively addressing chronic problem areas as they develop, including establishment of appropriate buffer zones around problem areas and areas of identified concern relative to ungulate populations in the future as the wolf population becomes more secure. Management will become increasingly restrictive as packs move further from the core area and encounter conflict involving livestock, wildlife impacts such as winter range, human safety, or if packs appear likely to inhabit areas where needed management options are limited by federal regulation or land use designation. Wolf packs that are not causing problems, regardless of their location, will be allowed to persist.

As the wolf assumes its role as part of the native wildlife of Idaho, the recovery area designations (Northern Continental Divide, Central Idaho, Yellowstone Ecosystem) will no longer be needed. IDFG will be encouraged to establish wolf management areas or zones that are tailored to the resources and interests that are involved. These areas or zones may be modified as experience dictates. Management should be directed towards retaining the majority of the wolf population within the central Idaho core area as specified in the recovery plan. Lands in the central Idaho recovery core area are primarily federal lands and other ownerships where the presence of wolves is not expected to interfere with land use practices. If requested by local entities, wolf

advisory committees shall be created to address issues in each of the Fish and Game administrative regions.

Classification of wolves will be changed from a State endangered species to either a big game animal or a furbearer at the discretion of the Idaho Fish and Game Commission (§36-201). Such classification would allow IDFG the option of establishing seasons and bag limits to regulate and limit legal public take of wolves in the future, and enable IDFG to protect wolf populations by enforcing regulations and issuing citations for illegal take. Under classification as a big game animal or furbearer, the IDFG could also manage wolves by offering no "open season," thus preventing sport harvest. IDFG's management philosophy will be to emphasize the use of sport-hunting and/or public trapping for purposes of wolf population control and management of wolf distribution in preference to agency-conducted control actions when possible. Actual impacts of wolf predation on ungulates in Idaho will be researched to the maximum extent possible based on available funding as recovery progresses.

Problem wolves will be controlled immediately by the appropriate agency in a manner consistent with wolf population objectives. Wolf packs documented to be causing excessive impacts on ungulate populations will be managed to reduce predation to acceptable levels. USDA APHIS Wildlife Services will remain the agency responsible for control actions associated with wolf depredation on livestock, and as necessary to control adverse wolf impacts on ungulate populations. The program, as administered by Wildlife Services through a Memorandum Of Understanding with the Idaho State Animal Damage Control Board, will play a key role in the overall management plan as depredations to livestock and wildlife resources increase as the wolf population in Idaho grows.

Upon delisting, every individual has the right to protect their person and property, on private, state, and federal lands from wolf depredation. IDFG will promulgate rules for wolves that are generally consistent with the requirements for black bears and mountain lions.

Because wolves cross political boundaries, IDFG will coordinate management strategies and philosophies with surrounding states and provinces, the National Park Service, the US Fish and Wildlife Service, and the tribes.

Specific wolf population objectives will be developed by IDFG and adopted by the Fish and Game Commission. If wolf populations are sufficient to allow harvest, they will be managed at levels compatible with management objectives of other game species. Annual harvest goals, methods to achieve those goals, and number of permits to be issued will be evaluated annually through the IDFG's normal season-setting process. Harvest options to be considered will include, but are not limited to:

1. Issuance of a limited number of controlled hunt permits to focus harvest in a specific area;
2. Depredation hunts;
3. Eventually, a general hunting or trapping season with established quotas.

Wolf population objectives, annual harvest goals, methods to achieve those goals, and number of permits to be issued will be evaluated annually through IDFG's big game season setting process.

Regardless of management approach, all hunters or trappers who harvest wolves will be required to submit the hide and skull to IDFG for tagging within 5 days of the date of kill (as is required for mountain lions). A detailed harvest report (Big Game Mortality Report form) will be completed by IDFG personnel at the time the hide and skull is checked and a receipt will be issued to the hunter.

IDFG may consider providing one or more tags annually to be issued through auction or special drawing. Proceeds would go back into funding the wolf management program.

The Idaho Fish and Game Commission and IDFG hold meetings across Idaho at regular intervals. Opportunities for Idahoans and others to comment on wolf management and conservation activities will become an integral part of these meetings.

Compensation for Livestock Depredation

Claims for compensation for domestic animals killed by wolves will be handled under the same process specified for losses caused by mountain lions or black bears (Idaho Code §36-115) except that a separate depredation account will be established specifically for wolf-caused losses. This wolf depredation account will be established and maintained exclusively with federal, private, or other non-state funds.

Claims for compensation may be based on confirmed losses; suspected or probable losses as compared to historical losses before wolf predation; decrease in weaning or pregnancy rates based on historical data; or labor or other expenses required to resolve disruption of ranch activities. While much of this information may be difficult to verify or quantify, decisions should be based on the best scientific or commercial evidence available.

Compensation for Loss of Outfitter Business Opportunity

The Idaho Outfitters and Guides Association may prepare a plan to address the economic harm caused individual outfitting businesses by decreasing ungulate populations due to adverse wolf impacts. This plan will be put into effect upon consultation with, and approval by, the Fish and Game Commission.

Wolf Population and Prey Base Monitoring

Wolf numbers, distribution, and breeding success will be determined to assure that numbers remain above recovery 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. Subsequent relocations of these individuals will be accomplished from aircraft. 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.

Prey populations, especially the deer species and elk, will need to be monitored as well. Similar to the predator, annual census of selected, important prey populations should be conducted by IDFG. 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. IDFG is not adequately funded to conduct these intensive surveys at this time. 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.

IDFG and the state legislature will seek the assistance of the Idaho congressional delegation to obtain federal funding sources pay for the cost of wolf management (e.g., in FY2001, Interior appropriations budget contained \$188,000 for prey base monitoring). IDFG will additionally seek funding from outside entities, including wolf advocacy groups, to aid in all wolf management efforts.

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, 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 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 is 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 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 USFWS, wolf advocacy groups, livestock industry, outfitting industry, Idaho sportsmen, and a diverse public. IDFG will update this plan periodically to ensure the least amount of impact to the rest of Idaho's wildlife and economy, and maintain adequate wolf populations to avoid relisting.

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.

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
Estimated Total Annual Budget:		\$837,325

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APPENDIX 1

The Diamond Moose Association near Salmon entered into a two-year study to evaluate the effects of wolves on calf survival. This study was supported by numerous entities including the local cattlemen, ICA, Nez Perce Tribe, University of Idaho, and the U.S. Forest Service. The study radio-marked one-third of the total calf population (231 animals) in an effort to track them over the summer in the rugged, mountainous allotment.

In the first year report, it was concluded that 33% of the deaths in radio-marked calves were wolf-caused. It is important to note that the detection rates for these radio-marked calves was only 1 out of 2.3. Obviously, the rate for calves that weren't radio-marked is much higher. In fact, the study provides an important rule of thumb that for every one unmarked calf found to be killed by wolves there are at least another 5.5 killed that are never found.

Calf vulnerability to wolf predation appears to be correlated with spatial proximity to wolf home ranges and rendezvous sites. Wolf control actions coupled with natural mortality rates apparently reduced the rate of wolf-caused calf mortality.

APPENDIX 2

John Aldous is a rancher from Salmon who runs about 280 cows. He is one of several permittees in the summer and fall on the Diamond Moose Forest Service Allotment, a steep, rough allotment with many timbered areas. The permittees on this allotment have accurate production and loss information for the last 10 or more years. John's average loss per year has been 6 calves and 2 cows.

In 1998 the Jureano Mountain wolf pack moved into that part of the Diamond Moose allotment where John's cows tend to be concentrated. John lost 3 calves which the USFWS determined to be due to wolves. John found the partial remains of 3 more calves which were suspected by the USFWS to be wolf kills, but were not proven to be wolf kills. John had 37 cows come home without a calf at the end of the grazing season. John also lost 5 cows on the allotment.

The Defenders of Wildlife honored their commitment and did compensate John for the income associated with the 3 dead calves considered to be wolf kills. The Defenders also modified their policy, in the light of increasing livestock losses this year, and agreed to pay John for ½ the value of the 3 calves which were suspected but not proven to be killed by wolves.

In total, John was compensated for the loss of 4.5 calves. He was not compensated for the other 32.5 calves and 3 cows which he lost this year which are over and above his historical losses. Assuming the calves were worth \$350 and the cows \$500, John suffered an uncompensated loss of \$12,875. While we do not know for certain that wolves were responsible for all the uncompensated loss, we can be reasonably certain that the wolves were very likely to be responsible for most of that loss. The USFWS, the Nez Perce agents working on the wolf program, and the Wildlife Services Agency all recognize that most of the livestock killed by wolves will not be found, and of those that are found, most will not be found quickly enough to prove that wolves were responsible.

To put John's loss in perspective, most ranchers feel they are doing an excellent job of management when they are able to realize profits of \$100/cow/year. Very few ranchers achieved this goal in 1998. A \$12,875 loss cannot be supported by \$28,000 in total potential income. Additionally, John's pregnancy rates appear to be significantly down from historical averages this winter. That information is still being assembled.

In 1997, when Edward Brothers Livestock Co. cattle were near the Diamond Moose Allotment, they lost 23 calves more than their historical average.

USDA APHIS Wildlife Services conducted 16 wolf depredation investigations in 1998, compared to 11 in 1997. Of the 16 investigations, 5 were confirmed wolf depredations. In 4 of the investigations wolf involvement was considered probable or possible but insufficient evidence was available. Livestock loss in the confirmed wolf kills were 4 cows, 4 calves and 5 sheep. Losses in the probable or possible wolf kills were 1 cow, 5 calves and 14 sheep. Note that John Aldous' loss of 32 calves and 3 cows does not appear here. There were no bones found to base a complaint upon or start an investigation.

Unless these losses, particularly the larger individual losses, are compensated, ranching will become unfeasible in areas that wolves may come into from time to time. Compensation must also be made for those large losses where no one expects that definitive proof will be found to indicate wolf responsibility. The Defenders compensation program is voluntary on their part and they have announced that it may terminate when the wolves are removed from the Endangered Species List (when the wolf population and livestock losses are reaching new highs).

--Ted Hoffman, DVM