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Rocky Mountain Wolf Recovery
1999 Annual Report



Photo By: C. Niemeyer 2000

***A cooperative effort by the U.S. Fish and Wildlife Service,
the Nez Perce Tribe, the National Park Service, and USDA Wildlife Services***

This cooperative annual report presents information on the status, distribution and management of the recovering Rocky Mountain wolf population from January 1, 1999 through December 31, 1999.

Background

Gray wolf populations (*Canis lupus*) were extirpated from the western U.S. by the 1930s. Subsequently, wolves from Canada occasionally dispersed south into Montana and Idaho but failed to survive long enough to reproduce. Public attitudes toward predators changed and wolves received legal protection with the passage of the Endangered Species Act (ESA) in 1973. Wolves began to successfully recolonize northwestern Montana in the early 1980s. By 1995, 6 packs lived entirely in northwestern Montana. In 1995 and 1996, 66 wolves from southwestern Canada were reintroduced to Yellowstone National Park (YNP) (31 wolves) and central Idaho (35 wolves). The Rocky Mountain wolf population comprises 3 recovery areas: the Northwest Montana recovery area (NWMT, Figs. 1, 2) which includes northwest Montana and the northern Idaho panhandle; the Greater Yellowstone recovery area (GYA, figs. 1, 4) which includes Wyoming and adjacent parts of southeast Idaho and southeast Montana; and the Central Idaho recovery area (ID, Figs. 1, 3) which includes central Idaho and adjacent parts of southwest Montana.

Wolves in the 3 recovery areas are managed under different guidelines, depending upon their designated status under the Endangered Species Act (ESA). NWMT wolves are classified as endangered, the most protected classification under the ESA. GYA and ID wolves are classified as nonessential experimental populations and managed with more flexible options than the endangered population.

NORTHWESTERN MONTANA WOLF RECOVERY AREA

Monitoring

Summer trapping efforts resulted in 31 captures of 27 different wolves. Ten pups too small to radiocollar were eartagged only, and 17 wolves from 6 different packs were radiocollared. Additionally, we translocated the Bass Creek Pack from ID to NWMT, which added another pack with 6 more radiocollared wolves to that area (see Livestock Depredations and Management below). At the end of 1999, 22 radiocollared wolves were transmitting in the NWMT area in 8 packs totaling about 57 wolves (Figs. 1, 2; Tables 1, 4). The average pack size was 7.1 wolves, and average home range size 481 square kilometers (188 square miles). Radiocollared wolves were located from airplanes approximately twice per month. Packs included in the NWMT recovery area as of December 1999 were South Camas, Murphy Lake, Ninemile, Boulder, Whitefish, Grave Creek, Little Wolf, and Spotted Bear (Table 1). Packs that occasionally travel into NWMT but den and spend most of their time in Canada, and therefore are not counted in the NWMT area, include the Wigwam, Spruce Creek, and Belly River Packs. Packs discussed in previous reports but no longer confirmed as existing included the North Camas, Thompson River and Pleasant Valley Packs. No radiocollared animals lived as resident lone wolves in 1999, although several dispersing or translocated wolves traveled alone for varying periods of time. Five radiocollared wolves disappeared from their packs during 1999 and

probably dispersed. The only dispersal confirmed in 1999 was that of female #57. She was radiocollared as a yearling in the Murphy Lake Pack in 1997, was last heard March 1998 at Murphy Lake, and was captured at Bass Creek in June 1999 with a failed radiocollar. Her dispersal distance was approximately 240 km.

Several small groups of wolves are known or suspected (of which only 1 pack contains a radiocollared wolf) including a pack of 3 in the Lincoln/Alice Creek area, a pack of 3 in the Ovando area, a pack of 3 in the Big Prairie area of the Bob Marshall Wilderness (including a radiocollared wolf translocated from Pleasant Valley), a pack of 3 south of Libby, and a pack of unknown size in eastern Glacier National Park and the Blackfoot Indian Reservation. In fall 1999, sightings of 1 or 2 wolves in the Bass Creek drainage suggested that wolves were reoccupying that area after the removal of the Bass Creek pack several months earlier.

Reproduction was confirmed in 5 packs, and a sixth pack (Whitefish) denned but pups were not confirmed (Table 1). Pup survival was high and a minimum of 26 pups survived until Dec. 31 (including 5 Bass Creek/Spotted Bear pups originally born in the ID recovery area). A minimum of 15 wolves (radiocollared and uncollared) died in northwestern Montana in 1999. This count does not include animals that disappeared whose fates were unknown. The old remains of #1718 (breeding female of the Thompson River Pack) were discovered in November and her cause of death is unknown. She was last located in the Thompson River area in March 1997. Male wolf 119, translocated from Pleasant Valley to Spotted Bear in January 1999, was killed illegally in the Garnet Mountains, west of Helena, in September 1999. The cause of death of female #59, of the Little Wolf Pack, is under investigation. The former breeding female of the South Camas Pack, #8756, died in June of natural causes at the advanced age of 12 years. An untagged Murphy Lake pup and an untagged adult wolf (northeast of Columbia Falls) were killed by trains. Nine wolves were killed in response to livestock depredations, including Pleasant Valley wolves #5, #95, #128, and #130, and 3 untagged Pleasant Valley wolves, and 2 untagged wolves on the East Front (see Livestock Depredations and Management below).

Table 1: Northwest Montana wolf recovery area: wolf packs and population data 1999

WOLF PACK	PACK SIZE JAN 2000			HOME RANGE (SQUARE KM)	MORTALITIES			KNOWN	MISSING ²	CONTROL		VERIFIED LOSSES		
	ADULT	PUP	TOT		NATURAL	HUMAN ¹	UNKN	DISPERSED		KILLED	MOVED	CATTLE	SHEEP	DOGS
South Camas	5	0	5	425	1			1	1					
Murphy Lake	3	6	9	430		1			1					
Ninemile	6-7	>2	8-9	63										1
Boulder	4	3	7	118										
Whitefish	5-6	?	>5	1590					2					
Grave Creek	4-5	2+	6-7	826										
Little Wolf	2	8-9	10-11	116		1			1			1		
Spotted Bear ³	2	5	7											
Pleasant Valley	0	0	0	279		8				7	4	8		
Big Prairie	3	0	3											
Alice Creek	3	0	3										1	1
Misc./ Lone						3	1			2		4	18	
Total	37+	26+	63+		1	13	1	1	5	9	4	13	19	2

1 includes 6 wolves killed in control actions.

2 missing collared wolves.

3 includes 6 former Bass Creek wolves and 1 former Pleasant Valley wolf, translocated to Spotted Bear.

Ongoing Research

We gathered information on population dynamics, distribution, and wolf movements through routine monitoring efforts. An experimental, radiocollar-triggered light and siren device, developed by USDA/APHIS Fort Collins Laboratory to keep wolves away from livestock, was tested in the Bitterroot Valley of Montana in 1999. More research on this and other aversive methods is planned in cooperation with Wildlife Services, the University of Montana and the Turner Endangered Species Fund.

Outreach

Program personnel presented informational talks and status reports throughout the year to various federal and state agencies, public and private institutions, special interest groups, and rural communities. During 1999, project personnel (USFWS and WS) gave 47 public presentations to approximately 2700 people. Additionally, scores of informal presentations to small groups or individuals were conducted during this time. A film crew spent 2 weeks with project personnel in September, preparing a documentary for German public television.

Livestock Depredations and Management

Wolf control in response to livestock depredation may be a factor limiting the expansion of the NWMT wolf population. Confirmed livestock losses in 1999 included 13 cattle, 19 sheep, and 2 dogs (Table 5). It can be difficult or impossible to confirm wolf depredation when livestock carcasses are eaten or decomposed. In wooded and/or mountainous country, livestock carcasses may not be found promptly, if ever. Therefore, confirmed losses represent only a portion of actual losses. Whether this is a large or small portion of such losses is the subject of much controversy and current research (see Diamond Moose cause-specific calf mortality study, below). With wolves occupying more widespread areas and awareness of wolves increasing, more ranchers suspect wolf depredation. In addition to the 13 incidents of verified wolf depredation in northwest Montana, USDA/APHIS/Wildlife Services investigated approximately 35 other reports in the state, that were not verifiable as wolf depredation or were attributed to other causes. Depredation control efforts resulted in the killing of 9 wolves, and the moving of 4 wolves. All wolf depredations in NWMT in 1999 occurred on private land.

In 1998 and early 1999, a series of cattle losses in the Pleasant Valley area west of Kalispell led the USFWS to move 4 wolves from the Pleasant Valley Pack to the Spotted Bear area in the Flathead National Forest, where it was hoped that they would remain away from humans and livestock. One of these wolves, with 2 companions of unknown origin, began killing sheep and calves on the east front of the Rocky Mountains in summer 1999. All 3 wolves were eventually killed in government control efforts. Another of the translocated wolves dispersed south to the Garnet Mountains and was illegally killed there. Two of the translocated wolves remained in or around the Bob Marshall Wilderness. When depredations in Pleasant Valley continued, 3 wolves were killed in February at the request of USFWS. Continued depredation caused the removal of the last 3 Pleasant Valley Pack members in April. Much of the territory of the Pleasant Valley Pack was within what is now the Lost Trail National Wildlife Refuge, and 1-2 wolves are suspected to have already reoccupied the area.

The Bass Creek Pack (2 adults and 8 pups) was removed from its home range in June for livestock depredations near Stevensville, MT, and placed in a captive facility near McCall, Idaho. Over the summer months, 3 pups died of parvovirus, and the adult male was accidentally killed in the pen in a handling incident. The remaining 6 pack members (adult female, 2 male pups, and 3 female pups) were translocated in December to a temporary electrified pen in the Spotted Bear area near the Bob Marshall Wilderness. This temporary pen was constructed of a soft, electrified mesh netting designed to hold the wolves a few days to calm them from the trauma of transport before releasing them at Spotted Bear. This pen structure is lightweight, easily assembled, transportable in a pick-up or by horse back, and has potential for future translocations. Similar modified soft-release pens were successfully used by the Mexican wolf project in Arizona in 1999. The radiocollared wolves were flown into Spotted Bear on December 7. Within 12 hours of their being placed into the electrified mesh pen, an adult male wolf appeared outside the pen. The male, #117, had been translocated into this area 11 months earlier from Pleasant Valley after livestock depredations. Wolf #117 had last been located in late November 40 miles from the Spotted Bear release site. His appearance at the release site was a great stroke of luck. The field crew took advantage of his presence and turned the penned wolves loose after only 24 hours of captivity. After release, all 7 (#117 plus the 6 Bass Creek wolves)

were located together, have made kills, and appear to have formed an intact pack, hereafter known as the Spotted Bear Pack.

Isolated incidents of wolf depredation on livestock were confirmed in the Milk River drainage near the Canadian border east of Glacier National Park (by a suspected lone wolf), and in the Wolf Prairie area (Little Wolf Pack). No control was conducted in these instances. Of 24 cattle, sheep and dogs confirmed killed by wolves in the GYA recovery area in 1999, 23 were on private land.

GREATER YELLOWSTONE WOLF RECOVERY AREA

Monitoring

At the end of 1999, at least 118 wolves were present in the GYA. Twenty-four wolves were captured by helicopter and radiocollared in 1999, and 47 radiocollared wolves were being monitored at the end of the year. Of these, 38 were in 11 established packs averaging 9.2 wolves per pack. Pack home ranges averaged 891 square kilometers (348 square miles) in size. Another 9 radiocollared wolves were traveling alone or in newly formed pairs. Wolves were located approximately 4 times per month by airplane. The former Chief Joseph I pack has been renamed the Chief Joseph Pack. The Chief Joseph II Pack has been renamed the Sheep Mountain Pack. A non-radiocollared pack containing 1 adult and 3 pups (North GYA) established a home range north of YNP. Eleven radiocollared wolves were known to have dispersed, and 1 radiocollared wolf disappeared from its pack in 1999 (Table 2). Packs discussed in previous reports but no longer confirmed as existing included the Washakie and Thorofare Packs. Continued depredations and sightings of wolves in the Dubois area suggest that a few wolves (perhaps including the lone remaining member of the Washakie Pack) still live there. Repeated attempts to capture wolves in this area in 1999 were unsuccessful. Reports suggest that small packs of wolves may live in the Gravelly Range and Taylor Fork areas of Montana, part of the GYA.

Reproduction was confirmed in 11 packs, with 1 pack having 2 litters of pups. Pup survival was fairly poor and many pups disappeared over the summer, possibly dying of disease. At least 64 pups were born in the GYA and 38 survived through December 1999. A total of 32 wolves were thought to have died in the GYA: 10 wolves died of human-related causes (including 8 in depredation control north of the park); 3 wolves died of known natural causes; and 18 wolves were assumed to have died although their fates were unknown (mostly pups that disappeared while too young to disperse). One radiocollared adult wolf died of unknown causes.

Table 2: Greater Yellowstone wolf recovery area: wolf packs and population data 1999.

WOLF PACK	PACK SIZE JAN 2000			HOME RANGE (SQUARE KM)	MORTALITIES			KNOWN		CONTROL		VERIFIED LOSSES		
	ADULT	PUP	TOT		NATURAL	HUMAN ¹	UNKN	DISPERSED	MISSING ²	KILLED	MOVED	CATTLE	SHEEP	DOGS
Druid Peak	6	2	8	522	4			1						
Rose Creek	10	6	16	502	8	1		4						
Leopold	10	1	11	436	3									
Crystal Creek	12	1	13	556				1						
Chief Joseph	5	3	8	2018	1	2		2		2			6	
Nez Perce	8	5	13	456										
Soda Butte	3	0	3	2419	2			2						
Sheep Mtn	6	3	9	310		6		1		6		2		
Teton	1	5	6	692		1								
Gros Ventre	3	2	5	1797										
Sunlight Basin	2	7	9	88								1		1
Taylor (#115F)	2	0	2											
North Fork Cr	2	0	2											
North GYA	1	3	4		2		1							
Washakie	2+	?	2+									1		4
Lone Wolves	7	0	7		1				1				7	1
TOTAL	80+	38	118+		21	10	1	11	1	8	0	4	13	6

1 includes 8 wolves killed in control actions.
 2 missing collared wolves.

Ongoing Research

We gathered information on population dynamics, distribution, and wolf movements as described above through routine monitoring efforts. Additionally, we are conducting the following research:

Jackson Hole area and National Elk Refuge

* In winter 1999-2000 a cooperative inter-agency monitoring effort was begun to determine winter food habits of wolves and to describe behavioral response of elk on winter feeding grounds to the presence of wolves.

Yellowstone National Park

- * Leadership behavior of wolves in Yellowstone National Park, MS student Amy Jacobs. This study is examining the relationship between the dominance status of a wolf, its breeding activity, and leadership behaviors.
- * Hunting success of wolves and their behavioral interactions with prey in Yellowstone National Park, MS student Dan MacNulty. This study is investigating wolf-prey interactions, wolf prey capture behavior, and prey behavior to escape predators.
- * Statistical and ecological methods for estimating the abundance and composition of wintering elk on Yellowstone's northern range, MS student Carrie Schaefer. The goal of this study is to develop field methods to estimate elk abundance and composition within wolf pack territories with minimal bias and imprecision.
- * Behavioral interactions between avian scavengers and wolves, MS student Dan Stahler. This study is investigating behavioral interactions between wolves and common ravens.
- * Denning behavior of wolves in Yellowstone's northern range, MS student Linda Thurston. This study is investigating the roles of parental care by the male and female breeders, and the role of auxiliary wolves tending dens.
- * The disposition of carrion biomass: energy flow and ecological relationships between wolves, wolf-killed prey, and scavengers, Ph.D. student Chris Wilmers. This study is examining the role of wolf kills in the scavenger community including how scavengers locate carcasses, what species use them, and how the resources are divided amongst the guild of scavengers.
- * Winter wolf predation study, Yellowstone Wolf Project: This study examines kill rates within packs, age, sex, and general health of prey, carcass utilization, and habitat characteristics of kill sites.
- * Population genetics, Yellowstone Wolf Project: This study investigates genetic relationships of wolves including pedigree, polygyny, and age of first breeding.
- * Summer food habits, Yellowstone Wolf Project: This study examines summer food habits by collecting scats at den and rendezvous sites and opportunistically during summer.

Outreach

Wyoming USFWS biologists and special agents gave 26 talks about wolves to a total of about 850 people. At least 36 news stories on wolves in Wyoming appeared in 1999. YNP personnel presented informational talks and status reports throughout the year to various federal and state agencies, public and private institutions, special interest groups, and rural communities. During 1999, YNP personnel gave 38 public presentations to approximately 1675 people. Additionally, scores of informal presentations to small groups or individuals were conducted during this time. USFWS Special Agents spent 40+ days in the back country of WY contacting hunters to discuss

the reintroduction program and providing information about wolves. Law enforcement agents mailed wolf information to all hunters receiving limited quota hunting licenses in areas occupied by wolves. National Geographic finished filming "Yellowstone Wolves" in August 1999.

Livestock depredations and management

Confirmed livestock losses to wolves in the GYA in 1999 included 4 cattle, 13 sheep, 1 foal, and 6 dogs. All of these depredations except 1 calf were on private land. Control efforts resulted in the killing of 8 wolves, all in the Paradise Valley area north of YNP.

Near Dubois WY, in the area formerly occupied by the Washakie Pack, 1 foal, 1 calf, and 4 dogs were confirmed killed by wolves. Two more calves were recorded as possible wolf kills and compensated by Defenders of Wildlife. Difficult access and widespread movements of these wolves frustrated attempts by USFWS and USDA/APHIS/WS personnel to capture and radiocollar them. Because of the long pattern of depredations, a permit was granted to a livestock producer to shoot 2 wolves on sight, in keeping with experimental population management regulations. No wolves were shot under this permit, which expired December 31.

North of YNP in Montana's Paradise Valley, the Sheep Mountain Pack occupied areas near cattle all summer and were seen chasing cattle on several occasions. NPS and USFWS biologists monitored these wolves intensively and made several attempts to move wolves away from cattle. The Defenders of Wildlife provided funds for alternate pasture and extra riders to monitor cattle. Local livestock producers expressed concern about missing cattle, cattle being harassed, scattered and injured, and crop damage from livestock and elk being displaced by wolves. After a calf was confirmed killed by wolves in October, 4 wolves from the Sheep Mountain Pack were killed. After another calf was killed later in the month, 2 more wolves were killed. Eight wolves are still present in the Sheep Mountain Pack and there have been no further depredations.

Six sheep were killed by the Chief Joseph Pack north of YNP in November 1999. Two wolves were lethally removed from the pack shortly thereafter. One calf and 1 dog were confirmed killed by the Sunlight Basin Pack east of YNP in 1999. USFWS biologists intensively monitored these wolves but no further depredations occurred. Late in 1999, a single wolf apparently attacked sheep on a number of occasions in the Soda Springs area in southeastern Idaho, killing 7 sheep and 1 guard dog, and injuring 14 sheep and 2 guard dogs. Attempts to remove this wolf were unsuccessful. This area is within the GYA wolf recovery area.

CENTRAL IDAHO WOLF RECOVERY AREA

Monitoring

From 20 captures of 18 individuals, 17 wolves were radiocollared in 1999, and 1 pup that was too small to radiocollar was eartagged. In addition, all 10 Bass Creek wolves were captured, and 6 were later radiocollared and released in the NWMT recovery area. A total of 36 radiocollars were transmitting in 12 packs at the end of 1999. Another 8 wolves were being monitored as lone or dispersing animals at that time. These packs and lone wolves totaled at least 141 wolves in the ID recovery area (Figs. 1, 4; Tables 3, 4). Radiocollared wolves were located approximately twice per month by airplane. Packs included in the ID recovery area as of December 1999 were Big Hole, Chamberlain Basin, Jureano Mountain, Kelly Creek, Landmark, Moyer Basin, Selway, Snow Peak, Stanley Basin, Thunder Mountain, Twin Peaks, and White Cloud (Table 3). The average pack size was 11.1 wolves per pack, and average pack home range size was 933 square kilometers (364 square miles). The former Bear Valley Pack presently consists of just a single animal, male B28. After a series of mortalities and dispersals, the Jureano Mountain Pack at the end of 1999 consisted of just 2 pups. Seven radiocollared wolves dispersed from their packs in 1999, and another 7 disappeared (fate unknown).

Reproduction was confirmed in 12 packs producing a minimum of 65 pups. Pup survival was high for all packs except the Jureano Pack where 9 pups were originally observed, 3 were found dead and another 4 disappeared during the summer and presumed dead. Three radiocollared adult ID wolves died of natural causes and 2 died of unknown causes. Eleven wolves died of human-related causes (including 5 that were deliberately killed in depredation control efforts and 4 that died in captivity following depredation control efforts).

A young female wolf (B-45) from the Idaho wolf population crossed the Snake River into Oregon in March 1999, causing great interest among the public and wildlife management agencies. She was recaptured and returned to Idaho, and has since apparently found a mate and established a territory north of McCall, Idaho. The disposition of any other wolves dispersing outside the experimental areas in the future will be decided on a case-by-case basis.

Table 3: Central Idaho wolf recovery area: wolf packs and population data 1999

WOLF PACK	PACK SIZE JAN 2000			HOME RANGE (SQUARE KM)	MORTALITIES			KNOWN		CONTROL		VERIFIED LOSSES		
	ADULT	PUP	TOT		NATURAL	HUMAN ¹	UNKN	DISPERSED	MISSING ²	KILLED	MOVED	CATTLE	SHEEP	DOGS
Bass Creek ³	0	0	0			4					10	3		
Bear Valley	1	0	1	1820	1									
Big Hole	7	3	10	364										
Chamberlain Basin	14	5	19	927										
Jureano Mountain	0	2	2	612	3	3	6	4	1	2		5		1
Kelly Creek	12	4	16	799				1	1					4
Landmark ⁴	2	2-6	4-8	1160										
Moyer Basin	5	7	12	527		1	1	2						
Selway	4	1+	5	1800	1									
Snow Peak	8	0	8	820										
Stanley Basin	9	7	16	1470		1	1			1	1	3	13	
Thunder Mountain	8	7	15	656										
Twin Peaks	6	4	10	486										
White Cloud	9	7	16	688					1		2	1		
Lone/Dispersing	7	0	7		1	2			4	2	2	4	44	
TOTAL	92	49+	141+		6	11	8	7	7	5	15	16	57	5

1 includes 5 wolves killed in control actions.

2 missing collared wolves.

3 relocated to NW Montana Dec 1999.

4 The original LM pack is thought to have split up; current pack believed to include F333 + male + up to 6 pups.

Ongoing Research

* Predation and Interactions of Wolves and Cougars in Central Idaho: Big Creek and Panther Creek Studies. Investigators, Panther Creek: Dick Wenger (USFS), Gary Powers (ID Fish and Game, ret.), Jason Husseman (U of I graduate student); Big Creek: Jim and Holly Akenson. This study is investigating wolf-cougar interactions and their cumulative predation on wintering ungulates in wilderness (Big Creek) and managed (Panther Creek) landscapes. Cooperators: Nez Perce Tribe, USFWS, University of Idaho, Lemhi County, Salmon/Challis National Forests, Bureau of Land Management, Rocky Mountain Elk Foundation, Wolf Education and Research Center, Hornocker Wildlife Institute, Charles Devlieg Foundation.

* Diamond Moose Cause Specific Calf Mortality Study. Investigators: U of I graduate student John Oakleaf, NPT wolf monitoring crews, Rick Williamson (Wildlife Services). The Diamond Moose Calf Mortality Study is designed to better identify the extent of livestock losses to wolves

on the Diamond Moose Grazing Allotments administered by the National Forest Service. Cooperators: Nez Perce Tribe, US Fish and Wildlife Service, USDA/APHIS/Wildlife Services, Salmon/Challis National Forests, Lemhi County Cattle Association, Diamond Moose Association, Defenders of Wildlife, University of Idaho, Wolf Education and Research Center, National Wildlife Federation.

Outreach

Program personnel presented informational talks and status reports throughout the year to various federal and state agencies, public and private institutions, special interest group organizations, and rural communities. Additionally, scores of informal presentations to small groups or individuals were conducted during this time.

Livestock depredations and management

As in the NWMT and GYA, USDA/APHIS/WS agents in Idaho investigated more reports of wolf damage to livestock than in the past (more than 50 in calendar year 1999). Many of these were not confirmed as wolf depredation because a) they were killed by other predators, b) died of other causes, c) because carcasses could not be located, or d) were too consumed/decomposed to identify cause of death. A total of 16 cattle and 57 sheep were confirmed killed in the ID recovery area. Another 5 calves and 10 sheep were classed as probable wolf kills, and 11 calves, 1 cow and 1 horse as possible wolf kills. Five dogs were reported killed by wolves, and another 2 injured. In response to livestock depredations in 1999, 15 wolves were moved to other areas (including the entire Bass Creek Pack of 10 wolves), and 5 wolves were killed in control efforts.

Eleven of 15 cattle killed by wolves were on private land. Of 57 sheep killed by wolves, 52 were on US Forest Service land and 5 on private land.

Two wolves that had dispersed from Central Idaho were shot in government control actions after killing at least 2 calves near Jackson, Montana in March 1999. Also in the Montana portion of the Central Idaho wolf recovery area, an automatic, radiocollar-triggered light and siren device was used in late winter 1988-89 to try to keep the Bass Creek Pack away from cattle during calving season. Preliminary indications were that the wolves responded to the device as intended. A more sophisticated unit has been built and will be tested in 2000. Several weeks after the device was removed and after cattle had become more widely distributed, the Bass Creek Pack killed calves on that and neighboring ranches during summer 1999, and were eventually moved (NWMT depredation and control).

Six confirmed livestock depredations, affecting 5 livestock producers, were attributed to the Stanley Basin Pack in 1999. Two livestock guarding dogs were injured, and 13 sheep and 3 calves were confirmed killed by this pack. One adult wolf was captured in July and moved to the Selway River drainage. After further depredations, 1 adult wolf was shot in late July, and 1 pup was radiocollared and released on site in August.

The Jureano Mountain Pack was involved in 4 confirmed livestock depredations and the killing of 1 livestock guarding dog in summer 1999. Three livestock producers sustained losses totaling

1 cow, 4 calves and 1 dog confirmed killed by these wolves. The alpha female of the Jureano Pack was illegally killed in summer 1999. The alpha male and an adult female were trapped and euthanized. Two pups were trapped, radiocollared and released. After the dispersal of a radiocollared yearling male, the 2 pups were all that remained of the pack.

The White Cloud Pack was responsible for as many as 5 depredations on calves (confirmed, probable or possible) near Clayton, Idaho. Two yearlings from the pack were radiocollared and released on site, then later recaptured and relocated after depredations were confirmed. Electronic light and siren devices were used to try to keep wolves away from cattle. Four lion-hunting dogs were reported to have been killed by the Kelly Creek Pack in March 1999. In addition to depredations by established wolf packs, lone or dispersing wolves killed 44 sheep and one calf in Idaho in 1999. Two wolves were translocated in response to these depredations.

ROCKY MOUNTAIN WOLF PUBLICATIONS APPEARING IN 1999

Bangs, E. E., S. H. Fritts, J. A. Fontaine, D. W. Smith, K. M. Murphy, C. M. Mack, and C. C. Niemeyer. 1998. Status of gray wolf restoration in Montana, Idaho, and Wyoming. *Wildlife Society Bulletin* 26:785-798.

Mack, C., and K. Laudon. 1999. Idaho wolf recovery program: The restoration and management of gray wolves in central Idaho. Progress Report 1995-1998. Nez Perce Tribe, Department of Wildlife Management, Lapwai, ID. 22 pages.

Smith, D. W., W. G. Brewster, and E. E. Bangs. 1999. Wolves in the Greater Yellowstone Ecosystem: restoration of a top carnivore in a complex management environment. Pages 103-125 in *Carnivores in ecosystems* (ed. Tim Clark, et al.). Yale University Press.

Smith, D. W., K. M. Murphy, and D. S. Guernsey, 1999. Yellowstone Wolf Project: Annual Report, 1998. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming, YCR-NR-99-1.

Boyd, D. K., and D. H. Pletscher. 1999. Characteristics of dispersal in a colonizing wolf population in the central Rocky Mountains. *Journal of Wildlife Management* 63:1094-1108.

Kunkel, K. E., D. H. Pletscher. 1999. Species-specific population dynamics of cervids in a multipredator ecosystem. *Journal of Wildlife Management* 63:1082-1093.

Kunkel, K. E., T. K. Ruth, D. H. Pletscher, and M. G. Hornocker. 1999. Winter prey selection by wolves and cougars in and near Glacier National Park, Montana. *Journal of Wildlife Management* 63:901-910.

LITIGATION

On January 13, 2000, the Tenth Circuit Court of Appeals overturned the December 1998 Wyoming District Court ruling that the reintroduction program was unlawful and should be revoked. The Tenth Circuit ruling stated that: "We reverse the order and judgement of the district court, vacate the district court's stay order, and remand with instructions to the district court to enter an order upholding the challenged wolf reintroduction rules." In its opinion the Tenth Circuit also stated that "Discerning no conflict between the challenged experimental population rules and the Endangered Species Act, we reverse the district court's order and judgement." The Secretary of the Interior issued a statement: "I am very pleased that the courts have given a ringing endorsement to our wolf reintroduction program in Yellowstone National Park and central Idaho. The court clearly agreed that the U.S. Fish and Wildlife Service's reintroduction program is fully consistent with the Endangered Species Act. Wolf reintroduction is a powerful demonstration of this Nation's commitment to protecting and restoring endangered species. This decision is a welcome vindication of our efforts to preserve this magnificent species."

Table 4: Northern Rocky Mountain States minimum fall wolf population and breeding pairs*, 1979-1999

Minimum fall wolf population:

Year:	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	
Recovery Area:																						
NW MONTANA	2	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	66	70	56	49	63	
YELLOWSTONE																	21	40	86	112	118	
CENTRAL IDAHO																	14	42	71	114	141	
TOTAL	2	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	101	152	213	275	322	
Breeding pairs:																						
Year:	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	
Recovery Area:																						
NW MONTANA								1	2	1	1	3	2	4	4	5	6	7	5	5	5	
YELLOWSTONE																	2	4	9	6	8	
CENTRAL IDAHO																		3	6	10	10	
TOTAL								1	2	1	1	3	2	4	4	5	8	14	20	21	23	

* By the standards of the Rocky Mountain gray wolf recovery plan and wolf reintroduction environmental impact statement, a breeding pair is defined as an adult male and an adult female wolf, accompanied by 2 pups that survived at least until Dec 31. Recovery goals call for 10 breeding pairs per area, or a total of 30 breeding pair distributed through the 3 areas, for 3 years.

CONTACTS

For further information or to report wolf sightings, please contact:

U. S. Fish and Wildlife Service, Helena MT: (406) 449-5225

U. S. Fish and Wildlife Service, Lander WY: (307) 332-7789

Yellowstone Center for Resources, YNP WY: (307) 344-2243

Nez Perce Tribal Wolf Program, McCall ID: (208) 634-1061

This report may be copied and distributed as needed.

ACKNOWLEDGMENTS

Hundreds of people have assisted us with wolf recovery efforts and we are indebted to them. It would be impossible to individually recognize them all in this report. The agency and tribal personnel primarily responsible for wolf recovery efforts included Ed Bangs, Joe Fontaine, Mike Jimenez, Brian Cox, Diane Boyd, Tom Meier, Roy Heberger, (US Fish and Wildlife Service); Douglas W. Smith, Kerry Murphy, Debra Guernsey (US National Park Service), Shaney Evans (Yellowstone Park Foundation); Curt Mack, Isaac Babcock, Kent Laudon, Marcie Steiger, Jim Holyan, Russ Richards, Jaime Fire Crows (Nez Perce Tribe); and Carter Niemeyer (USDA/APHIS/Wildlife Services). Major contributions to wolf recovery efforts were provided by Commodore Mann, Rick Branzell, Doug Goessman, Dominic Dominici, Tim Eicher, Roy Brown, Steve Magone, Roger Parker, Paul Weyland, and Rich McDonald (USFWS Law Enforcement Agents), Dave Skates, Jeff Kimber, and Laurie Connell (USFWS Lander, WY), Jeff Green, Mark Collinge, Layne Bangerter, Chuck Carpenter, George Graves, Rick Phillips, Merrill Nelson, Craig Maycock, Larry Handegaard, Dave Nelson, Jim Hoover, Jim Stevens, Jeff Ashmead, Douglas Hunsaker, Graeme McDougal, Tim Graff, Jonathan Farr, Justin Mann, Mike Hoggan, Ted North, Rick Williamson, Marshall Robins, Jim Rost, Steve Moyles, Gary Rushane, and Chief (USDA/APHIS/Wildlife Services). We thank our pilots Dave Hoerner of Red Eagle Aviation, Lowell Hanson of Piedmont Air Services, Roger Stradley of Gallatin Flying Service, Pat Dorris, Gary Meritt and other pilots of McCall Wilderness Air, Bill Stewart of Northstar Aviation, Bob Danner of Stanley Air Taxi, Ray Arnold of Arnold Aviation, and Lisa and Steve Robertson, for their skill and determination. Gina Patton, Emily Babcock, John Oakleaf, Jason Husseman, Dick Wenger, Gary Powers, and Jim and Holly Akenson assisted with efforts in Idaho. Ed Heger, Kari Rogers, Dan Stark, and Paul Frame assisted with wolf capture in Montana. Volunteers in the GYA included Eric Brewster, Robert Buchwald, Susan Chin, Deanna Dawn, Brett Holmquist, Kevin Honness, Amy Jacobs, Deb Lineweaver, Dan MacNulty, Heather Marstall, Bruce Passmore, Melissa Peer, Andy Pils, Jennifer Pils, Carrie Schaefer, Tom Segerstrom, Dan Stahler, Laura Strong, Linda Thurston, Nathan Varley, Jason Wislon, and Tom

Zieber. Numerous agencies have contributed to the recovery program and we thank the US Forest Service (with special thanks to the Hungry Horse and Spotted Bear Ranger Districts of the Flathead National Forest), US National Park Service, US Bureau of Indian Affairs, Montana Fish, Wildlife and Parks, Idaho Fish and Game, Wyoming Game and Fish, Lost Trail National Wildlife Refuge, and the US Fish and Wildlife Service Black-footed Ferret Recovery Project. Many private organizations have lent their support to the program including Defenders of Wildlife, the Wolf Education and Research Center, National Wildlife Federation, Snowden Wildlife Sanctuary, Plum Creek Timber Company, and the Turner Endangered Species Fund. The dozens of ranchers and other private landowners whose property is occupied by wolves, sometimes at great cost to the owner, deserve our thanks and consideration. The efforts of many individuals who have contacted us to report wolf sightings are greatly appreciated. Special thanks are owed to Suzanne Laverty for organizing the annual western wolf recovery meeting, and to Leona Bomar for preparing maps for this report.

Table 5: Rocky Mountain States: Confirmed Wolf depredation, wolf control, compensation 1987-1999.

Northwest Montana Recovery Area:

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	TOTAL
cattle	6	0	3	5	2	1	0	6	3	9	16	9	13	73
sheep	10	0	0	0	2	0	0	0	0	0	30	0	19	61
dogs	0	0	0	1	0	0	0	0	2	1	0	0	2	6
other livestock	0	0	0	0	0	0	0	0	0	0	0	0	0	0
compensation ¹	3049	0	1730	3700	1250	374	0	1772	1633	1485	10877	1675	7253	34798
wolves moved	0	0	4	0	3	0	0	2	2	10	7	0	4	32
wolves killed ²	4	0	1	1	0	0	0	0	0	4	14	4	9	37

Yellowstone Recovery Area:

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	TOTAL
cattle									0	0	5	3	4	12
sheep									0	13	67	7	13	100
dogs									1	0	0	4	6	11
other livestock									0	0	0	donkey	foal	2
compensation ¹									0	1221	17644	2050	6310	27225
wolves moved									6	8	14	0	0	28
wolves killed ²									0	1	6	3	9	19

Central Idaho Recovery Area:

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	TOTAL
cattle									0	4	1	10	16	31
sheep									0	24	29	5	57	115
dogs									0	0	4	0	5	9
other livestock									0	0	0	0	0	0
compensation ¹									0	5185	3761	6855	17887	33688
wolves moved									0	5	0	3	15	23
wolves killed ²									0	1	1	0	6	8

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Total, 3 States, 3 Recovery Areas:

	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	TOTAL
cattle	6	0	3	5	2	1	0	6	3	13	22	22	33	116
sheep	10	0	0	0	2	0	0	0	0	37	126	12	89	276
dogs	0	0	0	1	0	0	0	0	3	1	4	4	13	26
other livestock	0	0	0	0	0	0	0	0	0	0	0	1	1	2
compensation ¹	3049	0	1730	3700	1250	374	0	1772	1633	7891	32282	10580	31450	95711
wolves moved	0	0	4	0	3	0	0	2	8	23	21	3	19	83
wolves killed ²	4	0	1	1	0	0	0	0	0	6	21	7	24	64

1 Paid by Defenders of Wildlife

2 Includes 2 wolves legally shot by ranchers. Others killed in government control efforts.

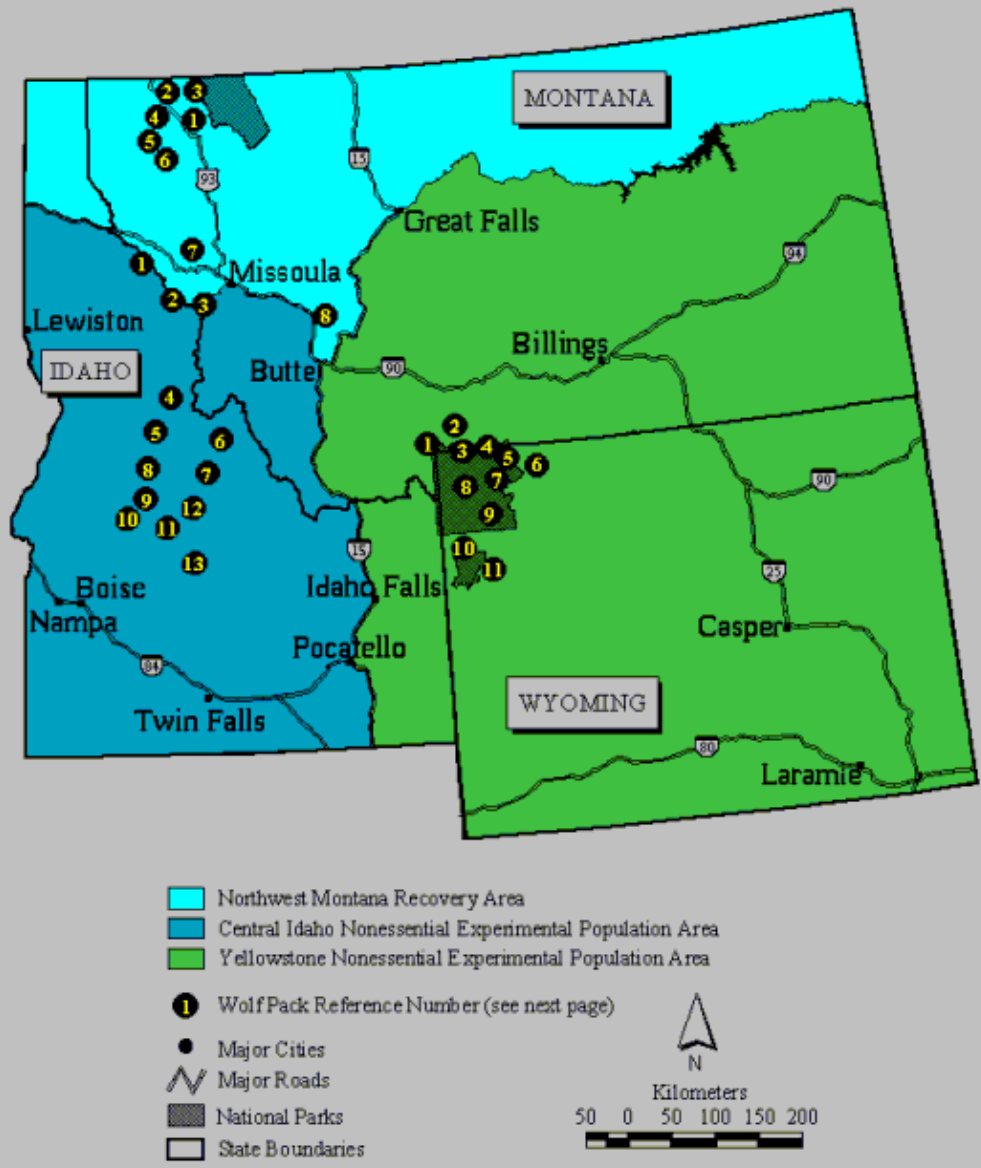


Figure 1. Wolf Pack Home Ranges in the Rocky Mountain Wolf Recovery Area

LEGEND (Figure 1):

NORTHWEST MONTANA RECOVERY AREA:

1. Whitefish Pack
2. Grave Creek Pack
3. South Camas Pack
4. Murphy Lake Pack
5. Little Wolf Pack
6. Pleasant Valley Pack
7. Ninemile Pack
8. Boulder Pack

GREATER YELLOWSTONE RECOVERY AREA:

1. Chief Joseph Pack
2. Sheep Mountain Pack
3. Leopold Pack
4. Rose Creek Pack
5. Druid Peak Pack
6. Sunlight Basin Pack
7. Crystal Creek Pack
8. Nez Perce Pack
9. Soda Butte Pack
10. Gros Ventre Pack
11. Teton Pack

CENTRAL IDAHO RECOVERY AREA:

1. Snow Peak Pack
2. Kelly Creek Pack
3. Big Hole Pack
4. Selway Pack
5. Chamberlain Basin Pack
6. Jureano Mountain Pack
7. Moyer Basin Pack
8. Thunder Mountain Pack
9. Landmark Pack
10. Bear Valley Pair
11. Stanley Basin Pack
12. Twin Peaks Pack
13. White Cloud Pack

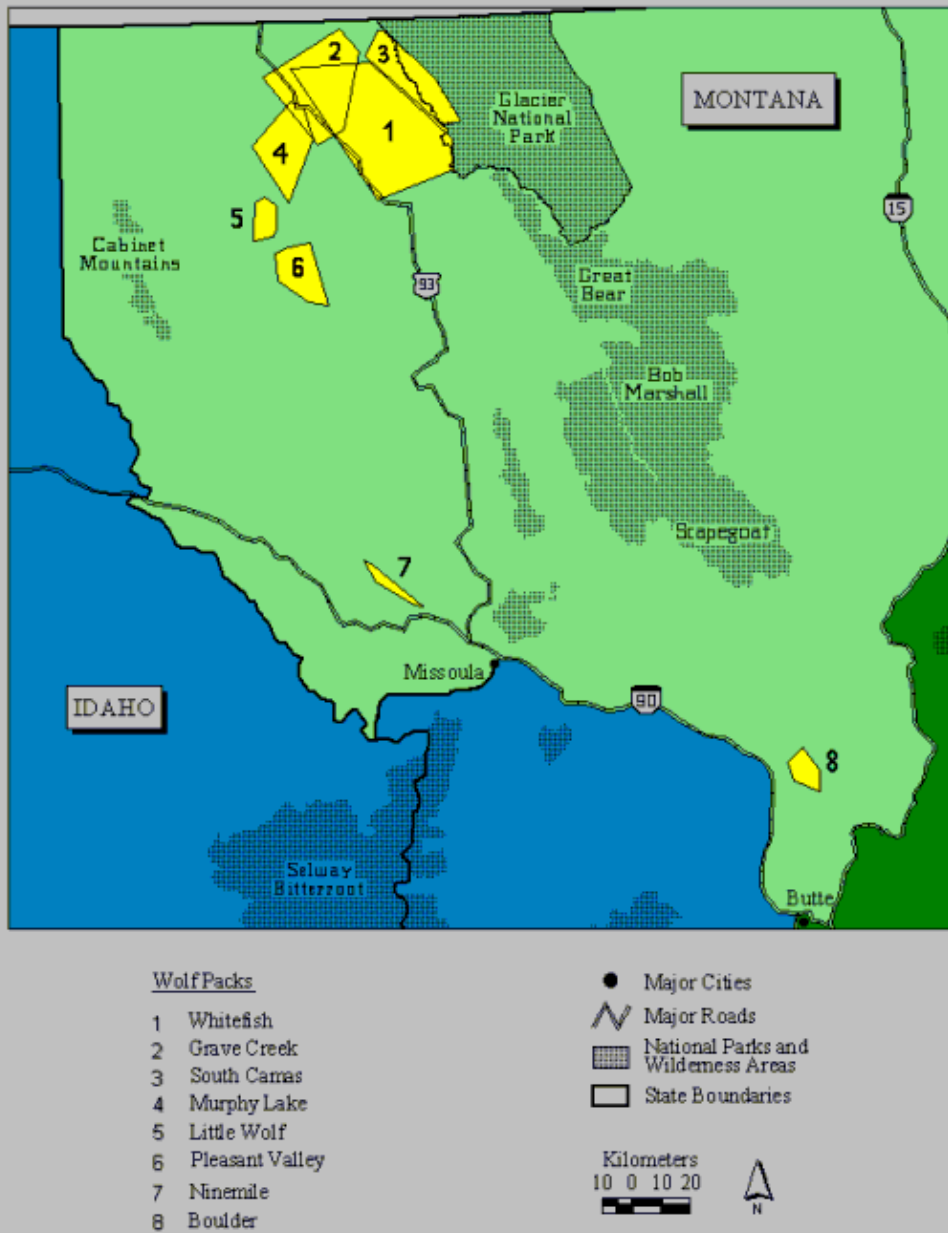
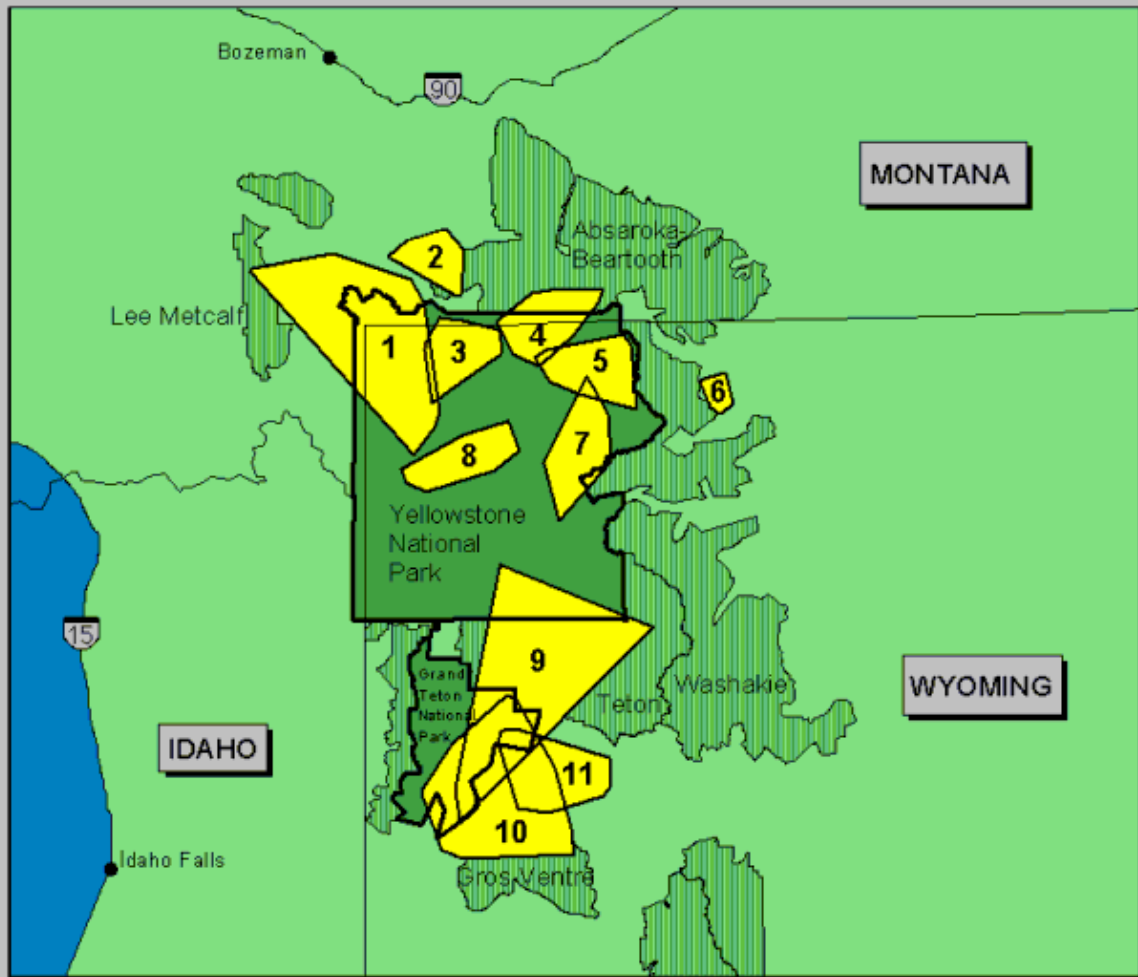


Figure 2. Wolf Pack Home Ranges in the Northwestern Montana Wolf Recovery Area



Wolf Packs

- 1. Chief Joseph
- 2. Sheep Mountain
- 3. Leopold
- 4. Rose Creek
- 5. Druid Peak
- 6. Sunlight Basin
- 7. Crystal Creek
- 8. Nez Perce
- 9. Soda Butte
- 10. Gros Ventre
- 11. Teton

- Major Cities
- Major Highways
- State Boundaries
- ▨ Wilderness Areas

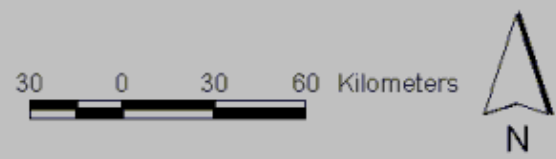


Figure 3. Wolf Pack Home Ranges in the Greater Yellowstone Wolf Recovery Area

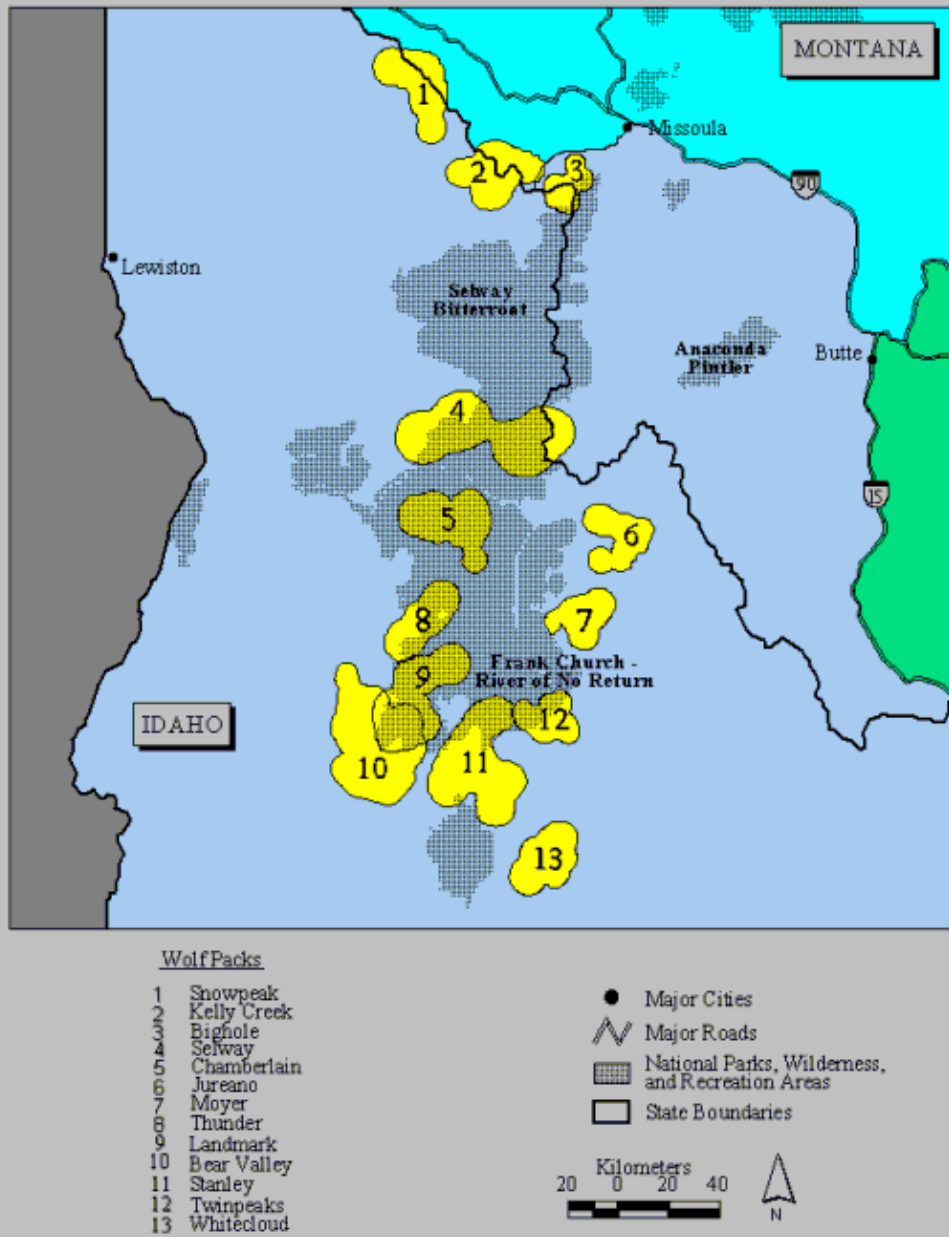
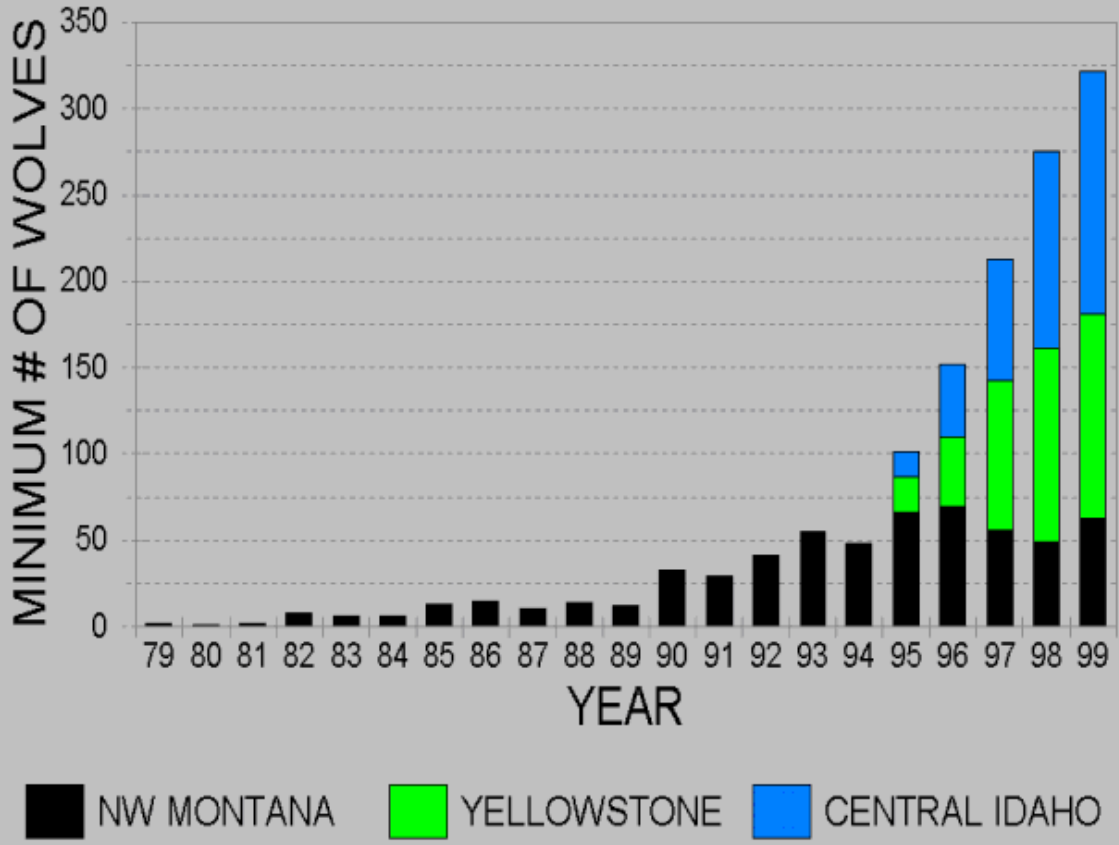
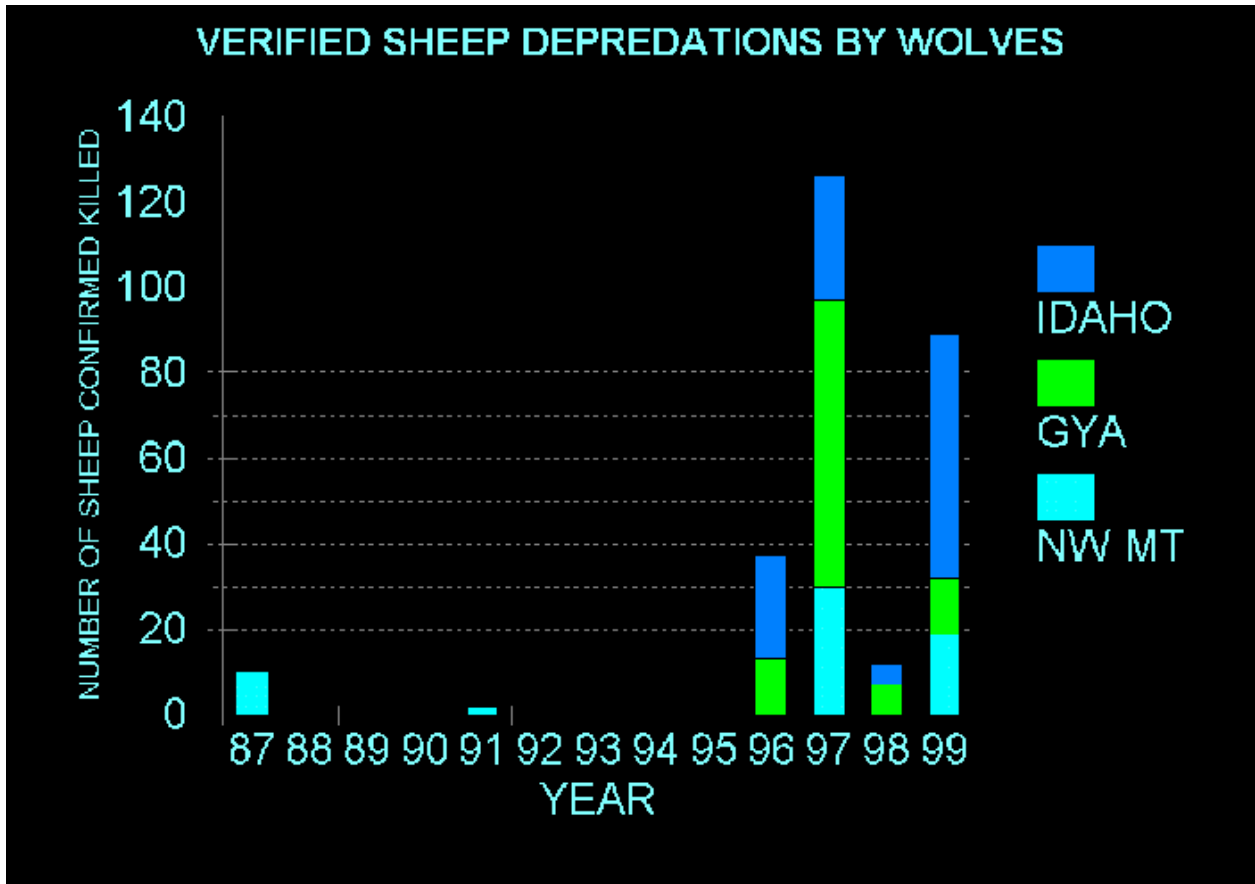


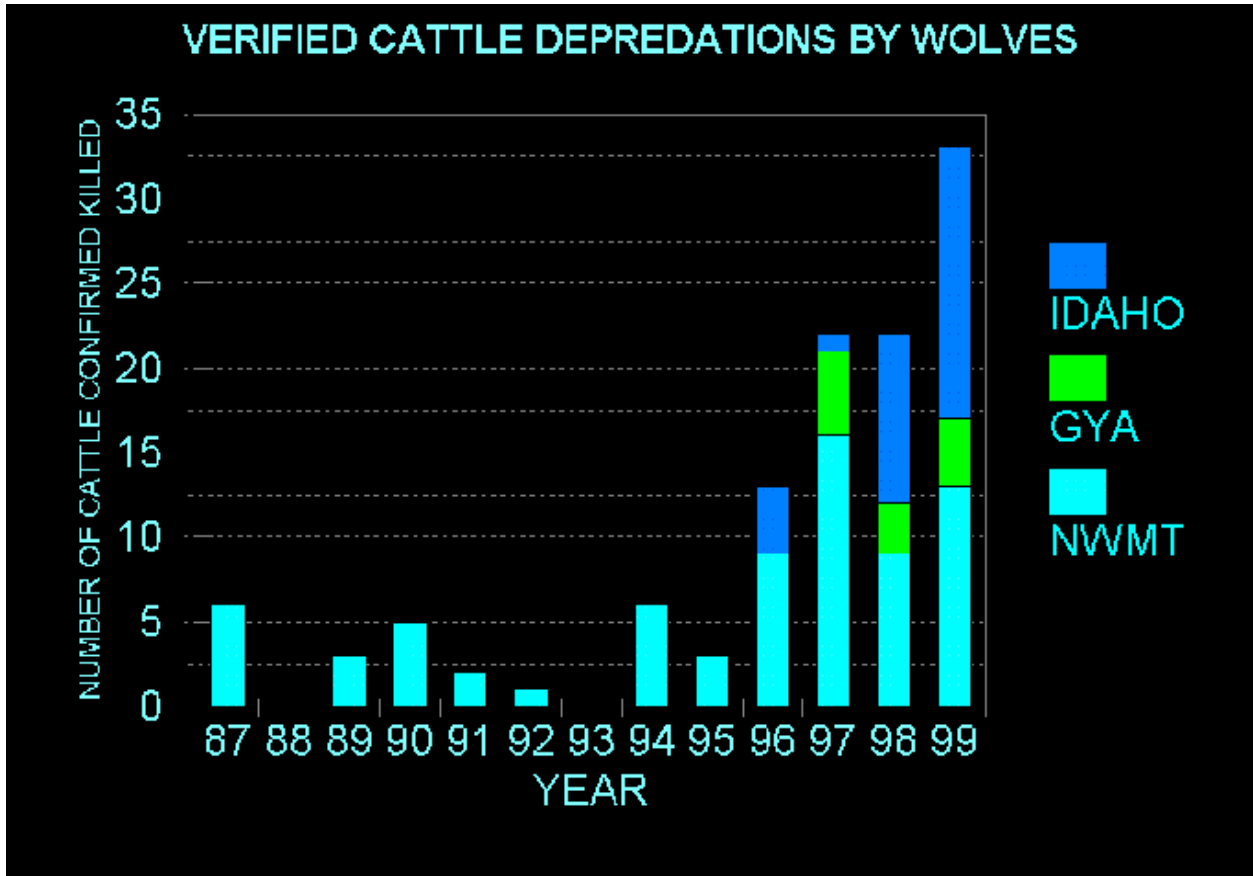
Figure 4. Wolf Pack Home Ranges in the Central Idaho Wolf Recovery Area

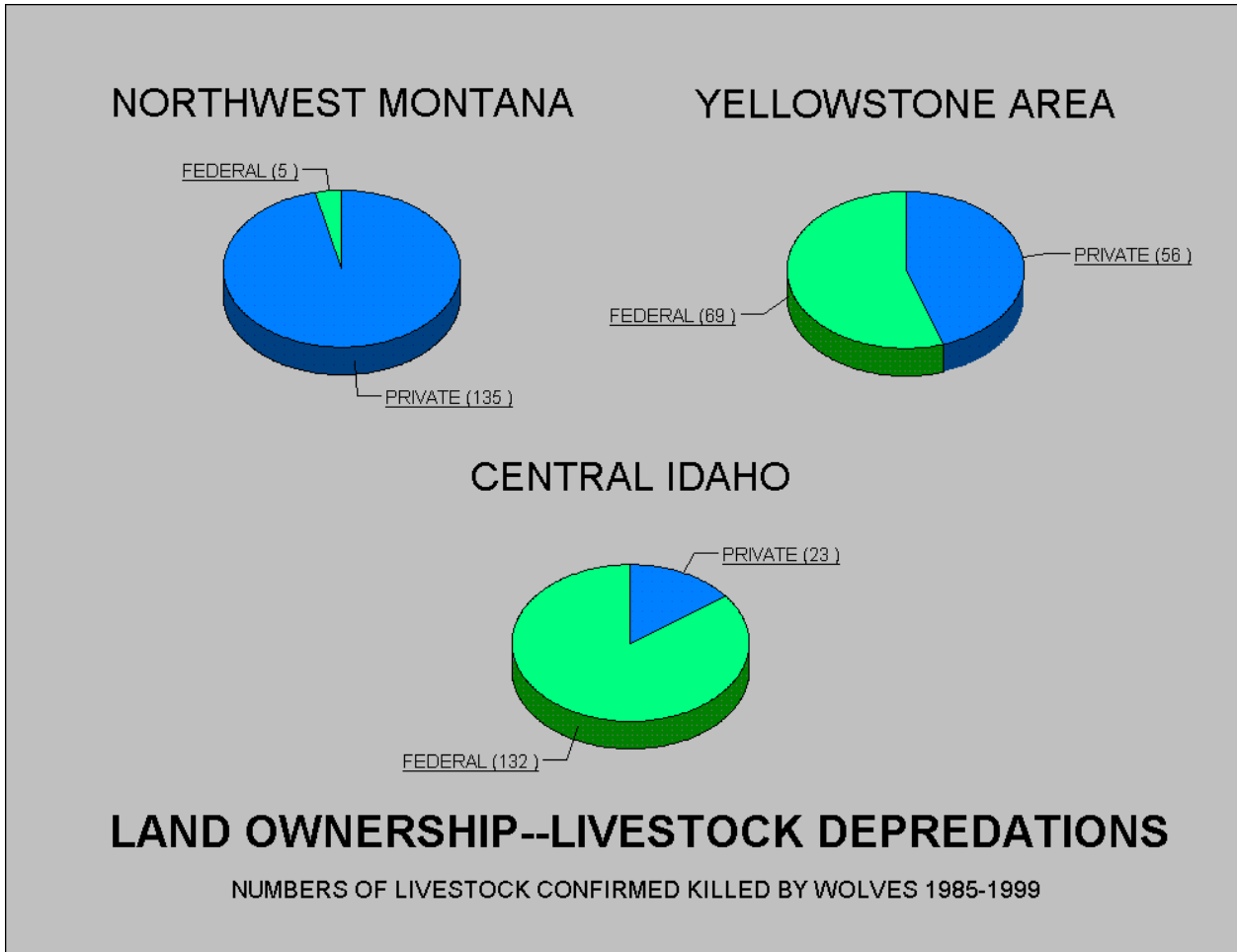
Figure 5: Wolf Population Trends

N. Rocky Mountain States, 1979-1999









Adapted from the online version at:

<http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt99/>