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IDAHO WOLF RECOVERY PROGRAM

Restoration and Management of Gray Wolves in Central Idaho
Progress Report 2003

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EXECUTIVE SUMMARY

The U.S. Fish and Wildlife Service (USFWS) is restoring endangered gray wolves to the northern Rocky Mountains including ongoing efforts in 3 restoration areas: Northwest Montana, the Greater Yellowstone Area, and Central Idaho. Gray wolves naturally recolonized northwest Montana and were down-listed to threatened status under the Endangered Species Act (ESA) in 2003. Nonessential experimental population areas were established for the Greater Yellowstone and Central Idaho Areas where wolves were actively reintroduced under the ESA. This special designation allows for management flexibility to address public concerns such as wolf-livestock conflicts.

In 2003 the USFWS reclassified gray wolves across the lower 48 states to better reflect the species current population status. The USFWS changed the classification of the gray wolf under the ESA from endangered to threatened in those portions of historic wolf range except for the Mexican gray wolf, Central Idaho, and Greater Yellowstone Experimental Population Areas. Wolves outside of historic range within the continental United States were delisted and no longer afforded protections under the ESA.

At the end of 2003, the Central Idaho Experimental Population Area (CIEPA), was home to an estimated 379 wolves including 38 known wolf packs. Thirty-one of those produced litters, 26 of which met the recovery requirement for a breeding pair - an adult male and an adult female wolf that have successfully raised at least 2 pups to December 31 of their birth year. The population recovery goal for the Northern Rocky Mountain Recovery Region (NRMRR) - to maintain 30 breeding pairs of wolves equitably distributed across the 3 restoration areas for 3 years - was achieved at the end of 2002.

Wolves were well distributed across 28,473 square miles (73,746 square km) of the Idaho portion of the CIEPA at the end of 2003. Territories of all known packs and pairs were completely or predominately within National Forest lands, 13 of which included federally designated wilderness areas.

Eleven new breeding pairs were documented in 2003 and a minimum of 103 wolf pups was produced. Five packs, first documented in 2003, were retroactively counted as 2002 breeding pairs based on pack size and presence of subadult wolves. Estimated minimum average litter size for all packs that reproduced, including those where counts were suspected incomplete, was 3.3 pups per litter for 2003.

Documented wolf mortalities during 2003 decreased from the previous year. Of 15 wolf mortalities with known cause, all (100%) were human-related. There were 2 deaths of undetermined causes and 1 suspected mortality.

The fates of 9 radio-collared Idaho wolves that dispersed within the NRMRR were documented during 2003. Undoubtedly, additional wolves without radio-collars dispersed as well. Tracking the movements of dispersing wolves between recovery areas lends credence to the notion that the NRMRR is a single, interconnected metapopulation.

Capturing and radio-collaring wolves remained a priority. During 2003, 46 individual wolves were captured, which resulted in the deployment of 33 new radio-collars and the re-collaring of eight individuals. Although wolves are captured and collared every year, the proportion of radio-collared individuals in the population decreases with expanding numbers of wolves, increasing the challenge of monitoring the activities, distribution, and status of the wolf population.

Confirmed and probable wolf-caused livestock losses during the year amounted to 23 cattle and 144 sheep. In addition, 6 dogs were confirmed killed by wolves, while 1 additional dog was categorized as a probable wolf kill. As a result of agency control actions, 6 wolves were lethally controlled and 6 were radio-collared and released on site through agency control. One wolf was legally shot by a livestock producer.

Scientific information collected through peer-reviewed research will foster a better understanding of wolf ecology and the effects of wolves within the ecosystems they inhabit, leading to effective wolf conservation and management. The Idaho Wolf Recovery Program (Recovery Program) continued to initiate and support ongoing research.

Gray wolf population recovery goals have been met in the NRMRR and the USFWS intends to initiate a proposal to remove wolves from the protections of the ESA as soon as the 3 states comprising the NRMRR, Idaho, Montana, and Wyoming, have USFWS-approved wolf management plans. The USFWS anticipates this delisting process may begin during 2004. Also, legislative changes to current Idaho law enabled full state involvement in wolf recovery and management. During 2003, the State of Idaho and the Nez Perce Tribe initiated efforts to develop a Memorandum of Agreement outlining a partnership of shared roles and responsibilities for the continued recovery and management of wolves.

Even with the prospect of delisting on the horizon, it is important that the Recovery Program maintains and enhances its working relationships with federal, state, and local governments; livestock associations; sportsmen's groups; and the environmental community. Ultimately, wolf recovery will be determined by Idahoans' willingness to accept wolves as a part of the state's diverse fauna.

Nursing pups - Photo by Isaac Babcock

ACKNOWLEDGEMENTS

The U.S. Fish and Wildlife Service (USFWS) provided principal funding for the Idaho Wolf Recovery Program (Recovery Program). In addition, we gratefully recognize the Bureau of Indian Affairs (BIA), the Defenders of Wildlife, the National Wildlife Federation, the U.S. Forest Service, the Wolf Education and Research Center, and all of the many individuals who generously contributed financial support and in kind services.

Communication and cooperation between involved agencies, organizations, and individuals continue to make the Recovery Program a success. We thank the Nez Perce Tribal (Tribe) Executive Committee and Wildlife Program Director Keith Lawrence for their unwavering support, input, and policy guidance. Jeff Cronce, of the Tribe's Land Services department, provided exceptional advice and service in helping us develop and create Recovery Program databases. Oversight and guidance provided by the USFWS was instrumental in consistent and fair application of the Final Rule governing recovery and management direction. A very special thanks to Dave Renwald, BIA, for his continued support over the years. We appreciate the support of USFWS personnel Jeff Foss, Carter Niemeyer, Ed Bangs, Joe Fontaine, Tom Meier, and Mike Jimenez. The USFWS Law Enforcement division's efforts in investigating wolf mortalities continued to aid wolf recovery. Our thanks go to Senior Agent Craig Tabor, and Special Agents Rick Branzell, Scott Bragonier, and Scott Kabasa. The staff at the USFWS National Fish and Wildlife Forensics Laboratory assisted by conducting necropsies and analyzing blood samples. The USDA Wildlife Services (WS) continued to play an extremely important role in the Recovery Program in their proactive approach to resolving wolf-livestock conflicts. We thank Mark Collinge, George Graves, Layne Bangerter, and Todd Grimm of the Idaho State Office and Larry Handegard of the Montana State Office, District Supervisors, and all of the dedicated Wildlife Specialists that conducted field investigations. Special mention goes to Rick Williamson, Wolf Specialist for WS Idaho, for his continued efforts and professionalism. Justin Mann and Doug Hansen (WS) made considerable contributions addressing wolf-livestock conflicts in their area. Doug Smith and Deb Guernsey, Yellowstone National Park, have given advice and exchanged information that has helped our efforts in Idaho. The U.S. Forest Service is recognized for its cooperation and coordination in providing logistical support, sighting information, and friendship at the many districts within wolf range. Personnel from the Idaho Department of Fish and Game were helpful in numerous ways and we look forward to a productive partnership in the future.

Tribal biologists Kent Laudon, Isaac Babcock, Jason Husseman, Adam Gall, and Anthony Novack displayed a never-ending dedication that went well beyond what could reasonably be expected of them. The commitment they have given to the Recovery Program could never go unnoticed. We benefited tremendously from those that volunteered, through the Tribe, and graciously endured the privations of the field; Emily Babcock, Barry Braden, Teresa DeBlieck, Tyler Hollow, Denise Jantzer, Anastacia Kampe, Rob Lonsinger, Karen Loveless, Susannah Phillips, Jennifer Rykowski, Erin Simmons, and Jon and Barbara Trapp. We appreciate the help and support received from Recovery Program Administrative Assistant Consuelo Blake and the Wildlife staff in Lapwai, especially Venus St. Martin.

The pilots and staffs of McCall Aviation, Stanley Air, and North Star Aviation continued to support our often-demanding requests with aplomb. We specifically recognize Wendy Beye, Bob Danner and Dia Terese, Pat and Mike Dorris, Rod Nielson, and Steve and Michele Wolters. We truly appreciate your expertise, patience, and skill. Winter helicopter capture was conducted efficiently and safely due to the outstanding capabilities of Gary Brennan and the support crew of Hawkins and Powers Aviation.

Dr. Clarence Binninger, Recovery Program veterinarian, continues to work with us in seeking ways to make wolf capture as safe as it can be. We would like to thank Suzanne Stone of Defenders of Wildlife for her assistance in developing and applying non-lethal techniques to address wolf-livestock conflicts. Thanks also to Jim and Holly Akenson, University of Idaho Taylor Ranch; Wolf Education and Research Center; Ed Levine, Merlin Systems; Paul Houghtaling, Wilderness Awareness School; Diane Boyd; Carol Williamson; Bob and Judy Griswold; Mike Popp; Mike Schlegel; and Kryan Kunkel and Wayne Melquist for their assistance.

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INTRODUCTION

Wolves were once the most widespread mammal on the North American continent prior to the arrival of European settlers. The colonists brought a cultural legacy of experiences, beliefs, and myths about wolves with them that led to the vilification of the animal in this new homeland. Wolves were viewed as a symbol of the wildness that needed to be conquered if the settlers were to subsist and thrive. The perception of the wolf as a competitor with humans for big game and a threat to domestic livestock lasted for the next 300 years, with organized efforts to eradicate them as the tide of civilization swept westward. The campaign to eliminate wolves was very successful; by the 1930s the only viable wolf population in the conterminous states was found in Minnesota.

Beginning in the 1960s, an environmental ethic arose that produced a more favorable image of the wolf. This change in perception culminated in the listing of the wolf as an endangered species in the continental United States under the Endangered Species Act (ESA) of 1973. The U.S. Fish and Wildlife Service (USFWS), which administers the ESA, completed a wolf recovery plan for the northern Rocky Mountains in 1987. Wolf proponents pushed for restoration in this area and in 1991 Congress authorized the preparation of an Environmental Impact Statement (EIS) to explore options for returning wolves to Yellowstone National Park and central Idaho. Support for wolf restoration was widespread nationally, and the Secretary of Interior approved the Final EIS in 1994. In 1995 and 1996, 66 wolves were captured in Alberta and British Columbia, Canada; 35 were released in central Idaho, and 31 were reintroduced into Yellowstone National Park.

The ultimate goal of the northern Rocky Mountain wolf restoration effort is to establish self-sustaining populations of gray wolves, remove the gray wolf from the protections of the ESA, and transfer wolf management authorities back to States and Tribes. The population recovery goal for the Northern Rocky Mountain Restoration Region (NRMRR) of Idaho, Montana, and Wyoming is to maintain 30 breeding pairs equitably distributed across the 3 restoration areas of northwest Montana, Greater Yellowstone Area, and central Idaho for 3 years. Wolves recolonized northwestern Montana naturally in the 1980s and were protected as endangered species. The Final EIS designated nonessential experimental population areas for the Greater Yellowstone and Central Idaho Restoration Areas (Figure 1), in which all wolves (released and naturally occurring) were classified as nonessential experimental animals. The USFWS developed a Final Rule that governs how wolves are managed within the nonessential experimental population areas. This Rule allows for management flexibility to meet public concerns and minimize conflicts regarding the presence of wolves, including effects on wild ungulate populations and livestock.

In Idaho, the USFWS, the Nez Perce Tribe (Tribe), the Idaho Department of Fish and Game, and USDA Wildlife Services (WS) comprise the Idaho Wolf Recovery Program (Recovery Program) sharing legal responsibility for recovering and managing wolves in Idaho. The Recovery Program has adopted a collaborative approach working closely with other government agencies and private entities to balance the biological needs of wolves with the social concerns of Idahoans. Wolves have recovered more quickly in Idaho than projected. The population

recovery goal for the NRMRR was achieved in 2002; the NRMRR supported an estimated 761 wolves and 51 breeding pairs in 2003. The USFWS anticipates initiating the delisting process for wolves as soon as 2004. The ultimate success of the recovery program will hinge on social tolerance for wolves and public support for recovery and delisting. As the wolf population continues to make progress towards recovery and delisting, the true measure of success will be to effectively address social concerns surrounding wolf recovery and reduce wolf-human conflicts.

THE CENTRAL IDAHO RESTORATION AREA

Central Idaho, vast, mountainous, and remote, is one of the largest remaining undeveloped blocks of public land in the conterminous United States. The Central Idaho Restoration Area covers all of central Idaho, and a small portion along the eastern slope of the Bitterroot Divide in Montana (Figure 1). The Central Idaho Restoration Area encompasses almost 15 million acres (6.0 million ha) of contiguous National Forest lands administered by 10 different National Forests in Idaho and Montana. The core of the Central Idaho Restoration Area includes 3 contiguous Wilderness Areas, the Selway-Bitterroot, Frank Church-River of No Return, and Gospel Hump, encompassing almost 4 million acres (1.6 million ha), which represents the largest block of federally-designated Wilderness in the lower 48 states.

Three major mountain chains and 2 large river systems create a very diverse landscape, ranging from sagebrush-covered flatlands in the southern part of the state, to extremely rugged peaks in the central and northern parts. A moisture gradient also influences the habitats of both wolves and their prey, with wetter maritime climates in the north, supporting western red cedar-western hemlock vegetation types, grading into continental climates of Douglas-fir and Ponderosa pine to the south. Elevations vary from 1,500 feet (457 m) to just over 12,000 feet (3,657 m). Annual precipitation varies from less than 8 inches (20 cm) at lower elevations to almost 100 inches (254 cm) at upper elevations.

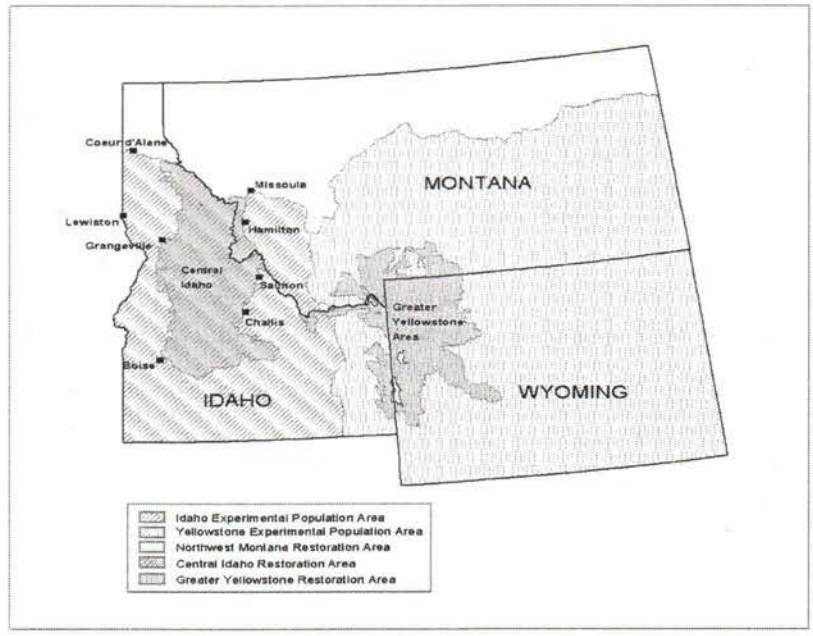

Figure 1. Central Idaho, Northwest Montana, and Greater Yellowstone gray wolf restoration and experimental population areas.

Central Idaho is encompassed within a 10-county area and is sparsely populated, with an average population density of about 3 people per square mile (2.6 square km). Nearly 80% of the land base is public land. Primary land uses include grazing, logging, mining, and recreation.

STATUS OF IDAHO WOLVES

The Idaho wolf population has continued to expand in both numbers and distribution since initial reintroductions (Figure 2). In 2003, 38 wolf packs were documented and the population was estimated to be around 379 wolves (Table 1). Additionally, 15 different areas of suspected wolf activity in the Central Idaho Experimental Population Area (CIEPA) were identified. Sixteen new wolf packs were documented in 2003, the largest single year increase, indicating continued population expansion.

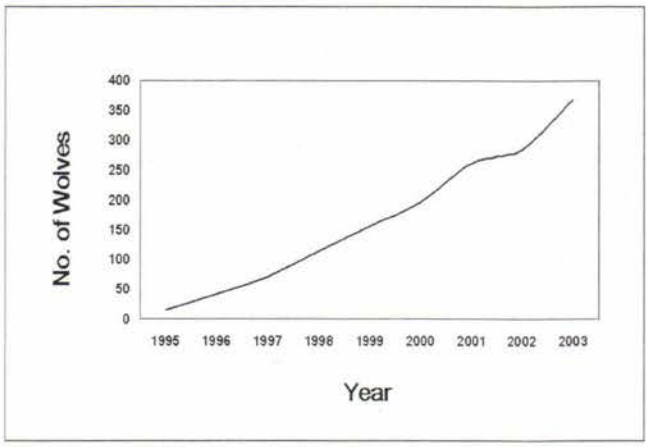

Figure 2. Minimum fall estimates of numbers of wolves in the Central Idaho Experimental Population Area, 1995-2003.

Over the past 5 years, since 1999, the annual rate of population growth has averaged approximately 27%, and shown no apparent trend. The rate of growth of the wolf population is expected to decrease in the future as it reaches social and biological carrying capacity. Ultimately the citizens of Idaho, not habitat, will determine the number of wolves that will persist in the state. The social carrying capacity for wolves will undoubtedly be below the biological carrying capacity as wolves are managed in concert with other wildlife values, livestock concerns, and other management objectives.

Table 1. Estimated Population parameters for wolves in the Central Idaho Experimental Population Area, 1995-2003.

Year	No. Packs	No. breeding pairs	Min. No. pups	No. mortalities[a]	Population Estimate
1995	0	0	0	1	14
1996	3	3	11	4	42
1997	7	6	29	2	71
1998	12	10	52	9	114
1999	13	10	68	22	156
2000	19	10	64	23	196
2001	17	14	82	16	261
2002	23[b]	14[b]	62[c]	28	294[c]
2003	38	26	103	18	379

[a] Includes wolves known and suspected to have died.
[b] Increased by five based on information obtained in 2003.
[c] Increased by ten based on information obtained in 2003.

The Recovery Program, in an effort to validate its wolf population estimation method, developed 2 different models that employed multiple wolf population parameters based on data from Idaho, the NRMRR, and scientific literature. The population estimate of 379 wolves in the CIEPA for 2003 fell within the range of values produced by these 2 other methods (360-441), and was within 15% of the upper end value of the range. Because the population estimate of 379 falls within the

range of population estimates derived from the other 2 methods, and because the overall range was fairly restricted, the Recovery Program feels that the traditional population estimate provides a reliable indicator of wolf population size.

Distribution

Wolves were well distributed throughout 28,473 square miles (73,746 square km) within the Idaho portion of the CIEPA (Figure 3). Occupied wolf range in the CIEPA is approximately

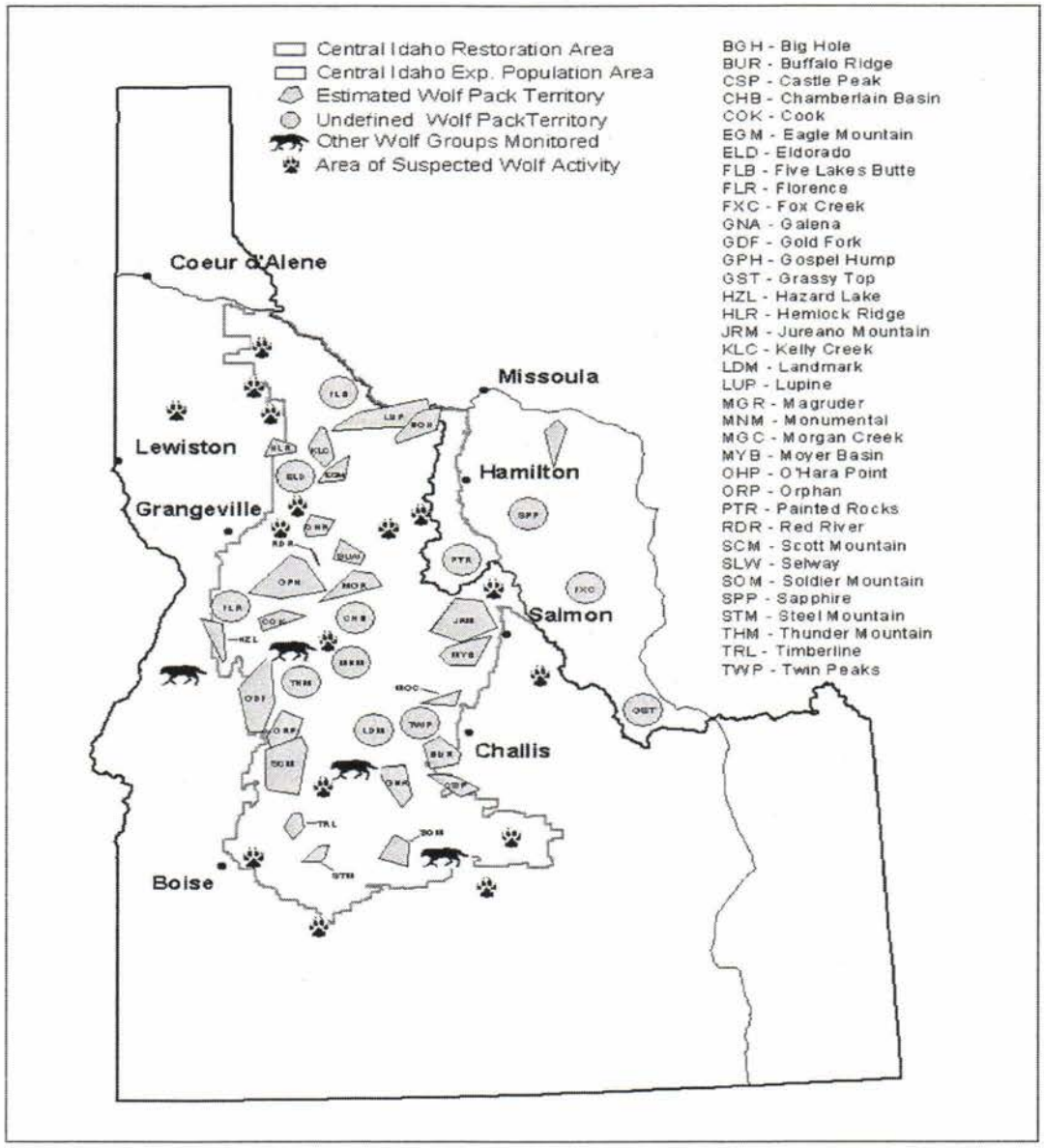

Figure 3. Locations of known wolf packs and areas of suspected wolf activity in the Central Idaho Experimental Population Area, 2003.

bounded by Interstate Highway 90 to the north, Interstate Highway 15 on the east, State Highway 20 to the south, and the Snake River on the west. Territories of all established and documented packs were predominately or wholly within National Forest public lands within the Central Idaho Restoration Area. Thirteen Idaho pack territories included or were entirely contained within federally designated Wilderness Areas.

Reproduction

The reproductive status of 40 known packs and known or suspected pairs was investigated during 2003. Of those, a minimum of 31 wolf packs produced litters and 26 packs qualified as breeding pairs (Table 2).

Wolf pup counts were conservative estimates because some pup mortality may have occurred before being documented and some counts were incomplete. More pups, litters, and breeding pairs were documented in 2003 than in any previous year. A minimum of 103 wolf pups was documented in the CIEPA in 2003; an increase over the 62 recorded in 2002, which was attributed to the production by newly discovered packs. Minimum estimated numbers of pups produced per pack ranged from 1-7 pups. Average minimum litter size for all packs that produced litters, including those where counts were suspected incomplete, was 3.3 pups per litter, which was below the overall average of 4.3 pups per litter estimated for the past 8 years (inclusive of 2003). Eleven previously documented packs that reproduced had a minimum of 33 pups (average litter size = 3.3 pups/litter), whereas the 17 packs first documented to have reproduced in 2003, for which pup counts were obtained, produced a minimum of 70 pups (average litter size = 4.1 pups/litter). For 4 newly discovered packs (Cook, Eagle Mountain, Eldorado, and Morgan Creek), where multiple pups were heard but not seen, counts were officially recorded as 2 pups. It is likely there may have been more than 2 pups in these litters.

Eleven new breeding pairs were documented in 2003; Castle Peak, Eagle Mountain, Florence, Fox Creek, Galena, Hazard Lake, Hemlock Ridge, Magruder, Soldier Mountain, Steel Mountain, and Timberline. Five packs; Cook, Eldorado, Morgan Creek, O'Hara Point, and Red River, were retroactively counted as 2002 breeding pairs based on pack size and presence of subadult wolves, although 2003 was the first year of documented reproduction. Each pack was assigned 2 pups for 2002 as the minimum number of pups that qualified it for breeding pair status. Extant packs that apparently did not reproduce were; Five Lakes Butte, Gold Fork, Grassy Top, Lupine, Painted Rocks, Thunder Mountain, and Willow Creek. Evidence indicated that wolves denned in Monumental Creek; these may have been affiliated with the Thunder Mountain or Wolf Fang packs, but may also have been a previously undocumented group. The den site occupied in 2003 was used initially by the Thunder Mountain pack, but the Wolf Fang pack was located in that area on at least 2 occasions in 2002. Neither the Thunder Mountain nor Wolf Fang packs contained radio-collared individuals in 2003, hampering monitoring efforts. Determination of the reproductive status of the Thunder Mountain and Wolf Fang wolves remained unknown

despite investigations of prior den and rendezvous sites. A former den/rendezvous area of the Twin Peaks pack also displayed evidence that wolves denned there, although no pups were observed.

Table 2. Estimated minimum numbers of pups produced and mean litter sizes of wolf packs in the Central Idaho Experimental Population Area, 1996-2003.

	Number of pups									
Pack	1996	1997	1998	1999	2000	2001	2002	2003	Total	Mean[g]
Bass Creek				8[a]					8	
Bennett Mountain								1[a,c]	1	
Big Hole			5	3	0	6	3	3	20	4.0
Big Smoky					6[a]				6	
Buffalo Ridge							7	6	13	6.5
Castle Peak								4	4	
Chamberlain	4	4	4	5	8[b]	4	0	2	31	4.4
Como Lake[d]							3		3	
Cook							2[c,f]	2	4	2.0
Eagle Mountain								2[c]	2	2.0
Eldorado							2[c,f]	2[c]	4	2.0
Five Lakes Butte							2[c]		2	
Florence								2	2	
Fox Creek								6	6	
Galena								5	5	
Gold Fork					2[c]	2[c]	0	0	4	2.0
Gospel Hump						7	3[c]	4	14	4.7
Hazard Lake								5	5	
Hemlock Ridge								5	5	
Jureano Mountain		6	4	9[a]	6	3	5[a]	3	36	5.1
Kelly Creek		5	6	4	2	0	6	2[c]	25	4.2
Landmark	5	4	0	5	8	6	11[b]	2	41	5.9
Lupine						2			2	
Magruder								6	6	
Marble Mountain					2[c]	3[c]	3[a,c]		8	2.7
Monumental Creek								[a,e]		
Morgan Creek							2[c,f]	2[c]	4	2.0
Moyer Basin		4	4	7	5[a]	5	4	2	31	4.4
O'Hara Point							2[c,f]	7	9	4.5
Orphan					1[a]	1[a]	0	1[a]	3	1.0
Red River							2[c,f]	4	6	3.0
Sapphire[d]								3[a]	3	
Scott Mountain						4	2[a,c]	5	11	3.7
Selway	2	0	0	2	4	3	3[c]	3	17	2.8
Snow Peak			5	0	0				5	
Soldier Mountain								4	4	
Stanley Basin		6	6	7	7[a]				26	6.5
Steel Mountain								6	6	
Thunder Mountain			6	7	3	9	0		25	6.3
Timberline								4	4	
Twin Peaks			3	4	0	7[a]		[a,e]	14	4.7
White Cloud			9	7	2[a]				18	6.0
Whitehawk Mountain					1[a]	9			10	5.0
Wildhorse					2	5	0		7	3.5
Willow Creek								0		
Wolf Fang					5	8	0		13	6.5
Total pups	11	29	52	68	64	84	62	103	473	
No. of litters	3	6	10	12	16	17	17	31	110	
Mean litter size	3.7	4.8	5.2	5.7	4.0	4.9	3.6	3.3	4.3	

[a] Did not meet requirements for breeding pair.
[b] Includes two litters born into this pack.
[c] Suspected incomplete counts.
[d] Verification from USFWS.
[e] Evidence of reproduction, but no pup counts obtained.
[f] Added retroactively based on information obtained in 2003, with min. two pups required for breeding pair status.
[g] Means calculated using incomplete counts, therefore should be viewed as minimums.

Mortality

Eighteen documented or suspected wolf mortalities were recorded in 2003 (Table 3). All mortalities of known cause (n = 15) were human-related (lethal control [n = 6], illegal take [n = 6], legal take [n = 1]), and other human causes [n = 2]). The cause of death in 2 cases was unknown. One mortality, B100, a female that dispersed to the Big Hole area of Montana, was suspected. Her signal was located on mortality mode in January of 2003. A site investigation indicated that the signal was emanating from under the ice of the Big Hole River. The radio-

Table 3. Numbers and causes of documented and suspected wolf mortalities in the Central Idaho Experimental Population Area, 1995-2003.

	Cause of Mortality							
		Human-related						
Year	Control	Illegal	Legal	Other	Natural	Unknown	Suspected	Total
1995	-	1	-	-	-	-	-	1
1996	1	-	-	-	2	-	1	4
1997	-	1	1	-	-	-	-	2
1998	-	3	-	1	-	5	-	9
1999	5	3	-	5	2	3	4	22
2000	10	8	-	2	1	2	-	23
2001	6	2	1	-	1	5	1	16
2002	14	4	-	1	2	4	3	28
2003	6	6	1	2	-	2	1	18
Total	42	28	3	11	8	21	10	123

collar was not retrievable at that time. It was recovered in June of 2003, but no other evidence was available to determine B100's fate. Undoubtedly these figures are underestimates of the true amount of overall mortality occurring within the wolf population, as documenting mortalities of uncollared wolves is difficult. Also, mortality estimates do not include pups less than 4 months of age.

Mortality related to human factors was the greatest source of mortality for radio-collared wolves in the CIEPA. Wolves lethally controlled and legally taken, both radio-collared and uncollared, were well documented. Illegal take, especially of uncollared animals, is difficult to document. The number of radio-collared wolves documented or suspected to have been illegally killed, in proportion to the average number of radio-collared wolves in the CIEPA, was used to generate a minimum estimate of the range of potential population-wide effects of illegal take during 2003. This is a minimum estimate in that some radio-collars are likely destroyed during the illegal act and would be listed as missing wolves rather than mortalities. This computation suggests that 56-83 wolves were illegally killed in 2003. This estimate of illegal take represents 14-21% of the current population estimate, and would be additive to other sources of mortality.

Dispersal

The outcomes of 9 Idaho wolves that dispersed were documented in 2003. Female B107, which dispersed from the Moyer Basin pack, paired with an unknown male and produced a litter in the Sawtooth Valley, forming the Galena pack. This is the fourth pack that has established in this area; all of the previous resident packs were involved in depredations on domestic livestock and members of those packs were eventually removed via relocation or lethal control. Radio-contact was regained with B109, now a 3-year-old female, from the Wolf Fang pack, in 2003. She, and her suspected mate of unknown origin, seemed to settle in the upper South Fork of the Payette River and surrounding country. Based on numerous reports of wolf activity from the Bear Valley and Bull Trout Lake areas, B109 and her companion may be part of a larger group of wolves, as they have been located in these areas as well, although ground and aerial observations of this pair by Recovery Program personnel did not indicate the presence of additional wolves. Another disperser from the Wolf Fang pack, male B131, was observed with a suspected mate along the South Fork of the Payette River in late 2002. It was anticipated that they would produce a litter in 2003. B131 was illegally killed in May of 2003 and the fate of his mate remains unknown. Documentation of the newly discovered Timberline pack in this area, following B131's death, indicated the possibility that additional wolves may have been accompanying these 2 wolves. B110, a dispersing male from the Moyer Basin pack, was a member of the newly discovered Magruder pack in 2003. A male wolf from the Jureano Mountain pack, B111, was discovered north of Elk City, Idaho early in 2003. There were at least 3 other adults/yearlings and 7 pups present. Former Gold Fork pack member, male B116, left that pack in late January of 2003 and soon thereafter joined with B61 of the Orphan pack. It was suspected that B116 assumed the alpha male role in that pack. Two-year-old male B127, born into the Wildhorse pack, was found in the Price Valley area near New Meadows, Idaho. Limited observations indicated that B127 was alone, although there were reports of multiple wolves in an area near where he has seemingly settled. Male B136 dispersed from the Marble Mountain pack, obtained a mate, established a territory, and produced a litter of pups in 2003, forming the Eagle Mountain pack. This pack occupies an area on the south side of the Lochsa River approximately halfway between the confluence of the Lochsa and Selway Rivers and Powell Ranger Station. Idaho male B144, born into the Moyer Basin pack in 2002, was captured by a coyote trapper near Livingston, Montana in mid-December, at which time personnel from the Yellowstone wolf program recollared him. Prior to his dispersal B144 was last located in mid-October in his natal territory near Salmon, Idaho. B144 may be attempting to join the resident Lone Bear pack, or may continue dispersing.

It is extremely difficult to document dispersal, as most dispersing wolves rapidly depart their natal territories, often moving extensive distances. Radio contact can be lost for extended periods of time before signals are rediscovered, if at all. Seldom has the Recovery Program been able to follow a dispersing wolf while it searches for a mate and new territory. The number of dispersals recorded is an underestimate of true dispersal, as the Recovery Program can monitor only those wolves with radio-collars. Because wolves are capable of traveling long distances and locating mates, the animals dispersing from the CIEPA and other recovery areas are likely to provide founding individuals for neighboring states. Documented long-distance dispersals within the NRMRR, and between other areas of study in the Rocky Mountain chain, provide

evidence that wolves in this region represent a continuous and connected population. At least 3 dispersing wolves have been documented in Oregon, one in Utah, and one in Washington.

WOLF MANAGEMENT

Capture and Radio-collaring

Fifty wolf captures, of forty-six individuals, were made in 2003; 34 were processed for the first time and 12 were recaptured during summer ground trapping and winter helicopter capture efforts (Table 4). Thirty-three of these were radio-collared for the first time, and an additional 8 were re-collared. Three wolves captured during control actions were euthanized. Three pups were too small to be radio-collared.

Table 4. Numbers of wolves captured by helicopter and ground trapping in the Central Idaho Experimental Population Area, 1997-2003.

Year	Helicopter	Trapping	Total[a]
1997[b]	6	5	11
1998	0	27	27
1999	5	25	30
2000	9	16	25
2001	13	17	30
2002	16	9	25
2003	14	36	50
Total	63	135	198

[a] Includes recaptures of previously radio-collared wolves.
[b] Includes 4 wolf pups from the Boulder Pack in Montana outside of the CIEPA.

Ground trapping and darting occurred throughout the summer and yielded 36 captures from 15 different wolf groups. A Recovery Program biologist ground darted a wolf with a telemetry dart in 2003. This was believed to be the first time this technique was successfully employed to radio-collar a wolf.

Helicopter capture, conducted in mid-January of 2003, resulted in 14 captures from 6 packs. In addition to darting, net-gunning, a new technique for the Recovery Program, was utilized to catch 6 animals. Net-gunning, where a net was shot over the wolf to entangle it, proved useful in the broken snow conditions that were encountered in 2003 and showed promise as an effective capture method in the future.

As of December 2003, the Recovery Program was monitoring 43 radio-collared wolves with known whereabouts and searching for 15 missing wolves whose radio-collars should still be functional. An additional two were not transmitting due to non-functioning radio-collars and personnel from the Montana USFWS were monitoring 1 other wolf in the CIEPA.

Livestock Depredation

Resolving wolf-livestock conflict is one of the defining social challenges of wolf recovery. Livestock depredation by wolves is a paramount concern of livestock producers in Idaho. Livestock losses to wolves can have negative economic impacts to individual livestock producers. Wolf depredations often occur in the same geographic areas involving the same livestock producers year after year in chronic problem areas. The Final Rule, which governs the management of nonessential experimental wolves in Idaho, allows agency control of wolves to resolve wolf-livestock conflicts. Under the Final Rule wolves may be harassed, relocated, or lethally controlled in response to confirmed depredations on livestock. However, despite these mitigating efforts, livestock depredations and resulting control of wolves remain highly emotional and politically charged. Developing long-term solutions to resolve wolf-livestock conflicts is key to the success of the Recovery Program and timely delisting of wolves.

Thirteen groups of wolves (packs or individuals) were implicated in confirmed and/or probable depredations during 2003: Buffalo Ridge, Cook, Florence, Fox Creek, Gold Fork, Hazard Lake, Jureano Mountain, Morgan Creek, Sapphire, Willow Creek, B157, and uncollared wolves near Willow Creek Summit, Idaho and Chilly Slough, Idaho. Confirmed wolf depredations on livestock in the CIEPA included 13 domestic calves and 118 domestic sheep, and an additional 10 domestic calves and 26 sheep were classified as probable wolf kills. Most (n = 92, 78%) of the verified sheep losses in 2003 were the result of multiple depredations by the Cook pack. Fifteen wolf packs and pairs that used areas in common with livestock but were not implicated in confirmed and/or probable depredations were Castle Peak, Eldorado, Galena, Hemlock Ridge, Landmark, Moyer Basin, O'Hara Point, Orphan, Red River, Scott Mountain, Soldier Mountain, Steel Mountain, Timberline, B109, and B127.

Fortunately, the level of wolf-livestock conflicts has remained manageable in Idaho as annual numbers of livestock lost and livestock producers affected has remained fairly constant at relatively low levels for the past several years (Figure 4). Although loss of livestock to wolves

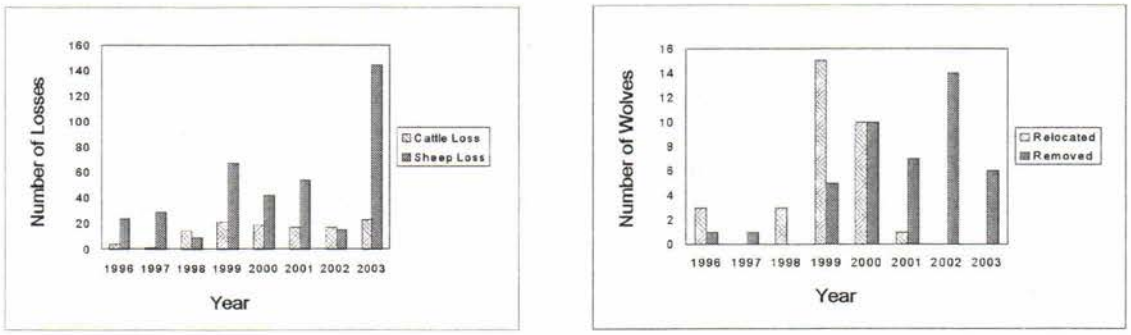

Figure 4. Numbers of confirmed and probable livestock losses and numbers of wolves managed in the Central Idaho Experimental Population Area, 1996-2003.

can have negative economic impacts to individual producers, wolf depredation remains a relatively minor cause of livestock loss statewide. Since 1999, when chronic depredations began

in a limited number of areas, confirmed and probable livestock losses to wolves averaged 19 cattle and 64 sheep per year, affecting an average of 14 producers per year in the CIEPA. Documented livestock losses to wolves account for about 1-2% of reported predator losses for cattle and sheep in Idaho and less than 0.01% of total livestock losses. Wolf-livestock conflicts can be addressed by implementing effective wolf management strategies that are responsive and mitigate the economic impacts to producers, focus on individual producers suffering losses in chronic problem areas, are proactive in deterring wolf-livestock conflicts, and work closely with affected rural communities and local governments. In addition, Defenders of Wildlife, a national conservation organization, provides monetary compensation to livestock producers for verified losses to wolves. In 2002 the State of Idaho initiated a compensation program that addresses such indirect losses as reduced weight gain, lower pregnancy rates, and missing livestock that are difficult to verify. Wolf control and compensation for losses has generated tolerance and patience among many livestock producers.

During 2003, 6 wolves were lethally controlled, 6 wolves were radio-collared and released on-site, one was legally killed while depredating, and none were relocated as a result of agency control in response to verified conflicts with livestock (Figure 4). In February an uncollared male wolf, apparently alone, was removed near Chilly Flats between Challis and Mackey, Idaho. Similarly, an uncollared female was lethally controlled in June approximately 10 miles (16 km) north of the Chilly Flats area, near Willow Creek Summit. Two wolves from the Cook pack, a male and a female, were lethally controlled in separate incidents following depredations that occurred east of Burgdorf, Idaho. A male wolf was trapped and lethally removed north of Granite Mountain (approximately 11 miles [18 km] north of New Meadows, Idaho) in August. Male wolf B172 was radio-collared and released in October, not far from where the wolf was lethally controlled near Granite Mountain. B172, based upon his capture location, was suspected to be a member of the Hazard Lake pack, although subsequent observations indicated that he is part of a group of wolves neighboring the Hazard Lake pack's territory. An adult member of the Willow Creek pack (Montana), sex unknown, was lethally removed during a control action following a depredation on cattle in that pack's territory in October. Two wolves from the Cook pack were trapped, one was radio-collared, and both were released, during control actions. Two adults, a male and female, were trapped and radio-collared during a control action north of McCall, Idaho in August. The female died, likely from complications of her capture, the following day. Also in August, 2 adult male wolves, B160 and B161 of the Morgan Creek pack, were captured. B161 broke the chain on the trap and was roaming free for 6 days with the trap on his foot before he was recaptured. Unfortunately he died 1 week later, presumably from infection and stress related to these circumstances. Jureano Mountain pack male B137 was legally shot by a landowner while the wolf was standing over a freshly killed domestic calf.

Current levels of wolf mortality associated with agency control are not anticipated to adversely affect the Idaho wolf population. Exploited wolf populations are capable of sustaining an overall mortality rate, from all causes, of 30% without jeopardizing population viability. The 6 wolves lethally removed during agency control actions and the one legally killed in 2003 accounted for 2% of the estimated CIEPA wolf population (unexploited).

Livestock Conflict Resolution

Wildlife Services, under a cooperative agreement with the USFWS, holds the primary responsibility to investigate and verify reported wolf depredation, and implement wolf control actions.

The Tribe, USFWS, and WS worked cooperatively with livestock producers to minimize losses. Wolf control strategies in response to confirmed livestock depredations are addressed on a case-by-case basis. Control strategies varied widely, ranging from non-injurious harassment to lethal removal. Implementation of control actions emphasized minimizing livestock losses while promoting wolf recovery.

Wildlife Services deployed non-lethal wolf deterrents, including radio-activated guard (RAG) boxes in 3 areas of verified or potential conflict. Fladry was used at 2 locations, once following a depredation on sheep and once as a preventative measure. In both cases no depredations occurred following application of fladry.

Other proactive measures to minimize wolf-livestock conflicts include hazing wolves, using less-than-lethal rubber bullets, using additional guard dogs, purchasing hay or alternate pastures to separate wolves and livestock, modifying grazing patterns, and coordinating volunteers to help haze wolves away from livestock. Used in sequence or combination, these non-lethal methods have proved useful around calving and lambing pastures providing time for young calves and lambs to grow large enough to be less vulnerable to wolf depredations. The Recovery Program will continue to seek effective non-lethal means of avoiding wolf-livestock interactions.

The Defenders of Wildlife, a private conservation organization, established and administers a wolf compensation trust, to reimburse ranchers for verified losses to wolves. This program has promoted tolerance for wolf recovery. Defenders of Wildlife has also worked cooperatively with the Recovery Program and provided financial assistance for resolving wolf-livestock conflicts.

Litigation

Case: The United States District Court for the District of Idaho. Western Watersheds Project and Idaho Conservation League vs. Sawtooth National Forest, Bill Levere, Sawtooth National Forest Supervisor, and United States Forest Service [Forest Service], Case No. CIV 01-389-E-BLW.

This case was initiated in the summer of 2002 and revolves around the establishing legislation for the Sawtooth National Recreation Area (SNRA). That legislation suggests preferential use by wildlife in the SNRA. The SNRA has been historically used for livestock grazing under federal grazing permits. Since the USFWS's reintroduction efforts in 1995, the wolf population in Idaho has expanded, with at least 1 wolf pack using part of the SNRA in 2003. Because of chronic livestock depredations by wolves on private land adjacent to the SNRA and within it, agency wolf control ultimately resulted in the removal of all 10 members of the Whitehawk

Pack. Environmental groups filed suit and the Judge's preliminary ruling directed the Forest Service to give preference to wildlife but also to balance out wildlife with permitted livestock grazing. The Court ruled that the Forest Service needed to do a more thorough environmental assessment of the conflict between livestock grazing and predators, primarily wolves, in the SNRA.

The Court further issued an injunction on the USFWS that prohibited lethal control of wolves that depredated on livestock within the SNRA during the summers of 2002 and 2003. The USFWS requested the Judge reconsider that position since the USFWS was not part of the original litigation and that control of wolves that attack livestock is a necessary part of wolf restoration in the northern Rocky Mountains of Montana, Idaho, and Wyoming. The USFWS/Department of Interior worked with Department of Justice and filed an appeal of the Court's decision. The appeals court suspended its consideration of the appeal, until a closely related case, now before the Supreme Court, is ruled upon. The USFWS stands ready to continue to assist to reduce livestock depredations in other non-lethal ways in the SNRA, as this case is being decided. The Court's 2003 injunction expired in November 2003, but the plaintiffs are expected to ask the court for another injunction this spring just as they have for the last 2 grazing seasons.

On April 1, 2003 the Service finalized a reclassification rule that delisted wolves in the southeastern U.S., established 3 Distinct Population Segments (DPS), Western, Eastern and Southwestern, and changed the status of wolves from endangered to threatened in the Western and Eastern DPS. Wolves in the Southwestern DPS remained listed as endangered. A number of environmental groups immediately filed a 60-day notice of intent to sue. In late 2003 about 20 groups filed a lawsuit claiming that the reclassification was illegal for a wide variety of reasons. Other groups filed another suit over similar issues in Vermont in December. These litigation efforts will be ongoing for some time.

RESEARCH

The Recovery Program continued to support research that will benefit wolf management in the future. A study of wolf-ungulate dynamics in the Frank Church-River of No Return Wilderness was concluded, and a new study investigating wolf den-site characteristics was begun in 2003. In addition, a literature review and questionnaire of worldwide wolf censusing techniques provided the groundwork for a grant that will evaluate, test, and implement those techniques that may have application in the NRMRR.

Nine research studies have been initiated in Idaho since 1999. Two addressed winter predator-ungulate relationships, one examined den ecology, four dealt with wolf-livestock interactions, and one analyzed wolf survival in the NRMRR. The studies detailed below are in progress or in the planning stage.

Wolf Den-Site Selection in the Northern Rockies

Investigators: Jon R. Trapp (Prescott College), Curt Mack (Nez Perce Tribe), David Parsons, Paul Beier (Northern Arizona University), Paul Paquet.

Research Assistants: Casey King, Rob LaBuda, Barbara Trapp

Cooperators: Nez Perce Tribe, U.S. Fish and Wildlife Service, U.S. Forest Service, Glacier National Park, Banff National Park, Yellowstone National Park, Wolf Education and Research Center, Plum Creek Timber Company, University of Idaho, and the Geographic Data Service Center.

Reproductive success is the key to persistence and survival in any species. Gaining a better understanding of wolf den-site selection and characteristics can help in the future management of wolves in the Northern Rockies and elsewhere. This research study was initiated to examine wolf dens to determine which, if any, variables are significant in den-site selection. Over 30 wolf dens were analyzed in Idaho, Montana, Yellowstone National Park, and Canada in the summer of 2003.

This study focused on 2 levels of data collection and analysis: micro- and macro-habitat. The micro-habitat portion involved collecting a suite of site-specific data at dens (n = 22) in Idaho, Montana, and Canada. Micro-habitat variables included vegetative composition and structure, canopy cover, hiding cover, slope, aspect, soil analysis, habitat type, den measurements, and distance to water, roads, and human disturbance. For each den-site found, a randomly generated contrast site was created within the home range of the selected wolf pack. The same data, with the exception of the den measurements, were collected at the contrast site. The contrast site allowed for a comparison between presence (the den-site) and absence (another location within the wolves' home range without a den). Significant variables included canopy cover, hiding cover, herbaceous ground cover, woody debris, and proximity to water.

The macro-habitat analysis utilized a Geographic Information System (GIS) to examine dens (n = 35) in central Idaho, Northwest Montana, and Yellowstone National Park. By utilizing the computer mapping abilities of GIS many questions can be answered at the landscape level. GIS layers can supplement some of the data collected in the field such as slope, aspect, and habitat type. Digital Elevation models with 30 meter resolution allow for slope, aspect, and solar radiation analyses. Roads, trails, and hydrology layers can be used with den coordinates to determine precise distances. GIS data layers were then combined using a multivariate analysis technique called the Mahalanobis distance.

Literature Review of Worldwide Wolf Monitoring Techniques.

Principal Investigators: Curt Mack (Nez Perce Tribe), Kryan Kunkle (Montana State University), and Wayne Melquist (University of Idaho).

Cooperators: Idaho Department of Fish and Game and the USFWS.

The Nez Perce Tribe is initiating an effort to summarize the current worldwide state of knowledge regarding wolf counting/survey/and monitoring techniques. This effort will include a complete published and grey literature search, as well as a questionnaire survey designed to collect unpublished information from current wolf managers. This is the initial stage of, and will provide the foundation for, a proposed research study to develop post-delisting monitoring protocols for wolves in Idaho. Results of this study will also be useful to other states developing wolf survey and monitoring protocols.

The Nez Perce Tribe received a grant from the USFWS's Tribal Wildlife Grants Program to fund the following proposed research, which will be an extension of the literature review described above.

Developing Monitoring Protocols for the Long Term Conservation and Management of Gray Wolves in Idaho.

Principal Investigators: Curt Mack (Nez Perce Tribe), and others not yet determined.

Cooperators: Idaho Department of Fish and Game and the USFWS.

As part of the USFWS's, efforts to restore endangered populations of gray wolves (*Canis lupus*), an imperiled species, to the northern Rocky Mountains of the conterminous United States, 35 wolves were reintroduced into Idaho between 1995 and 1996. The Nez Perce Tribe (Tribe) has supported wolf recovery efforts, in part, because of the cultural and religious significance of this species. The Tribe, working through a cooperative agreement with the USFWS, has been charged with the responsibility of monitoring and documenting the status of the recovering wolf population in Idaho. Wolves in the northern Rocky Mountains have recovered more rapidly than anticipated and the USFWS is intending to initiate the delisting process as soon as 2004.

To date, wolf population estimation has relied on time intensive and expensive radio telemetry techniques. Although this approach worked well with initial small population sizes, these techniques are no longer appropriate or cost-effective given the current, much larger recovered population size and near statewide distribution.

The Tribe, USFWS, and State of Idaho are interested in a collaborative partnership effort to develop a less intensive and more cost effective approach for estimating wolf population numbers across the varied landscapes of Idaho. We are proposing to initiate a 3.5-year research effort to develop standardized protocols for estimating wolf population parameters appropriate for meeting post-delisting monitoring and management needs.

Standardized monitoring protocols will be important in satisfying the USFWS's 5-year post-delisting monitoring requirements and is crucial to insure sustainability of the population through effective post-delisting conservation and management of wolves. Results of this effort will also be useful to other states, particularly Montana and Wyoming, developing monitoring protocols for wolves across the northern Rocky Mountains.

Assessing Management and Factors Related to Wolf Depredation on Livestock in Montana, Idaho, and Wyoming.

Investigators: Elizabeth H. Bradley and Daniel H. Pletscher, Wildlife Biology Program, Department of Ecosystem and Conservation Sciences, University of Montana, Missoula.

Cooperators: USFWS, Turner Endangered Species Fund, Yellowstone National Park, Nez Perce Tribe, Defenders of Wildlife, National Fish and Wildlife Foundation.

Methods used to mitigate wolf (*Canis lupus*) predation on livestock in Montana, Idaho, and Wyoming have largely consisted of removing individuals from depredating packs, either by lethal or non-lethal (translocation) means. We examined the effects of partial and complete removal of wolf packs on the persistence of livestock depredations. Removing alpha individuals appeared no more effective than removing non-alphas in reducing depredations within the year. Packs that underwent partial removal contributed similar numbers of breeding pairs toward recovery goals as depredating packs that did not undergo removal, but fewer breeding pairs than non-depredating packs. We suggest chronic depredations result more from factors inherent in locality rather than individual pack behavior. Our findings may be useful for managers seeking to balance objectives of wolf recovery and depredation mitigation.

Translocation of carnivores that depredate livestock is commonly used as a non-lethal method to mitigate conflicts especially when conservation of rare or endangered individuals is of interest. In Montana, Idaho, and Wyoming, wolves have sometimes been translocated with the objective of non-lethally reducing livestock conflicts while promoting wolf recovery. We assessed survival, depredation behavior, establishment, and movements of wolves post-translocation to determine the effectiveness of translocation in the NRMRR and to consider how it may be improved. We found translocated wolves had lower annual survival (0.60) than other radio-collared wolves (0.73) with government control composing the largest source of mortality. Over one-quarter of translocated individuals and cohesive groups depredated again after release and few established or joined a non-depredating pack that contributed to recovery goals for $\geq$ 1 year. We conclude that translocation was ineffective at meeting management objectives in that few relocated wolves significantly contributed to recovery and failed to depredate again. We suggest managers choosing to translocate wolves or other carnivores consider soft-releasing individuals (preferably in family groups, if social) when feasible as this may decrease wide post-release movements and homing behavior.

Managing wolf depredation on livestock is expensive and controversial therefore managers seek to improve and develop new methods to mitigate conflicts. Determining what factors put ranches at higher risk to wolf depredation will help improve knowledge that could benefit management decisions. We sampled cattle ranches in Montana and Idaho that had experienced confirmed wolf depredations in confined pastures and compared landscape and husbandry factors with nearby matched non-depredated ranches. We found that depredated ranches had a higher presence of elk, were larger in size, had more cattle, and grazed cattle further from residences than non-depredated ranches. We found no relationship between depredated ranches and husbandry practices (carcass disposal, calving locations, calving times), breed of cattle, or the closest distance cattle were grazed from the forest edge. Four of 6 ranches that experienced

depredations during the wolf denning season (April 15 – June 15) were located closer to dens than nearby non-depredated ranches.

Survival of Colonizing Wolves in the Northern Rocky Mountains of the United States, 1982-2002.

Investigators: Douglas W. Smith (Yellowstone Center for Resources), Dennis Murray (Trent University), Edward E. Bangs (USFWS), Curtis Mack (Nez Perce Tribe), John Oakleaf (University of Idaho), Joe Fontaine (USFWS), Diane Boyd (Teller Wildlife Refuge), Michael Jimenez (USFWS), Daniel Pletscher (University of Montana), Carter Niemeyer (USFWS), Thomas J. Meier (USFWS), Daniel Stahler (Yellowstone Center for Resources), and Jim Holyan (Nez Perce Tribe).

The main hypothesis of this study was that wolf survival would not be equal among the 3 recovery areas – central Idaho (CI), northwest Montana (NWMT), and the Greater Yellowstone Ecosystem (GYE) – and that this difference would be due to land status/ownership (e.g., park, wilderness, private, etc). We expected these differences because the CI and GYE recovery areas had large, core, protected areas either in wilderness or national park that reduced wolf-human conflicts and reduced mortality. No such area in NWMT existed as a large wolf population did not reside in Glacier National Park and many packs lived on or close to private land. Another objective of this study was to determine where management attention was warranted by the USFWS before delisting to facilitate transfer to the state governments, and ensure that survival was high enough to assure wolf population subsistence into the foreseeable future – a requirement for state management post-delisting. Other objectives were to analyze demographic, behavioral, and habitat factors important to wolf survival. Results of these analyses would be used in future management decisions.

From 1982 through 2002, 478 wolves were collared in the 3 recovery areas; 263 of these died, while the other wolves were still alive at the end of data collection. Number of wolves collared in each area was 188, 138, 152, for GYE, CI, and NWMT respectively. Average annual survival for all wolves was 0.73. Annual survival by recovery area was 0.80 for GYE, 0.79 for CI, and 0.56 for NWMT. Northwest Montana had the lowest survival of the 3 recovery areas all years studied. Annual survival varied from 0.37 for NWMT in 1987 and 2000 to 1.00 for Idaho in 1997. Survival for the GYE and CI was most similar all years except for 1997 where survival for the GYE was lowest for any year (0.62) but the highest of any year for Idaho (1.00).

Overall, males survived at a slightly lower rate (0.70) than did females (0.74). Overall survival increased by age class, but this was not consistent by recovery area. Alpha wolves survived at a slightly higher rate (0.80) than did subordinates (0.73). Breeders, which were typically, but not always alphas, survived at a higher rate (0.79) than non-breeders (0.71). Resident wolves survived at a much higher rate (0.75) than did wolves that were dispersing (0.60). Wolves living in larger packs had a higher survival rate.

The leading cause of death for all wolves in all areas was human-caused mortality. Of 263 wolves that died, 174 (67%) deaths were human-caused. The leading human mortality factor

was agency legal control (26%), followed by illegal take (23%), and then other human mortality sources (17%; vehicles, capture mortalities).

After human-caused mortality, intraspecific and interspecific killing were the leading causes of death. Mortalities due to unknown causes averaged about 10% for the GYE and CI, but for NWMT were over 25% of the sample.

WOLF RECOVERY AND DELISTING

In the NRMRR, 2003 marked the fourth consecutive year that 30 or more breeding pairs of wolves were documented. Wolves in the northern Rockies are biologically recovered. In 2003, an estimated 761 wolves and 51 breeding pairs were estimated to inhabit the NRMRR.

The USFWS intends to propose delisting when it determines that the wolf population has been recovered and it is reasonably assured that wolves would not become threatened again if the ESA protections were removed. The ESA contains several checks, balances, and protections to ensure that any decision to delist a species is scientifically sound and will not result in it becoming listed again. The ESA requires that all decisions be based on the best scientific data available. The USFWS is mandated to examine all of the factors that may have caused a species to become threatened and to determine that they are not likely to cause the species to become threatened again. For wolves, regulating the level of human-caused mortality is the primary factor that must be resolved before delisting could be proposed. The ESA requires the USFWS to determine that regulations, other than the ESA, will prevent unchecked human-caused mortality from once again driving wolves toward extinction. State fish and wildlife management agencies typically regulate wildlife mortality. The USFWS requested that Montana, Idaho, and Wyoming develop state wolf management plans so that wolves would be adequately conserved under state management. In addition, the USFWS believed that state wolf plans would help the public to understand the consequences of delisting and provide a solid administrative foundation for the final decision. The USFWS provided various degrees of funding and assistance to the states while they developed their wolf management plans. State laws, as well as state management plans, must be consistent with long-term conservation of the wolf population. Idaho, Montana, and Wyoming completed their respective state wolf plans by September of 2003. The USFWS immediately sent the 3 state plans for independent peer review to 12 North American wolf management and research experts. Peer reviewers were asked, "In combination, would the 3 state plans assure conservation of the wolf population at or above recovery levels." Eleven reviews were returned. They were then reevaluated by the state wildlife management agencies, to allow each state to provide their perspectives on the reviewers' comments. On December 10, 2003 the 3 states provided their responses back to the USFWS, completing the peer review process. After further internal and legal review at the Regional Office and Washington D.C. levels, recommendations were provided to the Director of the USFWS.

Idaho's state wolf management plan, when examined by itself, appeared to contain some conflicting and confusing statements regarding whether adequate regulatory mechanisms would be in place to protect gray wolves. However, passage of Idaho House Bill 294 in 2003, clarified

and resolved those concerns and provided the framework for state involvement including, full involvement by the State Department of Fish and Game. Idaho's wolf management plan was deemed adequate as a regulatory mechanism to maintain a recovered wolf population, assuming step-down planning followed through on the plan's overall policy commitments.

Montana's state wolf management plan was considered an outstanding professional effort by the Director of the USFWS and deserved special recognition. Montana's wolf management plan was clearly adequate as a regulatory mechanism to maintain and conserve a recovered wolf population.

The Wyoming state wolf plan called for wolves to be considered "trophy game" in the national park and wilderness areas of the state and considered as "predators" throughout the remainder of the state (and as "trophy game" in a larger area of NW Wyoming if less than eight packs were outside the National Parks). The combination of large areas and the uncertainty of monitoring wolf mortality under predatory animal status, the changing status between "predatory animal" and "trophy game" in certain areas, and the potentially limited area in which human-caused mortality of wolves could be regulated were major concerns. Wyoming's unique and complex proposed regulatory framework, and the vague direction provided by Wyoming law did not assure the USFWS that Wyoming's plan would conserve wolves at or above a recovered level in Wyoming. The Director of the USFWS determined that Wyoming must designate wolves as "trophy game" statewide so the Wyoming Game and Fish Department has legal authority to manage them and Wyoming must clearly commit to managing for 15 or more well distributed packs. These changes will require changes in Wyoming state law that cannot be made until early 2004. The USFWS will not propose that the wolf population be delisted in the NRMRR until Wyoming state laws and their state plan can assure that Wyoming's portion of the NRMRR wolf population will remain secure without the ESA protections.

A delisting proposal would include relevant data and a thorough analysis of the USFWS's rationale. It would be published, and extensive public and professional peer review would be requested. After public comment and any new information were analyzed, USFWS could withdraw the proposal, modify it, or finalize it. The NRMRR wolf population could be delisted as early as 2005. Upon delisting, each state would be responsible for the conservation and management of wolves within their respective borders. Coordination among the 3 states is expected, and already established through a memorandum of understanding signed by the respective governors, and cooperation between state wildlife agencies. After the wolf population is delisted, the ESA requires a mandatory, minimum 5-year post-delisting oversight period. That period, during which the USFWS reviews the implementation of state management plans, provides a safety net to ensure that the species is able to sustain itself without the protection of the ESA. If wolves became threatened again, USFWS could re-list them by emergency order.

The State of Idaho is also working with the Department of Interior for increased state management authority, prior to delisting, under the nonessential experimental designation for wolves in Idaho. If adopted, the USFWS could transfer increased management authorities for wolves to the State of Idaho and provide increased management flexibility to address wolf conflicts with livestock, pets, and big game populations.

The Nez Perce Tribe and the State of Idaho share a mutual interest in the long-term conservation and management of wolves in Idaho. During 2003, the State of Idaho and the Tribe engaged in negotiations to develop a Memorandum of Agreement that, if adopted, would commit both governments to work cooperatively towards the conservation and management of wolves, provide agreement and understanding on shared roles and responsibilities across the state, outline joint efforts for securing needed funding, and provide guidelines for managing future harvest of wolves. This Memorandum of Agreement would take affect upon adoption prior to delisting and remain in affect after delisting. Completion of this Memorandum of Agreement is anticipated in early 2004.

IDAHO WOLF PACKS

Bennett Mountain

Sporadic reports of sightings provided evidence of wolf activity in this area northeast of Mountain Home, Idaho during 2003. This pack was verified as a reproductive pack for 2003 based on information obtained from WS and the USFWS. Wolves killed domestic calves on 2 occasions near Hammett, Idaho in 2004, triggering a control action that resulted in the lethal removal of 2 wolves, including at least 1 pup. Two to 3 additional wolves were heard howling in the vicinity following the lethal control. This pack was not considered a breeding pair for 2003 because only 1 pup was documented.

Big Hole

The radio-collars on long-standing alpha male B7 and alpha female B11 both failed in 2003, but not before biologists were able to track B11 to her den-site. Because B11 was localized for much of the denning season, we believed she was still the alpha (reproductive) female of the pack. Two yearlings were captured, male B148 and female B151, and instrumented with radio-collars. B148 was ground darted, the first time a wolf had been successfully captured in this manner. In March the radio-collar of female B62 was retrieved after pack mates had apparently chewed it off. The Big Hole pack was a breeding pair for 2003.

Buffalo Ridge

Alpha male B93 and alpha female B95 were recollared in January, and 2 pups from the 2002 litter, males B142 and B143, were radio-collared as well. Pack members were implicated in a depredation in April along the Salmon River in which 3 calves were classified as probable wolf kills. No further livestock losses were attributed to the pack due to collaborative efforts between the Recovery Program, Defenders of Wildlife, and affected livestock operators to separate wolves and livestock. B143 died in May. The results of the necropsy, conducted at the National

Fish and Wildlife Forensics Laboratory, indicated that B143 died from compound 1080 poisoning, which is a banned substance in the United States; an investigation is underway. A litter of 6 gray pups was produced, making this a breeding pair for 2003.

Castle Peak

Aged male B2 founded a new pack in 2003 following the death of his mate, B66, of the Wildhorse pack in 2002. B2 was seen with another wolf in the East Fork of the Salmon River during the helicopter capture operation in January. In June B2, an uncollared female, and 4 gray pups were observed at a rendezvous site north of Railroad Ridge. This first year pack counted as a 2003 breeding pair.

Chamberlain Basin

Researchers from the University of Idaho reported wolf activity near this pack's traditional den-site to the Recovery Program in June, prompting a trapping effort. None were captured, as the wolves appeared to have moved away from the area soon after biologists arrived. Subsequently, 7 adults were observed and 2-3 pups were detected based upon howling. There are no functioning radio-collars in this pack. Based on the number of pups heard howling ($\geq$2), this pack qualified as a breeding pair in 2003.

Cook

In September a rash of confirmed depredations on domestic sheep occurred between the breaks of the Salmon River and Payette Lake north of McCall, Idaho. A minimum of 92 sheep was confirmed killed by wolves in this area, which represented 78% of all sheep losses in the CIEPA for 2003. Wildlife Services initiated control actions to resolve this situation. Two wolves were captured, one was radio-collared, and both were released. In addition, an adult female and a subadult male were lethally controlled. The depredations occurred in the area where female wolf B45 resided. A minimum of 13 gray wolves was observed during a subsequent aerial monitoring flight. It was not known if B45 was present or associated with this newly discovered pack. The Cook pack was considered a breeding pair in 2003.

Eagle Mountain

B136, a male that dispersed from the Marble Mountain pack in late 2002, mated with an unknown female and founded a new pack. This pair denned on the south side of the Lochsa River. The den was located and a minimum of 2 pups was heard howling near there. Most of the radio-locations obtained throughout the summer showed B136 to be using the Selway-Bitterroot Wilderness. The Eagle Mountain pack was a breeding pair in 2003.

Eldorado

Wolf activity was suspected in this area, northeast of Kamiah, Idaho, for the past 2-3 years based on information provided by a knowledgeable local resident. During the winter of 2002-2003 the Recovery Program set up bait stations using road-killed ungulate carcasses supplied by the Idaho Department of Fish and Game. The presence of wolves was verified from tracks observed at the baits, and a wolf was captured temporarily, though it escaped. Two efforts were made during the summer to locate wolves, document their pack and reproductive status, and capture and radio-collar members of this pack. The second effort resulted in the confirmation of a minimum of 2 pups, but trapping was unsuccessful. This newly discovered pack was considered a breeding pair for 2003.

Five Lakes Butte

Two survey and trapping efforts were made in the area where a rendezvous site for this pack was located in 2002. Although wolf sign was observed on both occasions, no wolves were captured and no evidence of pups was observed. This pack did not count as a breeding pair.

Florence

A newly documented pack was located near this old mining town northeast of Riggins, Idaho. A confirmed depredation on domestic sheep narrowed the search area and led to a sighting by Recovery Program biologists of a minimum of 3 gray adults and 2 pups. Trapping in September resulted in the capture and radio-collaring of a male pup, B169, but within 10 days its radio-collar had been chewed off by pack mates. This pack achieved breeding pair status for 2003.

Fox Creek (Montana)

USFWS personnel in Montana verified this pack after depredations on domestic cattle in the southern part of the Big Hole region. Subsequent monitoring indicated that the pack was composed of an alpha pair of unknown origin, and their 2003 litter of 6 pups. This new pack qualified as a breeding pair.

Galena

Founded by female B107, which dispersed from the Moyer Basin pack, and a male of unknown origin, this first year pack has taken up residence in the Sawtooth Valley following in the wake of the Whitehawk pack. This is the fourth pack that has established in this area; all of the previous resident packs were involved in depredations on domestic livestock and members of

those packs were eventually removed via relocation or lethal control. B107 gave birth to a litter of 5 gray pups in a shallow depression under the low-hanging limbs of a spruce tree. As with the 3 other packs that have inhabited this area, there were concerns over potential interactions with livestock. Effective cooperation between involved parties helped prevent depredations during the 2003-grazing season. Three female pups, B168, B170, and B171 were radio-collared in September. The Galena pack was a breeding pair in 2003.

Gold Fork

Reproduction was not detected in this pack in 2003. During the helicopter capture operation in January only 5 wolves were sighted, including 4 with radio-collars. The suspected alpha female, B129, and adult male B116 were recaptured and fitted with new radio-collars. B129's radio signal has not been detected since late January of 2003 and B116 dispersed. Neither of the remaining 2 radio-collared wolves, B117 or B130, showed evidence of denning based on the wide-ranging nature of their movements in the spring. A domestic calf was confirmed killed by wolves in their territory and lethal control was authorized. No wolves were captured and depredations ceased. The Gold Fork pack was not considered a breeding pair for 2003.

Gospel Hump

After several attempts to document the reproductive status of this pack throughout the season, Recovery Program personnel finally succeeded in obtaining a pup count in August. Because yearling females B138 and B139 roamed considerably during the summer, they were of little use in locating den and rendezvous sites, although B138 eventually did unite with the pups. Female B50, whose radio-collar expired in 2002, was seen at the rendezvous and is believed to still be the alpha. This pack counted as a 2003 breeding pair.

Grassy Top (Montana)

This group was verified by USFWS personnel in Montana following reports by Montana Fish, Wildlife, and Parks biologists who observed a minimum of 2 wolves in this area. No evidence of pups was obtained, so this pack was not a breeding pair for 2003.

Hazard Lake

Male B105, the suspected alpha of this pack, and a female of unknown origin, produced a litter of 5 pups in a tributary of the Little Salmon River. In May a landowner near Pinehurst, Idaho had 7 sheep killed and five injured during an attack by wolves. Fladry was placed around the pen and no further depredations occurred there. Another livestock producer reported at least 3 instances of wolves chasing horses and dogs in this pack's area. The Recovery Program believed

that only B105 and his mate were present, although multiple adult-sized wolves were reported. In August, in response to another confirmed depredation, an uncollared, adult-sized male wolf was lethally controlled in the area. It was not known if this animal was affiliated with the Hazard Lake pack or was a lone wolf trespassing in their home range. During the fall hunting season reports of multiple adults howling near Hazard Lake were received by the Recovery Program. At this time of year the pups have gained their adult voices, so they may account for the extra adult wolves reported. Because of the potential for future conflicts with livestock the Hazard Lake pack will be a priority for radio-collaring efforts. The pack achieved breeding pair status in 2003.

Hemlock Ridge

A report from U.S. Forest Service personnel led to the discovery of this newly documented pack. A trapping operation was initiated within 1 day of the sighting and resulted in the capture of 2 wolves. Yearling female B152 was captured and radio-collared, as well as a 2-month-old pup, which was not radio-collared. Interestingly, there were 2 distinct size classes of pups observed, possibly indicative of 2 litters in this pack, though only 5 pups were seen. Two wolves, including B152, were found dead near Pierce, Idaho in mid-November of 2003. Both wolves were illegally shot and their deaths are under investigation by USFWS Law Enforcement. The Hemlock Ridge pack qualified as a breeding pair for 2003 despite the deaths of the 2 wolves.

Jureano Mountain

Following the removal of the alpha female in October of 2002, it was unknown whether the pack would remain cohesive in 2003. Alpha male B106, female pup B146, and yearling female B147 were captured during January, bringing the total number of radio-collared members of the pack to 5. In June a confirmed depredation of 1 domestic calf on private property resulted in the legal shooting of male B137 by the landowner. This was the only confirmed depredation by the Jureano Mountain pack during 2003. Three pups, 2 black and 1 gray, were seen in mid-June of 2003, making the pack a breeding pair.

Kelly Creek

Female wolf B42, a 6-year-old member of this long-standing pack, was the sole radio-collared member of this pack following the disappearance of adult male B135 in early April. The identities of the alpha pair were not known. A minimum of 5 adults was observed and 2-3 pups were present based on howling. Yearling male B153 was radio-collared near the rendezvous site. This pack qualified for breeding pair status in 2003.

Landmark

Contact with this pack was lost in early January with, what turned out to be, the premature failure of female B91's radio-collar; the only radio-collared member of this pack. She was observed nursing 2 gray pups at the den-site in June. A trapping effort at that time was unsuccessful and likely led to the abandonment of the area by the wolves. Further efforts to locate and capture these wolves were not fruitful. A minimum of 3 adults was present, which leaves a large number of wolves that were seen in 2002 unaccounted for. The Landmark pack was considered a breeding pair for 2003.

Lupine

Male wolf B79 was thought to have dispersed across the Idaho/Montana border and founded, or joined, the Lupine pack in the Northwestern Montana Recovery Area in 2001. Since late winter of 2002, B79 has been located predominantly in portions of what used to be his natal territory; Kelly Creek pack, in Idaho. Multiple wolves were seen from the airplane during aerial monitoring flights. Two efforts to determine the reproductive status of the Lupine pack did not result in the detection of any pups, therefore the Lupine pack did not qualify as a breeding pair in 2003.

Magruder

Male wolf B110, which dispersed from the Moyer Basin pack, was associated with 3 other adult-sized wolves and 6 pups in the Sabe Creek drainage of the Selway-Bitterroot Wilderness. Two trapping efforts were made on this newly discovered pack, which inhabits extremely rough and remote territory; neither was successful in capturing wolves. This pack qualified as a 2003 breeding pair.

Monumental Creek

A group of wolves used the Monumental Creek drainage of the Frank Church-River of No Return Wilderness in 2003, though their exact identity was not determined. Examination of a den-site previously used by the Thunder Mountain pack showed that wolves had again used it in 2003. Because there were no radio-collars in the Thunder Mountain or Wolf Fang packs, which was aerially located in this area in 2002, it could not be determined if either of these packs, or an undocumented group, were involved. The Monumental Creek wolves, although they reproduced, were not considered a breeding pair in 2003 because no determination of the number of pups present was made.

Morgan Creek

Reports of wolf activity in the Morgan Creek drainage near Challis, Idaho were initially received in late fall of 2002. In January of 2003 Recovery Program personnel verified the tracks of 10-11 wolves in the snow. A bait station was set up in hopes of possibly snaring a wolf, but the wolves did not return to the area. In response to a confirmed depredation in late August, Recovery Program personnel captured and radio-collared 2 adult males, although one of them died as a result of its capture. Subsequent monitoring led to the detection of multiple pups. Because at least 2 pups were heard, this pack met breeding pair criteria for 2003.

Moyer Basin

The Moyer Basin pack numbered 6 wolves in January when 4 of them were radio-collared during the helicopter capture effort. They denned in a tributary of Panther Creek, near Salmon, Idaho, and produced a minimum of 2 pups. This pack qualified as a breeding pair for 2003.

O'Hara Point

Dispersing male wolf Bl 11, now an adult, who originated from the Jureano Mountain pack, led Recovery Program biologists to this newly documented pack north of Elk City, Idaho. Seven black pups were documented. Based on howling, a minimum of 4 adults was also present. A trapping effort in September resulted in the radio-collaring of male pup B162 and yearling female B163. Ten black wolves were observed during an aerial monitoring flight in November. This pack was a breeding pair in 2003.

Orphan

Only 2 wolves were observed in this pack during aerial monitoring, alpha female B61 and presumably her single pup from 2001. B61 was re-collared during the helicopter capture effort in January of 2003. Shortly after this B116, from the Gold Fork pack, joined the Orphan pack, and was suspected to have become the new alpha male. As was the case with all 3 of her previous litters, B61 produced only a single pup in 2003. Because of low productivity the Orphan pack failed to qualify as a breeding pair for the fourth consecutive year.

Painted Rocks (Montana)

The USFWS in Montana continued to receive reports of wolf activity in this area in 2003. B67, illegally killed in the West Fork of the Bitterroot River drainage, was associated with an unknown number of other wolves in the spring and summer of 2002. Recovery Program

personnel were not able to establish whether these wolves reproduced in 2002. The USFWS estimated that a minimum of 4 wolves inhabited the area in 2003, though they were not considered a breeding pair.

Red River

Since 2002, reports from U.S. Forest Service personnel suggested that a wolf pack might have established south of Elk City, Idaho in the Red River drainage. In mid-June Recovery Program personnel responded to a report of wolf pups seen in this area and several pups were heard howling. No wolves were captured and the pack left the area. In September a report was received of 10 wolves sighted on the Red River Wildlife Management Area. Three pups were captured and radio-collared, males B164 and B165 and female B166. Subsequent monitoring indicated the presence of at least 4 adult wolves and 4 pups, qualifying this newly documented pack as a 2003 breeding pair.

Sapphire (Montana)

USFWS personnel from Montana confirmed this pack in 2002, based upon reports of howling and sightings in the area between Skalkaho Pass and the East Fork of the Bitterroot River. In 2003, it was estimated that there were at least 5 wolves present, possibly including 3 pups. Recovery Program personnel did not verify reproduction therefore this pack was not considered a breeding pair for 2003.

Scott Mountain

The Scott Mountain pack contained 3 wolves during the January helicopter capture operation when the sole uncollared wolf, female pup B141, was radio-collared. It was interesting that such a low number of wolves were detected. B141 was presumed to be the only surviving pup from the 2002 litter. There could have been a minimum of 8 wolves in this pack if all of the pups from the previous 2 litters had survived and had not dispersed; it would be unusual for all members of an age cohort to disperse from a pack in such a relatively short time. Five gray pups were seen in late June. The Scott Mountain pack was a breeding pair in 2003.

Selway

A minimum of 3 black pups was observed at this pack's traditional den site in late July. The elderly and assumed alpha male, B5, was the sole radio-collared wolf in the pack. Efforts to trap and radio-collar additional wolves were unsuccessful. Breeding pair status was achieved by this pack for 2003.

Soldier Mountain

Wolves were once again found inhabiting the Big Smoky Mountains west of Ketchum, Idaho. They may be remnants of the Big Smoky pack that was monitored in 2000. The Big Smoky pack was disrupted by illegal take, and surveys conducted from 2001-2002 provided no evidence of pack activity in this area. Recovery Program biologists investigated the area in early May of 2003 based on reports from Idaho Department of Fish and Game personnel. The discovery of fresh wolf tracks led to a trapping effort. Two wolves were captured, adult male B149 and lactating female B150 (presumed alpha), and radio-collared. Two black and 2 gray pups were seen, which made this newly discovered pack a breeding pair in 2003.

Steel Mountain

Yellowstone wolf R241, a male that dispersed from the Sheep Mountain pack, was located in April in the Middle Fork of the Boise River drainage southwest of Atlanta, Idaho. His restricted movements indicated that he was likely attending a denning female. Four black and 2 gray pups were counted at a rendezvous site in July. This first year pack was a breeding pair in 2003.

Thunder Mountain

Pup production was not verified for the Thunder Mountain pack in 2003. The only radio-collared wolf in this pack, female B72, apparently dispersed during the spring, which made monitoring any remaining wolves in the territory difficult. Wolf B72 died in August. Recovery Program biologists surveyed all of the formerly documented rendezvous sites of this pack, but were unable to verify the presence of pups. The tracks of at least 2 wolves were found, and U.S. Forest Service personnel and residents of Yellow Pine, Idaho reported seeing and hearing multiple wolves. It is likely that wolves still inhabit this area. This pack was not considered a breeding pair for 2003.

Timberline

A confusing situation existed in the North Fork of the Boise River drainage east of Idaho City, Idaho in 2003. U.S. Forest Service personnel reported wolf activity in the vicinity of Rabbit Creek in the spring, including a sighting of an adult wolf carrying a pup across a road. Recovery Program personnel investigated the scene, discovered wolf sign, and initiated a trapping operation. No wolves were captured. In early August, following another report, a second attempt was made to radio-collar wolves in this area. Adults and pups were heard howling, confirming reproduction. A gray pup was trapped on 2 occasions, but was too small to radio-collar, as well as an adult male (B155) that was radio-collared. At about the same time, wolf sign, including that of pups, was located approximately 12 miles (19 km) northeast in the Crooked River drainage. A trapping effort was started there, as well. One adult female, B158,

and 1 pup, B159, were radio-collared, although the pup shed its radio-collar within 2 days. Subsequent monitoring located B155 and B158 in the Willow Creek drainage simultaneously, although it could not be determined if they were together. B155 eventually was seen with 2 gray pups near his capture site in Rabbit Creek. B158 was illegally killed in October; her death is under investigation. At the end of 2003 it was not known if the wolves in this area represented 1 pack, 1 pack with a double litter, or 2 distinct packs. Further monitoring will be conducted to determine the status of wolves in this area. The loss of B158 complicated the Recovery Program's ability to assess the number of wolf packs in this area. Male wolf B131, a disperser from the Wolf Fang pack, was also located in the Crooked River area in the spring, but was illegally shot in May adding to the challenge of determining the status of wolf activity in this area. The Timberline pack was a breeding pair in 2003.

Twin Peaks

This pack was last monitored in 2001 before the sole radio-collared wolf, alpha male B59, was shot. Wolf activity was documented during investigations of the area surrounding the last known den for this pack. At least 2 adults were heard howling and pup-sized tracks and scats were found. A trapping effort was unsuccessful due to increased recreational use of the trail systems the wolves were using, which caused the wolves to vacate the area. Because no pups were seen or heard it was not determined if a minimum of 2 existed, so this pack did not count as a breeding pair for 2003.

Willow Creek (Montana)

Based on data from the USFWS, which monitors this group of 3-4 wolves, including B103, reproduction was not suspected. Female B103 was relocated from the Wildhorse pack in Copper Basin, Idaho in 2001 to the Kooskooskia Meadows area of northern Idaho. From there she made her way eastward and established a home range near Willow Creek Reservoir outside of Drummond, Montana. An adult member of this pack was lethally controlled due to depredations on domestic cattle. The Willow Creek pack was not considered a breeding pair for 2003.

OTHER WOLF GROUPS MONITORED

B109

Female B109, dispersing from the Wolf Fang pack, was aerially located along the South Fork of the Payette River in spring. She traveled extensively throughout the summer, ranging from Whitehawk Basin to the Sawtooth Valley. There were several reports of wolf groups numbering from 2-5 wolves in areas where B109 had been located. Recovery Program personnel documented her with at least 1 other wolf on 2 occasions. It was doubtful that this pair produced

any pups in 2003, though the possibility that they were part of a larger group of wolves could not be ruled out.

B127

A disperser from the Wildhorse pack in Copper Basin, B127 had been missing since mid-September 2002. His radio-signal was located again in August of 2003 in the Price Valley area north of Tamarack, Idaho. Recovery Program biologists did not document B127 in association with other wolves, though there have been reports of multiple wolves in this general area.

B157

Recovery Program personnel captured this male wolf during a control action in Pearl Creek, north of McCall, Idaho. A female wolf associated with B157 was also captured, but died the following day of handling-related complications. A third wolf was suspected to be in the area based on the presence of wolf tracks along the trap line. Additional monitoring did not document B157 traveling with other wolves following his capture.

B173

This wolf was radio-collared after a coyote trapper reported capturing it on his trap line. Only 3 aerial locations were collected for this wolf before it disappeared, so it was suspected that the wolf was dispersing at the time of its capture. The trapper reported seeing tracks of 1 other wolf in the immediate vicinity.

OTHER AREAS OF SUSPECTED WOLF ACTIVITY

Wolf activity in the following areas has either been documented in the past and/or was suspected based on reports from agency personnel and the public, and surveys conducted by the Recovery Program. Recovery Program personnel have investigated many of these areas in an effort to document wolf status. Future efforts will be made to capture and radio-collar wolves in each of the following areas.

Avery

Reports from the public and Idaho Department of Fish and Game personnel indicated the probable presence of wolves on the north side of the St. Joe River drainage.

Bovill/Deary/Elk River

Only one report, from early September, was received in 2003, and it came in 2 weeks after the sighting was made, so no investigation was made. Based on the persistent, but infrequent, nature of reports from this area the Recovery Program suspected wolf activity, although that was not confirmed in 2003.

Carey/Craters of the Moon

The remaining Wildhorse pack members spent time in this general area in 2002 following the disbanding of that pack following the death of their alpha female. It could be that one or more of the uncollared wolves of the Wildhorse pack settled in this vicinity and were responsible for sightings there.

Como Lake (Montana)

Recovery Program personnel received no reports of wolf activity in this area, and due to the isolated nature of the country, in conjunction with other priorities, did not undertake a survey effort there. Pack activity was documented here in 2002 by the USFWS.

Copper Basin

Recovery Program personnel verified wolf tracks in early winter of 2003-2004, although pack status remained unknown. This was formerly the territory of the Wildhorse pack, and some of its original members may remain, although no radio-collared wolves from that pack currently occupy the area.

Lemhi

Based on the locations of reports, more than 1 group of wolves may inhabit this geographic region.

Lower Mores Creek

Sightings in this area have ranged from Bogus Basin to Arrowrock Reservoir.

Lower North Fork of the Clearwater River

This geographic area may be inhabited by more than 1 group of wolves. Most reports emanate from the area between the Aquarius and Washington Creek campgrounds.

Lower Selway/Lochsa Rivers

This geographic area may be inhabited by more than 1 group of wolves. Recovery Program personnel located the tracks of multiple wolves in the Pete King Creek drainage in the spring of 2003, although the undefined territory of the Eldorado pack might account for these wolves. In addition, several reports of wolf activity were received from the north side of the Selway River near the Fenn Ranger Station. It was not known if the Selway and Lochsa Rivers served as a territorial boundary for wolves.

Marble Mountain

Contact with the Marble Mountain pack was lost in 2003 with the dispersal of the sole radio-collared wolf, B136. Few reports of wolf activity were received fom this pack's traditional territory during the summer field season, and 1 effort to visit all of the previously known rendezvous sites failed to locate sign of wolves. During the big-game hunting season the Recovery Program did receive reports of multiple wolves in the Marble Mountain pack's home range. It is likely that there is still wolf activity in this area, though whether the pack is still intact is unknown.

Newsome Creek

A hunting dog was confirmed killed by wolves in this area in 2003. This is approximately 10 miles (16 km) west of the area where the O'Hara Point pack had a rendezvous site in 2003, although, to date, none of the radio-collared members of that pack have been located in the Newsome Creek drainage.

North Fork of the Salmon River

This geographic area may be occupied by more than 1 group of wolves. Reports have been received on both the west and east sides of the river. In 2002 wolves on the east side of Highway 93 killed a Jureano Mountain wolf, B118. Radio-collared members of the Jureano Mountain pack have been located on the west side of the river in the past, but have not stayed there long. This may also be winter range for the Painted Rocks pack that inhabits the West Fork of the Bitterroot River drainage in Montana.

Upper Selway

This geographic area may be occupied by more than 1 group of wolves. In November, a report of 8 wolves, including a large white wolf wearing a radio-collar, was received from a U.S. Forest Service wildlife biologist hunting in the Running Creek area. This is the extreme upper end of the Selway River drainage and the sighting most likely involved the suspected pack that has been reported between Moose Creek and White Cap Creek. Sightings have also been received from the vicinity of Hells Half Acre Mountain.

Upper South Fork of the Payette River/Bear Valley

Numerous reports were received from both sides of the Highway 21 corridor between Lowman, Idaho and Banner Summit during 2003. This geographic area may be occupied by more than 1 group of wolves. Concentrated sightings in late 2003 indicated that a group of wolves was northeast of Lowman, while possibly a second group was in the Bull Trout Lake area. The presence of a radio-collared pair, B109 and B190, should aid in determining the status of wolves in this stretch. Wolves have occupied Bear Valley in the past, most recently the Whitehawk pack. A report of 4 wolves at the Bruce Meadows airstrip during the summer of 2003 provided evidence that this area may be recolonized again. At the extreme headwaters of the South Fork Payette drainage, in the Sawtooth National Recreation Area, persistent reports suggested wolf activity there, as well.

Wolf Fang

Without any radio-collared members, this pack could not be monitored, so pack status and reproduction could not be documented in 2003. Several efforts by Recovery Program personnel failed to provide evidence of a litter. Inspection of the last known den-site suggested that wolves may have spent some time there in the spring, but definitive evidence of pups was absent. Tracks were seen in a few parts of their home range, but wolf sign was not concentrated enough to warrant a capture operation. In September a sighting of 7-8 wolves was reported to the Recovery Program from the Profile Gap area, which was part of this pack's territory. The Wolf Fang pack was not a breeding pair in 2003.

BIOGRAPHICAL INFORMATION

Curt Mack, NPT Wolf Recovery Program Leader

Education: Bachelor's of Science degree, 1977, in Wildlife Management from University of Idaho.
Master's of Science degree, 1985, in Wildlife Management from Colorado State University.

Career Highlights: Graduate thesis, "Restoration of River Otters in Rocky Mountain National Park, Colorado," involved reintroducing the Canadian/North American river otter (*Lontra canadensis*) into Rocky Mountain National Park. Wolf Recovery Program leader for NPT, 1997-2003. Recognized by Audubon magazine as one of the top 100 conservationists of the 20th Century.

Jim Holyan, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1986, in Wildlife and Wildland Recreation Management from Washington State University.

Career Highlights: Worked on a variety of wildlife species including northern spotted owls (*Strix occidentalis*), elk (*Cervus elaphus*), caribou (*Rangifer tarandus*), musk oxen (*Ovibos moschatus*), and North American pine marten (*Martes americana*). Worked on wolf/cougar winter predation study near Salmon, Idaho. Wolf Recovery Program 1997-2003.

Isaac Babcock, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1997, in Wildlife Biology from Oregon State University.

Career Highlights: Worked on wolf recovery in Yellowstone National Park and northwestern Montana, as well as helicopter capture with Hawkins and Powers Aviation (elk [*Cervus elaphus*], deer [*Odocoileus* spp.], and bighorn sheep [*Ovis canadensis*]). An accomplished 35mm photographer and currently working on a film documentary of wolves in Idaho. Wolf Recovery Program 1997-2003.

Kent Laudon, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1991, in Wildlife Management and Biology from University of Wisconsin at Steven's Point. Graduate courses in Wildlife and Forestry from University of Montana.

Career Highlights: Worked on a variety of wildlife species including northern spotted owls (*Strix occidentalis*), black bears (*Ursus americanus*), and cougars (*Felis concolor*). Worked on wolf/cougar winter predation study near Salmon, Idaho. Wolf Recovery Program 1997-2003. Also employed by Idaho Department of Fish and Game since October, 2000.

Jason Husseman, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1996, in Natural Resource Sciences (Wildlife Management), from Washington State University. Master's of Science degree, 2001, in Wildlife Sciences from the University of Idaho.

Career Highlights: Graduate thesis, "Prey Selection Patterns of Wolves and Cougars in East-central Idaho," studied effects of wolf and cougar predation on ungulates near Salmon, Idaho. Also worked on marbled murrelets (*Brachyramphus marmoratus*), small mammals (voles [*Microtus* spp.]), and silvicultural work. Wolf Recovery Program 1999-2000 and 2002-03. Also employed by Yellowstone Cougar Project, winter/spring 2003 and fall/winter/spring 2004.

Adam Gall, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1999, in Biology from Hope College (Michigan). Master's in Secondary Education, in progress, University of Idaho.

Career Highlights: Also worked on snowshoe hares (*Lepus americanus*) and wolf/cougar winter predation study near Salmon, Idaho. Wolf Recovery Program 2000-03.

Anthony Novack, NPT Wolf Recovery Program Biologist

Education: Bachelor's of Science degree, 1994, in Wildlife Ecology from University of Florida. Master's of Science degree, 2003, in Wildlife Ecology and Conservation from the University of Florida, Gainesville.

Career Highlights: Graduate thesis, "Impacts of Subsistence Hunting on the Foraging Ecology of Jaguar and Puma in the Maya Biosphere Reserve, Guatemala," studied food habits of large cats in areas subjected to human harvest and areas with full protection. Graduate student of the year-Master's research 2003. Peace Corps volunteer in Honduras, 1995-99. Wolf Recovery Program 2003.

Consuelo Blake, NPT Wolf Recovery Program Administrative Assistant

Education: Studied Geosciences at Harvard University and at the University of Colorado at Boulder.

Career Highlights: Involved with research projects for Harvard University and the Smithsonian Institute's Museum of Natural History. Has nearly a dozen years of other project research and office experience. Wolf Recovery Program 2003.

Jon Trapp, NPT Wolf Recovery Program Temporary Biologist/Graduate Student

Education: Bachelor's of Science degree, 1993, in Political Science from Northern Arizona University. Master of Arts degree, expected 2004, in Conservation Biology from Prescott College.

Career Highlights: Graduate thesis, "Wolf Den-site Selection in the Northern Rockies; A Multi-scale Analysis," studied wolf den-site characteristics at 2 levels of habitat selection. Air Force Intelligence Officer, 1993-2000. Worked with Mexican spotted owls (*Strix*

occidentalis lucida) and Mexican gray wolves (*Canis lupus baileyi*). Wolf Recovery Program 2003.

Barbara Trapp, NPT Wolf Recovery Program Temporary Biologist

Education: Bachelor's of Science degree, 1996, in Biological Sciences from Ohio University.

Career Highlights: Air Force Intelligence Officer, 1996-2000. Worked with Mexican spotted owls (*Strix occidentalis lucida*), Mexican gray wolves (*Canis lupus baileyi*), conducted stream habitat surveys for the U.S. Forest Service, and designed/developed database for Wolf Recovery program. Wolf Recovery Program 2003.

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CONTACTS

The Nez Perce Tribe's Idaho Wolf Recovery Program can be reached by the following:

Telephone:	(208) 634-1061
Fax:	(208) 634-3231
Mail:	P.O. Box 1922 McCall, ID 83638
Email:	cmack@nezperce.org jholyan@nezperce.org consuelob@nezperce.org

For information about the Nez Perce Tribe's Wildlife Program and to view the previous Wolf Recovery Program Progress Reports, please visit the following website:

http://www.nezperce.org/Programs/wildlife_program.htm

For information about wolf recovery in the Northern Rocky Mountains, please visit the following website:

http://www.westerngraywolf.fws.gov/

To report wolf sightings within Idaho:

Nez Perce Tribe's Idaho Wolf Recovery Program, McCall, ID	(208) 634-1061
Nez Perce Tribe's Wildlife Department, Lapwai, ID	(208) 843-2162
U.S. Fish and Wildlife Service, Boise, ID	(208) 378-5639
Idaho Department of Fish and Game, Boise, ID	(208) 334-3700

Or http://www2.state.id.us/fishgame/Info/ProgramsInfo/wolves/online_report.cfm

To report livestock depredations within Idaho:

USDA/APHIS/Wildlife Services, State Office, Boise, ID	(208) 378-5077
USDA/APHIS/Wildlife Services, District Supervisor, Boise, ID	(208) 378-5077
USDA/APHIS/Wildlife Services, District Supervisor, Gooding, ID	(208) 934-4354
USDA/APHIS/Wildlife Services, District Supervisor, Pocatello, ID	(208) 236-6921
USDA/APHIS/Wildlife Services, Wolf Specialist, Arco, ID	(208) 681-3127

To report information regarding the illegal killing of a wolf or a dead wolf within Idaho:

U.S. Fish and Wildlife Service Senior Agent, Boise, ID	(208) 378-5333

IDAHO WOLF PACK PROFILES

Bennett Mountain pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (1)
Recovery status in 2003	Non-breeding pair

Big Hole pack

Alpha pair (male, female)	B07, B11
Date Paired	March 1996
Years Produced (minimum litter size)	1998 (5), 1999 (3), 2001 (6), 2002 (3), 2003 (3)
Recovery status in 2003	Breeding pair

Buffalo Ridge pack

Alpha pair (male, female)	B93, B95
Date Paired	May 2001
Years Produced (minimum litter size)	2002 (7), 2003 (6)
Recovery status in 2003	Breeding pair

Castle Peak pack

Alpha pair (male, female)	B2, Unknown
Date Paired	January 2003
Years Produced (minimum litter size)	2003 (4)
Recovery status in 2003	Breeding pair

Chamberlain Basin pack

Alpha pair (male, female)	B09, B16
Date Paired	April 1995
Years Produced (minimum litter size)	1996 (4), 1997 (4), 1998 (4), 1999 (5), 2000 (8), 2001 (4), 2003 (2)
Recovery status in 2003	Breeding pair

Como Lake pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2002 (3)
Note	Confirmed by USFWS & MT Fish, Wildlife & Parks in 2002
Recovery status in 2003	Non-breeding pair

Cook pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (2)
Note	Pack retroactively confirmed for 2002
Recovery status in 2003	Breeding pair

Eagle Mountain pack

Alpha pair (male, female)	B136, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (2)
Recovery status in 2003	Breeding pair

Eldorado pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (2)
Note	Pack retroactively confirmed for 2002
Recovery status in 2003	Breeding pair

Five Lakes Butte pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2002 (2)
Recovery status in 2003	Non-breeding pair

Florence pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (2)
Recovery status in 2003	Breeding pair

Fox Creek pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (6)
Note	Confirmed by USFWS
Recovery status in 2003	Breeding pair

Galena pack

Alpha pair (male, female)	Unknown, B107
Date Paired	Fall/winter 2002
Years Produced (minimum litter size)	2003 (5)
Recovery status in 2003	Breeding pair

Gold Fork pack

Alpha pair (male, female)	B117, B129
Date Paired	??
Years Produced (minimum litter size)	2000 (2), 2001 (3)
Recovery status in 2003	Non-breeding pair

Gospel Hump pack

Alpha pair (male, female)	Unknown, B50
Date Paired	??
Years Produced (minimum litter size)	2000 (2), 2001 (7), 2002 (3), 2003 (4)
Recovery status in 2003	Breeding pair

Grassy Top pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	
Note	Confirmed by USFWS
Recovery status in 2003	Breeding pair

Hazard Lake pack

Alpha pair (male, female)	B105, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (5)
Recovery status in 2003	Breeding pair

Hemlock Ridge pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (5)
Recovery status in 2003	Breeding pair

Jureano Mountain pack

Alpha pair (male, female)	B106, Unknown
Date Paired	??
Years Produced (minimum litter size)	1997 (6), 1998 (4), 1999 (9), 2000 (6), 2001 (3), 2002 (5), 2003 (3)
Recovery status in 2003	Breeding pair

Kelly Creek pack

Alpha pair (male, female)	Unknown, B42
Date Paired	??
Years Produced (minimum litter size)	1997 (5), 1998 (6), 1999 (4), 2000 (2), 2002 (6), 2003 (2)
Recovery status in 2003	Breeding pair

Landmark pack

Alpha pair (male, female)	B33, B91
Date Paired	??
Years Produced (minimum litter size)	1996 (5), 1997 (4), 1999 (5), 2000 (8), 2001 (6), 2002 (11), 2003 (2)
Note	11 pups in 2002 represent double litter
Recovery status in 2003	Breeding pair

Lupine pack

Alpha pair (male, female)	B79, Unknown
Date Paired	??
Years Produced (minimum litter size)	2001 (2)
Recovery status in 2003	Non-breeding pair

Magruder pack

Alpha pair (male, female)	B110, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (6)
Recovery status in 2003	Breeding pair

Marble Mountain pack

Alpha pair (male, female)	B48*, Unknown
Date Paired	January 2000
Years Produced (minimum litter size)	2000 (2), 2001 (3), 2002 (3)
Recovery status in 2003	Non-breeding pair

Morgan Creek pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (2)
Note	Pack retroactively confirmed for 2002
Recovery status in 2003	Breeding pair

Moyer Basin pack

Alpha pair (male, female)	B97, B145
Date Paired	??
Years Produced (minimum litter size)	1997 (4), 1998 (4), 1999 (7), 2000 (5), 2001 (5), 2002 (4), 2003 (2)
Recovery status in 2003	Breeding pair

O'Hara Point pack

Alpha pair (male, female)	B111, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (7)
Note	Pack retroactively confirmed for 2002
Recovery status in 2003	Breeding pair

Orphan pack

Alpha pair (male, female)	B116, B61
Date Paired	January 2002
Years Produced (minimum litter size)	2000 (1), 2001 (1), 2003 (1)
Recovery status in 2003	Non-breeding pair

Painted Rocks pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	
Note	Confirmed by USFWS
Recovery status in 2003	Non-breeding pair

Red River pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (4)
Note	Pack retroactively confirmed for 2002
Recovery status in 2003	Breeding pair

Sapphire pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (3)
Note	Confirmed by USFWS
Recovery status in 2003	Non-breeding pair

Scott Mountain pack

Alpha pair (male, female)	B115, B78
Date Paired	??
Years Produced (minimum litter size)	2001 (4), 2002 (2), 2003 (5)
Recovery status in 2003	Breeding pair

Selway pack

Alpha pair (male, female)	B05, B10
Date Paired	August 1995
Years Produced (minimum litter size)	1996 (2), 1999 (2), 2000 (4), 2001 (3), 2002 (3), 2003 (3)
Recovery status in 2003	Breeding pair

Soldier Mountain pack

Alpha pair (male, female)	B149, B150
Date Paired	??
Years Produced (minimum litter size)	2003 (4)
Recovery status in 2003	Breeding pair

Steel Mountain pack

Alpha pair (male, female)	R241, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (6)
Note	R241 migrated to CIEPA from Yellowstone NP
Recovery status in 2003	Breeding pair

Thunder Mountain pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	1998 (6), 1999 (7), 2000 (3), 2001 (9)
Note	Pack status uncertain after deaths of B22 in 2002 and B72 in 2003
Recovery status in 2003	Non-breeding pair

Timberline pack

Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	2003 (4)
Note	Possible double litter in 2003
Recovery status in 2003	Breeding pair

Twin Peaks pack	
Alpha pair (male, female)	Unknown, Unknown
Date Paired	??
Years Produced (minimum litter size)	1998 (3), 1999 (4), 2001 (7)
Note	Evidence of reproduction in 2003, but no official count
Recovery status in 2003	Non-breeding pair
Willow Creek pack	
Alpha pair (male, female)	Unknown, B103?
Date Paired	??
Years Produced (minimum litter size)	
Recovery status in 2003	Non-breeding pair
Wolf Fang pack	
Alpha pair (male, female)	B132?*, B38
Date Paired	January 2000
Years Produced (minimum litter size)	2000 (5), 2001 (8)
Note	No contact with pack since 2002
Recovery status in 2003	Non-breeding pair

* Deceased

Contributing authors: Tom Meier and Ed Bangs (USFWS); Doug Smith (Yellowstone Center for Resources); Liz Bradley (University of Montana); and Jon Trapp (Prescott College).

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