

# Rocky Mountain Wolf Recovery 2001 Annual Report

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



*photo: Isaac Babcock*

This cooperative annual report presents information on the status, distribution and management of the recovering Rocky Mountain wolf population from January 1, 2001 through December 31, 2001. It is also available at <http://mountain-prairie.fws.gov/wolf/annualrpt01/>

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## **SUMMARY**

Wolves in the Northern Rocky Mountains (Idaho, Montana and Wyoming) continue to increase in distribution and numbers (Figures 1,5). Estimates of wolf numbers at the end of 2001 were 261 wolves in the Central Idaho Recovery Area, 218 in the Greater Yellowstone Recovery Area, and 84 in the Northwest Montana Recovery Area (Figure 1, Tables 1,2,3,4). By state boundaries, there were an estimated 251 wolves in the state of Idaho, 189 in Wyoming and 123 in Montana. Of the 63 groups of 2 or more wolves, at least 34 wolf packs met the definition of “breeding pair,” an adult male and female raising 2 or more pups until December 31. This made 2001 the second year in which recovery criteria have been met for removing wolves from the Endangered Species list (Table 4). It is expected that the process of delisting could begin in 2003 if state management plans are in place. Livestock depredations in 2001 included 40 cattle, 138 sheep, 6 dogs and 4 llamas confirmed lost to wolves. In response, 18 wolves were translocated and 19 killed within the 3-state area (Table 5). As new packs are formed between the original core recovery/release areas, the three populations increasingly resemble and function as a single, large population (Figure 1). Approximately 18 research projects are underway, examining wolf population dynamics, predator-prey interactions and livestock depredation.

## **BACKGROUND**

Gray wolf populations (*Canis lupus*) were extirpated from the western U.S. by the 1930s. Subsequently, wolves from Canada occasionally dispersed south into Montana and Idaho but failed to survive long enough to reproduce. Public attitudes toward predators changed and wolves received legal protection with the passage of the Endangered Species Act (ESA) in 1973. Wolves began to successfully recolonize northwest Montana in the early 1980s. By 1995, 6 packs lived entirely in northwestern Montana. In 1995 and 1996, 66 wolves from southwestern Canada were reintroduced to Yellowstone National Park (YNP) (31 wolves) and central Idaho (35 wolves).

The Rocky Mountain wolf population comprises 3 recovery areas: The Northwest Montana recovery area (NWMT, Figs.1, 2 ) includes northwest Montana and the northern Idaho panhandle. The Greater Yellowstone recovery area (GYA, figs. 1, 3 ) includes Wyoming and adjacent parts of Idaho and Montana. The Central Idaho recovery area (CID, Figs. 1, 4 ) includes central Idaho and adjacent parts of southwest Montana. Wolves in the 3 recovery areas are managed under different guidelines, depending upon their designated status under the ESA. NWMT wolves are classified as endangered, the most protected classification under the ESA. GYA and CID wolves are classified as nonessential experimental populations and managed with more flexible options than the endangered population. The Service believes that 30 breeding pairs of wolves, with an equitable and uniform distribution throughout the 3 states for 3 successive years would constitute a viable and recovered wolf population. If other provisions required to delist are met, primarily adequate regulatory mechanisms in the form of state wolf management plans that would reasonably assure that the gray wolf would not become threatened or endangered again, the Service would propose delisting in 2003.

## **NORTHWESTERN MONTANA WOLF RECOVERY AREA**

### ***Personnel***

Wolves in Montana (including the NWMT recovery area and part of the GYA and CID recovery areas) are monitored by U. S. Fish and Wildlife Service (USFWS) biologists Joe Fontaine in Helena and Tom Meier in Kalispell, and Turner Endangered Species Fund (TESF) biologist Val Asher in Bozeman. In 2001 they were assisted by seasonal USFWS employees Andreas Chavez and Paul Frame, and work/study employee Therese Hartman. Other USFWS personnel in Montana include wolf recovery coordinator Ed Bangs (Helena), and law enforcement agents Roger Parker (Billings), Rick Branzell (Missoula), Doug Goessman (Bozeman) and Kim Speckman (Great Falls). In the part of southwest Montana that lies within the CID recovery area, wolves are monitored cooperatively by the Nez Perce Tribe (NPT), USFWS and TESF.

Wolf control activities in all recovery areas are carried out by USDA/APHIS/Wildlife Services (WS). In that agency, Montana western district supervisor David Nelson took the job of State Director of WS in Wisconsin, and was replaced in Helena by Kraig Glazier. New wildlife specialists in the western district included J. Bart Smith in Deer Lodge and Chad Hoover in Whitehall. Other WS personnel involved in wolf control or management in 2001 included state director Larry Handegard, eastern district supervisor Paul J. Hoover and wildlife specialists James Rost, Michael Hoggan, Graeme McDougal, Theodore North, and James Stevens. The Montana WS operation covers parts of the GYA, CID, and NWMT wolf recovery areas.

### ***Monitoring***

Seven wolves from the Castle Rocks (formerly Boulder) pack were darted and radio-collared in January 2001 (see Livestock Depredations and Management, below). Another 7 wolves from 4 packs were trapped and radio-collared in summer 2001. Wilderness trapping efforts by TESF and USFWS biologists in the Danaher and Sun River valleys were unsuccessful and more back-country work will be done in 2002. In addition, 8 collared wolves from the Gravely Pack (GYA) were released in the Yaak River valley in December 2001 (see Livestock Depredations and Management, below). At the end of 2001, 26 radio-collared wolves (31% of the population) from 13 different packs or pairs were being monitored in the NWMT area. These packs, together with uncollared packs that have been documented, totaled about 84 wolves in the area (Figs 1, 2; Tables 1, 4). Radio-collared wolves were located from airplanes approximately twice per month. Collared wolves in and around Glacier National Park (GNP) were located more frequently from the ground by GNP and USFWS staff and volunteers. Packs included in the NWMT recovery area as of December 2001 were Apgar (formerly South Camas), Kintla (Formerly North Camas), Murphy Lake, Ninemile, Castle Rock (formerly Boulder), Whitefish, Grave Creek, Spotted Bear, Danaher, Fishtrap, Gates Park, Fish Creek, and Lupine. The Apgar, Kintla, and Castle Rocks packs were renamed to more accurately reflect their location and eliminate confusion with earlier packs of the same name. In addition to these established packs were the 8 wolves released in the Yaak drainage in December 2001, and five newly established pairs of wolves (Little Thompson, Lazy Creek, Hog Heaven, Clearwater, and Trout Creek) discovered in winter 2001-2002. Packs of wolves in the Yaak, Kootenai, Wigwam, Spruce

Creek and Belly River drainages of Canada may stray into Montana, but den and spend most of their time in Canada and are not counted in the NWMT population.

Reproduction was confirmed in the Apgar, Kintla, Ninemile, Whitefish, Grave Creek, Spotted Bear, Fishtrap, Gates Park, Fish Creek and Lupine packs. In order to count as a breeding pair toward recovery goals, an adult male and female and at least two pups must be present in the pack at year's end. The Apgar pack contained only one adult after the death of the breeding female, and the Whitefish pack and Fish Creek Packs had only one pup each, so only seven breeding pairs were counted toward recovery goals. At least 8 wolves died in NWMT in 2001. This count does not include animals that disappeared whose fates were unknown. The deaths of 4 wolves are still under investigation, but it is likely that the most common cause of death continues to be illegal killing. Three wolves were removed in control actions after livestock depredations. One collared wolf was known to have dispersed from its pack, a Ninemile wolf that was killed in Idaho, and two collared Castle Rocks wolves disappeared and may have dispersed or been killed.

### **Ongoing Research**

*Wolf Habitat Analysis: An investigation into the preferences of wolves in the Northern Rocky Mountains and future colonization possibilities.*

Investigators: John K. Oakleaf and Dr. Dennis L. Murray, Department of Fish and Wildlife Resources, University of Idaho.

Cooperators: U.S. Fish and Wildlife Service, Nez Perce Tribe, Yellowstone National Park, University of Montana, Yellowstone to Yukon Conservation Initiative, Defenders of Wildlife.

Abstract: Gray wolf populations have persisted and expanded in the Northern Rocky Mountains since 1986, while reintroduction efforts in Idaho and Yellowstone have further bolstered the population. However, rigorous and comprehensive studies of wolf habitat selection have yet to occur in this region. Our focus is to examine wolf-habitat relationships and to determine the amount of available habitat within the region. These data should help biologists in the following six areas: (1) defining dispersal corridors between the three recovery areas, (2) refining searches for unknown packs, (3) relocating wolves to quality unoccupied areas, (4) identifying private lands surrounded by quality wolf habitat for conservation easements, (5) description of the wolf carrying capacity for the Northern Rocky Mountains, and (6) collation of baseline data for state agencies to consider when developing wolf management plans. Further, by establishing the dispersal corridors for a long distance disperser (e.g. wolves), a better understanding of habitat connectivity in the Northern Rockies should be established for other mammal species (e.g. grizzly bears, lynx, and wolverines). To date, we have compiled several data layers and initiated a preliminary analysis of wolf home range size attributes, with additional analyses to be completed in the next 3-5 months.

*Wolf and Livestock Conflicts in Montana, Idaho, and Wyoming*

Investigators: Elizabeth Bradley and Dr. Daniel Pletscher, University of Montana.

Cooperators: U.S. Fish and Wildlife Service, Turner Endangered Species Fund, Defenders of Wildlife, National Fish and Wildlife Foundation.

We are beginning a research project to investigate several aspects of livestock depredation and management in the recovery areas of Montana, Idaho, and Wyoming. This project has 3 main objectives: 1.) Determine factors that predispose cattle ranches and site specific areas on cattle ranches to wolf predation. 2.) Evaluate translocation of depredating wolves as a method for reducing conflicts with livestock. 3.) Evaluate lethal control of depredating wolves as a method for reducing conflicts with livestock. For Objective 1 we will be interviewing ranchers that experienced confirmed cattle depredations from 1987-2001 to assess landscape variables and ranch characteristics associated with depredation events. For Objectives 2 and 3 we will compile information on all translocation and lethal control events up to the present to assess the effectiveness of these methods for reducing depredation problems. This project will run from September 2001 through December of 2003.

*Outreach*

Program personnel presented informational talks and status reports throughout the year to various federal and state agencies, public and private institutions, special interest groups, and rural communities. During 2001, USFWS project personnel gave public presentations to more than 2000 people. Additionally, scores of informal presentations to small groups or individuals were conducted during this time. Numerous radio and television interviews and news spots featuring project personnel were broadcast locally and nationally.

*Livestock Depredations and Management*

All reports of wolf depredation on livestock are investigated by Wildlife Services, who then take appropriate control action in consultation with USFWS. Confirmed losses in 2001 included 8 cattle, 5 sheep and 4 llamas. In wooded and/or mountainous country, livestock carcasses may not be found promptly, if ever. It can be difficult or impossible to confirm wolf depredation when livestock carcasses are eaten or decomposed. Therefore, confirmed losses represent only a portion of actual losses. Whether this is a large or small portion of such losses is the subject of much controversy and of research (see Diamond Moose calf mortality study, Central Idaho section). Depredation control efforts resulted in the killing of 3 wolves. Nonlethal control methods included the pre-emptive moving of 5 wolves from livestock areas, trapping and hazing of packs to move rendezvous sites away from livestock, nonlethal ammunition, and Radio Activated Guard (RAG) boxes. Most packs in NWMT, as in the GYA and CID recovery areas, were not involved in any confirmed livestock depredations in 2001.

*Castle Rocks (formerly Boulder) Pack:* Seven wolves from the Boulder pack were captured by helicopter in January 2001. Two, including the alpha male, were collared and released. Four 9-

month-old pups and a 2-year-old female were removed in order to decrease the size of the pack and help prevent cattle depredations. The five wolves were held in a pen near Bozeman until March 28, when they were released in the Parsnip Creek drainage in northwestern Montana, just west of Lake Koochanusa. The release site was about 200 miles northwest of their home territory. It was hoped that the 90-mile-long unfrozen lake would keep the wolves in extreme northwestern Montana, but within a few weeks all five had moved southeast to the Flathead Indian Reservation (nearly halfway home). One female pup continued southeast to within 10 miles of the Boulder Pack territory, where she lost her collar. The adult female and the single male, now a yearling, have settled into an area west of Flathead Lake (Hog Heaven Pack). One of the other female yearlings is associating with at least two other wolves in the Little Thompson River area (Little Thompson Pack). The fifth transplant, another yearling female, has been missing since summer 2001. None of the five wolves transplanted to Parsnip Creek has been implicated in any livestock depredation. One calf was confirmed injured by wolves in the Castle Rocks pack territory in November 2001.

*Fishtrap Pack:* The Fishtrap pack, consisting of four uncollared wolves, killed two llamas in McGinnis Meadows in January 2001. Neck and foot snares were set by Wildlife Services and USFWS in an unsuccessful attempt to radio-collar the pack, which moved away from the area after the depredations. Two adult wolves were captured and radio-collared in summer 2001. A confirmed attack on a cow in the Indian Creek drainage in late August 2001 may have been caused by this pack.

*Ninemile Pack:* A llama was confirmed killed by the Ninemile wolves in June 2001. A black male wolf was trapped and released on site. Another llama was killed in August, and an uncollared black wolf was shot at the carcass. Wolf 820, the adult male collared in June, was lethally removed from the pack in October. At least 4 sheep were killed by the Ninemile Pack in December.

*Grave Creek Pack:* The Grave Creek pack killed a pregnant cow in the Grave Creek/Deep Creek area southeast of Eureka in June 2001. The alpha female was trapped, fitted with a new radio collar and released. In early July, the wolves were seen chasing cattle in Grave Creek. Traps were again set and a yearling female wolf was captured and released. The pack had established a rendezvous site in an area where cattle were grazed, so biologists entered the site and disturbed the wolves, hoping to move them out of the area. The attempt was successful, as the wolves moved about 10 miles to the upper Stillwater River and no further depredations or cattle harassment were reported.

*Lone wolves:* A series of attacks on livestock on the East Front of the Rocky Mountains occurred from January through April 2001. In all, 5 calves and a sheep were confirmed killed by a lone wolf. The uncollared black adult male, an older animal with some missing teeth, was trapped and killed in April.

## **GREATER YELLOWSTONE WOLF RECOVERY AREA**

### **Personnel**

Only two full-time employees worked for the Yellowstone Wolf Project in 2001, Project Leader Douglas Smith and Program Assistant Debra Guernsey. Kerry Murphy, the old Project Biologist has not been replaced. Rick McIntyre worked as a seasonal employee on the Druid Peak Pack Road Management Project. Erin Cleere also worked on the Road Management Project but through the Yellowstone Park Foundation (YPF). Linda Thurston worked as a technician for the Wolf Project also through funds raised by YPF. Volunteers staffed the two early (Nov-Dec) and late (March) winter study periods.

USFWS Wyoming wolf biologist Mike Jimenez was assisted in summer 2001 by seasonal biologist Paul Hansen. USFWS law enforcement agents in Wyoming are Dominic Domenici (Casper), Tim Eicher (Cody) and Roy Brown (Lander).

Monitoring of wolves in the Montana portion of the GYA is headed up by Val Asher of the Turner Endangered Species Fund, along with other TESSF, USFWS and NPS personnel and volunteers.

Wyoming employees of USDA/APHIS/Wildlife Services who were involved in wolf control or management in 2001 included state director Rod Krischke, district supervisors Sam Crowe and Merrill Nelson, wildlife specialists Jack Clucas, Arnold DeBock, Casey Hunter, Michael Peterson, Marshal Robin, Jed Edwards, Tracy Frye, Stephen Moyles, and James Pehringer, and pilot Ted Jensen. Wolf control in the Montana portion of the GYA is carried out by the staff of the Montana WS office, as described above for the NWMT recovery area.

### **Monitoring**

#### ***Yellowstone National Park***

Thirty-two wolves were captured by helicopter darting in January and December 2001. Two other wolves outside YNP were captured and collared by Wildlife Services. A special December capture operation was conducted in order to catch wolves before they followed migrating elk out of YNP and into the Bridge-Teton Wilderness, where helicopter darting is not permitted. In all, 23 males and 11 females were captured, 25 pups and 9 adults. Wolves were captured in the following packs: Sheep Mountain (2), Swan Lake (3), Leopold (4), Rose Creek II (2), Druid Peak (8), Yellowstone Delta (8), Nez Perce (4), and Chief Joseph (3). Besides attachment of radio collars, standard measurements and blood (for genetics and disease monitoring) were collected on all wolves handled.

At the end of 2001, 131 wolves in 10 packs (including 8 breeding pairs) were present in YNP. At least 43 pups (33% of the population) survived to the end of 2001. There were 42 collared wolves (32% of the population) in YNP at the end of 2001. Collared wolves were located approximately 4 times/month and more frequently during the 30-day winter study periods.



Two new packs formed in 2001. A disperser from the Leopold pack started the Cougar Creek pack near West Yellowstone, Montana. In early 2001 the Tower/Rose Creek sub-group splintered, but one wolf from this group returned to the territory with another uncollared wolf in late 2001. Currently they are a pair and named the Tower pack.

Pack size in YNP ranged from 2 to 37 wolves and averaged 13.1. The near-record size of the Druid Peak pack is not expected to be maintained. In late 2001 they were already traveling in 3 different sub-groups. This pack was also the only pack to have more than one litter in 2001 (at least 2 litters were produced and 4 females localized).

At least 16 wolves died in the GYA in 2000. These mortalities do not include pups that died within the first 4 months of life. Thirteen wolves died due to human-caused mortality (9 in control actions, 2 to vehicles, and 2 to illegal killing) and 3 died due to natural causes (prey, drowning, and other wolves). Seven wolves dispersed and one collared wolf is missing.

### ***Wyoming outside YNP***

At the end of 2001, at least 56 wolves were present in Wyoming outside of Yellowstone National Park (Table 2, Figures 1,3). These included at least 48 wolves in packs with radio collars (Teton, Gros Ventre, Washakie, Sunlight Basin, Absaroka, and Beartooth) and 8 in new, uncollared packs (Greybull River, Pinedale). We radio collared 10 wolves in 2001 and monitored a total of 13 radio collared wolves (23% of the population). Collared wolves were located at least twice a month by airplane and more often by ground crews. Five (possibly 6) of these packs produced a minimum of 24-27 pups. Average litter size was 4.8 and average pack size was 8.7 wolves.

### ***Montana portion of GYA***

Six packs of wolves that live partly or entirely within the Montana portion of the GYA have been formed in recent years by wolves moving out of Yellowstone National Park. These include the Sheep Mountain, Mill Creek, Taylor Peaks, Freezout, Gravely, and Red Lodge Packs (Figure 2). The Chief Joseph Pack, though classified as a YNP pack, also spends considerable time outside of the park. Of an estimated 40 wolves in the area during 2001, 18 were radio-collared. Packs were monitored throughout the year by TEF, NPS and USFWS personnel by radio telemetry, visual observation and snow tracking. Four of the packs produced pups, one pack (Taylor Peaks) failed to produce pups, and the reproductive status of the Mill Creek and Red Lodge packs is unknown. At least 8 wolves from the area died in 2001, including 5 killed in depredation control actions (Table 2).

### **Ongoing Research**

#### ***Research in Yellowstone National Park***

Wolf-Prey Relationships: Wolf-prey relationships were documented by observing wolf predation directly and by recording characteristics of wolf prey at kill sites. Wolf packs were monitored during two winter-study sessions, periods of time in which wolves were intensively

radio-tracked each day for 30 consecutive days during March and November-December. The Leopold, Rose Creek II, and Druid Peak Packs were monitored by teams of two persons from the ground and from aircraft; the Swan Lake, Tower, Chief Joseph, Mollie's, Nez Perce, Sheep Mountain, Yellowstone Delta, and Cougar Creek Packs were monitored from aircraft only. Behavioral interactions between wolves and prey, predation rates, the total time wolves fed on their kills, percent consumption of kills by wolves and scavengers, characteristics of wolf-prey (e.g., nutritional condition), and characteristics of kill sites were recorded and entered into a database. The abundance and sex-age composition of elk within wolf pack territories were also estimated from the ground and from fixed-wing aircraft.

Observations of wolf-prey interactions indicate that a predatory sequence consists of six distinct behaviors that occur in a flexible framework when wolves attack prey. Bison were more difficult for wolves to kill and wolf behavior toward bison was different than when trying to kill an elk.

Three graduate students continue to gather data on elk habitat relationships, distribution, mortality, and age structure changes since wolf reintroduction. Preliminary data indicate that elk distribution has changed little post-wolf except that elk were summering at higher elevations which also could be an effect of the 3-year drought.

*Composition of Wolf Kills:* Project staff detected 161 definite and 196 probable kills made by wolves in 2001, including 311 elk (87% of total), 6 bison, (2%), 1 moose (<0.5%), 6 deer (2%), 1 pronghorn (<0.5%), 6 coyotes (2%), and 26 unknown prey (7%). The composition of elk kills was 33% calves (0-12 months), 36% cows, 17% bulls, 4% elk of unknown sex, and 10% elk of unknown sex and age. Bison kills included 3 calves, 2 yearlings and 1 adult, all of unknown sex. Of the bison kills, 1 was killed during mid-winter (February), 2 were killed in early spring (April), and 3 were killed during the summer months. The Nez Perce Pack made two of the summer kills; the third was made by the Druid Peak Pack. The moose and pronghorn kills were made by the Druid Peak Pack; the moose kill during late winter and the pronghorn kill in October.

*Winter studies:* During the March winter study, wolves were observed for 261 hours from the ground. The number of days wolf packs were located from the air ranged from 10 (Yellowstone Delta) to 21 (Leopold, Rose Creek II, and Druid Peak). One hundred and eight definite or probable wolf kills were detected, including 98 elk, 2 mule deer, 1 moose, and 7 prey of unknown species. Among elk, 31 (32%) were calves, 40 (41%) were cows, 18 (18%) were bulls, 6 (6%) were of unknown sex, and 3 (3%) were of unknown sex and age. During the November-December winter study, wolves were observed for 174 hours from the ground. The number of days wolf packs were located from the air ranged from 3 (Yellowstone Delta) to 12 (Swan Lake and Leopold). Forty-one definite or probable wolf kills were detected, including 35 elk, 2 coyotes, and 4 unknown prey. Among elk, 15 (43%) of the kills were calves, 11 (31%) were cows, 6 (17%) were bulls and 3 (9%) kills were adult elk of unknown sex. Wolves that resided on the northern range averaged 1.8 elk/wolf/30-day study period during winter.

Wolf Behavioral Studies: Completed research on wolf pack leadership indicates that breeding dominant wolves overwhelmingly guide pack activities. This is true even when more than one female breeds. Dominant breeding males tended to lead more than dominant breeding females but variation was high.

Studies of parental care at dens indicates a strong division of labor among sex and age classes. The breeding female was the primary care giver to pups with the breeding male being the primary provider. Subordinate wolves will, however, both take care of pups and hunt. Again variation among individual wolves was high.

Other Carnivore Studies: In addition to studies on wolf-prey relationships, YNP staff and researchers from the Biological Resources Division (BRD), the Hornocker Wildlife Institute (HWI), U.S. Forest Service (USFS), and the state of Montana continued work on carnivore interactions on the northern range of YNP and Gallatin National Forest. Preliminary results indicate that grizzly bears were drawn toward hunter activity, cougars were repulsed, and wolves were indifferent. Recently a sample of each carnivore was fitted with GPS collars to examine spatial and temporal overlap in landscape use but results of those studies are not yet analyzed. Other data indicate that GPS locations for wolves were not adequate to determine kill rate at least at the pack sizes and locations/day studied.

Scavenger Studies: A study examining the fate of wolf-killed carcasses is also not fully completed but preliminary results indicate that wolves can lose a significant portion of meat to scavengers. The amount lost was related to pack size. Also, data indicate that many different species, including the threatened grizzly bear, benefit from wolf-provided carcasses.

Wolf Genetics: Wolf genetic studies continued. Three publications are in preparation. This continues to be a collaborative work between Diversa Corporation, Celera Agen Corporation, John Hopkins University, Sidney Kimmel Cancer Center, and the Yellowstone Center for Resources.

Vegetation Studies: Results of a published study (Ripple et al. 2001) show that wolves may be having an effect on aspen recruitment in YNP. Mesic areas of high wolf use received less elk use that was correlated with significantly greater growth of aspen saplings. Research is ongoing.

Visitor & Traffic Management: Since 1997 the Druid Peak pack has denned in Lamar Valley 600 meters from the road. Their daily road crossings have generated tremendous visitor interest. More visitors each year have flocked to Lamar Valley to see a wolf. In 2000 and 2001 private funding sources were sought by the Yellowstone Park Foundation to hire people to help manage the situation. In 2001 Rick McIntyre and Erin Cleere were hired to work on the project. In short, they prevented vehicle accidents and protected wolves in an often chaotic setting. Wolves attempted to cross the road in view of visitors 689 times, 216 (31%) of those times visitor disturbance prohibited the wolf from crossing. Wolves were in view for 368 hours (30% more than last year) and 11,210 people saw wolves (up from 8,145 in 2000).

**Research in Wyoming outside Yellowstone National Park**

Winter prey selection of wolves in the Gros Ventre River drainage

Cooperators: USFWS, USFS, Grand Teton National Park, and the National Elk Refuge.

We monitored wolves from December 10, 2000 thru March 15, 2001 near Jackson Hole, Wyoming to: 1) determine wolf distribution and occurrence, 2) determine winter food habits of wolves, and 3) describe the behavioral response of elk to the presence of wolves.

*Wolf Distribution:* In 2001, at least 2 wolf packs resided in the Jackson Hole area. We located radio collared wolves several times per week and estimated home ranges using 95% minimum convex polygons. The Teton Pack (12 wolves) established a home range using the Gros Ventre River drainage and the northeastern corner of Grand Teton National Park (Figure 3). There were no radio collared wolves in the Gros Ventre Pack (4-7 wolves) during winter 2001. Based on wolf observations and wolf tracks in the snow, we estimated that the pack’s home range overlapped with the Teton Pack near the 3 state feed grounds along the Gros Ventre River and extended further east up the Gros Ventre drainage. Gros Ventre wolves were only seen a few times on the National Elk Refuge throughout the entire 2001 winter.

*Food Habits:* During winter 1999/2000 , we located 51 ungulates killed by wolves from the Teton and Gros Ventre Packs. Wolves killed 48 elk, 2 coyotes, and 1 beaver. Fifty-six percent of the elk killed were calves and 44% were adult cows. The mean age of adult elk killed by wolves was 9 years and the oldest elk killed was 16 years old. Mean consumption of carcasses was 84%. Due to high consumption of calf carcasses, it was not possible to determine sex on most of the calves killed.

In winter 2001, only the Teton Pack in the Gros Ventre drainage was radio collared and our field season was affected by poor snow cover on roads used for snowmobile access into areas where wolves hunted. We examined 19 wolf kills located by aerial telemetry and by snow tracking wolves from the Teton Pack. Wolves killed 18 elk and 1 coyote. Fifty percent of the elk killed were calves, 44% were cows, and 5% were bulls. The mean age of adult elk killed by wolves was 10 years and the oldest elk killed was 15 years old. Mean consumption of carcasses was 87%.

Gros Ventre River Drainage		National Elk Refuge Calf/cow Ratios	
Calf/cow Ratios		(Source: Bruce Smith, NER)	
(Source: Wyoming Game and Fish)			
<u>Year</u>	<u>Calves/100 cows</u>	<u>Year</u>	<u>Calves/100 cows</u>
1997	14.0	1997	17.9
1998	17.0 – (wolves recolonize area in 1998) –	1998	16.7
1999	28.0	1999	18.8
2000	29.0	2000	24.8
2001	31.0	2001	24.1
2002	17.0	2002	20.1

*Elk Behavior:* The Teton and Gros Ventre Packs hunted elk, as they did the previous winter, on 3 state feed grounds located 5 miles apart along the Gros Ventre River drainage. Approximately 600-800 elk were fed hay in each feed ground. We observed elk responding to the presence of wolves in winter 2001 in the same manner as they responded to wolves during winter 2000. When wolves hunted near the northern (Alkali) feed ground, elk routinely left the area and dispersed to the middle (Cabin) feed ground. When wolves hunted elk near the southern (Fish Creek) feed ground, elk also dispersed to Cabin feed ground. Throughout the winter, about 2000-2500 elk frequented Cabin feed ground. Even though wolves killed elk on Cabin feed ground, elk often remained in the area. We did not detect any surplus killing. Alkali feed ground had considerably more tree cover around its perimeter, while Fish Creek feed ground had deeper snow cover. Cabin feed ground was surrounded by relatively open sagebrush. Winter 2001 had less snow fall than winter 2000, however we still propose the hypothesis that elk congregated in larger herds as a predator defense strategy and preferred Cabin feed ground due to its relatively lower snow cover and better visibility to see approaching predators. For the second year in a row, the increased number of elk at Cabin feed ground became very controversial as the state game management agency was forced to adjust its feeding program.

### ***Research in the Montana portion of the Greater Yellowstone Recovery Area***

#### *Factors affecting wolf-elk interactions in the Greater Yellowstone Area:*

Investigators: Scott Creel, Bob Garrott, Justin Gude, John Winnie, Eric Bergmann, Thain Cook, Knut Solberg (Montana State University).

Cooperators: Montana Fish, Wildlife & Parks, Yellowstone National Park, USFWS.

The wolf population reintroduced into Yellowstone National Park has grown steadily since 1995, expanding in both numbers and geographic distribution. With this growth has come recolonization by wolves of areas outside of Yellowstone National Park. The effect of wolf recolonization on the numbers, distribution and behavior of elk will be a contentious issue in the statewide management of both wolves and elk. In anticipation of federal delisting of the wolf (beginning perhaps as early as 2003) data on wolf-elk interactions in areas outside of YNP will be critical. This study will collect data on wolf-elk interactions from five sites in the Greater Yellowstone Ecosystem (one in YNP in the Madison-Gibbon-Firehole area, and 4 outside the park). Data collection will include (1) monitoring trends in elk population sizes and recruitment, (2) quantifying offtake by wolves, (3) examining interactions between the distributions and movements of elk and wolves, and (4) examining behavioral responses of elk to the risk of predation. In addition, we will use noninvasive physiological assays of pregnancy rates and stress hormone levels in elk, to test for sublethal effects on fitness. Analysis will include comparisons among the five sites, which differ with respect to fundamental variables expected to affect the rate of predation (e.g. snow depth, herd size), and comparisons within sites of pre-wolf and post-wolf data on population size and demography. Pre-wolf data extend as far back as 75 years, for some sites.

*Evaluation of Electronic Aversive Conditioning Methods for Reducing Wolf Predation on Livestock*

Investigators: Val Asher (TESF), John Shivik (USDA/APHIS/WS), Liz Bradley (TESF) Kyran Kunkel (TESF), Mike Phillips (TESF), Ed Bangs (USFWS).

In 2001 we placed 2 packs of wolves into captivity on the Flying D ranch near Bozeman, MT. We received the first pack on January 16, 2001. We captured 5 wolves from the Boulder pack near Avon, MT as a proactive measure to reduce the number of individuals in the pack to deter depredations. By removing some members of the pack the alpha pair would have less offspring to provide for and may be less prone to kill cattle. The 5 wolves removed consisted of 4 pups and 1 yearling. We kept them in the Flying D pen for 10 weeks to aid in deterring homing behaviors before we relocated them approximately 200 air miles from their natal territory to northwest Montana on March 28. Three of these wolves have settled into areas (Hog Heaven and Little Thompson River) west of Flathead Lake. These two new packs will probably reproduce and contribute to recovery in 2002. One pup slipped its collar approximately 10 miles from its natal territory and is presumed to have made it back to its original pack. The only depredation attributed to the original Boulder Pack (now called the Castle Rocks Pack) in 2001 was the wounding of a calf that was discovered after roundup.

On April 27, we placed one black yearling captured by Wildlife Services into the Flying D pen after evidence showed an uncollared pack was killing sheep in the Gravelly range. The Gravelly pack continued to kill sheep and a control action was started. The control action was delayed after finding 6 seven-week-old pups with the adults. The pups were dug out of the den and brought to the Flying D pen on June 6. On June 7, the adult male was killed and the alpha female was caught and brought to the Flying D pen to be reunited with the pups and the yearling.

We allowed the pack to acclimate in the pen for two weeks before scheduling a capture to fit electronic training collars on the 2 adults. We made improvements to the training collars by incorporating a sensor that alerted biologists if the collar was activated. We also noted battery drain and the collars were refurbished. We placed the new collars on the 2 adult wolves on July 30. During the next few weeks, we attempted to find 2 beef calves but were unsuccessful due to missing the early Feb/March local calving season. On August 20, we took a collar to the pen to test the range of the telemetry. We discovered that the range was less than 10 feet. We sent two of the faulty collars back to NWRC to be refurbished. We left the remaining two collars on the wolves.

On September 10, we tested the collars using a beef hide in the pen. We conducted the test from 11am to 7 pm. No wolves approached the hide. We conducted the same test on September 11 from 10 am to 1 pm. Again, no wolves approached the hide. On September 14, we placed a meat based scent post and buried the triggering mechanism. No wolves approached the scent post. We believe that there was the remote possibility that the wolves could have been shocked as we drove away from the pen to get to the observation ridge.

Conclusions: We conducted four tests to determine if the collars were functional. We observed no attempts to approach the beef hide or the meat-based scent post. These tests were inconclusive. This could have been due to the wary behavior previously observed of wild wolves in a captive situation. The wolves were not acting naturally and we did not witness the behaviors of a correction. We had no good evidence that the collars were working which may have contributed to no visual signs of a correction if they did come within range of the triggering mechanism.

Another problem we had was acquiring beef calves late in the season. We noted in the 2000 study that a small beef calf was apparently seen as vulnerable by the wolves. Once calves exceeded a certain size they seemed to be less vulnerable and the wolves were less likely to challenge the calf. We need to find a year round source of calves and natural prey before we can follow the current testing protocol.

We recommend that further study should be done on captive, socialized wolves. The problems of stress associated with captive wild wolves would be less for socialized wolves. We have no recommendations for reducing the wary behavior of wild wolves in captivity other than we feel that having an intact pack with decision makers (i.e. alpha pair) would increase the odds of wolves challenging a calf in the pen.

The Gravelly wolves were released in the Yaak River valley in northwest Montana on December 19, 2001.

Sheep Mountain update: Two of the three Sheep Mountain pack members contributed to wolf recovery by siring pups to two females in 2001. Wolf #189M and Wolf #196M found a dispersing female from Yellowstone park, wolf #155F, and spent the breeding season with her. Wolf #189M was in the wild 85 days before being found dead, from drowning. Wolf #196M dispersed to the Mill creek area and was seen with 6 uncollared animals. He was in the wild for 229 days before being killed due to being involved in depredations. Wolf #155F dispersed and whelped 4 pups. Wolf #155F was found dead in late October and the incident is under investigation. Wolf #195M found an uncollared female and the 2 used the Sheep Mountain natal den. They produced 6 pups. Wolf #195 spent 314 days in the wild before being killed after the pack was involved in a depredation.

### Outreach

YNP wolf staff gave approximately 50 formal presentations to approximately 1500 people and an untallied number of informal talks both within and outside YNP.

USFWS staff gave numerous presentations and status reports to federal and state agencies, conservation groups, rural communities, guide/outfitters organizations, livestock associations, schools, and various other public and private institutions. Wolf recovery personnel also participated in local radio call-in programs, television interviews, and newspaper feature stories.

## **Livestock Depredations and Management**

### ***Wyoming portion of GYA***

Potential wolf depredations in Wyoming are investigated by Wildlife Services (WS) and the USFWS. Depredations are classified as either confirmed, probable, possible/unknown, or other, based on specific criteria agreed upon by the USFWS and WS. If wolf depredation is confirmed, nonlethal or lethal control, or a combination thereof, is implemented under the direction and authorization of the USFWS. Confirmed losses in Wyoming for 2001 included: 20 cattle, 37 sheep, and 4 dogs. Nineteen sheep were recorded as probable wolf depredations. Two dogs and two cattle survived wolf attacks.

*Gros Ventre Pack:* The Gros Ventre Pack killed one calf on a federal grazing allotment. The livestock producer was compensated for his loss and no control action was conducted. No further depredations occurred.

*Teton Pack:* No depredations were reported.

*Washakie Pack:* Two calves and 1 dog were killed on private land. A lethal control action was initiated, but no wolves were removed. One radio-collared pup was recaptured and released on site. The rancher was compensated for 2 calves and no further depredations were reported.

*Beartooth Pack:* No depredations were reported.

*Sunlight Pack:* Two calves were killed on private property and 2 additional calves survived wolf attacks. The rancher was compensated for 2 calves.

*Absaroka Pack:* Eight calves were killed on public grazing allotments and 1 dog was killed on private land. One wolf was removed and 1 pup was trapped, radio collared and released. The ranchers were compensated for 8 calves.

*Single collared and uncollared wolves:* Two collared wolves (dispersing wolves # 229M from the Teton Pack and # 191 from the Nez Perce Pack) were lethally controlled for killing sheep, cattle, and 1 dog in Lincoln County WY. A young uncollared wolf was removed for killing sheep in Sublette County. Five cattle were killed on private land, six sheep were killed on private land and 28 sheep were killed on public land.

### ***Montana portion of GYA***

*Sheep Mountain Pack / Mill Creek Pack:* Three Sheep Mountain wolves that had been held in captivity to prevent depredations in Paradise Valley were released back into their territory in December 2000. One was found dead in March 2001. Another, male 196, joined a previously unknown pack of wolves, the Mill Creek Pack, near Chico Hot Springs. In June, wolf 196 was near the scene of a confirmed calf depredation in Pine Creek. He was lethally removed on July 20. The Sheep Mountain pack killed a calf on a USFS grazing allotment in October. Two pack



members were captured and radio-collared, and the alpha male, wolf #195, was killed. He was the last of the three wolves released back into the wild in December 2000.

Chief Joseph Pack: This pack had been involved in cattle and dog depredation in the Tom Minar Basin/Paradise Valley area in 2000, so in March 2001 the den they had used in 2000, in Cinnabar Basin, was filled in with mothballs, sticks and rocks in an attempt to get them to den in Yellowstone National Park as they had in previous years. This was apparently successful, and they returned to the park den. A telemetry receiver was loaned to a local rancher so he could monitor the pack's movements near his livestock. The pack was confirmed to have killed a calf, and attempted to attack another, at another ranch in April. After an uncollared Chief Joseph wolf was found harassing cattle in Tom Minar Basin in late May, a rancher there was given nonlethal ammunition and trained in its use. In June, when the wolf again approached livestock, the rancher hit the wolf with a bean bag round from 50 yards away, causing the wolf to fall to the ground, then run off. No further depredations were reported.

Gravelly Pack: After 8 sheep were confirmed killed in the Gravelly Mountains west of YNP in April 2001, the alpha male of the Gravelly Pack was captured and radio-collared, and a yearling male was captured and placed in the acclimation pen at the Flying D Ranch. Sheep attacks continued, with a total of 38 sheep confirmed killed and many more probably killed but unconfirmed. The alpha male was killed in June, and the female and 6 pups placed in the pen with the previously captured yearling male. Two uncollared wolves remained from the Gravelly Pack, and were thought to be responsible for killing another 38 buck sheep near Humphrey, Idaho, just south of the pack's territory, in early summer. Lethal take permits were issued to three sheep producers in the Gravelly Mountains in June. Five sheep were killed by wolves on a grazing allotment in the Gravelly Mountains in September.

The eight captured wolves were held until December 19, when they were transported to the Yaak River in extreme northwest Montana, and released there. The site was chosen in consultation with Montana Fish, Wildlife and Parks for its abundant deer, relative lack of livestock, and proximity to large areas of northwest Montana and northern Idaho that were not known to contain any breeding packs of wolves. It is hoped that these eight collared wolves, including an adult female, a yearling male, and six 8-month-old pups at the time of release, will join up with other wolves dispersing through the area and establish one or more breeding packs of wolves in Montana or northern Idaho.

Freezout Pack: In August, ranchers in the Gravelly Range were provided with telemetry receivers and antennae to warn them if the Freezout pack came near their bands of sheep. The pack had a rendezvous site about 3 miles from the nearest sheep band, on a Forest Service allotment. Nonlethal ammunition and training were also provided to producers. No depredation was reported on the bands, which were protected by guard dogs and herders.

Taylor Peaks Pack: Two sheep were confirmed killed by the Taylor Peaks pack in August. An anti-predator fence around the flock was repaired to keep the wolves out. An adult male wolf was trapped, collared and released on site. A calf was killed by members of the Taylor Peaks

and Chief Joseph packs in the Madison Valley in October. The alpha male of the Taylor Peaks pack and an uncollared female were lethally removed.

### ***Idaho portion of GYA***

Two wolves, thought to be dispersing remnants of the Gravelly Pack, killed at least 38 buck sheep near Humphrey, Idaho in May and June 2001. Efforts to trap these wolves were unsuccessful. In November 2001, the Nez Perce Pack from Yellowstone National Park traveled to Fremont County, Idaho and killed a stock dog on private land there.

## **CENTRAL IDAHO WOLF RECOVERY AREA**

### **Personnel**

Management and monitoring of the Central Idaho wolf population is conducted by the Nez Perce Tribe, headed in 2001 by biologists Curt Mack, Isaac Babcock, Marcie Carter, Adam Gall, Jim Holyan, Kent Laudon, Gina Patton, and Russ Richards, with administrative assistant Cheri Ramos and interns Ryan Branstetter and Jamie Five Crows.

The USFWS is represented in Idaho by recovery coordinator Carter Niemeyer, and enforcement agents in the Boise USFWS field office. Senior Agent Rich McDonald was promoted to a new position in Washington, DC and was replaced by Craig Tabor. Special Agent Scott Bragonier also joined the USFWS law enforcement office in Boise. Other USFWS enforcement personnel in the Central Idaho recovery area are Steve Magone (Idaho Falls) and Paul Weyland (Boise).

Wildlife Services personnel involved in wolf control or management in Idaho in 2001 included State Director Mark Collinge, District Supervisors Layne Bangerter, Charles Carpenter and Craig Maycock, wildlife specialists Douglas Hunsaker, Justin Mann, Michael Svedin, Jeff Ashmead, Richard Williamson, Eric Simonson, Lee Czapenski, and Jonathan Farr, and pilot Gerald Peterson.

### **Monitoring**

During the 2001 field season, 27 wolves were captured by both helicopter darting (13) and leg-hold trapping (14). Of that total, 19 new wolves were collared and 8 wolves were re-collared. At the end of 2001, 51 wolves (19% of the population) were being monitored in 17 packs. Another 3 wolves were being monitored as lone or dispersing animals. These packs and lone wolves, along with known uncollared packs, accounted for about 261 wolves in the central Idaho recovery area (Figures 1,2,5; Tables 3,4). Radio-collared wolves were located approximately twice per month by airplane. Packs included in the central Idaho recovery area as of December 2001 were Big Hole, Chamberlain Basin, Gold Fork, Gospel Hump, Jureano Mountain, Kelly Creek, Landmark, Marble Mountain, Moyer Basin, Orphan, Scott Mountain, Selway, Thunder Mountain, Twin Peaks, Whitehawk Mountain, Wildhorse, and Wolf Fang (Table 3, Figures 1,3).

In addition, three uncollared packs are known to live in the Montana portion of the recovery area, in the East Fork of the Bitterroot, the West Fork of the Bitterroot, and the Mount Haggin area.

Reproduction was confirmed in 16 packs producing a minimum of 82 pups. In addition, reproduction was verified for 2 new packs (Fish Creek and Lupine Creek) in the NW Montana recovery area that contain, possibly as alphas, Idaho wolves B81M and B79M, respectively. Fourteen of the 16 packs met the recovery standards of a breeding pair (Tables 3,4). One radio-collared wolf died of natural causes and 5 died of unknown causes. Ten wolves died of human-related causes (including 6 that were lethally controlled during control actions and 1 that was legally shot while depredating). Three collared wolves were known to have dispersed away from their home territory and another 4 wolves went missing in 2001 and may have dispersed.

Four new Idaho wolf packs were documented in 2001 including Gold Fork, Gospel Hump, Scott Mountain, and Twin Peaks (with new alphas following removal of the original Twin Peaks pack in March 2000). Uncollared animals of unknown origins formed the Gold Fork pack, east of Donnelly, Idaho. Their existence was suspected in 2000, based on reports from the public and confirmed wolf depredations on sheep in this vicinity. This summer 2 yearlings and 2 pups were observed. Presence of yearlings is evidence of reproduction in 2000, and this discovery marked the 30<sup>th</sup> breeding pair for the Northern Rocky Mountains for 2000. Female wolf B50, which produced 2 pups last year while a subordinate member of the Chamberlain Basin pack, crossed the Salmon River to the north and established a territory in the Gospel Hump Wilderness. She produced a litter of 7 pups with a wolf of unknown origins in 2001. The Scott Mountain pack consists of female B78, a disperser from the Kelly Creek pack, and B115 (a male of unknown origin). They inhabit the Deadwood River drainage. Four pups were observed with the Scott Mountain pack. The original Twin Peaks pack was eliminated through control actions in 2000. This pack was revived with B59, a dispersing male from the Thunder Mountain pack, and an unknown female (suspected to be a member of the original Twin Peaks pack). This pair whelped 7 pups in 2001.

The status of 2 previously established Idaho wolf packs was unknown by the end of 2001 including Big Smoky and Stanley Basin. Both radio-collared wolves in the Big Smoky pack were illegally killed in late 2000, so the fate and whereabouts of the remaining members remains unknown. The Stanley Basin pack disbanded following the relocation, and subsequent death, of the alpha male and the dispersals of several subadult wolves. Alpha female B23 was lethally controlled for a depredation in March 2001, leaving no radio-collared wolves in the Stanley Basin pack territory. Further proof of this pack's demise was the occupation of their home range by the Whitehawk Mountain pack, which denned in the same general area that the Stanley Basin pack had in 2000.

### **Ongoing Research**

Continued conflicts between wolves and livestock and potential effects of wolves on big game populations remain key management issues. The Recovery Program continues participation in on-going research to help address these challenges. Scientific information collected through

these efforts will foster a better understanding of wolf-livestock and wolf-big game relationships, and more effective wolf conservation and management. Three research projects have been initiated since 1999. Two address predator-ungulate relationships and the other deals with wolf-livestock interactions.

*Winter Predation and Interactions of Wolves and Cougars on Panther Creek in Central Idaho*

Investigators: Dennis Murray and Jason Husseman, University of Idaho; Gary Power, Lemhi County; and Dick Wenger, U. S. Forest Service.

Cooperators: Nez Perce Tribe, USFWS, Bureau of Land Management, Rocky Mountain Elk Foundation, Wolf Education and Research Center, Hornocker Wildlife Institute.

This study was initiated to investigate wolf-cougar interactions and predation on wintering ungulate populations, primarily elk and deer. The study area was located within GMU 28 west of Salmon, Idaho and encompassed the Panther Creek drainage and surrounding areas. Two wolf packs, Jureano Mountain and Moyer Basin had established territories within the study area. In addition, 4-6 cougars were radio collared and monitored within the study area.

The 2000 field season was the second year of this multi-year project. Samples of wolf and cougar-killed prey indicated that elk and deer comprised the bulk of their winter diets. In wolf diets, elk were represented in greater proportions relative to deer during both years. In addition, elk calves, followed by elk cows, were favored. Crude kill rates were estimated to be between 3.5 and 5.0 days per kill for both wolf packs over the 2 field seasons. These figures are thought to underestimate the true kill rate as researchers often lost track of wolves for varying lengths of time, and were unable to search all the areas where wolves had traveled due to terrain and time constraints.

Cougar diets were similar to wolf diets in both species and composition. During both winters, elk were represented in greater proportion relative to deer in samples of cougar-killed prey. Likewise, elk calves, followed by elk cows, were represented in highest proportions in samples of cougar-killed elk. Predation of elk bulls by cougars may have been under-represented because a majority of cougars collared were female, which may focus on smaller prey relative to male cougars.

Wolves and cougars tended to kill prey in different habitats, with wolves killing prey in higher elevation areas with low to moderate slopes. A majority of kills occurred in riparian areas. Cougars also tended to kill prey in higher elevations, but kills occurred on significantly steeper slopes with less snow cover.

*Predation and Interactions of Wolves and Cougars on Big Creek in Central Idaho*

Investigators: Jim and Holly Akenson.

Cooperators: Nez Perce Tribe, University of Idaho, Charles DeVlieg Foundation, Idaho Department of Fish and Game, Hornocker Wildlife Institute-Wildlife Conservation Society.

This study was initiated to investigate the wolf-cougar interactions and predation on wintering ungulate populations, primarily elk and deer. The study area is located within the Big Creek drainage in the Frank Church-River of No Return Wilderness. The study area encompasses part of the wintering area of the Chamberlain Basin pack. In addition, 5 cougars were radio-collared and monitored within the study area.

The 2001 field season was the third year of this multi-year project. Samples of wolf and cougar-killed prey indicated that elk and deer comprised the bulk of wolf and cougar winter diets. In wolf diets, elk were represented in greater proportions relative to deer during 1999 and 2000, and these prey species were taken in proportion to their relative abundance in the study area.

In cougar diets, like wolf diets, elk and mule deer were taken in similar proportion to their relative abundance in 1999. In 2000, however, cougars disproportionately selected deer as prey over elk. This difference between years was attributed to a mild winter and resulting change in distribution of elk and deer relative to cougars within the study area during 2000.

Elk calves were taken in greater proportion to their availability in both wolf and cougar diets. Older adult cows were the predominant age and sex class of ungulate carcasses found in the study area during all years. Median age of adult elk carcasses was 15 years in 1999 and 10 years in 2000. Birth years were calculated based on tooth aging by cementum annuli for Big Creek cow elk that died in 1999 and 2000 during winter or from hunter harvest. Only 2 of 36 cows were born after 1993. This lack of young cow elk reflects poor calf production or survival. Many people were concerned that wolves were directly responsible for lower elk recruitment. These data suggest that this elk population had started to decline prior to wolf presence. Wolves and cougars did not favor mule deer fawns in 2 of 3 years. Mule deer killed by wolves and cougars were also primarily older adults, with a median adult age of 7 years in 2000.

Wolves visited cougar kill sites, but researchers did not document cougars visiting wolf kill sites. Researchers felt wolf presence in cougar home ranges affected cougar movements.

A large-scale forest fire burned much of the Big Creek winter range in August 2000. This resulted in a shift to an adjacent winter range by some elk and the wolf pack in winter 2000-2001, whereas cougars remained in the drainage and diversified their diets. Mortality from wolf and cougar predation could be partially compensatory if this elk population is at carrying capacity.

*Preliminary Assessment of Wolf Predation on Livestock on the Diamond Moose Allotment in Central Idaho.*

Investigators: Dennis Murray and John Oakleaf, University of Idaho; Curt Mack, Nez Perce Tribe; Rick Williamson, Wildlife Services.

Cooperators: U. S. Fish and Wildlife Service, Salmon Challis National Forests, Lemhi County Cattle Association, Diamond Moose Association, Lemhi County, Defenders of Wildlife, Wolf Education and Research Center, National Wildlife Federation, Idaho Cattle Association.

This research examined interactions of the Jureano Mountain wolf pack and cattle on a U.S. Forest Service allotment near Salmon, Idaho in an attempt to evaluate effects of wolves on calf survival. The Diamond Moose Association (DMA) calf losses increased over historic levels following wolf establishment. Despite this increase, few calf mortalities were conclusively documented as being the result of wolf depredation. During the 1999 and 2000 grazing seasons, one third of the total calf population (N=1368) was radio-marked. Overall, calf survival was high (greater than 95%), with relatively few mortalities ( $n=9$ ,  $n=4$ ) among the marked population. Natural calf mortality (pneumonia, unknown causes), and wolf-caused calf mortalities represented 46% and 31% of deaths ( $n=13$ ), respectively during the 2 grazing seasons. The Jureano Mountain wolf pack was deemed responsible for 2 of 4 unmarked calf deaths on the DMA. An additional 6 mortalities (2 in 1999 and 4 in 2000) attributed to wolves were discovered on a neighboring pasture. The fate of 34 missing calves on the DMA was unknown at the conclusion of the study.

Detection rates for all causes of mortalities (marked and unmarked calves) were low within the DMA (1 of 3.1 mortalities) and similar to detection rates for wolf-caused calf mortality (1 of 2.7). Detection rates of wolf-caused mortality dropped considerably (1 of 8.0) when marked calves were removed from this estimate. Calves selected by wolves were significantly younger than average ( $p < 0.05$ ), indicating that ranchers should consider altering calving periods to favor older calves in areas with wolves. Movement patterns and herd size of calf locations did not vary with wolf use levels. Calf vulnerability to predation appeared to be correlated with spatial proximity to wolf home ranges and rendezvous sites. Wolf control actions coupled with natural and illegal mortality apparently reduced the rate of wolf-caused calf mortality.

### ***Outreach***

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

### ***Livestock Depredations and Management***

All reports of livestock depredation are investigated by Wildlife Services, who then take appropriate action in consultation with USFWS. A total of 9 calves, 1 cow, 16 sheep and 1 livestock guarding dog were confirmed killed by wolves in the CID recovery area in 2001. Another 6 calves and 1 cow were classed as probable wolf kills. Seven wolves were killed in depredation control actions, and 5 were translocated. Another 8 wolves were captured and released on site in these operations. The number of investigations, numbers of livestock killed and numbers of wolves killed and translocated were lower in 2001 than in 2000. Decreases in depredations may be due to the removal of chronic depredating wolves in previous years, and to

increased use of nonlethal deterrents including Radio Activated Guard (RAG) boxes and human herders.

*Stanley Basin Pack:* The Stanley Basin pack was involved in many confirmed depredations events during 1999 and 2000, which led to the removal/disbanding of the pack. Alpha female B23 was lethally controlled in March 2001 after she was confirmed to have killed a calf between Arco and Mackay, Idaho (outside of her usual home range). After the death of B23, and the dispersals of several radio-collared subadult wolves, no radio-collared wolves were known to remain in the established territory. Much effort and time was committed to addressing livestock depredations by this pack, by the Nez Perce Tribal field crews, Wildlife Services, the Boulder-White Cloud Council, and Defenders of Wildlife. The chronic nature of the problem indicates the need for more creative management and a higher level of cooperation among the Recovery Project, other agencies, organizations, and livestock producers to resolve wolf-livestock conflicts.

*Whitehawk Mountain Pack:* After the Stanley Basin pack's territory was left vacant through relocations, dispersals, and lethal control, the Whitehawk Mountain pack moved into the area. They also used parts of the former White Cloud pack's territory along the East Fork of the Salmon River. It was there, in March, that wolf B102 was legally shot while depredating on private land. The wolf was shot while standing near the carcass of a calf that was confirmed killed by wolves. The pack moved from this area into the Sawtooth Valley and denned on the Forest Service sheep allotment belonging to a livestock producer that had been previously affected by wolf depredations by both the Stanley Basin and White Cloud packs. Shortly after the arrival of sheep and cattle for the summer grazing season, the Whitehawk Mountain pack attacked and killed 16 sheep, 1 guard dog, and 1 calf. A control action resulted in the deaths of B40 and B101, both male wolves, the latter the suspected alpha. An extensive effort was initiated by the Nez Perce Tribe and Defenders of Wildlife to recruit volunteers that would monitor the pack and attempt to deter them from additional depredations. No further depredations were attributed to this pack in 2001.

*Jureano Mountain Pack:* Alpha female B46 reclaimed her natal territory to rejuvenate the Jureano Mountain pack. Unfortunately she also seems to have continued the tradition of livestock depredations in this area west of Salmon, Idaho. One calf was confirmed killed by this pack in summer 2001, and 6 more calves classified as probable kills. A yearling female wolf was lethally removed, and 1 adult and 1 pup were captured, radio-collared, and released on site. One incident occurred on private land.

*Wildhorse Pack:* The Copper Basin region that this pack inhabits holds several thousand cattle during the summer grazing season. In August 2001, one calf was confirmed by the Wildhorse pack. On two occasions, one a control action and the second a management action, Wildlife Services and the Nez Perce Tribe employed a helicopter to dart wolves for relocation purposes. A subadult female wolf, B103, was moved to the Lochsa River drainage in the initial darting effort. Two wolf pups were also trapped, collared, and released on site. No additional wolf-livestock conflicts were reported for the remainder of the year in this area.

*Gold Fork Pack:* Three confirmed depredations from 3 separate incidents led to the discovery of this pack, the 30<sup>th</sup> breeding pair in the Northern Rocky Mountain Recovery Area for the year 2000. Field investigations revealed that at least 2 yearlings were present, as well as a minimum of 2 pups, evidence of reproduction in 2000. In each depredation the wolves killed 1 calf. Following the first incident Wildlife Services and the Nez Perce Tribe conducted a trapping effort that resulted in the capture and collaring of the suspected alpha male and a yearling. Traps were also placed after the second and third calves were killed, but no more wolves were captured. Depredations on sheep in this same area, east of Donnelly, Idaho, in 2000 probably can be attributed to this pack.

*Lone and Dispersing Wolves:* In early May 2001, former members of the Moyer Basin and Stanley Basin packs, including male B104 and 2 non-radioed wolves, were implicated in the death of a cow/calf pair on privately owned land along the Salmon River. This livestock producer had been impacted by the depredations of the Twin Peaks pack in 2000. A control action was undertaken, where B104 and 1 uncollared wolf were lethally controlled. A colt was confirmed injured by wolves in the same area in July 2001.

#### ***Montana Portion of Central Idaho Recovery Area***

*Big Hole area:* Two pairs of wolves that had moved into the Big Hole area of southwest Montana from the Idaho wolf population were captured in mid-August, transported back into Idaho, and released into the Selway-Bitterroot Wilderness. Three of the wolves soon returned to the Big Hole valley. No depredations were confirmed in the area in 2001. These wolves are not the same as the Big Hole Pair (now the Big Hole Pack) that was translocated back into Idaho in 1997 and established a territory near Lolo Pass on the Montana/Idaho border.

### **PLANNING AND LEGAL ISSUES**

#### ***Proposed National Reclassification of the Gray Wolf***

On July 11, 2000 the Service published a Federal Register notice that proposed a change in the status of the gray wolf under the Endangered Species Act. The proposal addressed the status of the gray wolf in the lower 48 states. The proposal announced the Service's intent to (1) focus future gray wolf recovery efforts only in certain parts of the species' historic range, (2) recognize recovery progress and adjust the degree of protection under the Act in those areas to further promote recovery by promoting increased human tolerance. Public comment on this proposal was solicited until November 2000. Nearly 20,000 comments were received and are being analyzed by the Service. The public comment will be addressed in the final rule which should be completed in mid-2002.

In the northwestern U.S. the Service proposal recommended that the Yellowstone and central Idaho experimental population areas not be changed. The proposal also recommended that because the wolf population in Montana, Idaho, and Wyoming had exceeded 20 breeding pairs for more than 3 successive years, the gray wolf outside the experimental population areas be



reclassified from endangered to threatened status. The Service proposed that wolves in the northwestern U.S. classified as threatened be managed under special rules similar to those used in the experimental population areas.

### **Resolution of Diamond G lawsuit**

On December 19, 2001, the United States District Court for the district of Wyoming issued a ruling on the case of the Diamond G Ranch vs. the U.S. Department of the Interior, Fish and Wildlife Service. The Ranch, which had experienced several depredations and suspected others, challenged the Service's management of wolves in Wyoming's Dunoir Valley. The court ruled entirely in the Government's favor that there was no violation of the Endangered Species Act, the Fifth Amendment, or the Administrative Procedures Act. The Ranch has appealed this case to the 10<sup>th</sup> Circuit Court.

### **Funding of Wolf Recovery**

Wolf recovery in the northern Rocky Mountains from 1973 through 2001 cost just over \$14,000,000 (with no adjustments for inflation). If recovery continues at the current rate and management costs remain within predictions, wolf recovery should be complete in 2003 at an additional cost to taxpayers of \$1,400,000 annually for 2002 and 2003. The total cost for the restoration, management, recovery, and delisting of wolves between 1973 and late 2003 should be about \$17,000,000. Costs in 2001 were:

US Fish and Wildlife Service: \$1,111,000 (\$500,000 in Region 1 and \$611,000 in Region 6). This funding is used for overall coordination on local and national wolf issues, monitoring, research, control, public information, litigation, biologists in Helena and Kalispell, MT, Lander, WY and Boise, ID, support to WS for assistance in wolf control (\$100,000), and funding the Nez Perce Tribe for leading wolf management in Idaho (\$300,000- \$400,000).

USDA Wildlife Services: \$89,000 (investigating reports of wolf damage and increased costs of coyote control in areas occupied by wolves). In addition, in 2001, WS received an additional \$1,000,000 to their budget in the MT, ID, and WY funding to assist in control of predators, some of which could be used to support investigation of suspected wolf-caused livestock losses, and any additional wolf control activities.

National Park Service: \$220,000 (monitoring, research, coordination, and public information).

Initial recovery costs were lower than predicated in the EIS primarily because reintroduction objectives were met in 2 years rather than in the 3-5 years that had been predicted. Wolves remained in Yellowstone National Park and in wilderness areas of central Idaho to a greater extent than predicted, and reproduction and survival exceeded expectations. Also, depredations on livestock were below the levels expected, and private groups and individuals made substantial contributions to the program. Currently, the private Turner Endangered Species Fund is funding all costs for an experienced wolf biologist in Bozeman, Montana who is directly supervised by the USFWS to assist with resolving conflicts between wolves and private landowners in

southwestern Montana. Defenders of Wildlife provides a compensation program for livestock killed by wolves, at a cost of more than \$200,000 to date.

The issue of who should or will pay for management of a recovered wolf population is still a subject of intense debate. The costs of wolves as a state-managed animal, though expected to be below those currently associated with the recovery program, have not been estimated. The states of Montana, Idaho, and Wyoming argue that there must be federal assistance for wolf management after the population is delisted or their plans cannot be implemented. Without federal assistance they would not support assuming management authority.

### **Law Enforcement**

Law Enforcement continues efforts to prevent the illegal killing of wolves. These efforts include the mailing of wolf information to some hunters that will be hunting in areas occupied by wolves. This information is intended to inform the hunters that wolves may be present, gives tips on wolf identification, as well as providing phone numbers and addresses to report wolf sightings. Special Agents still continue to educate people about wolves. When “good” information is given to the people that have to deal with wolves, more tolerance is generated and fewer wolves are killed. One of the more effective tools that Law Enforcement has used is the back country horse patrol. Special Agents patrol the back country during high use periods to provide a deterrent to those who may otherwise kill a wolf, and to educate and answer questions about wolves. These patrols have been effective in preventing the illegal killing of wolves in remote areas.

A Utah man who shot a wolf in Montana was convicted this year. He was sentenced to serve 8 months in jail and pay a \$500 fine, and placed on one year probation.

Law Enforcement continues to push the Department of Justice to change its policy regarding jury instructions for Endangered Species Cases. A policy implemented under the Clinton Administration, holds the government to a higher standard in proving the intent of the person killing a wolf or other listed animal. Several Endangered Species Act prosecutions have failed due to this policy.

### **Idaho Wolf Management Planning**

Idaho's legislative oversight committee has reported a draft wolf management plan to the Idaho legislature for approval. The legislature has printed the necessary resolution and amendment of Idaho Code to enact the plan, and these measures will be debated and decided upon in the current legislative session. Idaho's draft plan directs the Idaho Department of Fish and Game to ensure the long-term survival of wolves while minimizing wolf-human conflicts by managing wolves essentially the same way the agency currently manages black bears and mountain lions. The key management statistic will be the number of packs in the state, and the main management tool will be the removal of wolves that prey on domestic animals or cause similar problems. While the number of packs exceeds 15, lethal control of wolves will be authorized in the same manner that lethal control is currently authorized for black bears and lions. If the number of packs falls

below 15, lethal control will become more conservative and IDFG will review management policy for possible changes. If the number of packs continues to fall, lethal control will revert to the control plan in the current federal regulation governing reintroduced wolves in Idaho. In addition to direct management of wolves, the plan calls for an education program that emphasizes wolf biology, management, and conservation. The plan requires federal funding in order to be implemented.

### **Montana Wolf Management Planning**

The Montana Wolf Management Advisory Council was appointed in April 2000 by former Gov. Marc Racicot to advise Montana Fish Wildlife & Parks (FWP) as it prepares a management plan for the gray wolf upon federal delisting. The Council was a diverse group, representing the interests of conservationists, hunters, landowners, livestock producers, outfitters, educators, and others. The Council completed their deliberations and presented their *Report to the Governor* to newly-elected Gov. Judy Martz early in 2001. Gov. Martz directed FWP to draft a planning document based on the Council's recommendations. FWP prepared the *Montana Wolf Conservation and Management Planning Document* and then presented it to the Advisory Council in October 2001. The document was ultimately completed in December 2001.

The planning document follows the Council's goal to develop a management approach and framework that is biologically possible, socially acceptable, and economically feasible. Major issues identified in the planning document address wolf conservation and management, human safety, livestock predation, compensation for livestock losses, funding, and maintaining Montana's deer, elk and moose populations. The overall approach recognizes the gray wolf as a native species in Montana and as a valuable part of our wildlife heritage. It further seeks to integrate and sustain wolves in suitable habitats within a complex management setting and to responsibly address conflicts where and when they develop.

The planning document was released to the public in January 2002 and serves as the starting point for a broader public and environmental review of a state wolf program. In March 2002, FWP begins a nine-month process to formally prepare an environmental impact statement for a final Montana wolf management plan. After extensive public input and environmental analysis, the final wolf management plan and accompanying environmental impact statement will be completed by December 2002.

The Council's *Report to the Governor* and the *Montana Wolf Conservation and Management Planning Document* are both available and may be downloaded from FWP's website [www.fwp.state.mt.us](http://www.fwp.state.mt.us). Comments may be submitted by mail or on-line. The deadline for comment during the public scoping phase of the process is April 30<sup>th</sup> 2002. The public is encouraged to participate and follow the planning process on our website.

### **Wyoming Wolf Management Planning**

The State of Wyoming has not committed to developing a state wolf management plan nor have they committed to participate in wolf management at this time. The Wyoming Game and Fish Commission has written a letter to the U.S. Fish and Wildlife Service requesting funding of up to \$250,000 for the creation of a wolf management plan for Wyoming.

## **CONTACTS**

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

U. S. Fish and Wildlife Service, Helena MT: (406) 449-5225  
U. S. Fish and Wildlife Service, Kalispell MT: (406) 751-4581  
U. S. Fish and Wildlife Service, Lander WY: (307) 332-7789  
U. S. Fish and Wildlife Service, Boise ID: (208) 378-5639  
Yellowstone Center for Resources, YNP WY: (307) 344-2243  
Nez Perce Tribal Wolf Program, McCall ID: (208) 634-1061

### **To report livestock depredations:**

USDA/APHIS/Wildlife Services, Montana: (406) 657-6464  
USDA/APHIS/Wildlife Services, Wyoming: (307) 261-5336  
USDA/APHIS/Wildlife Services, Idaho: (208) 378-5077

### **To report discovery of a dead wolf or information regarding the illegal killing of a wolf:**

U.S. Fish and Wildlife Service Special Agent, Billings, MT: (406) 247-7355  
U.S. Fish and Wildlife Service Special Agent, Missoula, MT: (406) 329-3000  
U.S. Fish and Wildlife Service Special Agent, Bozeman, MT: (406) 582-0336  
U.S. Fish and Wildlife Service Special Agent, Great Falls, MT: (406) 453-4761  
U.S. Fish and Wildlife Service Special Agent, Casper, WY: (307) 261-6365  
U.S. Fish and Wildlife Service Special Agent, Lander, WY: (307) 332-7607  
U.S. Fish and Wildlife Service Special Agent, Cody, WY: (307) 527-7604  
U.S. Fish and Wildlife Service Special Agent, Boise, ID: (208) 378-5333  
U.S. Fish and Wildlife Service Special Agent, Idaho Falls, ID: (208) 523-0855  
U.S. Fish and Wildlife Service Special Agent, Spokane, WA: (509) 928-6050

### **For information on Montana state wolf management planning:**

Carolyn Sime 406-751-4586 casime@state.mt.us  
Glenn Erickson 406-444-2612 gerickson@state.mt.us

**WEBSITES:**

USFWS Rocky Mountain weekly & annual wolf updates:

<http://www.r6.fws.gov/wolf/>

USFWS Midwestern gray wolf recovery, national wolf reclassification proposal:

<http://midwest.fws.gov/wolf/>

USDA/APHIS/Wildlife Services:

<http://www.aphis.usda.gov/ws/>

Alternative Capture Systems and Aversive Stimuli Applications for Managing Predation:

<http://www.aphis.usda.gov/ws/nwrc/predation.htm>

Nez Perce Tribe:

<http://www.nezperce.org/2frameMain.htm>

Turner Endangered Species Fund:

<http://www.tesf.org/>

Yellowstone Park Foundation:

<http://www.ypf.org/>

Yellowstone Wolf Tracker:

<http://www.wolftracker.com/>

Yellowstone National Park technical information page:

<http://www.nps.gov/yell/technical/index.htm>

Montana Fish, Wildlife & Parks:

<http://www.fwp.state.mt.us/>

Montana Fish, Wildlife & Parks wolf management planning:

<http://www.fwp.state.mt.us/wildthings/wolf/wolfmanagement.asp>

Montana Natural Resource Information System:

<http://nris.state.mt.us/>

Idaho Fish and Game:

<http://www2.state.id.us/fishgame/>

Idaho Office of Species Conservation:

<http://www.state.id.us/species/>

Wyoming Game and Fish Department:

<http://gf.state.wy.us/>

Wyoming agricultural statistics:

<http://www.nass.usda.gov/wy/>

Idaho agricultural statistics:

<http://www.nass.usda.gov/id/>

Montana agricultural statistics:

<http://www.nass.usda.gov/mt/>

National agricultural statistics:

<http://usda.mannlib.cornell.edu/reports/nassr/livestock/>

Defenders of Wildlife wolf compensation trust:

<http://www.defenders.org/wolfcomp.html>

International Wolf Center:

<http://www.wolf.org/>

Wolf Recovery Foundation:

<http://forwolves.org/>

Wolf Education and Research Center:

<http://www.wolfcenter.org/>

Nature's Wolves (an alternative viewpoint):

<http://www.natureswolves.com/>

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