

INTRODUCTION

In January 2005, the U.S. Fish and Wildlife Service (USFWS) published and adopted new regulations (2005 10(j) Rule) governing wolf management within the Nonessential Experimental Population Areas of Idaho south of Interstate Highway 90 (Figure 1). In January 2006, the Secretary of Interior and the Governor of Idaho signed a Memorandum of Agreement (MOA), which transferred most wolf management responsibilities to the State of Idaho. The Idaho Department of Fish and Game (IDFG) is the primary state agency responsible for carrying out wolf management activities in Idaho. In April 2005, the Governor of Idaho and the Nez Perce Tribe (NPT) signed an MOA that outlined responsibilities between the State of Idaho and the NPT in regards to wolf conservation and management. The 10j rule was again revised in 2008, and allowed increased flexibility for livestock producers and pet owners on public land in states with approved wolf management plans. For more detailed information on the history and management of wolves in Idaho, please visit: <http://fishandgame.idaho.gov/cms/wildlife/wolves/>.

In February 2008, the USFWS published a proposed rule to delist wolves in the northern Rocky Mountains, and wolves were officially delisted 30 days later. The U.S. Federal District Court in Missoula, Montana, issued a preliminary injunction on Friday, July 18, 2008, that immediately reinstated temporary Endangered Species Act protections for gray wolves in the northern Rocky Mountain Distinct Population Segment pending final resolution of the case. This included all of Montana, Idaho, and Wyoming, the eastern one-third of Washington and Oregon, and parts of north-central Utah. On September 22, 2008 the United States filed a motion to vacate the delisting rule, return the gray wolf to the list of endangered and threatened species, and remand the matter to the Fish and Wildlife Service. On October 14, Judge Molloy filed an order granting the United States' motion to remand the delisting rule back to the Fish and Wildlife Service. He also dismissed the case.

On October 24, 2008 the U.S. Fish and Wildlife Service announced it reopened the public comment period on its proposal to delist the gray wolf in the northern Rocky Mountains. Through a notice in the Federal Register published on October 28, 2008, USFWS asked the public to provide comments and any additional information on the February 2007 proposal to delist wolves. The USFWS analyzed the comments and rewrote the delisting rule including additional administrative record, data, analysis, and further explanation to address the federal courts concerns. The rule was sent to the Federal Register (FR) in January but not posted. The Obama administration put a hold on all rules and regulations sent to the FR that had not yet become final [under the Bush administration] pending review by the new administration. At the time of this writing, no decision had been made. The 2005 10(j) rule (as amended 2008) is in effect in Idaho and Montana, and the original 1994 Final Rule is in effect in Wyoming until they develop a plan that is acceptable to the USFWS or wolves are delisted (Figure 2).

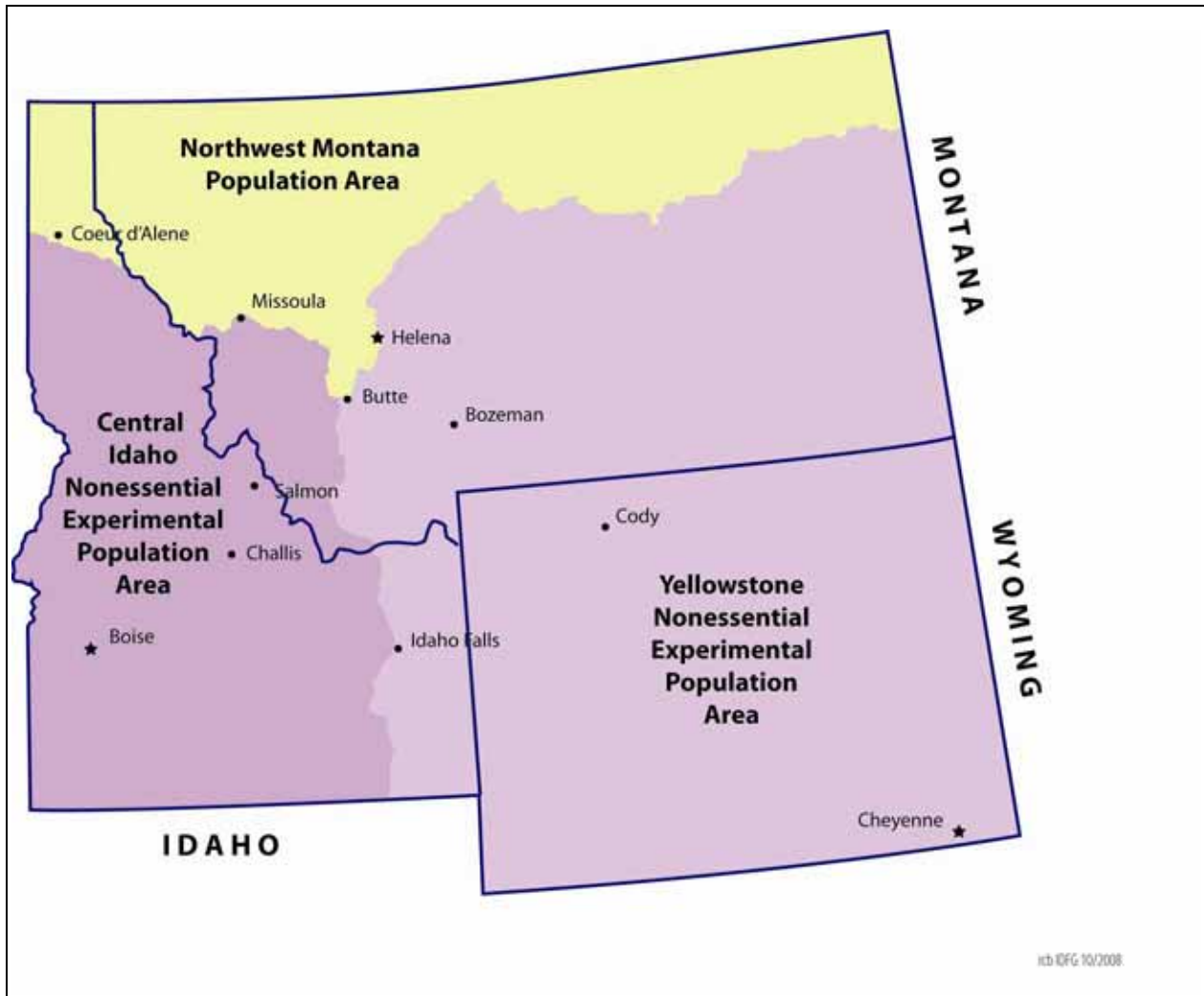


Figure 1. Recovery areas established by the U.S. Fish and Wildlife Service to restore gray wolf populations in the northern Rocky Mountains of Idaho, Montana, and Wyoming. Wolves are naturally recovering in the Northwest Montana Population Area, while wolves were reintroduced into the Central Idaho and Greater Yellowstone Nonessential Experimental Population Areas.

In preparation for delisting, IDFG prepared and the IDFG Commission authorized the Idaho Wolf Population Management Plan (Wolf Plan) which aims to stabilize the wolf population between 2005 and 2007 (500-700 wolves) levels and is designed to manage conflicts between wolves and human interests (IDFG 2008). It also provides for wolf harvest opportunities and non-consumptive enjoyment of wolves. This annual report will now reflect the structure and guidelines of the new Wolf Plan and is therefore different than previous years. It is organized by Wolf Management Data Analysis Units (Figure 3).

This report fulfills annual USFWS requirements to summarize and report wolf status and management activities in Idaho.

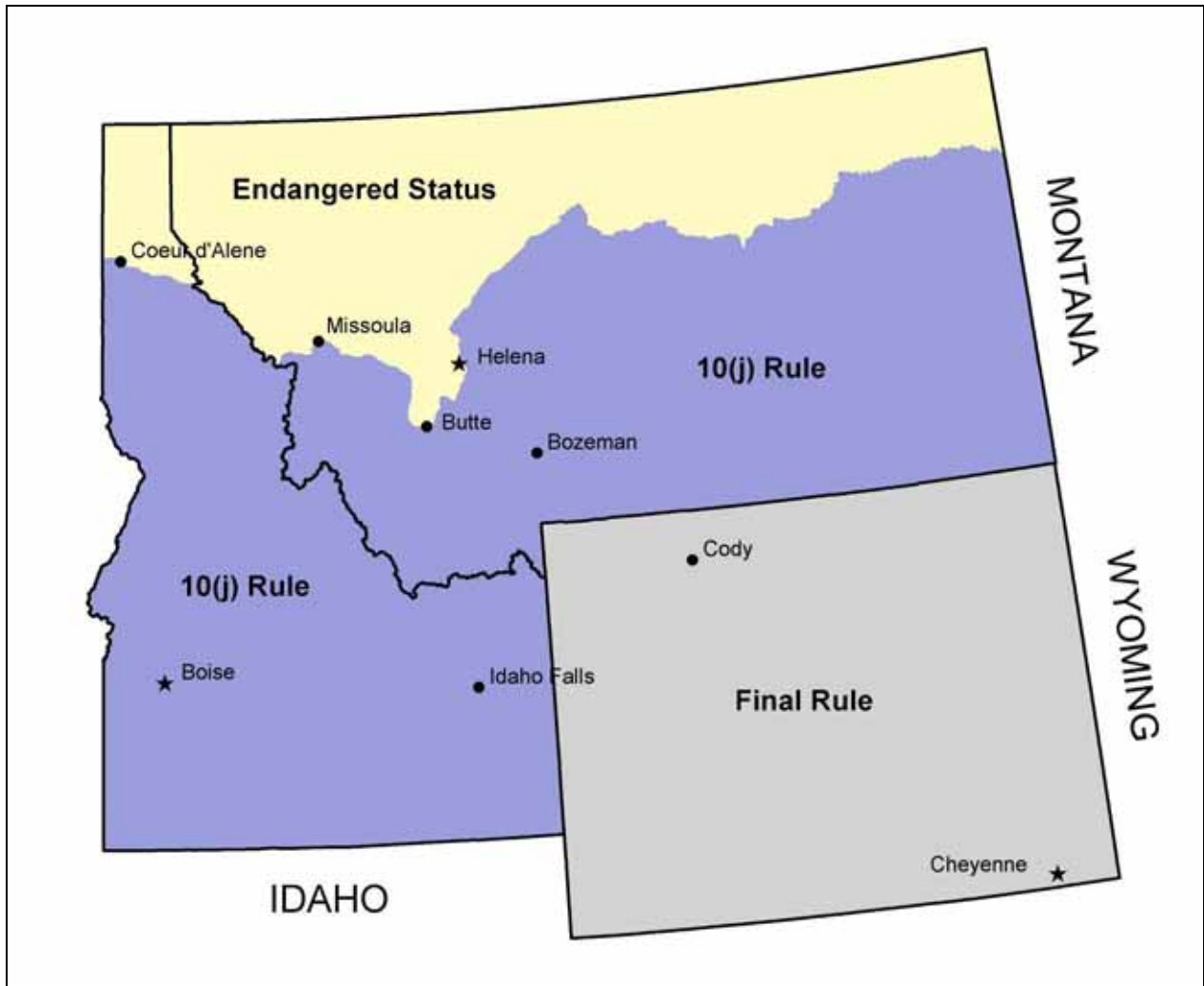


Figure 2. Management areas established by the U.S. Fish and Wildlife Service under the 2008 10(j) Rule to restore gray wolf populations in the northern Rocky Mountains of Idaho, Montana, and Wyoming. Wolves are managed by states as designated agents under the 2005 (as amended in 2008) 10(j) rule in Idaho and Montana, and under the 1994 Final Rule by the USFWS and National Park Service in Wyoming. Management in the Endangered Status Area in northern Montana and Idaho is conducted by the USFWS with authorities as designated agent for Montana, and cooperation with Idaho.

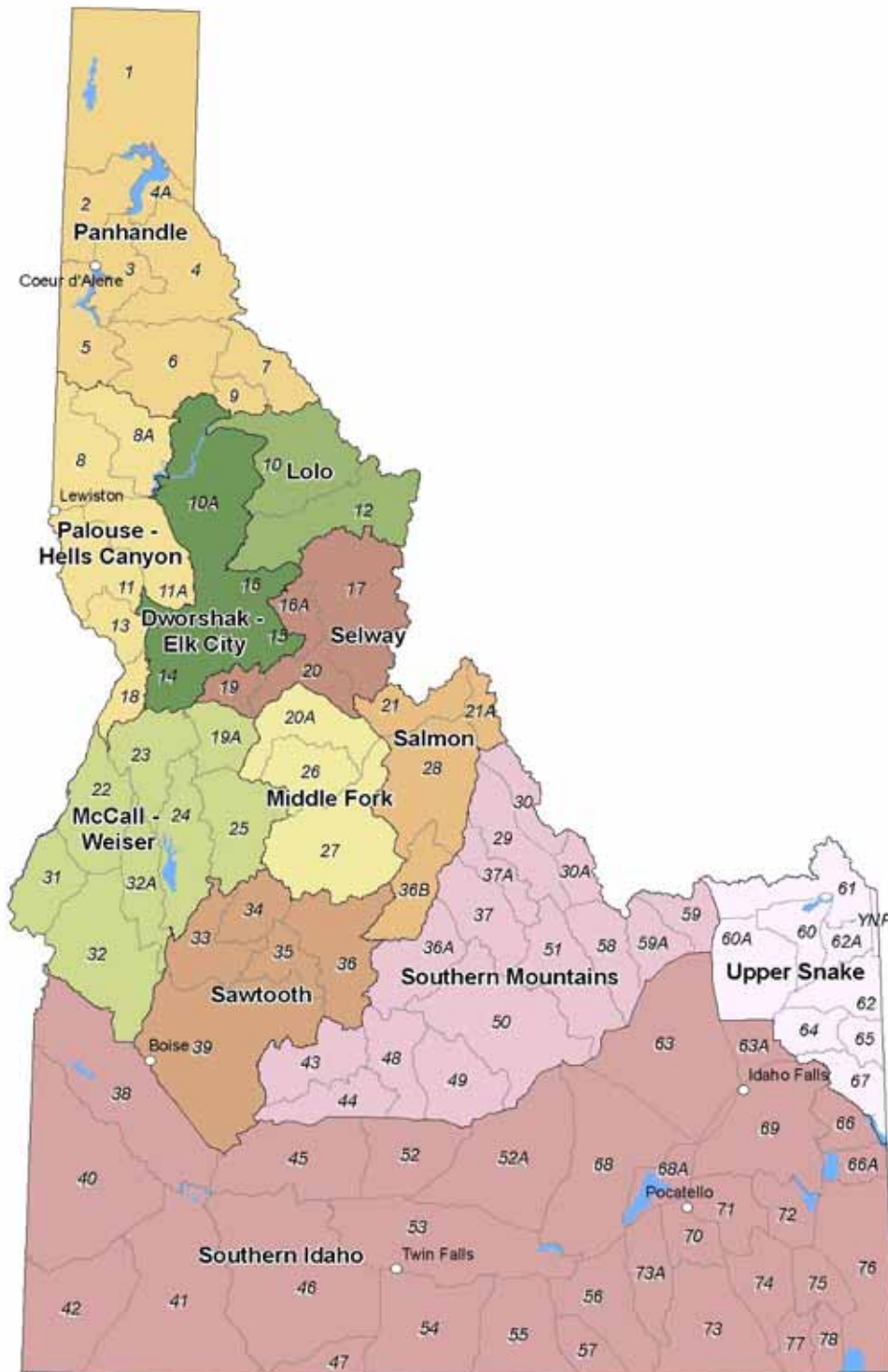


Figure 3. Wolf Data Analysis Units (DAUs). DAUs were delineated by combining one or more elk zones with similarity in wolf population, prey base, and current or potential conflicts with livestock and/ or ungulates. DAUs were designed to implement monitoring and management under the State Wolf Population Management Plan (2008).

STATEWIDE SUMMARY

This report summarizes the status of wolves and wolf management within the borders of the State of Idaho, including portions of all 3 northern Rocky Mountain recovery areas; endangered wolves in the Northwest Montana recovery area (NWMT) north of I-90, and nonessential experimental wolves within Idaho portions of the Central Idaho (CID) and Greater Yellowstone (GYA) Nonessential Experimental Population areas south of I-90.

Idaho has a diverse landscape which results in multiple levels of potential human conflict with large carnivores such as wolves. Central Idaho, includes 3 contiguous Wilderness Areas; the Selway-Bitterroot, Frank Church River-of-No-Return, and Gospel Hump. These wilderness areas encompass almost 4 million acres (1.6 million ha), which represent the largest block of federally-designated Wilderness in the lower 48 states. Southern Idaho includes the vast Snake River Plain, which is predominately private agricultural land and also contains most of Idaho's urban centers. Three major mountain chains and 2 large river systems help to blend these very different landscapes together with landscapes which tend to be heavily roaded forested or desert public, and some private, land which are managed for multiple uses. A moisture gradient also influences the habitats of both wolves and their prey, with wetter maritime climates in the north supporting western red cedar (*Thuja plicata*)-western hemlock (*Tsuga heterophylla*) vegetation types, grading into continental climates of Douglas-fir (*Pseudotsuga menziesii*) and Ponderosa pine (*Pinus ponderosa*) 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 centimeters) at lower elevations to almost 100 inches (254 centimeters) at upper elevations.

Wolf Population Status

The Idaho wolf population has continued to expand in both numbers and distribution since initial reintroductions in 1995 (Figures 4, 5 and 6). By the end of 2008, 88 documented wolf packs remained extant in Idaho, 5 more than were reported in 2007. A minimum of 428 wolves was observed or monitored by wolf Program personnel. The minimum population estimate was 846 (Appendix A).

Distribution, Reproduction, and Population Growth

Wolves were well distributed in the state from the Canadian border, south to the Snake River Plain, and from the Washington-Oregon Border east to the Montana-Wyoming border (Figure 6). Of the 88 documented packs extant at the end of 2008, territories of most were predominantly on U.S. Forest Service (USFS) public lands. However, this year more than others, population expansion seemed to occur in 2 primary areas: the Panhandle, where 6 new packs were documented, and the Southern Mountains DAU, where new wolf packs were verified after confirmed livestock depredations and had to be removed. Four of the 6 new wolf packs in the Panhandle had multiple adults, and therefore were presumed to have been extant for at least the previous year. Effort to document wolves in the Panhandle increased in 2008.

Of 88 documented packs, a minimum of 60 produced litters and 39 qualified as breeding pairs (Table 1). A minimum of 192 wolf pups was documented in 2008. Documented litter sizes ranged from 1-8 pups. Average minimum litter size for those packs where counts were believed

complete ($n = 25$) was 4.4 pups per litter. Wolf pup counts were conservative estimates because not all pups were observed from packs that were monitored, some documented packs were not visited and remoteness precluded obtaining pup counts for several packs in Wilderness and other areas with difficult access. Likewise, our reported number of breeding pairs is a minimum estimate as we were unable to determine reproductive status of some packs. The reproductive status of 49 documented packs was either not verified or believed to be non-reproductive during 2008.

Based on the presence of multiple (>2) adults, 4 packs newly documented in 2008 were believed to be extant during the previous year and were retroactively added to the number of documented packs for 2007. Based on this retroactively corrected pack count, the estimated wolf population increased 10% between 2007 ($n = 768$) and 2008 ($n = 846$) (Figure 4). Most newly documented packs were counted in the Panhandle DAU. Last year the average pack size was 7.7, this year it was 8.3, influencing population estimates (Appendix A). The social carrying capacity for wolves will likely be below the biological carrying capacity as wolves are managed in concert with other wildlife values, livestock concerns, and management objectives. Ultimately the citizens of Idaho, not habitat, will determine the number of wolves that will persist in the state. Due to high conflict levels with livestock during 2008, 108 wolves were removed by agencies or producers to manage problems. That was more than double the 50 wolves controlled for the same reasons in 2007. Increases in wolf-livestock conflicts were in part related to increased wolf activity in conflict areas, primarily private lands where agricultural and other human uses are incompatible with long-term wolf survival.

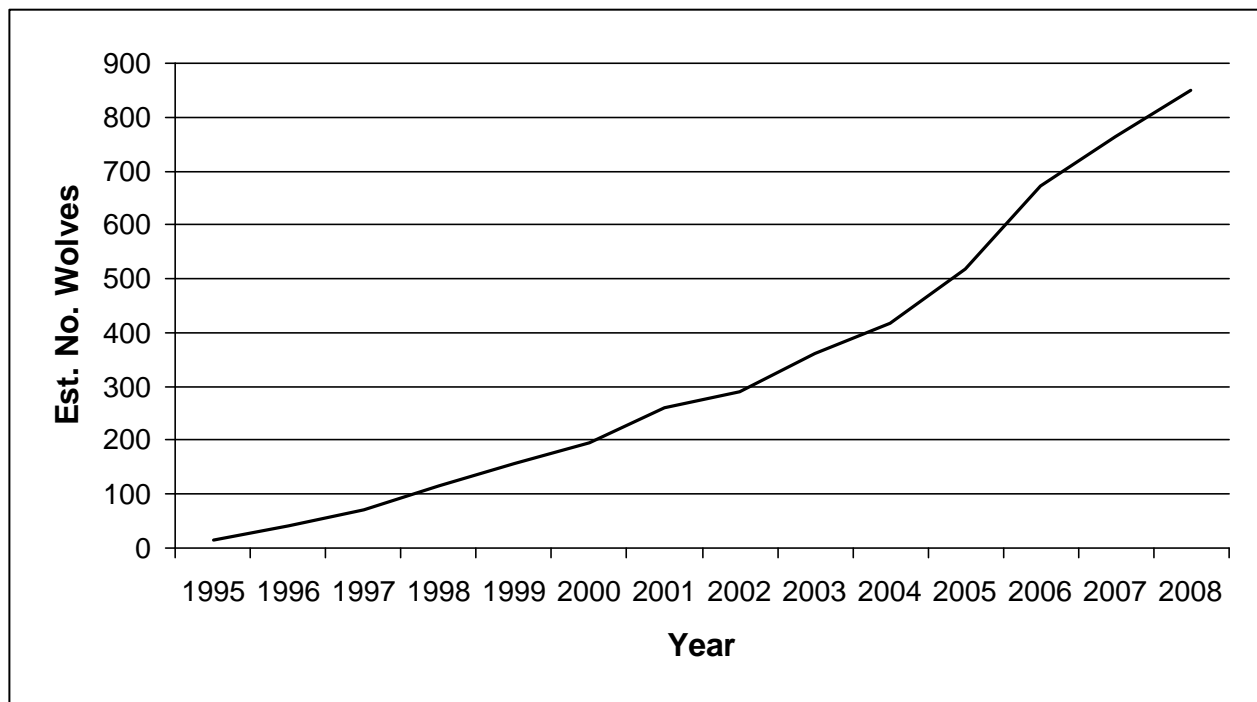


Figure 4. Estimated minimum number of wolves in Idaho, 1995-2008. Annual numbers were based on best information available and were retroactively updated as new information became available.

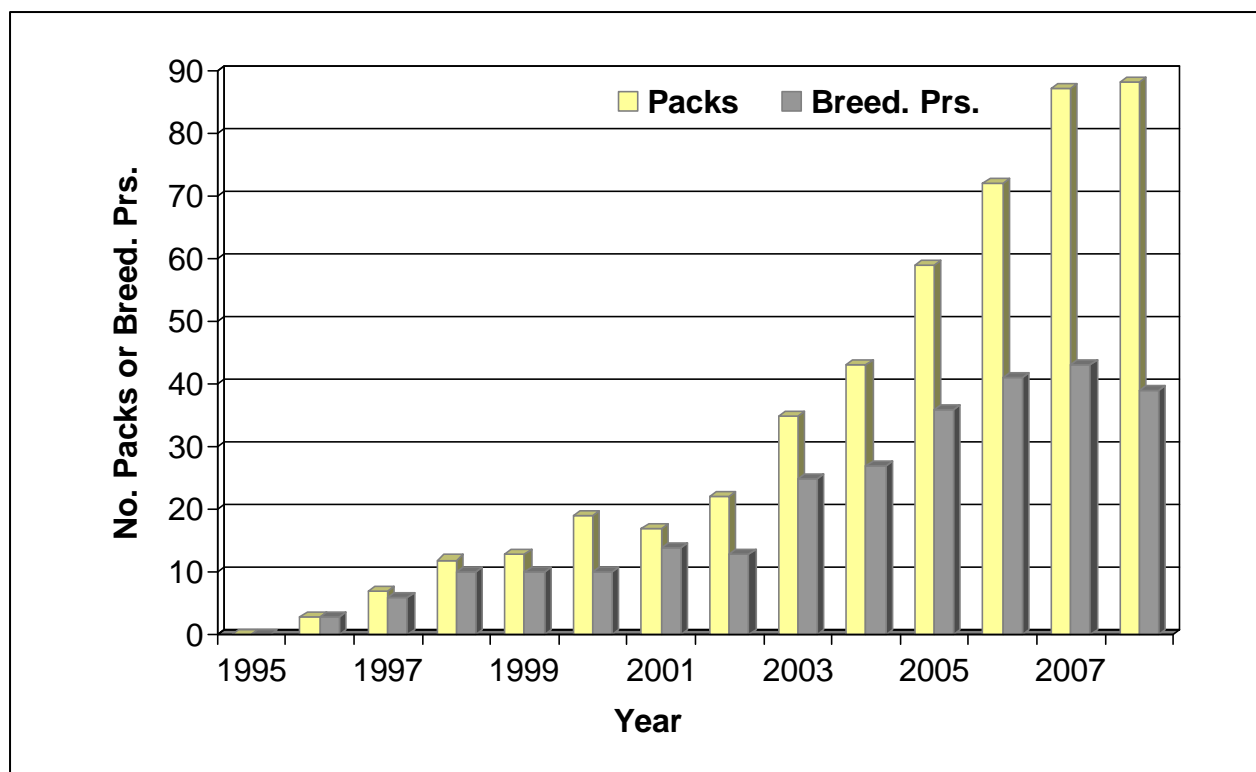


Figure 5. Number of documented wolf packs and breeding pairs in Idaho, 1995-2008. Annual numbers were based on best information available and were retroactively updated as new information became available.

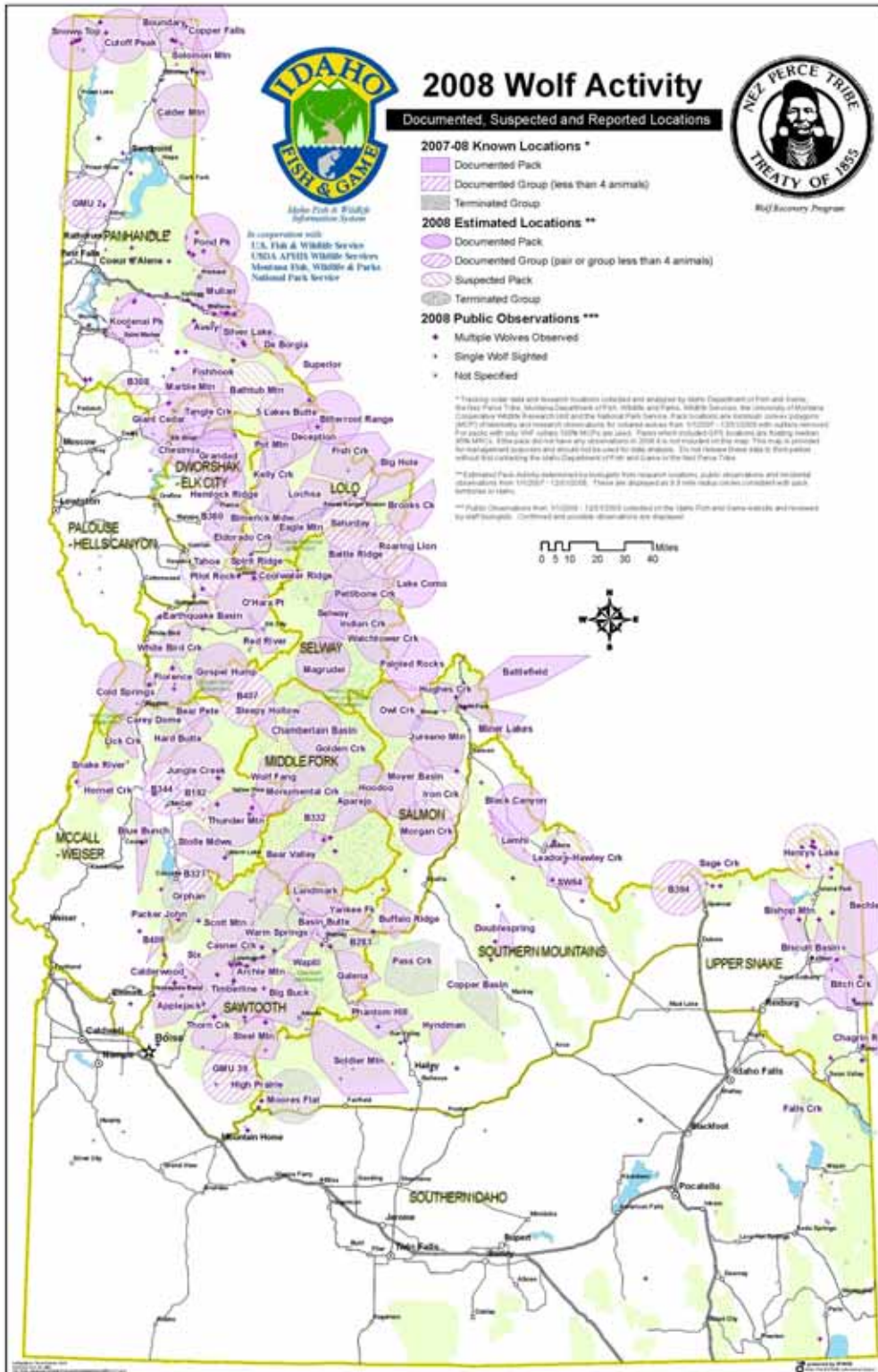


Figure 6. Distribution of documented and suspected wolf packs, other documented groups, and public wolf reports in Idaho, 2008.

Table 1. Number of wolves observed, documented packs, and other documented wolf groups; reproductive status; mortality; dispersal; monitoring status; and wolf-caused livestock depredations within Idaho Department of Fish and Game Wolf management DAUs, 2008.

	Management DAU												Total
	Panhandle	Palouse-Hells Canyon	Dworshak-Elk City	Lolo	Selway	McCall-Weiser	Middle Fork	Sawtooth	Southern Idaho	Upper Snake	Southern Mtns	Salmon	
Minimum number wolves detected ^a	41	7	48	70	7	48	33	108	0	17	30	19	428
Documented packs													
No. packs documented during year ^b	13	2	11	10	6	12	7	16	1	3	9	7	97
No. packs removed ^b	0	0	0	0	0	3	0	2	1	0	3	0	9
No. packs end of year	13	2	11	10	6	9	7	14	0	3	6	7	88
Other documented groups ^c													
No. other groups documented during year ^c	3	0	4	1	3	4	1	3	1	1	4	5	30
No. other groups removed ^c	0	0	1	0	0	1	0	0	1	0	2	4	9
No. other groups end of year	3	0	3	1	3	3	1	3	0	1	2	1	21
Reproductive status													
Minimum no. pups produced (morts)	16(2)	2	19	29	0	30(1)	10	44(6)	2(2)	6	14(3)	20(1)	192(15)
No. reproductive packs	8	1	5	8	0	7	5	13	1	2	6	4	60
No. breeding pairs ^d	2	1	4	6	0	5	2	11	0	2	2	4	39
Documented mortalities													
Natural	1	1	0	0	0	0	1	1	0	0	0	0	4
Control ^e	1	1	3	0	0	22	0	23	8	4	33	13	108
Other human-caused ^f	0	0	1	2	0	6	1	4	0	1	4	4	23
Unknown	3	0	4	3	1	1	2	1	0	1	1	1	18
Known dispersal	2	1	1	0	0	0	0	2	0	0	0	2	8
Monitoring status													
Active radiocollars	4	1	9	9	2	10	6	28	0	3	6	1	79
No. wolf captures ^g	1	1	1	6	0	3	2	30	1	5	6	4	60

Table 1. Continued.

	Management DAU												Total
	Panhandle	Palouse-Hells Canyon	Dworshak-Elk City	Lolo	Selway	McCall-Weiser	Middle Fork	Sawtooth	Southern Idaho	Upper Snake	Southern Mtns	Salmon	
No. wolves missing ^h	1	0	6	3	0	0	1	3	0	0	1	2	17
Confirmed (probable) wolf-caused livestock losses													
Cattle	0	1	2(3)	0	0	18(8)	0	17(5)	4(3)	3(1)	40(10)	11(2)	96(32)
Sheep	0	0	0	0	0	55(13)	0	88(8)	24	16	35(21)	0(4)	218(46)
Dogs, horses*	0(1)	0	1	6	0	2	0	2	1*	1	0		13(1)

^a Number of wolves observed by wolf program personnel in 2008. Sum of this row does not equate to number of wolves estimated to be present in the population.

^b Does not include documented packs removed due to lack of verified evidence for the preceding 2 years. Includes documented border packs tallied for Idaho.

^c Other documented wolf groups include suspected packs and known and suspected mated pairs; verified groups of wolves that do not meet the definition of a documented pack.

^d Breeding pairs are the measure of Federal and State wolf recovery and management goals. A breeding pair is defined as “an 2 adult wolves that have produced at least 2 pups that survive until December 31 of the year of their birth...”.

^e Includes agency lethal control and legal take by landowners.

^f Includes all other human-related deaths.

^g Includes wolves captured for monitoring purposes during 2008. Most, but not all, were radiocollared.

^h Radiocollared wolves that became missing in 2008.

Mortality

One hundred and fifty-three documented wolf mortalities were recorded in 2008 (Table 1). Of those, 131 were human caused, 18 were unknown, and 4 were natural. Of 131 confirmed human-caused mortalities, 94 wolves were controlled for livestock depredations by WS, 14 were legally taken by producers while attacking or harassing their stock or dogs or under Shoot- On- Sight permits, 13 were illegally taken, and 10 were from other human causes. More wolves ($n = 94$) were lethally controlled by WS in Idaho in 2008 than in any previous year. Eighty-nine percent of this mortality stemmed from removals in 26 packs. These figures are likely underestimates of the true amount of overall mortality occurring within the wolf population, as documenting mortalities of uncollared wolves that are not controlled by agencies is difficult. Only 4 wolf deaths due to natural causes were recorded, another indication that mortality was underestimated, as more individuals likely succumbed to non human-related factors. Lastly, there were no means to estimate deaths of pups that occurred prior to our visits.

Based on radiocollared wolves, mortality as a percentage of collars was estimated as follows: Of the 140 radiocollared wolves, 40 (29%) were confirmed or suspected to have died. Of those 3 (7.5%) died of natural causes, 10 (25%) from unknown causes, and 27 (67.5%) from human causes. Of the 27 human-caused mortality, 13 (48%) were from control actions by WS; 5 (18.5%) were legal takes under a shoot-on-sight permit, under state livestock protection law (36-1107), or under 10j livestock protection clause; 8 (30%) from illegal take, 1 (3.5 %) was capture related (Figure 7).

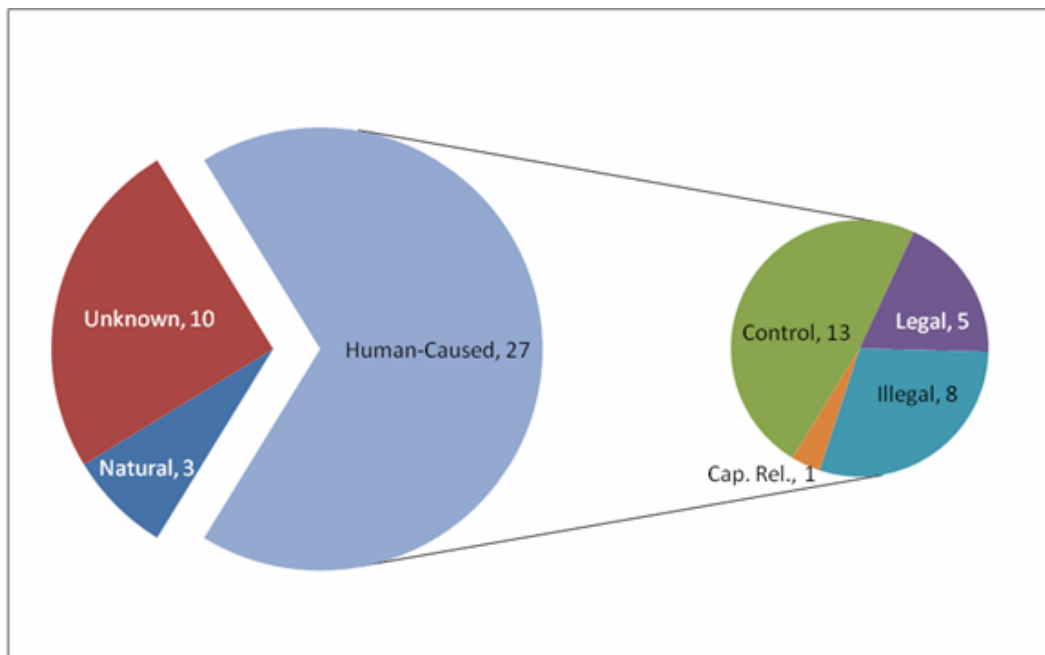


Figure 7. Cause specific mortality of 40 radiocollared wolves that died from various causes during 2008. (Note: Numbers are different than Table 1 because not all documented dead wolves had radio collars.)

Using these proportions, we estimated the total number of wolves dying during 2008 from various causes including agency control and legal take (n=108 wolves; 11% of population), illegal take (n=102 wolves; 10% of population), natural and unknowns causes (n=104 wolves; 10% of population), and other human causes (n=58 wolves; 6% of population) to be 372 wolves for an overall population mortality rate of 37%.

Livestock and Dog Mortalities

During 2008, WS conducted 202 depredation investigations involving reported wolf-killed livestock and dogs. Of those, 142 (70%) involved confirmed wolf depredations, 37 (18%) involved probable wolf depredations, 14 (7%) were possible/unknown wolf depredations, and 9 (4%) were due to causes other than wolves. During the calendar year, WS reported 128 cattle, 264 sheep, and 13 dogs, and 1 horse foal that were classified as confirmed or probable wolf kills (Table 1). Non-lethal techniques were used where appropriate to reduce wolf-livestock conflicts. Of the confirmed and probable conflicts, about a third of the packs were involved in 3 or more conflicts and were considered by WS to be chronic depredation packs. Statewide patterns of wolf depredations indicate highest livestock conflicts in 4 of the 12 DAUs; McCall-Weiser, Sawtooth, Southern Mountains and Salmon (Figures 8 and 9).

Law Enforcement

During 2008, USFWS Special Agents, IDFG Conservation Officers and other staff cooperatively investigated and reported 60 incidents of known or suspected wolf mortalities. Of the 60 incidents investigated, 16 involved legal takes, 9 were illegally killed, 8 were legally killed, 1 died of natural causes, 5 from other human causes, and the cause of death for 9 was unknown. For the remaining 6 incidents, either a carcass could not be found or the report or incident was not wolf-related. A number of investigations were still pending or undisclosed for investigative purposes and not reported in this text.

Research

Agencies continued to coordinate and support scientific research assisting in long-term wolf conservation and management.

Statewide Elk and Mule Deer Ecology Study

During 2008, the IDFG continued its effort to measure the effects of wolf predation and habitat on elk and mule deer populations across Idaho. Goals were met to radiocollar and monitor adult and 6-month-old mule deer and elk. Action is on-going to meet research objectives which include 1) determine survival, cause-specific mortality, pregnancy rates, and body condition for radiocollared animals; 2) monitor wolf distribution and abundance within project areas; 3) develop habitat condition and trend maps for Idaho; and 4) manipulate predator populations in project areas and monitor ungulate population responses. Focus is shifting from more than 10 extensive study areas to 2 intensive areas where detailed information regarding wolf and ungulate interactions via GPS telemetry is being gathered. These data will help to better understand the predator/ prey dynamic in contrasting landscapes. This research is providing contemporary data regarding survival, important mortality factors, and productivity of elk and

deer populations for determining appropriate harvest levels. Further, this research will help identify and evaluate specific predator and habitat management actions necessary to achieve ungulate population objectives.

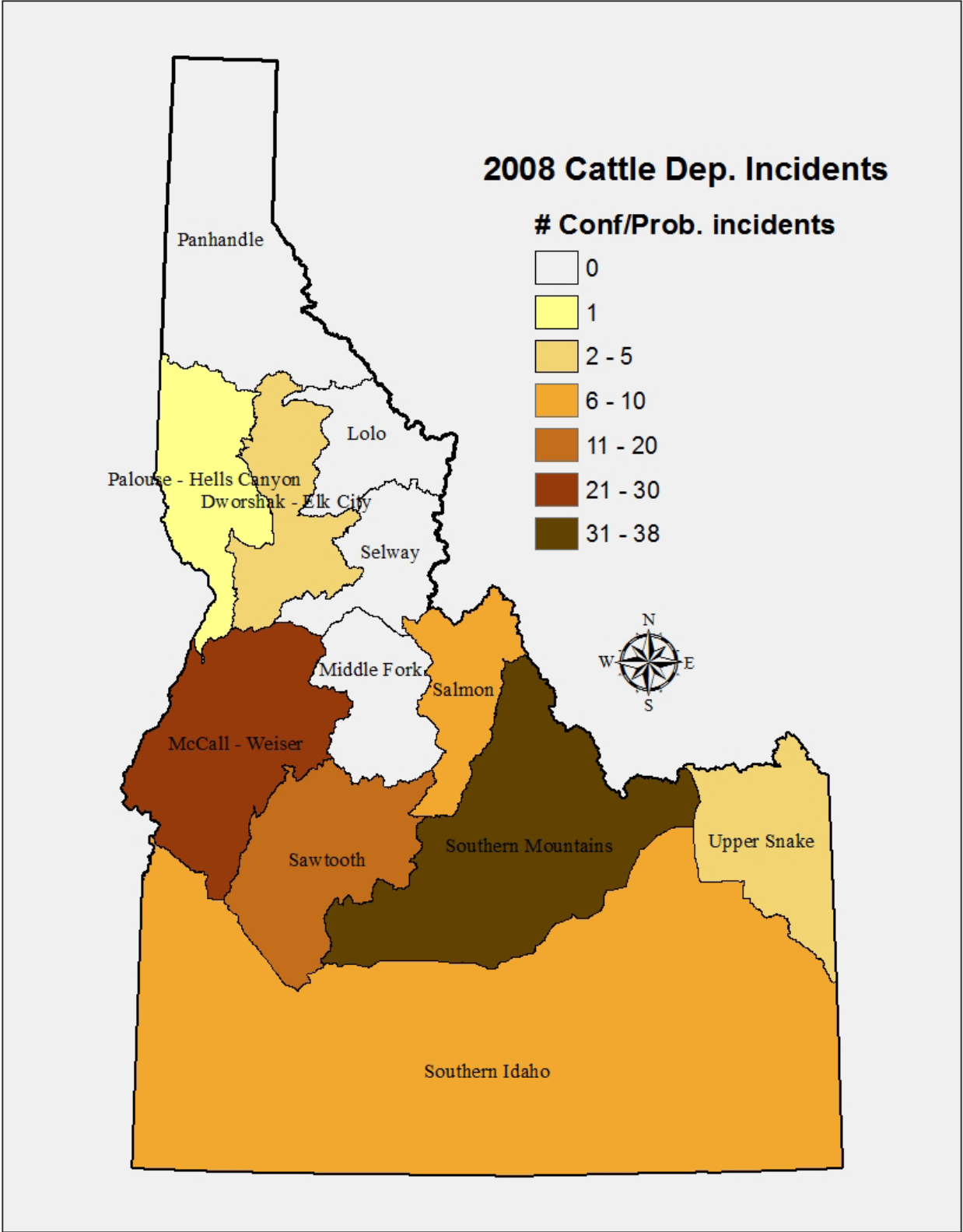


Figure 8. Cattle depredation incidents that were either confirmed or probable wolf, by DAU during 2008.

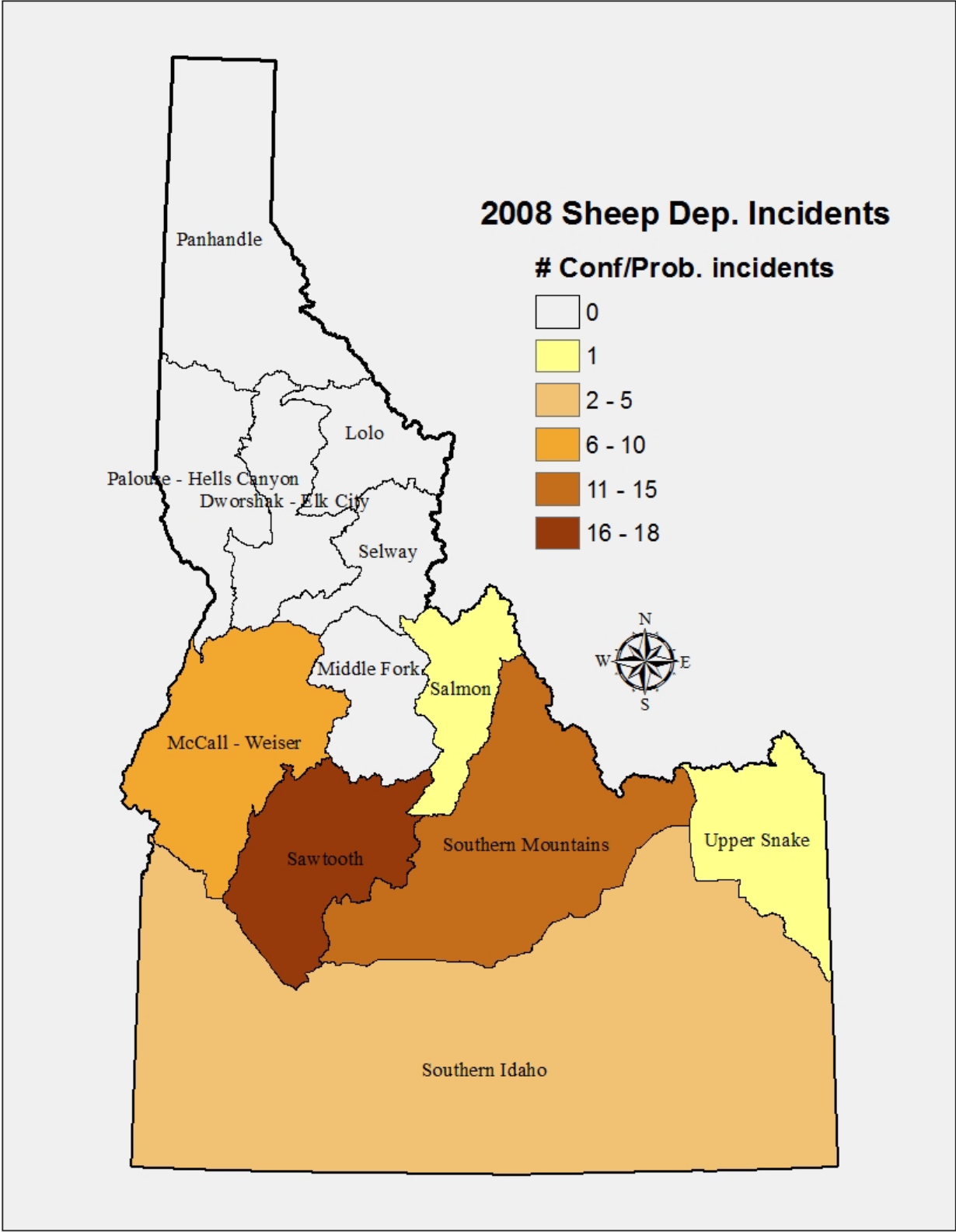


Figure 9. Sheep depredation incidents that were either confirmed or probable wolf, by DAU during 2008.

Developing Monitoring Protocols for the Long-term Conservation and Management of Gray Wolves in Idaho

Throughout reintroduction and recovery, wolves in the NRM have been monitored intensively through capturing, radio-collaring, and aerial surveys, supported almost entirely with USFWS funding. Federal funding for intensive monitoring will be eliminated following delisting, and agencies will have to rely on scarce resources to obtain the information needed to document wolf numbers. Recognizing the need for less invasive, but effective monitoring techniques, the Nez Perce Tribe obtained a Tribal Wildlife Grant to research alternative ways to monitor the wolf population that do not necessarily rely on radiocollaring wolves. Collaborating with the Montana Cooperative Wildlife Research Unit and IDFG, research began in earnest in 2006.

We have devised, and are in the process of testing, a proposed population monitoring program based on patch occupancy modeling, a statistical technique that can integrate observations from multiple sampling methods into population-level inferences on broad spatial scales. We demonstrate that a patch occupancy model can provide reasonably accurate estimates of abundance of wolf packs using only on-line public sightings. To populate a patch occupancy model and develop a statewide population monitoring framework useful for Idaho, we are evaluating a variety of survey methods that have varied levels of inference and have demonstrated strong relationships to wolf abundance and distribution. We are developing these methods to 1) enable the reliable detection of reproductively active wolf packs, 2) be more cost-effective than traditional radiotelemetry, and 3) to implement less invasive monitoring techniques. The suite of methods we are developing and testing are hunter surveys, rendezvous site surveys, howlboxes, and rub pads.

We surveyed 2,000 hunters annually and found that hunters are largely accurate when reporting wolf observations because there was a strong correlation between the number of wolves detected by hunters and the density of wolves in each of 4 study areas. To develop survey methods that can provide more detailed data on wolves in a given area than hunter surveys, we developed a habitat model that predicted the locations of wolf rendezvous sites. In 2007 and 2008, we conducted surveys at approximately 475 predicted rendezvous sites annually resulting in the detection of 12 of 17 accessible litters of pups and all 25 study packs. Genetic samples collected during rendezvous site surveys provided accurate population estimates via DNA analyses. The howlbox, an automated wolf detection tool, can detect wolves remotely, distinguish adults from pups, and obtain minimum pack size counts using spectrograms. Finally, we were able to consistently elicit roll responses from wolves onto barbed rub pads. Nearly 390 rub pad trap nights resulted in 39 roll events, and ongoing DNA extractions indicate rub pads can obtain hair samples non-invasively from wolves. The data gathered from each of these survey methods can provide the detection/non-detection data needed to populate a patch occupancy model; further, some of the methods can provide highly detailed data on wolves in areas providing biologists with unprecedented tools for understanding wolves occupying areas of high management interest. Because some of our survey methods can provide estimates of pack size, they can be coupled with the Mitchell et al. (2008) equations to estimate the number of Breeding Pairs in the state and help meet federal requirements during the 5-year post delisting phase of wolf recovery.

During 2009-2011 we will continue to test the validity of our survey methods and refine and improve them where necessary. We will also estimate the number of individual wolves and

Breeding Pairs from the patch occupancy model and perform simulations of patch occupancy models that employ varying levels of each survey method to determine which combination provides the highest level of accuracy and precision for use in future wolf conservation and management. Lastly, we will explore the use of spatially-explicit colonization and extinction probabilities generated by the patch occupancy model to assess their usefulness and reliability at predicting both the abundance and distribution of wolves. As wolves move from an endangered species to a big-game species, agencies in the NRM can use a patch occupancy framework to couple harvest results and annual monitoring efforts and enable continuous feedback and improvement of harvest predictions and population conservation strategies. Our goal at the end of 2011 is to have a less expensive population monitoring framework that has been soundly tested, is rooted in wolf ecology and can provide population estimates with an associated measure of precision that managers can use with confidence.

Outreach

Program personnel presented 44 information and education programs to a minimum of 2,149 people. Audiences included school students, agency personnel, livestock associations, community groups, sportsmen and outfitters, and legislators. In addition to organized presentations, program personnel talked to numerous members of the public via telephone, email, and in person. Also, news articles were often released by IDFG summarizing noteworthy items about wolves on a regular basis. Program personnel talked with reporters from across Idaho and the nation regularly. Wolves continued to be an interesting topic for the public and television, radio, and print media contacted the program leaders often to obtain wolf information and agency perspective. Additionally, IDFG hosted open houses around the state to comment on the wolf hunting regulations. Thus, thousands more people were contacted regularly by program personnel about wolves through radio, television, and print media.

The IDFG online wolf reporting system provided an opportunity for the public and professionals to record wolf observations in Idaho. During 2008, 496 wolf observations were reported on the web site. The online reporting system is a tool which assisted biologists in identifying areas of possible wolf activity and allowed the public a means to communicate wolf concerns to the appropriate agency.