

Montana Gray Wolf Conservation and Management 2009 Annual Report

A cooperative effort by Montana Fish, Wildlife & Parks, USDA Wildlife Services, Glacier National Park, Yellowstone National Park, Blackfeet Nation, and The Confederated Salish and Kootenai Tribes



FWP by photo Kent Laudon

This report presents information on the status, distribution, and management of wolves in the State of Montana, from January 1, 2009 to December 31, 2009.

It is also available at: www.fwp.mt.gov/wildthings/wolf

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MONTANA EXECUTIVE SUMMARY

Wolf recovery in Montana began in the early 1980's. Gray wolves increased in number and expanded their distribution in Montana because of natural emigration from Canada and a successful federal effort that reintroduced wolves into Yellowstone National Park (YNP) and the wilderness areas of central Idaho. The U.S. Fish and Wildlife Service (USFWS) approved the Montana Gray Wolf Conservation and Management Plan in early 2004, but delisting in the northern Rockies (NRM) was delayed. When federal funding became available later in 2004, Montana Fish, Wildlife & Parks (MFWP) began managing wolves in northwestern Montana under a cooperative agreement with USFWS. In 2005, Montana expanded its responsibility statewide under an interagency cooperative agreement. The agreement allowed Montana to implement its federally-approved state plan to the extent possible and within the guidelines of federal regulations.

Using federal funds, MFWP monitors the wolf population, directs problem wolf control and take under certain circumstances, coordinates and authorizes research, and leads wolf information and education programs. MFWP wolf management specialists were hired in 2004 and are based throughout western and central Montana. A program coordinator is based in Helena.

The Montana wolf population increased from 2008 to 2009, although the rate of growth slowed down as suitable habitat becomes occupied, leaving more conflict-prone areas vacant. As wolves attempt to settle in these areas and conflicts with livestock occur, wolves are killed. This dynamic produces more of a turnover effect than a net increase in the number of wolves on the landscape at local scales. The combination of hunter harvest, agency control and other mortality dampened, but did not fully curtail population growth. Most of the increase occurred in WMU 1 in northwest Montana. Minimum wolf counts in WMU 2 remained relatively stable from 2008 to 2009 and counts in WMU 3 declined. Nonetheless, a minimum of 166 pups were produced and the population is secure and well above federal recovery levels.

A total of 101 verified packs of 2 or more wolves yielded a minimum count of 524 wolves in Montana. Thirty-seven packs qualified as a breeding pair according to the federal recovery definition (an adult male and female with two surviving pups on December 31). In WMU 1, there were at least 308 wolves in 84 packs, 23 of which were breeding pairs. In WMU 2, there were at least 110 wolves in 20 packs, 5 of which were breeding pairs. In WMU 3, there were at least 106 wolves in 17 packs, 9 of which were breeding pairs.

USDA Montana Wildlife Services (WS) confirmed that 97 cattle, 202 sheep, 4 dogs, 4 llamas, and 2 domestic goats were killed by wolves in calendar year 2009. Additional losses (both injured and dead livestock) most certainly occurred, but could not be confirmed. Most depredations occurred on private property. The Montana Livestock Loss Reduction and Mitigation Board paid \$141,462 for 367 claims of confirmed or probable death loss of livestock in Montana in 2009. One hundred forty five wolves were killed to reduce the potential for further depredations. Of the 145, 135 were killed by WS, 10 were killed by private citizens under either state or federal regulations that allowed citizens to kill wolves seen chasing, killing, or threatening to kill livestock. No wolves were taken on kill permits issued to livestock owners as part of a coordinated agency response to confirmed depredations.

Wolves in Montana prey primarily on elk, deer, and moose. Numerous research projects that investigated wolf-ungulate relationships are winding down. Many reports and publications are available. Earlier in 2009, MFWP completed the final report summarizing efforts to monitor and assess wolf-ungulate interactions and population trends within the Greater Yellowstone Area, southwestern Montana, and Montana statewide. It is on the FWP website and available in hard copy.

In February 2008, the USFWS delisted the gray wolf in the northern Rocky Mountain Distinct Population Segment (all of Montana, Idaho, Wyoming, eastern Oregon, eastern Washington, and a small part of Utah). That decision was challenged in court in April. In July, a preliminary injunction was granted and wolves were back under the federal regulations and considered endangered or experimental in Montana. For about four months in 2008, wolves were officially delisted and wolves were managed wholly under Montana's regulatory framework. The USFWS withdrew its 2008 delisting decision by fall 2008 so that it could be re-evaluated in light of the court order granting the preliminary injunction. USFWS re-evaluated its delisting decision and took public comment on the issues raised during the 2008 delisting litigation and the court's injunction ruling.

In April 2009, USFWS published a new delisting decision that took effect May 4, 2009. The wolf was delisted in all of Montana and Idaho, eastern Oregon, eastern Washington, and a small part of Utah. In Wyoming, the wolf remained listed as experimental / non-essential under the federal Endangered Species Act. Upon delisting, the wolf was automatically reclassified as a state species in need of management statewide under Montana law. Montana's laws, administrative rules, and the state management plan took full effect.

This annual report presents information on the status, distribution, and management of wolves in the State of Montana from January 1 to December 31, 2009. The report and other information about wolves and their management in Montana program are available at <http://fwp.mt.gov/wolf>.

INTROUCTION AND BACKGROUND

Wolf recovery in Montana began in the early 1980's. Gray wolves increased in number and expanded their distribution in Montana because of natural emigration from Canada and a successful federal effort that reintroduced wolves into Yellowstone National Park (YNP) and the wilderness areas of central Idaho. Montana contains portions of all 3 federal recovery areas: the Northwest Montana Endangered Area (NWMT), the Central Idaho Experimental Area (CID), and the Greater Yellowstone Experimental Area (GYA) (Figure 1).

The biological and temporal requirements for wolf recovery in the northern Rocky Mountains of Montana, Idaho, and Wyoming were met in December 2002. Before the U.S. Fish and Wildlife Service (USFWS) can propose to delist gray wolves, federal managers must be confident that a secure, viable population of gray wolves will persist if protections of the Endangered Species Act (ESA) were removed. To provide that assurance, the states of Montana, Idaho, and

Wyoming developed wolf conservation and management plans and adopted other regulatory mechanisms in state law.

In late 2003, all 3 states submitted wolf management plans to USFWS for review. Based on the USFWS's independent review of the state management plans and state law, analysis of the comments of independent peer reviewers and the states' responses to those reviews, USFWS approved the Montana and Idaho management plans as being adequate to assure maintenance of their state's share of the recovered tri-state wolf population. Wyoming's plan, however, was not approved. USFWS will not propose delisting until the Wyoming plan and associated state laws can be approved.

After amending its Record of Decision to comply with the Montana Environmental Policy Act, MFWP increased its role in day-to-day wolf recovery and management in northwest Montana under an interim interagency cooperative agreement even though wolves remain protected under the federal Endangered Species Act. USFWS provided direct funding.

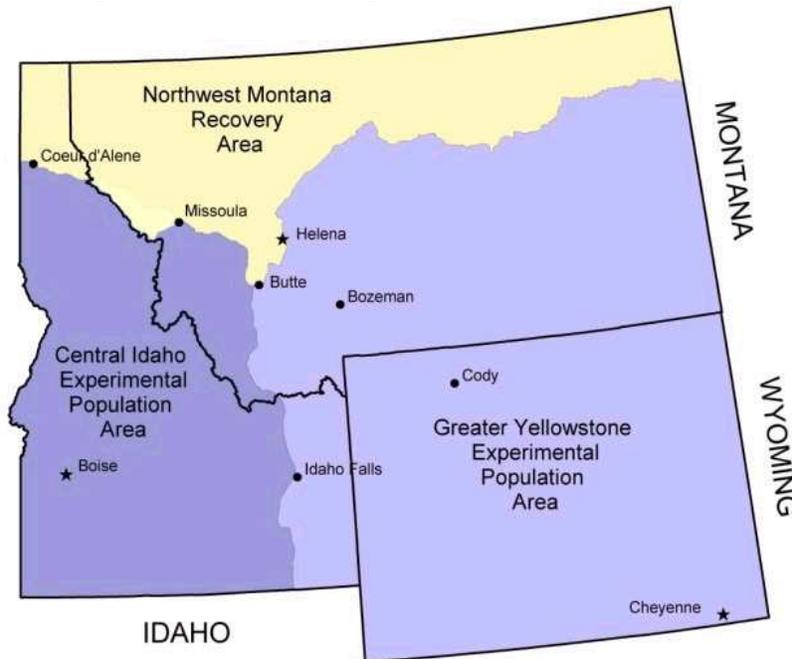


Figure 1. Northern Rockies gray wolf recovery area comprised of the states of Montana, Idaho, and Wyoming

In 2005, MFWP expanded its responsibility for wolf conservation and management statewide. Additional federal funding became available through Congress, beginning in federal fiscal year 2004. A new MFWP-USFWS interagency cooperative agreement was finalized in June 2005. With a clear agreement in place and federal funding to support the work, MFWP became the lead agency for wolf conservation and management statewide in June 2005, though its role and participation gradually increased from spring 2004 to June 2005. The agreement is effective through June 2010, or until the wolf population in Montana is removed from the federal list of threatened or endangered species, or until amended by either party.

The cooperative agreement allows Montana to implement its approved state plan to the extent possible and within the guidelines of federal regulations. The cooperative agreement authorizes Montana to conduct traditional wolf management such as population monitoring, direct problem wolf control, take wolves under certain circumstances, coordinate and authorize research, and coordinate and lead wolf information and education programs. Montana is committed to maintaining the recovered status of its share of the NRM wolf population.

In July 2007, USFWS proposed changes to the federal regulation pertaining to the 10j experimental area across southern Montana. USFWS proposed that the 2005 10(j) nonessential experimental population regulation be modified (72 FR 36942) to modify the standard by which states and tribes with USFWS-approved plans to develop science-based proposals to lethally remove wolves shown to be negatively affecting ungulate herds. The modification from 'primary cause' to 'one of the major causes' allowed a high but reasonable standard. In addition it would allow anyone on private land or public land to shoot a wolf that was attacking their dog or stock animals. The proposed rule change received over 262,000 public comments. The rule was published on January 28, 2008 (73 FR 4720) and became effective 30 days later on February 27, 2008.

Delisting Efforts and Litigation in 2007 - 2009

On February 8, 2007, USFWS proposed to identify the Distinct Population Segment (DPS) of the gray wolf in the NRM and to delist it. Two options were presented, depending on whether the regulatory framework in Wyoming (WY) could be approved. The USFWS proposed to delist wolves in Montana, Idaho, and Wyoming, and parts of Washington, Oregon, and Utah. The proposal noted that the ESA's protections would be retained in significant portions of the range in Wyoming if adequate regulatory mechanisms were not developed to conserve Wyoming's portion of a recovered wolf population into the foreseeable future. Under this alternative scenario, wolves in portions of Wyoming would stay listed under ESA as a non-essential, experimental populations and managed according to the 1994 federal regulations.

On July 6, 2007, the USFWS extended the comment period on the February 8, 2007 proposal in order to consider a 2007 revised Wyoming wolf management plan and state law. The delisting proposal was open for public comment for a total of 90 days and 8 public hearings were held. The proposed delisting rule received over 283,000 public comments. In December of 2007, the USFWS Director determined Wyoming's regulatory mechanisms met the requirements of the ESA, contingent on some final steps to be taken by Wyoming. On February 27, 2008, USFWS issued a final rule recognizing the NRM DPS and removing all of this DPS from the List of Endangered and Threatened Wildlife (73 FR 10514) and stated that Wyoming's 2007 regulatory mechanisms were adequate.

On March 28, 2008, wolves in Montana and throughout the NRM were officially delisted. The Montana state plan and state laws took full effect. On April 28, 2008, 12 parties filed a lawsuit challenging the identification and delisting of the NRM DPS. The plaintiffs also requested a preliminarily injunction to block the delisting decision from taking effect. The State of Montana sought and was granted intervener status to participate fully during the litigation. Many other

interveners were permitted to participate in the litigation in support of the USFWS delisting decision, including the states of Idaho and Wyoming. In May, during a court hearing on the injunction request, MFWP argued that Montana's regulatory framework was adequate and that the court had the flexibility to enjoin some states, but not others – essentially suggesting that the federal judge could split Montana out from Idaho and Wyoming at the injunction state and put Montana under the court's supervision.

The NRM DPS wolf population was officially delisted from March 28 to July 18, 2008. During that time, the Montana regulatory framework was in effect. Wolves were protected under Montana state law and by MFWP Commission rule as a species in need of management statewide. Montana's defense of property law allowed private citizens to haze, harass or kill wolves that were seen killing or threatening to livestock. One wolf was killed in that circumstance during the four month period in MFWP Administrative Region 2 where wolf-livestock conflicts have occurred in the past. The incident was reported and investigated by MFWP law enforcement. It was determined to be lawful and fulfilled the requirements of Montana law. MFWP's use of lethal control was guided by Interim Depredation Guidelines previously adopted by the MFWP Commission. The Interim Guidelines were applied statewide as the formal administrative rulemaking process was not yet completed. The Guidelines and the rules formally adopted by the MFWP Commission in September mirror the federal 2008 10j regulations. Thus, MFWP was not more aggressive in its application of lethal control, nor was there an accelerated rate of killings by non-agency personnel. Other aspects of the program (e.g. monitoring, outreach, research) also transitioned smoothly as MFWP has been managing the wolf population since 2004.

On July 18, 2008, the U.S. District Court for the District of Montana granted the plaintiffs' motion for a preliminary injunction and enjoined the USFWS implementation of the final delisting rule for the NRM DPS of the gray wolf. The three main issues identified were the regulatory framework in Wyoming, connectivity, and defense of property laws. The Court's preliminary injunction order concluded that the Plaintiffs were likely to prevail on the merits of their claims. The judge stated that he was inclined to rule against the federal government on two of the three issues during the main part of the lawsuit.

The NRM DPS wolf population was officially delisted from March 28 to July 18, 2008. This corresponded to the time lag between when the delisting decision took effect and when a federal district judge granted a request for a preliminary injunction (see below). During this period of time, state and Tribal management plans and state laws were fully in effect. The Court's preliminary injunction reinstated ESA protections for the gray wolf and reinstated federal regulations throughout the NRM DPS, effective July 18.

On September 22, 2008, USFWS asked the Court to vacate the final rule and remand it back to the agency. This would allow the agency to withdraw the rule for further consideration and review. On October 14, 2008, the Court vacated the final delisting rule and remanded it back to the USFWS.

On October 28, 2008, USFWS reopened the comment period on the February 2007, proposed delisting rule that presented two different scenarios for delisting the NRM DPS. Specifically,

USFWS sought information, data, and comments from the public regarding the 2007 proposal, with an emphasis on new information relevant to this action, the issues raised by the Montana District Court, and the issues raised by the September 29, 2008, ruling of the U.S. District Court for the District of Columbia with respect to the Western Great Lakes gray wolf DPS. The notice also asked for public comment on the WY regulatory framework. About 240,000 comments were received during that public comment period.

Based on the Court's ruling and a more thorough review, the USFWS determined and notified Wyoming in early January 2009 that its state plan and regulatory framework were not adequate and no longer "approved." Wolf management in all of Wyoming [except the Wind River Tribal Lands because the Tribe had a Service-approved plan] transitioned immediately to the 1994 experimental rules, which are less flexible and more restrictive than the 2005 or 2008 regulations.

In December 2008, USFWS revised the NRM delisting rule originally proposed in February 2007. On January 14, 2009, USFWS announced its decision to delist wolves throughout the NRM except the State of Wyoming, due to the lack of an accepted plan. The publication of the decision (final rule) in the Federal Register (official record of federal government's decisions) was delayed by an Executive Order on January 20, 2009. This is a standard practice as new federal administrations take office. The outcome of review by the administration could be: 1) publish as they were drafted; 2) revise through additional work and public comment and then modify/publish, or 3) not publish and withdraw to develop a different approach.

In February 2009, the Court awarded Earthjustice (the law firm representing 12 groups which filed the lawsuit challenging delisting) about \$263,000 in legal fees as reimbursement for their efforts at litigating the final delisting rule.

Upon further review by the new federal administration in early 2009, the USFWS delisting decision ultimately was published in the Federal Register and took effect in May, 2009. Wolves were delisted throughout the Northern Rocky Mountain Distinct Population Segment in the states of Montana, Idaho, eastern Oregon, eastern Washington, and a small part of Utah. The wolf remained a federally listed species in Wyoming due to the lack of an approved state plan and state laws. For the delisted states, the mandatory 5-year post delisting oversight period began in May.

Litigation over the 2009 delisting decision was again initiated in federal court in Missoula by the same coalition of organizations. Montana was again granted intervenor status. An injunction was requested, based on arguments presented by the plaintiffs that the hunting seasons planned for Idaho and Montana would harm the regional wolf population. The injunction request was denied and each state implemented a hunting season. Written Legal briefings were filed with the court by the all parties, and the last briefs were filed in January 2010.

STATEWIDE PROGRAM OVERVIEW

The Montana Wolf Conservation and Management Plan is based on the work of a citizen's advisory council. Completed in 2003, the foundations of the plan are to recognize gray wolves as a native species and a part of Montana's wildlife heritage, to approach wolf management similar to other wildlife species such as mountain lions, to manage adaptively, and to address and resolve conflicts.

However, because wolves were still listed until May 2009, some elements of Montana's plan could be implemented. Prior to delisting in May, the legal classification and federal regulations put wolves into 2 separate categories in Montana – endangered in northern Montana and experimental non-essential across southern Montana (Figure 2). Wolf-livestock conflicts were addressed and resolved using a combination of the statewide adaptive management triggers identified in the Montana plan and the federal regulations. In northwest Montana, the 1999 Interim Control Plan provided less flexibility to agencies and livestock owners. In contrast, more flexibility was provided through the revised 10(j) regulations (revised in February 2008).

Beginning with delisting in May, the wolf was reclassified as a species in need of management statewide (Figure 3). Montana's laws, administrative rules, and state plan replaced the federal framework. The 2009 delisting decision was challenged in federal court in Missoula. No ruling had been issued by the end of the calendar year, thus the wolf was conserved and managed as a resident wildlife species for the remainder of the year, with all taking regulated either by Montana laws or the MFWP Commission.

In the early stages of implementation, a core team of experienced individuals led wolf monitoring efforts and worked directly with private landowners. MFWP's wolf team also worked closely with and increasingly involved other MFWP personnel in program activities. As time goes by, Montana wolf conservation and management will transition to a more fully integrated program, led and implemented at the MFWP Regional level. USDA Wildlife Services (WS) investigated injured and dead livestock, and MFWP worked closely with them to resolve conflicts.

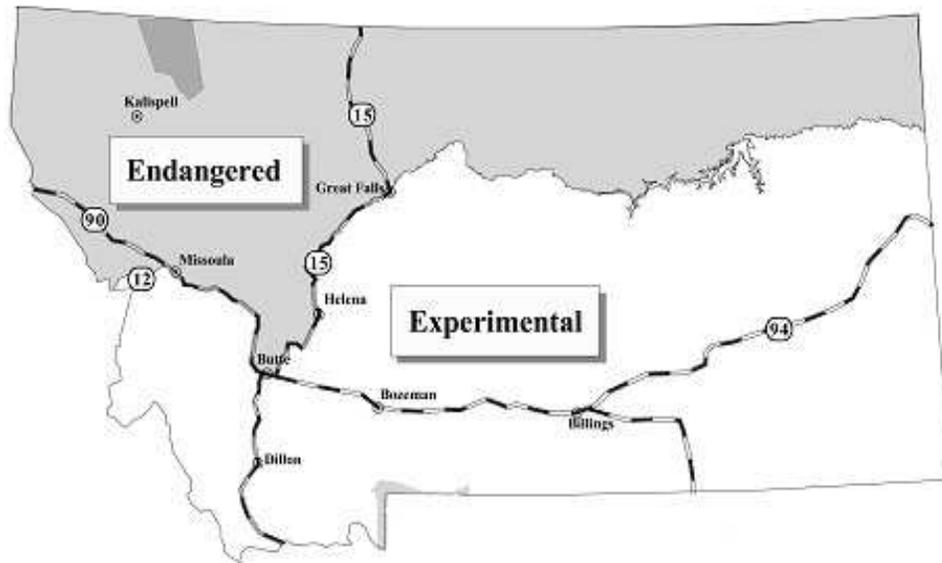


Figure 2. Map of the interim federal wolf management areas showing the endangered area where the 1999 Interim Wolf Control Plan applied and the experimental area where the 10(j) regulations applied prior to delisting in May, 2009. The central Idaho and Greater Yellowstone experimental areas are shown as one since the approved status of Montana’s state wolf plan allowed the special 10(j) regulations to apply equally in each area.



Figure 3. Map of legal classification of wolves statewide as species in need of management. Different laws and regulations may apply on Indian Reservations.

Overview of Wolf Ecology in Montana

Wolves were distributed primarily in the NRM region of western Montana east to the Beartooth face near Red Lodge. Montana wolf pack territories average around 200 square miles in size but can be 300 square miles or larger. Montana packs include a combination of public and private lands. The average pack territory in Montana is comprised of about 30% private land. Most Montana packs do not live strictly in back country wilderness areas or solely on public lands. Of the 101 packs in Montana, 11 (about 10% of all Montana packs) reside most of the year in remote backcountry or wilderness areas or in Glacier National Park. Many others live in public land areas with more public access and habitat fragmentation than wilderness areas or Glacier National Park. However, the majority of Montana wolf packs live in areas where mountainous terrain, intermountain valleys, and public / private lands are intermixed.

Dispersal distances in the northern Rockies average about 60 miles, but dispersals over 500 linear miles have been documented. A 500-mile radius from any wolf pack in YNP, Glacier National Park (GNP), or any pack in western Montana would plausibly reach all the way to Montana's eastern border. Montanans should be aware that wolves are established well enough in the northern Rockies now that a wolf could appear where none has been seen for decades. Wolves are capable of covering long distances in relatively short periods of time and often travel separately or in smaller groups. The travel ability of wolves, combined with the fact that packs split, with sub-groups traveling separately, can give an impression that there are more wolf packs and territories than is actually the case. Pack monitoring efforts, especially when combined with public / agency wolf reports, eventually leads to a conclusion about how many packs exist.

Wolf packs are family groups that consist of a breeding pair and their offspring of the current year and/or previous years and occasionally unrelated wolves. Offspring usually disperse from the natal pack at 1, 2 or 3 years of age. The size of the average wolf pack in Montana is between 5-6 wolves. The largest wolf pack documented in Montana in recent years has been 20-22 animals. Packs this large are very rare. There was no significant difference in the average size of wolf packs across all 3 Wolf Management Units.

Montana wolves can be black, gray, or nearly white. Wild wolves are sometimes mistaken for coyotes or domestic dogs. But a wolf's large size, long legs, narrow chest, large feet, and wide / blocky head and snout distinguish it from the other canid species. Adult male wolves average about 100 pounds, but can weigh as much as 130 pounds. Females weigh slightly less.

Population Estimation and Monitoring Methods

Montana wolf packs are monitored year round. Common wolf monitoring techniques include direct observational counts, howling and track surveys, and public wolf reports. FWP seeks to document pack size and breeding pair status of known packs, to verify wolf activity in new areas that can result in new packs forming, to document dispersal to the extent possible to demonstrate connectivity, to determine pack territories and identify affected private landowners. As importantly, FWP must demonstrate to USFWS that Montana is maintaining a secure, recovered wolf population and ESA-protections are no longer necessary. The statewide minimum Montana

wolf population was estimated on a calendar year basis (January to December), based upon the best available information.

Wolf monitoring is conducted using a variety of tools and techniques in combination, as is the case for other wildlife species. Common wolf monitoring tools include: radio telemetry, howling and track surveys, reports from the public and other natural resource agency professionals, and reports from private landowners. MFWP made a concerted effort in 2005 to invite the public to help monitor wolves in Montana by sharing information about wolves or wolf sign they observed while afield. The MFWP website now offers a way for the public to report their information electronically (see www.fwp.mt.gov/wildthings/wolf). Public reports were a tremendous help in prioritizing MFWP's field efforts. A wolf pack must be verified by agency personnel to be included in the final statewide population estimate.

A typical sequence is as follows. MFWP and other agency cooperators receive a report of a wolf observation, wolf sign, or injured/dead livestock from the public or an agency colleague. Because it is very difficult to gauge the reliability and validity of the report and it is even more difficult to verify given how much wolves travel and environmental conditions which obliterate tracks or degrade scats, these reports are logged into a database with as much spatially explicit information as is provided. Reports of lone animals or wolf sign must eventually be linked to other reports to build a pattern or cluster, which in turn helps direct and prioritize field efforts. If MFWP receives reports of multiple individuals (group of wolves or multiple sets of tracks), pair bonding and pack territory establishment are highly likely. These eventually can form a pattern as well.

MFWP has and will continue to use volunteers who systematically search areas of current wolf reports, areas of past wolf activity, or noted "gaps" in wolf activity despite adequate prey base. MFWP personnel also conduct systematic searches. Track logs are taken during these "routes" and waypoints recorded when wolf sign is found.

The next step occurs when patterns and field reconnaissance yield enough information to validate wolves were in the area. A decision was made about whether to try and capture a wolf or not. Many factors were considered when prioritizing field efforts across the state. Not all packs needed to have radio collars, while others should have had one or more collars. Regardless, radio telemetry has been the standard technique with other protocols developed and validated based on a sample of collared packs. Project staff spent much of their time throughout the year conducting ground-based trapping operations and helicopter darting in winter. Reliable information about specific packs and the overall statewide population was essential to implement the approved state plan and adhere to the federal regulations.

If a pack was trapped and a radio collar is deployed, on average MFWP flew 1 to 2 times per month to locate the collared animal. In addition, wolves were ground tracked to determine where they localized throughout the year and the number of wolves traveling together. Den sites and rendezvous sites were visited to determine if reproduction had taken place. Additional information may be collected, such as ungulates killed, identification of private lands used by wolves, identification of public land grazing allotments where conflicts could occur, or common travel patterns.

At the end of the year, MFWP compiled information gathered through field surveys, telemetry, and public reporting. This results in a greater understanding of wolf pack distribution, individual pack sizes, pelage colors, mortality, pup production, home range sizes and patterns of use within the territory, dispersal events, and disease. The information also guided decision-making when livestock depredations were confirmed. MFWP also gained insight into the large area wolves inhabit, the dynamics of pack size, and territory shifts within and between years.

MFWP estimated the number of individual wolves (adults and pups of the year) in each pack having a radio-collared member. Reliable estimates were made for packs without collars, based on public and other agency reports and ground surveys. The number of wolves in radio-collared packs was added to the number of wolves in verified, uncollared packs, resulting in the minimum statewide population total. If lone dispersing animals were accounted for reliably, they are also included.

Through its monitoring program, MFWP was required to also tally and report the number of “breeding pairs” according to the federal recovery definition of “an adult male and a female wolf that have produced at least 2 pups that survived until December 31.” Montana is required to maintain at least 10 breeding pairs as an absolute minimum. Packs of 2 or more wolves that met the recovery definition are considered “breeding pairs” and noted as such in the summary tables. Not all packs in Montana satisfy the breeding pair criteria. This can be caused by the loss of 1 or both adults because of mortality or dispersal, lack of denning activity, or the loss of pups to the extent the surviving litter consists of less than 2 pups.

The total number of packs was determined by counting the number of packs with 2 or more individual animals that existed on the Montana landscape on December 31. If a pack was removed because of livestock conflicts or otherwise did not exist at the end of the calendar year (e.g. disease, natural/illegal mortality or dispersal), it was not included in the year-end total or displayed on the Montana wolf pack distribution map for that calendar year.

The statewide minimum wolf population is estimated by adding up the number of observed wolves in verified packs + known lone animals as of December 31 each year. This is a minimum count and has been reported as such since wolf first began recolonizing northwest Montana in the mid 1980s. Suspected wolf packs are those that could not be verified with confidence and often consist of a new pair that has just formed. They are not included in the final minimum estimated count, but are acknowledged and discussed in the annual report narrative. Suspected packs may or may not persist. Subsequent field work and public reports ultimately reveal whether they did or not and minimum population estimates reflect that accordingly.

FWP wolf monitoring data, while not a precise accounting of the number of wolves in Montana, are adequate to make decisions to address wolf-livestock conflicts, to set wolf hunting and trapping regulations, and to set harvest quotas because FWP is confident there are at least the minimum number of wolves observed in the Montana population. These minimum data are also accurate enough to demonstrate maintenance of a recovered population and that delisting is not warranted.

NRM wolf program cooperators have agreed that packs will be tallied in the population in the administrative area where the den site was located. If the den site was not known with certainty, amount of time, percent of territory, or the number of wolf reports were the next criteria considered for determining pack residency. In rare cases, a pack may have a densite on one side of an administrative boundary, but spend the majority of its time on the other side. In such cases, a discretionary decision is made as to where the pack will be tallied. One of the project partners generally had the lead for wolf monitoring, but the information was shared equally. This assures that all packs were accounted for, but none were double-counted in population estimates. Transboundary packs were included in Tables 1, 2, 3, and 4 for the administrative region in which the animals were counted. The pack will also be displayed on the appropriate map.

In 2009, a total of 23 packs straddled the Montana / Idaho border. Two additional packs straddled the Montana / Canada border but they were not included in the Montana estimate or reflected on maps. In western Montana, 14 packs shared with Idaho counted in the Montana minimum population estimate. Eight of 14 were in the Bitterroot (WMU 2, Table 1c, Appendix 3) and 5 ranged from the lower Clark Fork north to the Montana/Idaho /Canada border (WMU 3, Table 1a, Appendix 3). One pack in southwest Montana also traveled in Idaho (Table 1b, Appendix 3) where it killed domestic sheep and was eventually removed.

In eastern Idaho, 9 packs straddled the Montana / Idaho state line and were tallied in the Idaho population estimate. Four packs were in the Bitterroot on the Idaho side (Table 3a, Appendix 3). Six were in WMU 1 (Table 3b, Appendix 3).

Montana Statewide Wolf Population and Distribution

The Montana wolf population is secure above the 10 breeding pair minimum. Wolves and wolf packs themselves, however, are very dynamic on the Montana landscape. Some packs do not persist from year to year for a variety of reasons. The loss of packs in the Montana population could be due to a variety of factors, including mortalities and poor pup production / survival due to parasites and disease, and lethal control to address conflicts with livestock. In some cases, some packs that were either verified or suspected in 2008 no longer existed by the end of 2009.

A total of 26 new packs formed between 2008 and 2009. The Montana minimum wolf population count increased about 4% from 497 wolves in 2008 to 524 in 2009 (minimum increase of 27) (Figure 4A). The combination of hunter harvest, agency control and other mortality sources dampened population growth, but did not curtail it. A minimum of 166 pups were documented. The rate of population growth appears to be slowing down as the best of suitable habitats are already occupied. Areas where new packs established or recolonized previously occupied territories are more prone to conflicts with livestock and lethal control. Wolf pack distribution did not expand from the outer limits verified at the end of 2008. Packs simply established territories within known distribution.

The minimum number of breeding pairs (by the federal recovery definition) in Montana at the end of 2009 was 37 (Figure 4B). The minimum number of packs statewide (2 or more wolves) increased from 46 in 2005, to 60 to 2006, to 73 in 2007, to 84 in 2008, and to 101 in 2009. Packs for which size was known with confidence at the end of the year averaged 6.0 wolves (range 2-

22). The larger packs tended to live in remote backcountry areas, wilderness, or Glacier National Park (GNP).

The vast majority of the total statewide increase in the minimum wolf count and number of packs continues to be in WMU 1 (northwest Montana). One and 6 wolf packs occurred on the Blackfeet and Flathead Indian reservations, respectively. The increase appeared to be influenced by the geographic proximity of the robust ID wolf population which is a much larger “source” population than YNP. Dispersal from within Montana also accounts for a portion of the increase given most wolves disperse about 60 miles. See Figures 5(A) and 5(B).

In WMU 1, the minimum estimate increased from 167 wolves at the end of 2006 to 213 at the end of 2007 (increase of about 28%). From 2007 to 2008, the minimum count increased to 256 (about 20% increase). From 2008 to 2009, the minimum count increased about 8% to 308, but the number of verified packs increased considerably more than that. This is due to the challenges of obtaining repeated observation counts of each wolf pack. Overall wolf distribution in unit 1 expanded with the increase in the number of packs. Twenty three of 63 packs met the breeding pair criteria, an increase from 2008. However, breeding pair status could not be confirmed in many packs due to the increasing workload as the wolf population has increased in number and expanded its distribution in the last four years. The minimum number of verified packs in WMU 1 increased from 19 in 2005, to 31 in 2006, to 36 in 2007, to 45 in 2008 to 63 in 2009. Several new packs started through dispersal events within WMU 1 over the last 1-3 years.

In WMU 2 at the end of 2009, a minimum of 20 packs were verified, 5 of which met the breeding pair criteria, for a minimum count of 110 wolves. This is similar to 2008. This is probably due to higher levels of lethal control in the Big Hole to address livestock losses. Otherwise, wolf numbers elsewhere in the unit appear to be stabilizing. After several years of strong population growth, the wolf counts in the unit may be leveling off as well.

In WMU 3 at the end of 2009, a minimum of 17 packs were verified, 9 of which met the breeding pair criteria, for a minimum count of 106 wolves. This is a slight decline from 2008. The population there appears to be leveling out over the last 2-3 years, suggesting that suitable habitat is filled. Levels of lethal control and decreased immigration from Yellowstone National Park may explain the leveling off in the last several years in the minimum wolf counts. New pack formation, pup production, and wolf survival have been close to levels of emigration and mortality so that the population seems to be fluctuating around 90-100 wolves on average in the last few years.

At the statewide level, wolves were distributed primarily in the western third of the state. Most of Montana’s wolf packs live outside of national parks are remote backcountry wilderness areas (Figure 6).

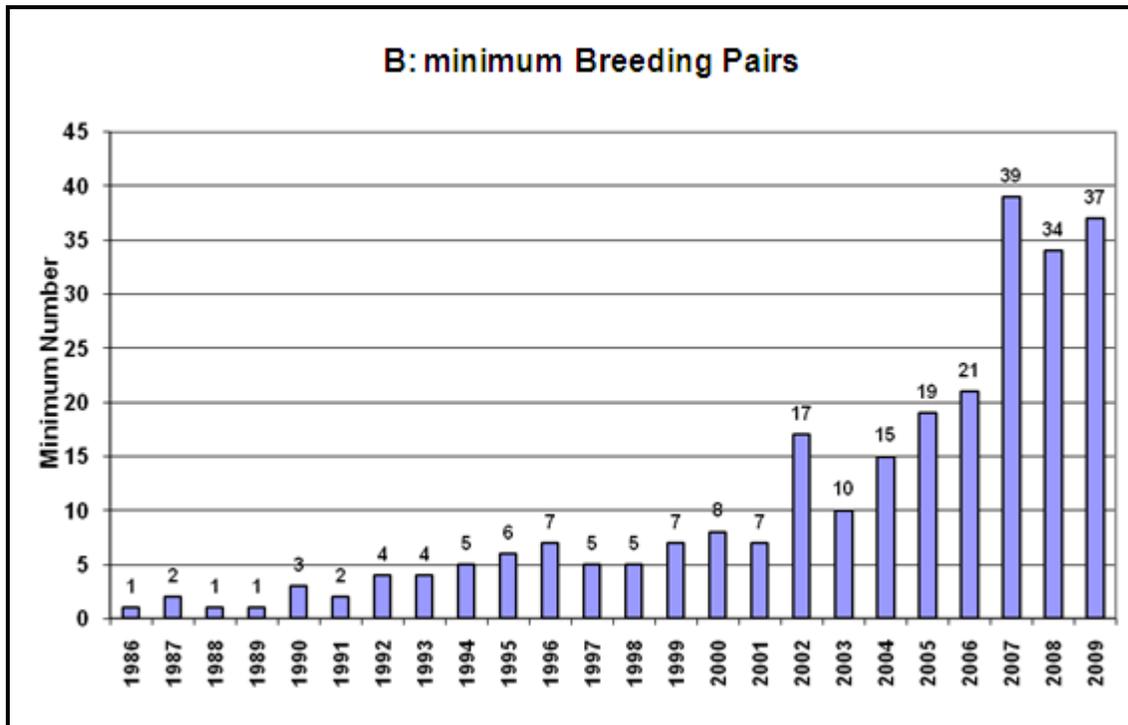
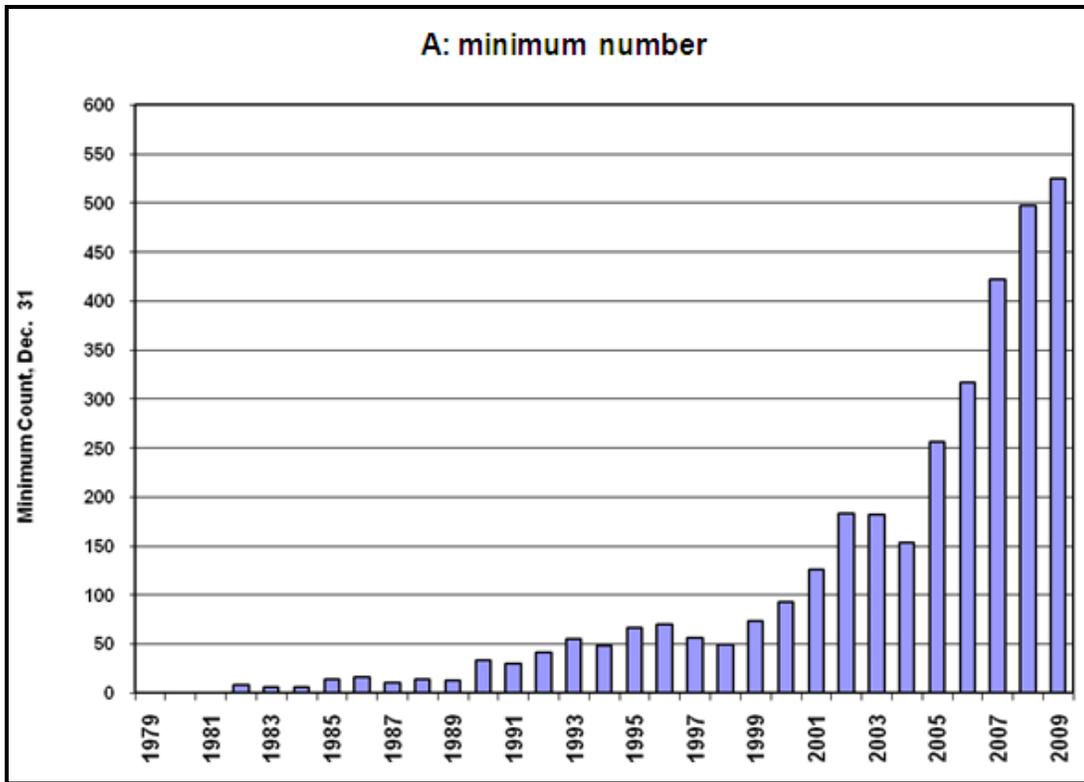


Figure 4. Minimum estimated number of wolves in the State of Montana on December 31, 1979-2009 (A) and (B) minimum estimated number of Breeding Pairs in the State of Montana December 31, 1986 – 2009.

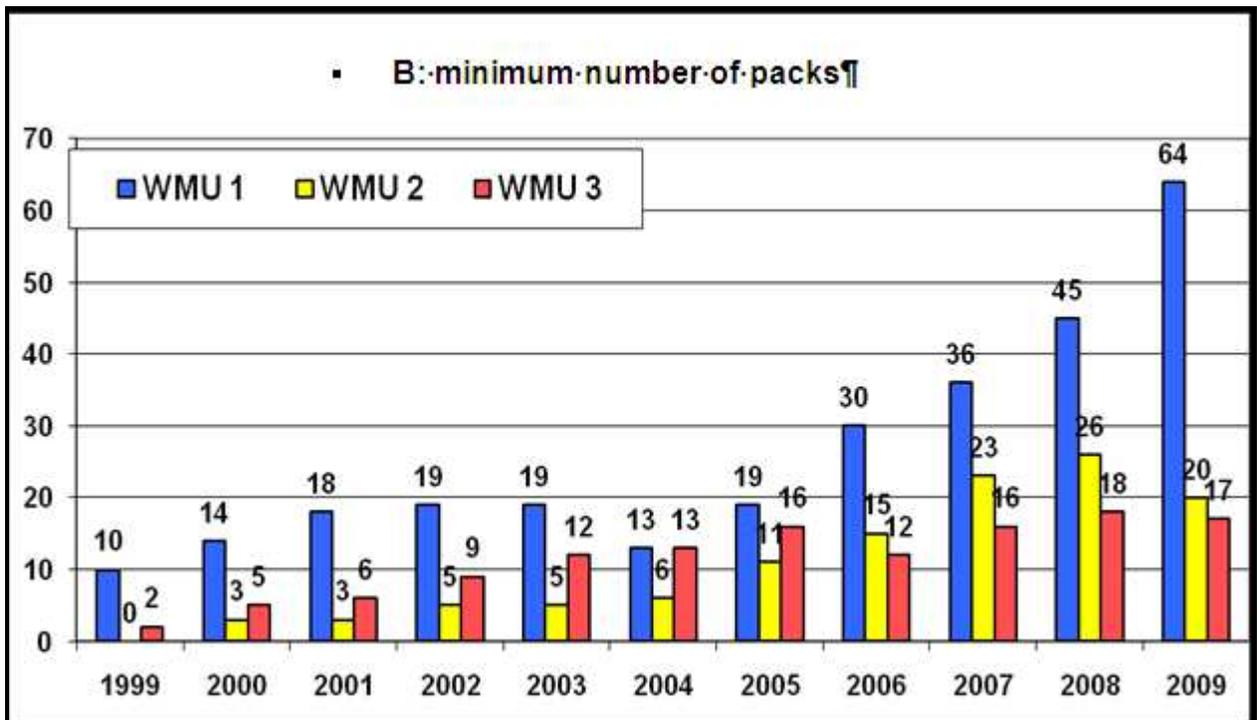
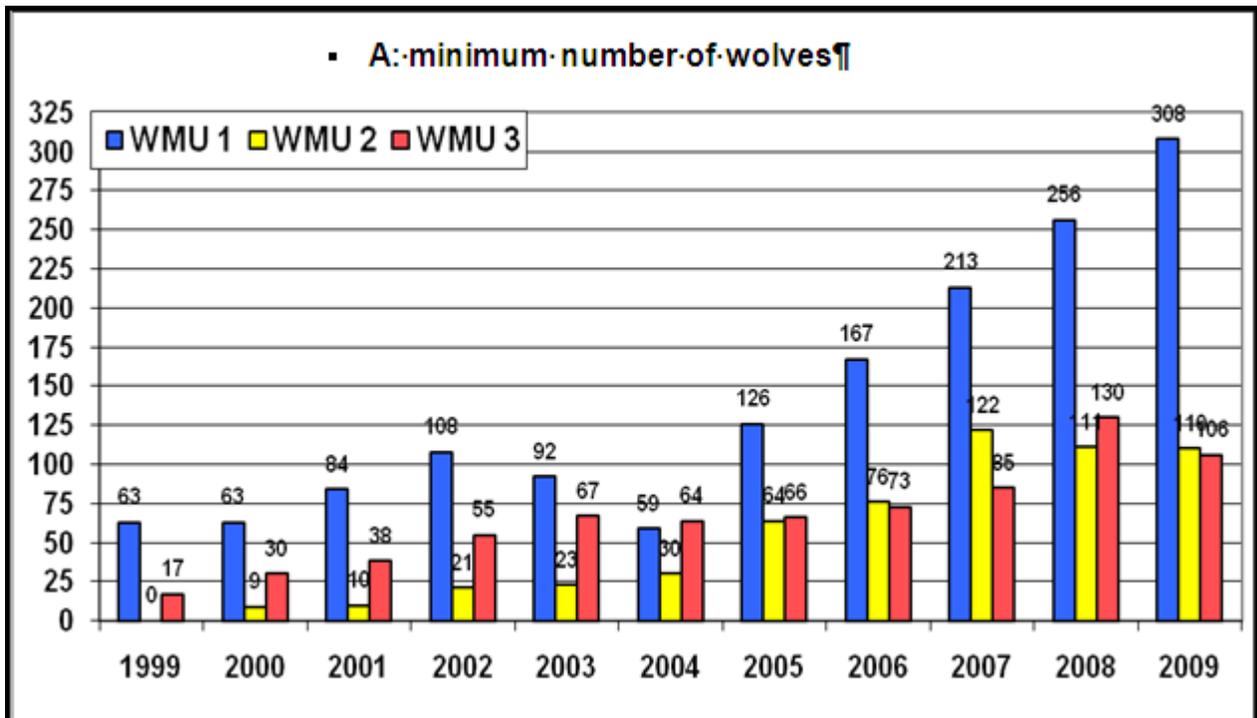


Figure 5. Number trends in the number of wolves (A) and (B) the number of wolf packs (defined as 2 or more wolves traveling together on Dec. 31) in each of the Wolf Management Units, 1999-2009.

MFWP has been documenting dispersal events within Montana's state borders that result in new pairs / packs forming. A total of 26 new packs were verified in 2008; however, some packs that existed on January 1, 2009 did not make it through the year for a variety of reasons, including human-caused mortality and/or disease. By the end of 2009, the dynamic nature of wolf packs was such that the minimum number of verified packs increased by a net total of 19 from 2006 to 2007, from 73 in 2007 to 84 in 2008, and from 84 to 101 in 2009.

MFWP maintained a similar amount of field effort in 2009, but increased wolf numbers increased the workload. MFWP hired two experienced seasonal field technicians and brought on additional volunteers to help with 2009 monitoring efforts. However, recent increases in the wolf population over the last few years is such that efforts are made to verify new packs and the continuation of known packs, in addition to determining breeding pair status. Inevitably, some packs are suspected, but not verified and MFWP conservatively notes those packs in the narrative, but those suspected packs are not included in the minimum estimate. Similarly, if the breeding pair status is not known with confidence, it is recorded as "not" a breeding pair. Thus the number of breeding pairs is a minimum known and others are likely, but could not be verified.

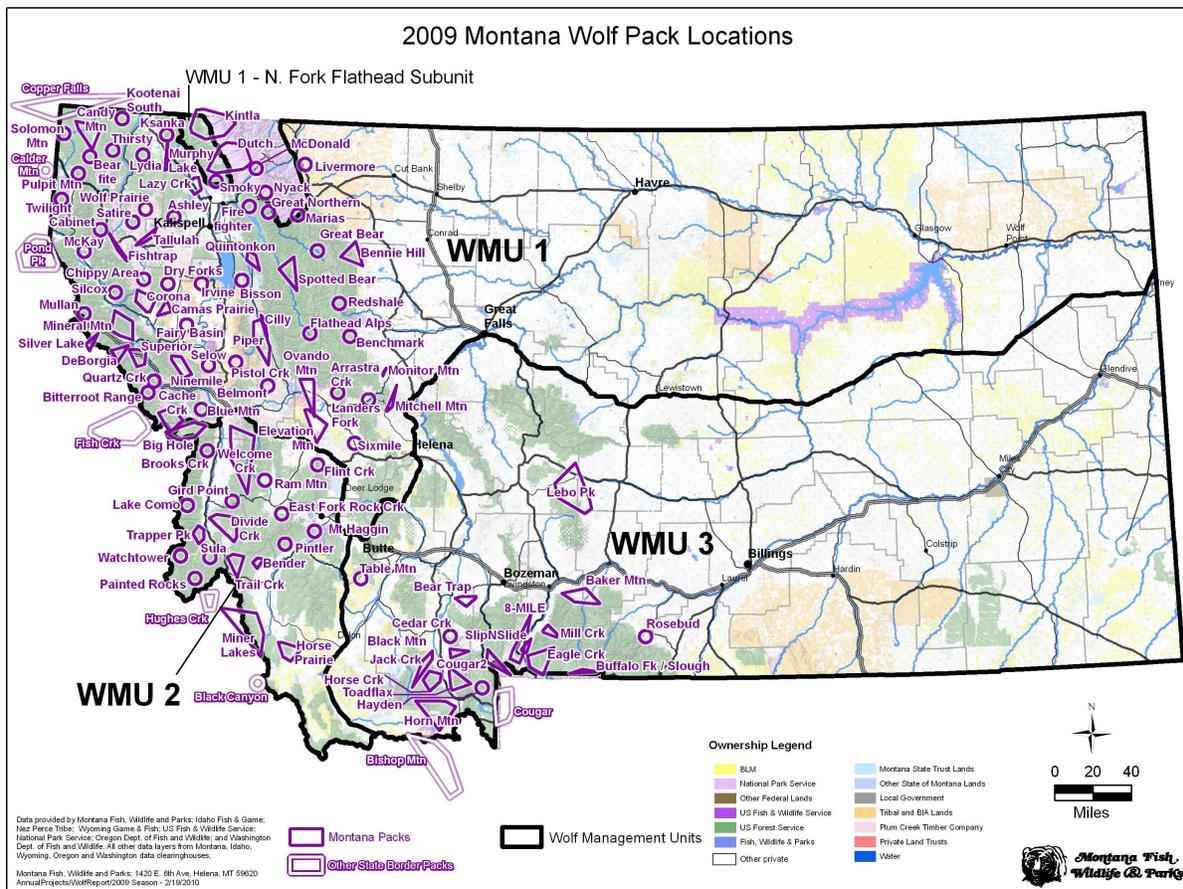


Figure 6. Verified wolf pack distribution in the State of Montana, as of December 31, 2009.

Development of a Fair Chase Public Wolf Hunting Season

MFWP first began exploring the idea of how to design regulated public hunting and trapping for wolves early in 2007, in anticipation of delisting in 2008. Hunting could only be implemented when wolves are successfully delisted and if there are more than 15 breeding pairs of wolves in Montana the previous year.

Regulated public harvest was first endorsed by the Governor's Wolf Advisory Council in 2000 and included in Montana's final wolf conservation and management plan. The 2001 Legislature passed SB 163, reclassifying the wolf as a species in need of management upon federal and state delisting (MCA 87-5-131). The 2007 Legislature created a wolf hunting license for residents and nonresidents (SB 372). Other statutes within MCA enable the MFWP Commission to adopt rules and general regulations and specific regulations pertaining to wolf hunting and trapping as a species in need of management upon delisting.

Incorporating public hunting and trapping into the overall wolf management program will enable the Department to more fully incorporate wolves into Montana's wildlife heritage by enabling sportsmen and women to participate in wolf conservation and management similar to other wildlife species. This will help develop an additional constituency to advocate for its conservation, as has been the case for mountain lions. Wolves would be managed more proactively and in conjunction with natural prey populations and other carnivores in a more ecological manner.

Wolf hunting and trapping seasons are established in two steps. First, the basic components, such as season dates, management units, bag limit, means of take etc. would be determined through the regular biennial season setting timeline and process. Hunting / trapping season regulations are adopted on a two year (biennial) cycle, with the process beginning with presentation of tentative proposals and public comment. MFWP reviews public comment and may modify the proposal prior to making a final recommendation to the Commission. The Commission makes a final decision, thereby creating rules and regulations for the next two years.

The second step is to determine the actual number of wolves that could be harvested. Total wolf harvest is finite and regulated through a quota system which allows MFWP to biologically tailor harvest of animals. Quotas allow MFWP to direct or alleviate hunting harvest pressure and distribute hunter kills geographically so that animals are not over harvested or under harvested in critical areas. Establishment of subquotas within smaller areas allows MFWP to further manage wolf numbers and packs and to facilitate connectivity. This also allows MFWP to consider special conservation needs or conflict areas uniquely. Within that quota system, general licenses are available but all harvest counts towards the total allowable harvest quota. The actual quota is determined through the regular quota-setting process. MFWP proposes and the MFWP Commission approves tentative and final total statewide quota, quotas within each wolf management unit, and any subquotas in a smaller area within a wolf management unit. The three management unit quotas sum to the total statewide quota. MFWP establishes quotas annually.

After meeting with the Montana Wolf Advisory Council, MFWP presented a wolf hunting / trapping season framework to the MFWP Commission in December 2007. The MFWP

Commission modified MFWP's tentative proposal and requested public comment during January 2008. In late February 2008, the MFWP Commission approved the 2008/2009 wolf hunting regulations. It did not adopt a framework for trapping in either year. Litigation in 2008 resulted in the wolf being relisted and MFWP cancelled the season.

USFWS delisted the gray wolf again in May 2009. Litigation was renewed, however a request for a preliminary injunction that would have canceled a 2009 season was denied. Therefore, MFWP was able to implement a 2009 season.

The 2009 Wolf Hunting Season

Basic Regulations and the Quota Setting Process

The MFWP Commission had previously approved the general regulations and these were in place for the 2009 season. The general wolf hunting season coincided with the general firearms season for deer and elk. Three wolf management units and one subunit were established (Figure 7). Four backcountry wilderness area hunting districts opened for general deer / elk hunting in mid-September and wolf hunting was allowed at the same time (districts 150, 151, and 316). In lieu of a trapping season, wolves could have been hunted from December 1 – 31, although no more than 10% of the management unit quota may be taken in December. Three wolf management units were established and a smaller North Fork Flathead subunit was established in the North Fork Flathead River drainage. A hunter could only harvest one wolf per year.

Successful wolf hunters are required to report their kill within 12 hours and present the hide and skull to MFWP for inspection within 10 days. MFWP and the Commission would close the wolf hunting season when the quota was reached. MFWP also had authority to initiate a season closure prior to reaching a quota when conditions or circumstances indicate the quota may be reached within the 24-hour closure notice period.

While developing tentative quotas, MFWP considered wolf population status and trend, wolf pack distribution, pup production and mortality, and previous management activities including lethal control to resolve wolf-livestock conflicts. A modeling exercise provided an assessment of risk of a quota level resulting in a wolf population decline below 15 breeding pairs. It also provided cursory estimates of what the population could be 1 year later if 100% of the quota was filled and the previous year's trends held. Many assumptions were necessary, but were made conservatively.

The model predicted that the Montana population could withstand a wide range of harvest rates and remain stable. Ultimately, MFWP proposed and the MFWP Commission adopted a final 2009 statewide quota of 75. This was a biologically conservative quota and approximated a 15% average harvest rate statewide. This final quota posed zero risk of the population dropping below 15 breeding pairs. It predicted that the population 1 year later would be about 590 wolves living in 117 packs (range 93-100), 52 of which qualified as breeding pairs.

The statewide total quota of 75 partitioned out across the three managements as follows. Wolf Management 1 (northern Montana had a quota of 38, with a subunit North Fork Flathead

subquota of 2 (i.e. only 2 of 38 wolves may be taken in the subunit which is adjacent and west of Glacier National Park). The wolf population in unit 1 is the highest of any unit and has been for many years. In Western Montana Wolf Management Unit 2, the quota was 22. Unit adjoins the robust wolf population in Idaho. In Southwest Montana Wolf Management Unit 3, the quota was 13. See Table 1.

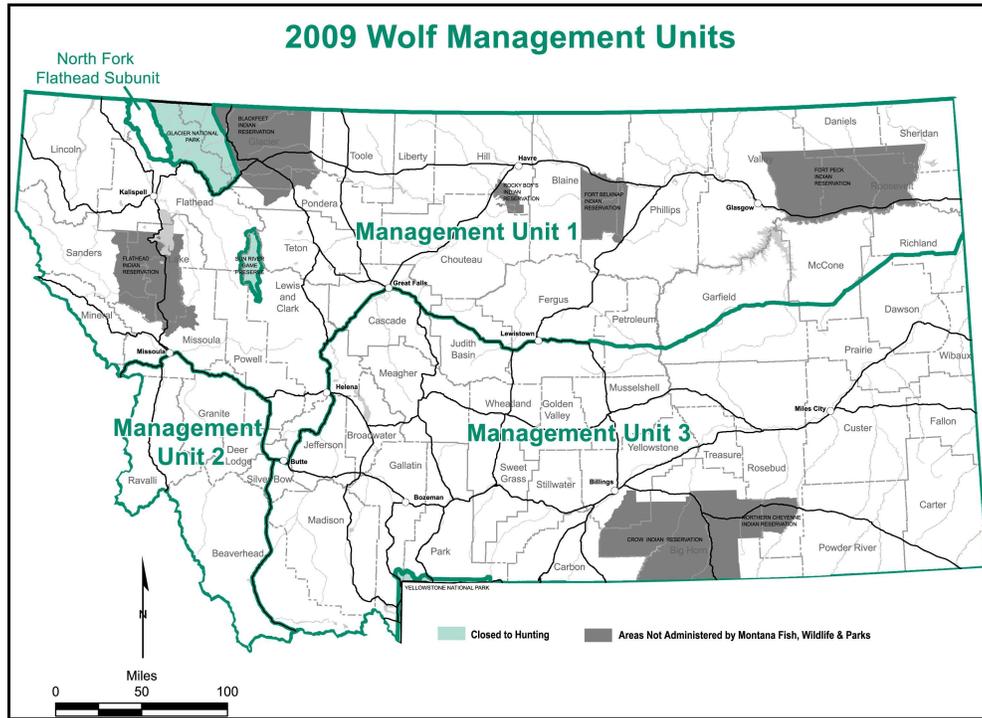


Figure 7. Montana Wolf Management Units 1 (Northern Montana), 2 (Western Montana), and 3 (Southwestern Montana).

Table 1. Minimum number of wolves in each hunting Wolf Management Unit (and the North Fork Flathead Subunit) at the end of 2008 and the final 2009 quota approved by the MFWP Commission.

2008 Year End Minimum Estimate used to set the 2009 hunting season quota	WMU 1 Northern Montana (North Fork Subunit)	WMU 2 Western Montana	WMU 3 Southwest Montana
Number of wolves	256 (29)	111	130
Number of Packs Verified	45 (2)	21	18
Number of Breeding Pairs Verified	17 (2)	6	11
Final 2009 Quota Approved	41 (2)	22	12

2009 Season Summary

The 2009 wolf hunting season was the first fair chase hunting season in Montana's history. Historically, private citizen efforts to kill wolves occurred under eradication programs intended to purposefully remove all wolves from the western landscape. At that time, unlimited numbers of wolves could be killed year long by any means, including poison. This was done for money and commercial profit under a bounty system. Contemporary wolf hunting is based on the principles of fair chase and ethical hunter behavior, with penalties for regulatory violations. Regulations and allowable harvest levels are established consistent with conserving the wolf population in perpetuity.

Most wolves were opportunistically harvested by hunters who were primarily hunting elk or elk/deer in combination. Many of those hunters saw 2-3 wolves prior to harvesting one. Hunters report seeing wolves while hunting deer and elk, and it appears that they are able to detect wolves in their relative degrees of abundance on the western Montana landscape. Therefore knowledge about deer and elk hunter effort and success will provide important insight into future wolf harvest management.

Montana's fragmented landscape is accessible to hunters by either motorized or non-motorized travel. Thus, most wolves are relatively accessible to big game hunters in most places where wolves live and elk/deer hunting occurs. This is in contrast to Idaho where remote, rugged terrain in many wolf districts appeared to contribute to the slower pace of harvest and a season extension.

Through time, wolves might alter their behaviors in response to hunting, as other species have learned to do. However, hunters demonstrated that they can successfully harvest wolves under a fair chase system. Regulated public harvest will be an important population management tool for wolves that can be used, designed, and tailored as appropriate, based on a population's status, just as it has been for Montana's other big game species.

As is the case for many other species, wolf harvest can be successfully managed through a quota-based approach. A quota system establishes the total number of wolves that could be harvested before the season starts. Hunters are required to report harvesting a wolf within 12 hours. FWP can and does track progress towards filing the pre-determined quota levels practically in "real" time. FWP can initiate a season closure in individual hunting units, anticipating that the quota is about to be filled.

There were no biological red flags in the harvest. Harvest was geographically spread out (see map) and age classes were generally representative of what was in the wolf population. Wolf hunter harvest decreased the size of individual packs by one to four wolves just ahead of the February 2010 breeding season. But even so, the level of hunter harvest combined with all other mortality in 2009 will not harm Montana's wolf population.

All of the harvest information will be assessed, in conjunction with other data gathered throughout the year and field-based population monitoring efforts to determine the status and

trend of the wolf population at the end of 2009. FWP will consider all of the information prior to proposing changes in the 2010/2011 hunting regulations and the 2010 hunting season quotas.

About the Harvested Wolves

No biological red flags were raised by what was removed from the population through hunting. Age classes of the harvested wolves approximates what was in the population. Harvest was well distributed geographically. Between 40 and 50 packs sustained harvest of between one and four wolves total per pack. Harvest did not harm the population overall. Here are a few highlights:

- The harvest was comprised of 22 juveniles (31%) of the total harvest, 22 yearlings (31%) of total harvest, 27 adults (38%) of total harvest, and 1 wolf of unknown age.
- Juveniles weighed 62 pounds on average. Yearlings weighed about 80 pounds. Adults weighed 97 pounds. One wolf weighed 117 pounds.
- A total of 41 males and 31 females were harvested.
- Sixty one percent the harvested wolves were gray; 36% were black and two wolves were white.
- Most wolves were healthy. Two wolves had slight mange. One wolf had fleas. One had porcupine quills in its shoulder and two wolves reportedly had hernias.
- Of the total 72 wolves harvested, 7 wore radio collars. The radio collar is a very important tool to gather a variety of data, including mortality information. As used in many other wildlife monitoring and research efforts, data gathered from radio collared animals allows biologists to estimate survival and cause specific mortality rates with unbiased statistical confidence, including hunting.

About the Wolf Hunt

Most wolves (78%) were opportunistically harvested by hunters who were primarily hunting elk or elk/deer in combination. The harvest was well distributed geographically, though more clumped in WMU 3 during the early backcountry season than expected. Once the general season opened on October 25, the pace of wolf harvest was steady and averaged about 20 wolves per week. The season closed statewide on Nov. 16 when quotas were nearly filled in WMU 1 and WMU 2 and the quota in WMU 3 had already been exceeded by one wolf. Had the final quotas been higher, they would likely have been filled. Here are a few highlights:

- The total statewide quota was 75. A total of 72 were harvested during the early and general seasons combined
 - WMU 1 quota was 41; 38 harvested total
 - WMU 2 quota was 22; 21 harvested total
 - WMU 3 quota was 12; 13 harvested total
- During the early backcountry season, 12 wolves were harvested. The pace of harvest during the WMU 3 backcountry season was faster than many expected, and FWP closed

it prior to the entire WMU 3 quota being taken in the backcountry, thus reserving the opportunity for the remaining 3 wolves during the general season elsewhere in WMU 3.

- 3 wolves were harvested in WMU 1 (deer/elk hunting districts 150/151/280) from Sept. 15 to Oct. 24
- 9 wolves were harvested in WMU 3 (deer/elk hunting district 316) from Sept. 15 to Oct. 4; this backcountry area closed temporarily on Oct. 9 and permanently on Oct. 13

- During the general season, 60 wolves were harvested between Oct. 25 and Nov. 15, which corresponds to first three weeks of the general deer/elk firearm season. The general season closed one half hour after sunset on Nov. 16 after quotas were nearly reached in both WMU 1 and 2. WMU 3 had previously closed on Oct. 26.
 - 35 wolves harvested in WMU 1
 - 21 wolves harvested in WMU 2
 - 4 wolves harvested in WMU 3

- Ten wolves were harvested statewide on Oct. 25 (opening day of the deer/elk general season), the most of any day. The pace of the harvest was steady and averaged about 20 per week. After opening day, the most wolves harvested statewide on any one day was six. On most days, however, between one and four wolves were harvested. After the general season opened, there were only two days during which no wolves were harvested.

- Hunter harvest decreased individual pack size ahead of the 2010 breeding season. The greatest number of wolves harvested from a single pack was four. Of all the packs from which wolves were harvested, 70% lost one wolf, and 20% lost two wolves. Thus, 90% of the packs sustaining harvest lost only one or two wolves. The overall harvest was well distributed across packs geographically.

- Most wolves (73%) were harvested before noon during both the early backcountry and the general seasons.

- Most hunters did not use predator calls during either the early or the general season. A few hunters did and/or reported howling.

- About 15 wolves were harvested from about ten different packs that had a prior history of confirmed livestock injury or death. Hunter harvest did not appear to accelerate or contribute to livestock conflicts. Some of these packs had injured or killed livestock or domestic dogs before the hunting season started and did so again after the season closed. Others had confirmed livestock conflicts before the hunting season started but not injure or kill livestock during the remainder of the year.

- Wolves were harvested at an average distance of 150 yards using firearms (range 10-430 yards; a reported outlier of 600 yards was omitted from the average). No wolves were harvested with archery equipment, although it would have been lawful during either the early backcountry or general season. There was no archery only season in 2009.

- Most wolves (82%) were harvested on public lands:
 - public lands: U.S. Forest Service n=57; Bureau of Land Management n=1; state land n=1
 - private: deeded land n=9; Plum Creek Timber Company n=4
 - Even though most of the harvest was on public land, harvest did occur in about 10 packs having confirmed prior incidents with livestock or domestic dogs
- Wolves were harvested in 15 counties in western and southwestern Montana. Neither the Blackfeet Nation nor the Confederated Salish and Kootenai Tribes opened a 2009 wolf hunting season.
 - Of the total harvest statewide, 75% occurred in 7 counties: Flathead (11), Ravalli (9), Beaverhead (9), Park (9), Lincoln (6), Sanders (6), and Lewis and Clark (4)
 - The other counties were: Missoula, Mineral, Lake, Teton, Granite, Gallatin, and Sweetgrass
- Harvest was well distributed spatially with the exception of the early backcountry season north of Yellowstone National Park where harvest was more concentrated. See Figure 8. Where more wolves were harvested at a local scale, more wolf packs exist or the existing wolf packs were larger than the average of 6 wolves.
- During both the early backcountry and general seasons, hunters reported seeing an average of 2-3 wolves prior to harvesting a wolf. Some hunters harvested the first wolf seen, while others hunters reported seeing 6-27 wolves before harvesting a wolf.
- During both the early backcountry and general seasons, hunters reported seeing 2-3 wolves in the group from which they killed a wolf. Some hunters reported that the wolf was by itself and some reported seeing as many as 10 in the group at the time of harvest.
- During the early season, most wolves were skinned in the field, and the pelt/skull were presented for inspection and registration, as allowed by the regulations. During the general season, about half of the wolves were skinned in the field and about half were retrieved whole.
- Three illegal wolf mortalities were documented during the fall months. Only one was clearly affiliated with the wolf hunting season as the hunter reported harvesting a wolf after the season had officially closed. This hunter was cited and paid a fine. The other two wolves were found dead in circumstances resembling illegal mortalities documented at other times of year – wolves were shot from a road. It is unclear whether these incidents were related to the fact that there was an open hunting season or not. Regardless, all three incidents are classified as illegal mortality and will be considered when establishing 2010 season quotas.

About the Successful Wolf Hunter

Most wolves were harvested by hunters who reported hunting primarily for elk or elk/deer in combination. They had purchased a wolf license in case an opportunity to harvest a wolf

presented itself. Therefore, consideration of elk and deer hunting activities (i.e. amount and distribution of hunter effort) relative to wolf pack distribution and wolf density would be appropriate when considering future wolf hunting regulations and quota levels. From the deer/elk telephone harvest surveys in 2007 and 2008, FWP learned that roughly 5-8% of deer/elk hunters who hunted in those two years reported seeing at least one wolf while hunting deer and elk. The vast majority of those observations occurred during the 5-week general deer/elk season. Here are a few highlights:

- Early season backcountry hunters were evenly split between whether they were primarily hunting wolf or another species. In contrast, the majority of general season hunters were not primarily hunting wolves. Wolf harvest was incidental to hunting elk or hunting elk/deer, in that order respectively.
- Overall at the statewide level and both seasons combined, 78% of the wolves were harvested opportunistically by individuals hunting for elk or elk/deer in combination.
- Most successful hunters were hunting on their own, without an outfitter. Six wolves were harvested by hunters with an outfitter.
- Most successful wolf hunters were Montana residents. Three successful non-residents were from Washington, Ohio, and Georgia.
- Successful wolf hunters were primarily male and averaged 42 years of age. The oldest was 70 years old and the youngest was 13 years old.
- FWP sold a total of 15,603 licenses (15,514 residents; 89 non-residents). FWP stopped selling wolf hunting licenses on Nov. 16, as there was no longer a hunting opportunity once the quotas were nearly met and the season closed.
- The Montana Legislature set the price of a wolf hunting license at \$19 for residents and \$350 for non residents. Licenses were available for purchase from August 31 to November 16 to anyone who had an interest in buying one. No licenses were sold after the season closed. Total license revenue was \$325,916. These funds were deposited into the FWP general license account and will be budgeted and spent for future FWP programs in the next biennium, as approved by the 2011 Montana Legislature.
- Based on 2007 elk license sales figures, about 12% of Montana resident elk hunters also bought a wolf license in 2009.

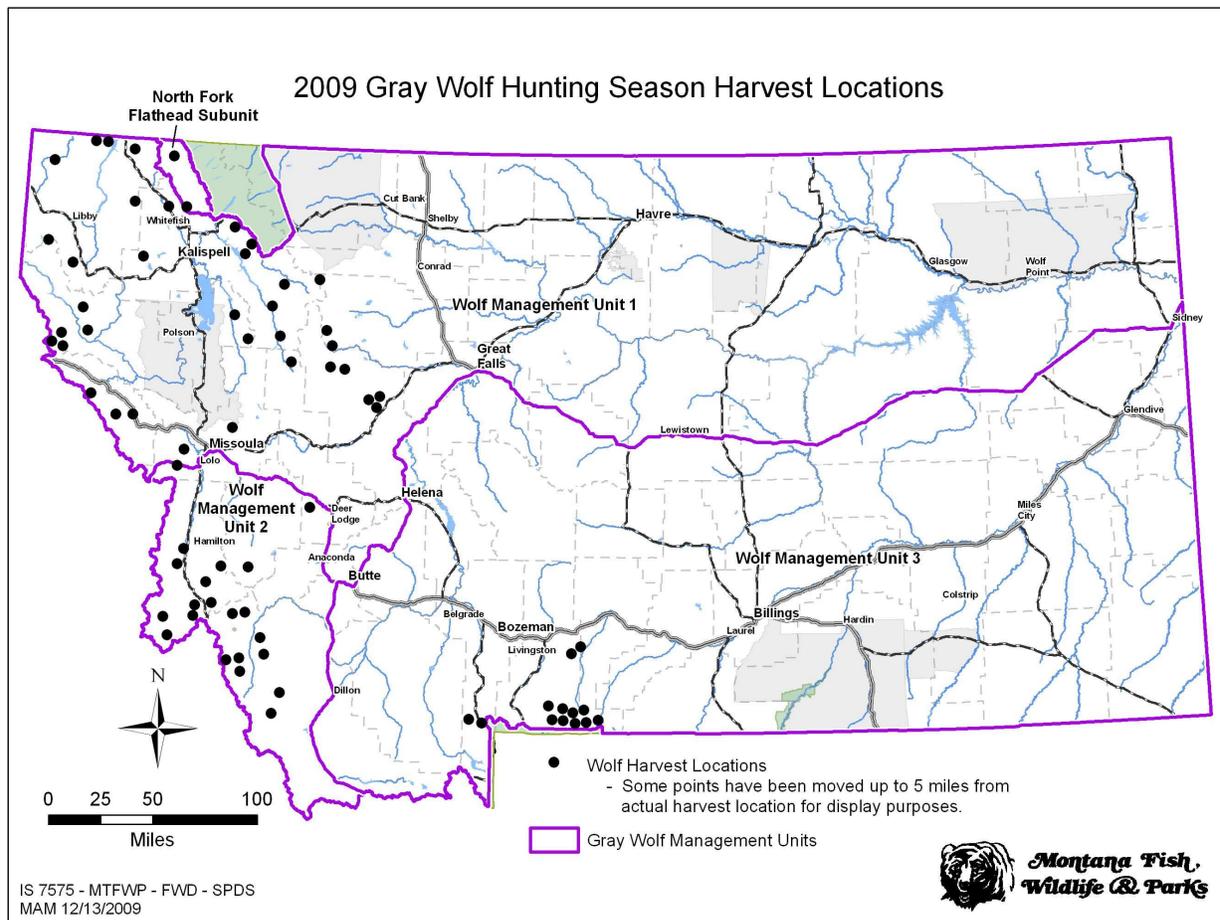


Figure 8. Location of where wolves were harvested in each of the three Wolf Management Units during the 2009 wolf hunting season.

Wolf – Ungulate Relationships

(source: Hamlin and Cunningham, 2009; see: <http://fwp.mt.gov/wolf> under Big Game)

The impacts of wolves on elk and other ungulates is perhaps one of the most controversial wildlife-related issues faced by people that co-inhabit landscapes with these species. This is certainly true in Montana, where the issue often involves widely disparate opinions and values. In the Greater Yellowstone Area (GYA) and southwest Montana in particular, public interest is heightened in this issue.

The GYA and southwest Montana generate approximately half of the Montana statewide elk hunter days afield and elk harvest annually. The impacts of wolves on elk populations are front and center in the minds of many elk hunters and elk enthusiasts in the region. The region is also close to Yellowstone National Park, where wolf conservation efforts were bolstered in 1995-96

with the experimental restoration of wolves to an ecosystem that had been without wolves for much of the previous century. The region holds particular significance for wolf conservation enthusiasts, and the impacts of wolves on elk are fresh in their minds as well.

Montana Fish, Wildlife, and Parks (MFWP) is entrusted to conserve and manage wildlife in the GYA and in southwest Montana. The state of Montana has been successful in efforts toward this endeavor since statehood was enacted in 1889. With the reestablishment of wolves in the region around the turn of the 21st century, however, wildlife managers were faced with a new challenge. Before this occurred, wildlife conservation and management programs were implemented without a thought given to wolves or their impacts on the ungulate populations the agency managed. Facts and data about the impacts of wolves on elk in the region were sorely needed for wildlife conservation and management programs to adapt and remain successful.

With the intense public interest and the data needs of wildlife managers in mind, MFWP began a wolf-ungulate research project in 2001 to fill some large gaps in our knowledge base. This was a collaborative project with the Ecology Department at Montana State University. The project was designed to incorporate both intensive and extensive data collection efforts. Intensive study sites were identified, and individual project cooperators ran efforts at these sites. Data collection at the intensive study sites was intended to provide the detailed comparisons needed to understand the range of effects that wolves can have on elk population dynamics and behavior. Additionally, as a part of this overall effort, MFWP agreed to bolster ungulate monitoring efforts in a more extensive region in southwest Montana, as well as to continue monitoring programs elsewhere in the state to provide insights regarding the effects of wolves on ungulate populations over a larger area.

The major, overriding result from this research effort has been that one-size-fits all explanations of wolf-elk interactions across large areas do not exist. However, we have learned that elk populations tend to become limited by predators when high ratios of predators to elk are reached, and this typically has occurred when multiple predator species are numerous within the range of one elk population. This limitation of elk populations in areas with numerous predators appears to become manifest through direct impacts on elk calf survival and recruitment.

Intensive Study Sites in the Greater Yellowstone Area and Southwestern Montana, 2001-2008

Wolf numbers have increased rapidly in all of western Montana since wolf restoration began in 1995, at rates of approximately 10% to 34% annually. In the range of the Northern Yellowstone elk herd, wolf numbers increased by an average of approximately 13% annually during 1995-2007.

Elk are the primary prey species for wolves in southwest Montana and the GYA, though there is limited evidence that the portion of elk in wolf diets may decline during summer months. Most data indicate that wolves preferentially select for elk calves and against adult female elk. Some data indicate that wolves preferentially select for adult male elk, and the degree to which this happens appears to be influenced by the number of adult male elk that reside within the territory of a particular pack or population of wolves.

Winter elk kill rates of wolves have varied widely across southwest Montana and the GYA, from approximately 7 to 23 elk killed per wolf during November through April. There are few data on summer elk kill rates of wolves, but it appears that wolves kill fewer elk during summer than during winter.

The number of grizzly bears in southwest Montana and the GYA has increased more than -fold since 1987, concurrently with the increase in wolf numbers, affecting the total elk predation rate.

Most data that have directly measured elk pregnancy rates since wolf restoration began indicate that elk pregnancy rates are unaffected by wolves, in contrast to some indirect evidence from average hormone concentrations in elk feces. Indirect evidence from hunter-collected samples also indicates that elk pregnancy rates have been unaffected by wolves.

In most of southwest Montana and the GYA, calf survival rates following wolf restoration have been similar to rates prior to wolf restoration. Declines in calf per 100 cow ratios have occurred in the Northern Yellowstone, Gallatin- Madison, and Madison- Firehole elk herds, where both wolf and grizzly bear densities have been high. In the northern Yellowstone and Gallatin- Madison elk herds, calf per 100 cow ratios have recently been approximately half or less than levels recorded prior to wolf restoration.

Adult female elk survival rates have remained high in most areas during the wolf population increase. In the Northern Yellowstone elk herd, adult female survival has ranged from approximately 75% to 85% since the mid-1980s. In earlier years, most adult female mortality in this herd was due to hunting. During 2000-2004, major mortality sources included hunting and predation. Since 2005, hunter harvest has been minimal and adult female survival rates appear to have remained in the low 80% range.

In areas with high predator (grizzly bear and wolf) to prey ratios, including the Northern Yellowstone, Gallatin Canyon, and Madison-Firehole winter ranges, elk numbers have declined substantially since wolf reintroduction. In most areas with lower predator to prey ratios, elk numbers have remained stable or have increased since wolf restoration began.

In the Northern Yellowstone elk herd, we estimate that since 2004 wolves have killed more elk than hunters, since 2005 wolves have killed more adult female elk than hunters, and in all but one year since 2002 wolves have killed more bull elk than hunters.

Our analyses of elk vital rates in the Northern Yellowstone elk herd indicate that a continued decline in elk numbers in coming years is likely until predator to prey ratios decline, even if hunting pressure remains low or is decreased further.

Most data collected during winter indicate that wolves have small-scale effects on elk distribution (displacement of up to approximately 1 km upon contact) and movement rates (increased movement rates of approximately 1.23 km per every 4 hours). Wolves may also affect elk habitat selection and group sizes, but the magnitude and direction of these effects is widely variable among wintering areas and even among habitats in the same wintering area. Where the

impacts of hunting, hunter access, and wolves have been studied simultaneously, the impacts of hunting and hunter access on elk distribution, movements, group sizes, and habitat selection have been larger than the effects of wolves.

Data concerning the effect of wolves on large-scale elk distribution are equivocal. Based on research data collected during this project, there is little or no indication that wolves affect larger-scale elk seasonal distribution or the timing of migration in some areas in southwest Montana. Anecdotal information suggests that this may occur in some other areas in southwest Montana, however. Additionally, research data from the Madison- Firehole elk herd suggest that wolf predation pressure affects large-scale migration patterns or seasonal range selection for some elk.

In the areas of southwest Montana and the GYA that have shown declines in elk calf survival, recruitment, and population size since the wolf reintroduction, mule deer recruitment and numbers have increased.

Little data exist on moose populations in southwest Montana and the GYA due to inconsistent monitoring. Recruitment and population sizes appear to have declined in some areas, while numbers have increased in other areas. We can currently provide little insight into the causes of these disparities, and increased monitoring efforts or research efforts might provide more insight.

Extensive Study Sites and Montana Statewide

The second section of this report provides summaries of data from routine MFWP statewide monitoring programs, including aerial survey, harvest survey, and species management programs, which have been absent from previous publications and reports. Conclusions in this section are more general and can be characterized as follows.

Elk populations in MFWP Administrative Region 1 appear to be stable or increasing, and all areas with consistent, long-term aerial counts have few wolves at present.

Moose numbers appear to be stable in the sole hunting district of Region 1 that has consistent, long-term data on moose population trend.

In most of northwestern Montana, including Administrative Region 1 and the northern portion of Administrative Region 2, white-tailed deer are likely the major prey of wolves, rather than elk.

Using buck harvest as an index of population trend for white-tailed deer, in most hunting districts numbers appeared to increase steadily until 2006 following the large decline in 1996-97. Recent highs were slightly lower than previous highs despite relatively smaller antlerless harvests, and the entire increase occurred during a phase of increasing wolf numbers.

Since 2006, and beginning as early as 2004 in some areas of Region 1, white-tailed deer population sizes, indexed by buck harvest, have been decreasing. The decrease has coincided with record high antlerless deer harvests in most hunting districts.

It appears that factors other than predation have played major roles in recent white-tailed deer population declines in Administrative Region 1. However, predation may have played a role in initiating the declines, prolonging the recovery periods, and/ or limiting total deer numbers below the previous highs. In much of Region 1, it appears to be possible that predator and prey fluctuations or cycles may develop, rather than more consistent, low numbers of white-tailed deer in the presence of wolves, because whitetailed deer numbers were able to increase following major declines in 1996-97.

In MFWP Administrative Region 2, white-tailed deer numbers, as indexed by buck harvest, increased through 2006 following the major declines in 1996-97. However, in HDs 201 and 202 where wolves have been present longest, buck harvest has remained below historic pre-wolf levels.

Since 2006, white-tailed deer numbers have decreased concurrently with record or near record high antlerless harvest, following a pattern very similar to the pattern in Administrative Region 1. The declines in Region 2 have been also influenced by factors other than predation, and most populations recovered following the major declines in 1996-97. This again leads to the possibility that predator and white-tailed numbers will fluctuate in Region 2, rather than white-tailed deer persisting at continually low numbers in the presence of wolves.

In some areas of Region 2, there have been some elk population declines with limited evidence that wolves may have played a role in limiting numbers or affecting elk distribution. In other areas aerial counts of elk have increased while harvest has decreased, with little apparent influence of wolves.

Consistent, long-term survey data indicate that elk in the Bitterroot Valley increased steadily until 2006, when planned reductions in elk numbers resulted from increases in harvest. The environment and conditions in the western portion of this valley suggest that wolves may affect elk numbers at some point, so close monitoring of this elk herd should continue.

At this time, there is little wolf presence in Administrative Regions 4 and 5, so chances of wolf impacts on ungulate populations in these areas are minimal at present.

It appears that some areas in Montana are unsuitable to wolves because livestock depredations continually lead to wolf removals, preventing wolves from increasing to densities that are seen in protected areas. In these areas, wolves are probably less likely to limit ungulate populations than in areas where depredation removals do not limit wolf survival and population growth.

Routine ungulate monitoring programs in Montana may only be powerful enough to detect large changes in ungulate numbers over a series of years, and power will be even lower in areas where harvest indices are used to monitor populations instead of aerial surveys. No routine surveys of ungulates in Montana are likely to be powerful enough to assign causes to declines in every case. This is apparently not always possible even in areas with intensive monitoring and research projects, because substantial debates concerning causes of declines and the role that predation plays in declines still persist in many of these areas.

Wolf Mortality and Disease Surveillance

MFWP's Wildlife Research Laboratory (Lab) in Bozeman played an important role in Montana's wolf monitoring program. In 2005, MFWP's wildlife veterinarian drafted a biomedical protocol that guides all wolf capture, physical or chemical immobilization procedures, and animal care and handling procedures. Supplementary training was provided in 2006, and routine consultation assured adherence to the protocol. Additionally, lab personnel carried out routine wolf health and disease surveillance by collecting information from both live and dead wolves submitted in 2007. In 2008 and 2009, necropsies were performed less frequently as baseline investigations. Instead, necropsies were increasingly performed only for those wolves for which cause of death was unknown.

Blood samples collected by MFWP and WS from live-captured wolves were sent to the Lab again in 2009. Blood was screened for exposure to various diseases, and some was archived in a DNA repository. Usable samples were forwarded for hematology, biochemistry, and serology screening. All of the hematology and biochemistry results were within normal limits expected for wolves. However, serology results indicated that most of those individuals had been exposed to some common canid viral and bacterial diseases: canine parvovirus, canine distemper, canine adenovirus, and leptospirosis. The presence of these antibodies in blood collected from live wolves indicated exposure at some time in the animal's life, but that it survived the exposure. While there has been much speculation about the cause of low pup counts in southwest Montana and inside YNP in recent years, clinical evidence to confirm the cause/s was very difficult to obtain. The 2006 Montana Wolf Conservation and Management Annual Report (Sime et al. 2007) provided an in-depth summary of results to date regarding diseases in Montana wolves.

MFWP has been cooperating in a University of Illinois study examining contaminants and toxins in western gray wolf kidneys. Samples were also submitted from the Canadian provinces. Results are not yet available, but see the Research section for an abstract for more information.

Additionally, MFWP developed a protocol that called for all dead wolves found in Montana to be retrieved from the field for examination by an MFWP representative. Some carcasses are sent to the lab for more detailed analysis.

Typical information collected includes cause of death, body weight, evidence of ectoparasites, etc. Various biological data were also collected. The veterinarian had discretion to complete a more in-depth necropsy if preliminary findings warranted additional examination. Abnormal or suspect tissues were submitted to the Montana State Diagnostic Laboratory (or occasionally elsewhere) for further evaluation. Lab personnel may also assist and consult during USFWS law enforcement investigations to determine cause of death and examine physical evidence. The 2006 Montana Wolf Conservation and Management Annual Report (Sime et al. 2007) provided an in-depth summary of results to date for the years 2003 to 2006. Some of the salvageable hides were retained and processed for educational purposes.

MFWP documented higher levels of wolf mortality in 2009 compared to 2007 and 2008 (Figure 9 and 10). The majority of wolf mortality overall in Montana is related to humans: livestock conflicts, regulated public harvest, car strikes, train strikes, illegal killing, legal harvest in

Canada, and incidental to other activities (e.g. trapping/snaring). That pattern is similar across the northern Rocky Mountains, except inside national parks where the majority of wolf mortality is due to intraspecific strife (wolf on wolf aggression) or other natural causes).

Of 255 mortalities documented in 2009, 57% (n=145) were killed to address livestock related conflicts. Livestock-related mortality continues to exceed mortality from other causes, even public harvest during Montana's first wolf hunting season. In WMU 1, livestock related mortality accounted for 48% of the total mortality documented. In WMU 2, livestock related mortality accounted for 55% of the total mortality documented. The majority of that mortality occurred in the west half of Beaverhead County (Big Hole Valley). In WMU 3, livestock related mortality accounted for 61% of total mortality documented.

At the statewide level, the remaining mortality documented was as follows: 16 died due to illegal killing (6%), 68 were harvested in Montana's first season (27%; some harvest mortality occurred in a Yellowstone National Park pack is not included here since it is a Wyoming wolf pack), 12 died of unknown causes, 2 died of natural causes, 8 car/train strikes, 1 self-defense, 2 electrocuted, and 1 euthanized due to poor health.

One wolf was euthanized by project personnel due to advanced stages of mange and the secondary effects and health complications associated with it. Several other wolves that died of a variety of causes showed signs of mange. Mange has been documented in several packs (see pack narratives below). Mange continues to be documented primarily in southwest Montana and the East Front of the Rockies. Mange has not been documented in west of the continental divide northwest Montana or in far western Montana.

Echinococcus Tapeworm

An article published in 2009 in the Journal of Wildlife Diseases describes the prevalence of *Echinococcus granulosus* in wolves (definitive host) and ungulates (intermediate host) in Idaho and Montana (Foreyt et al., 2009). *Echinococcus* is a genus of tapeworm. Although *E. granulosus* can be found almost worldwide, adult *E. granulosus* has only been documented in Montana during the past few years.

It is not known where the *E. granulosus* recently documented in Montana originated. Perhaps the parasite was maintained at a low level in canids such as coyotes and dogs in the absence of wolves prior to wolf reintroductions in 1995 and 1996, and the presence of wolves has amplified the parasite on the landscape. The possibility that *E. granulosus* was brought into Montana with transplantation of wolves from Canada into Yellowstone National Park cannot be ruled out. Transplanted wolves were treated with an anthelmintic drug effective against *E. granulosus* prior to release, however, it cannot be verified that treatment was 100% effective in all wolves.

Humans must ingest *Echinococcus* eggs to become infected. Only the larval stage of the parasite is found within cysts in ungulates. The adult tapeworms, which lay eggs that can infect humans, are found in the intestinal tract of canines. There are several basic precautions that can minimize the risk of human infection with *Echinococcus*. Dog owners should not allow their dog to consume carcasses of wild or domestic ungulates. If your dog does have access to carcasses, talk

to your veterinarian about appropriate deworming strategy. Always wash your hands after handling a dog that has access to ungulate carcasses. When enjoying outdoor recreation, do not touch or disturb wolf, coyote, or fox scat. Hunters should wear gloves when field dressing a wolf, coyote, or fox carcass, and wash your hands, forearms etc., since they may have come into contact with feces or contaminated fur.

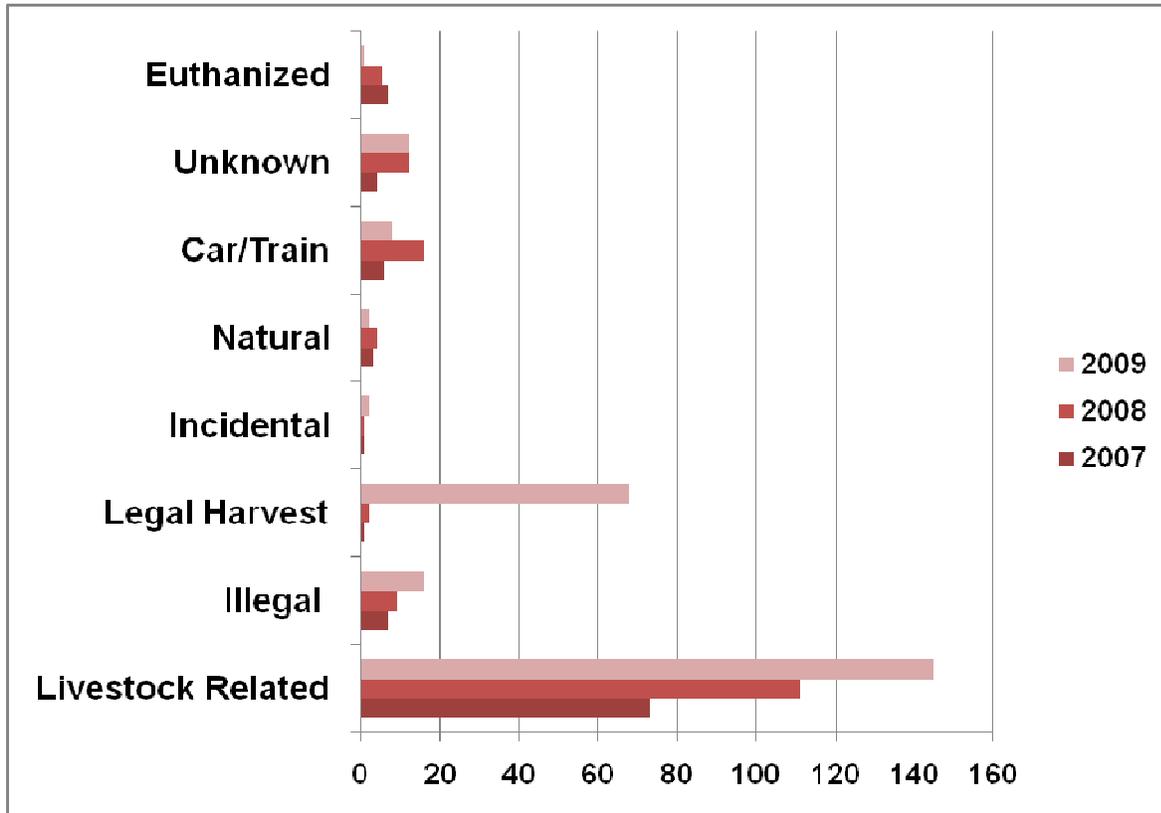


Figure 9. Minimum number of wolf mortalities documented by cause for gray wolves in 2007-2009. Total number of documented wolf mortalities in 2007 was 102, 161 in 2008 (which includes 3 wolves which died in Idaho and 3 wolves which died in Canada), and 255 in 2009.

Wolf – Livestock Interactions in Montana: General Overview

Montana wolves routinely encounter livestock on both public grazing allotments and private land. Wolves are opportunistic predators, most often seeking wild prey. However, some wolves “learn” to prey on livestock and teach this behavior to other wolves. Wolf depredations are very difficult to predict in space and time. Between 1987 and 2009, the vast majority of cattle and sheep wolf depredation incidents confirmed by WS occurred on private lands. The likelihood of detecting injured or dead livestock is probably higher on private lands where there was greater human presence than on remote public land grazing allotments. The magnitude of under-detection of loss on public allotments was not known. Nonetheless, most cattle depredations occurred in the spring or fall months while sheep depredations occurred more sporadically throughout the year.

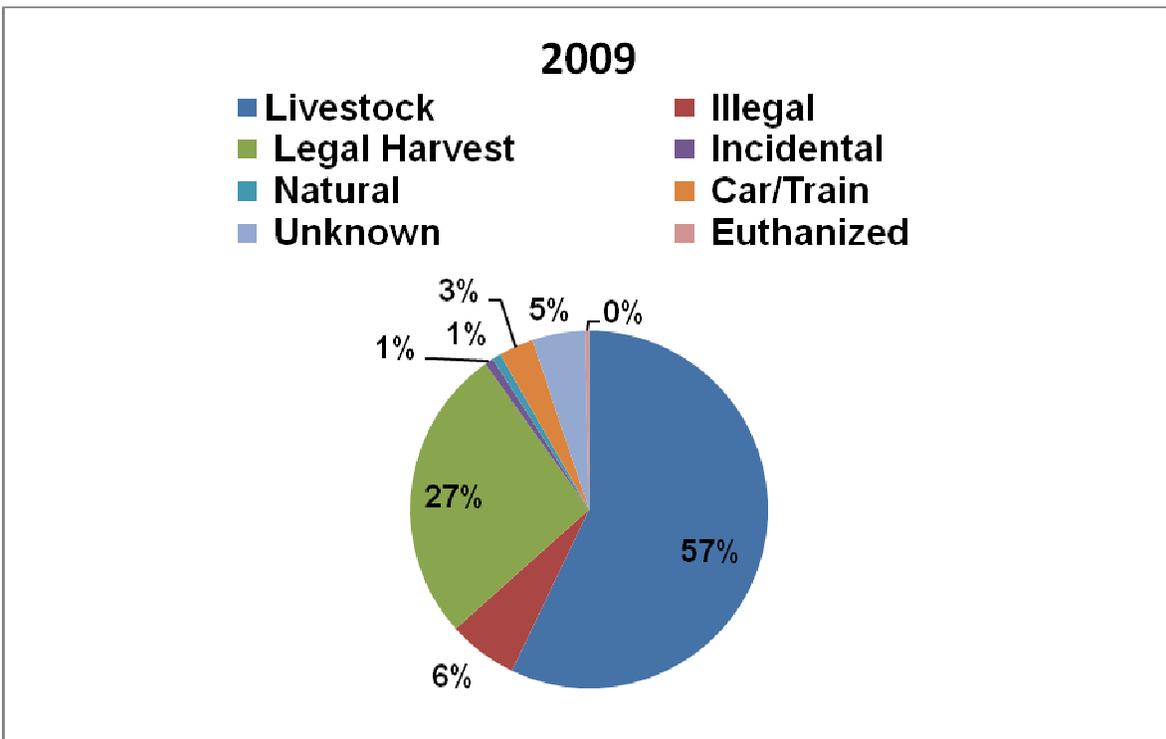
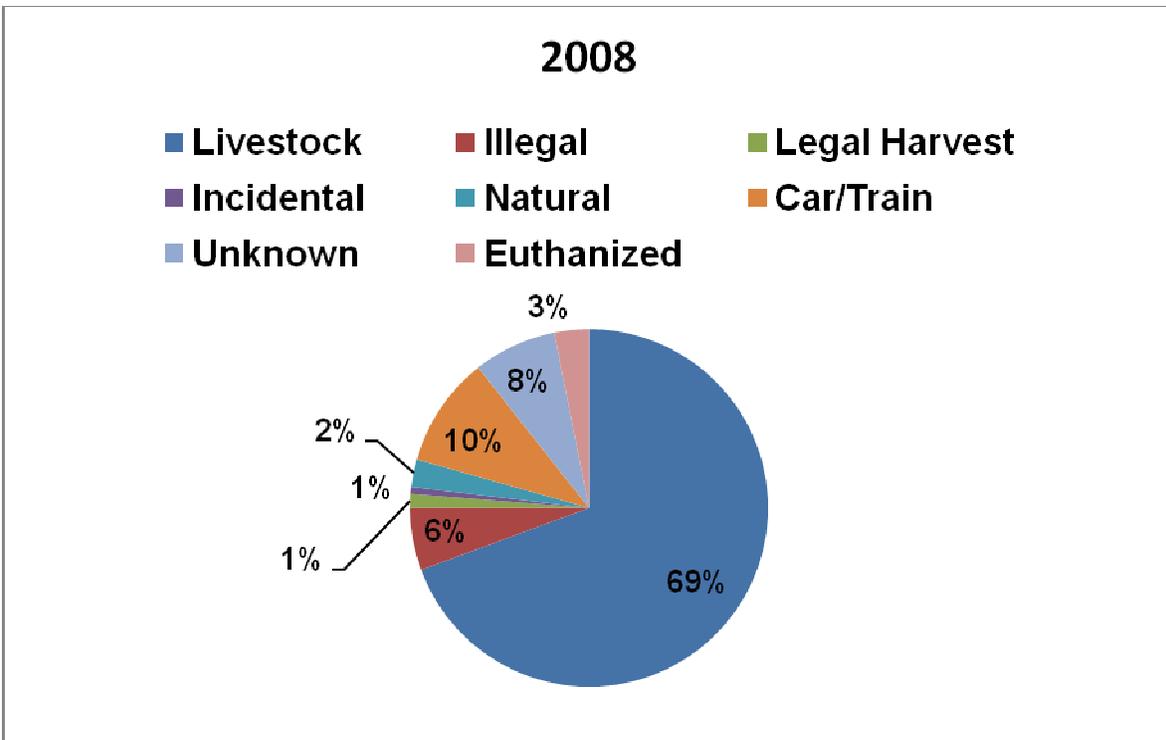


Figure 10. Percent of total documented mortality by cause in 2008 and 2009. In 2008, 161 mortalities were documented (which includes 3 wolves which died in Idaho and 3 wolves which died in Canada) and 255 were documented in 2009.

Most wolves in Montana routinely encounter livestock, but do not kill livestock at each encounter. On average through the last 10 years, 10-25% of Montana wolf packs were confirmed to have preyed on livestock in any given year. In more recent years, an average of 35% of packs has confirmed depredations. One pack has been on the landscape for 19 years and was confirmed to have killed livestock a total of 5-6 times even though livestock occurred within its territory and within 2 miles of the den site. Other packs depredate once or twice a year, every other year, or at more widely spaced intervals. Still others depredate more frequently, some demonstrating an escalating behavior pattern of actively hunting livestock in the span of a few weeks or months. Packs that have killed livestock repeatedly and within short periods of time, particularly adult-sized livestock, eventually became sources of chronic conflict. In these situations, lethal control occurred more regularly within and across years. In some cases, incremental removal in a stepwise fashion after repeated losses resulted in full pack removal.

Occasionally, livestock were confirmed killed by lone dispersing wolves or a pair of wolves passing through, as evidenced by the lack of a resident pack or subsequent instances of injured or dead livestock or wolf sign in the area. In these situations, the wolf usually does not return to the original depredation site. In other instances, livestock are killed by remnants of packs that became fragmented due to lethal control, dispersal or disease-related mortality.

USDA Wildlife Services workload has increased over the last 10 years as the wolf population increased and distribution expanded. The number of suspected wolf complaints received by WS increased steadily from federal fiscal year 1997 to 2009 (Figure 11). About 50% of the complaints received by WS are verified as wolf-caused.

A total of 583 wolves were killed to help resolve conflicts with livestock from 1987-2009 in Montana (Figure 9). Despite this level of lethal removal, particularly in the early years, the Montana population still increased in number and distribution, due to immigration from central Idaho, YNP, and through growth from within the Montana population via dispersal and new pack formation. From 2004-2008, an average of 15.8% of the wolf population per year was killed due to conflicts with livestock (Figure 10). In 2009, about 17% of the population was removed to resolve wolf-livestock conflicts. The percent killed in the most recent 3 years has increased as the size of the wolf population has increased and wolf pack distribution has expanded into areas where conflicts with livestock are more likely. Similar trends are evident in the NRM and the Western Great Lakes States. Despite this level of removal due to livestock conflicts, the Montana wolf population continued to increase through the years.

More flexible federal regulations in the southern Montana experimental area and upon delisting the state framework allowed a private citizen to kill a wolf seen in act of attacking, killing, or threatening to kill livestock. In 2009, ten wolves were taken in defense of livestock. 1

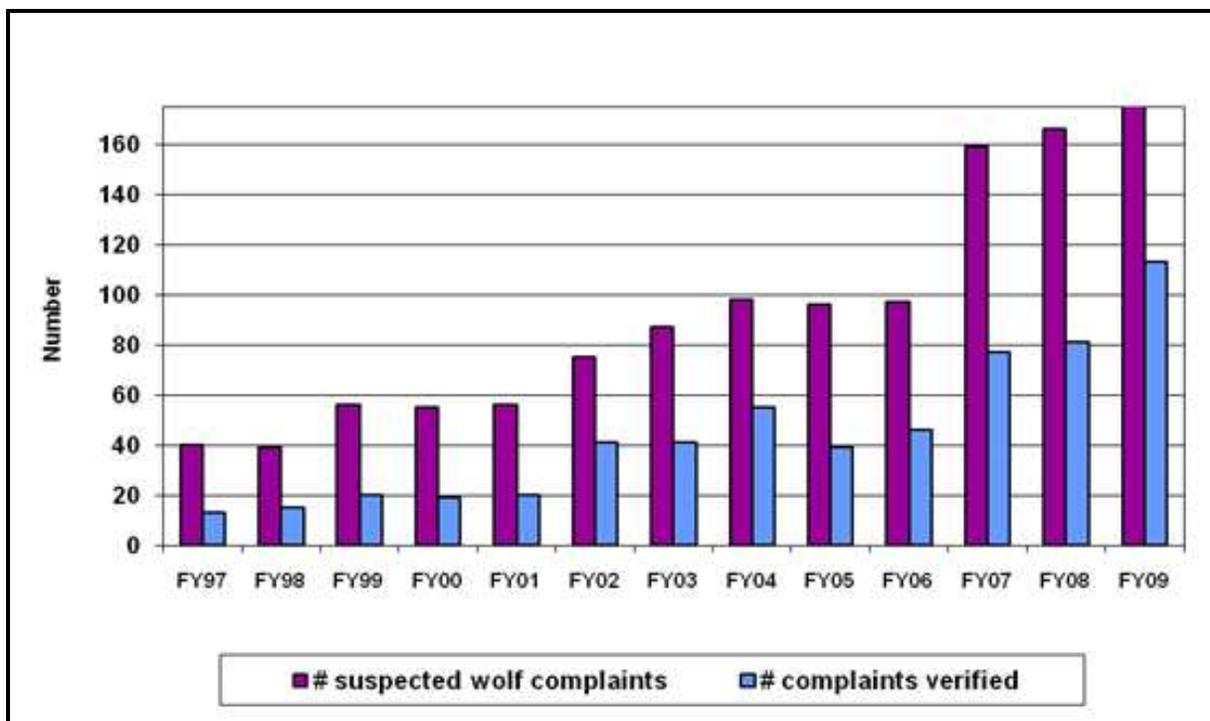


Figure 11. Number of complaints received by USDA Wildlife Services as suspected wolf damage and the percent of complaints verified as wolf damage, federal fiscal years 1992 – 2009. Federal fiscal years from October 1 to September 30.

Because wolves were listed under ESA for the first few months of the year, wolf-livestock conflict resolution was guided by a combination of the approved state plan and federal regulations. Upon delisting in May, the federal regulations no longer applied and were replaced with state regulations. Among other things, MFWP considered the number of breeding pairs statewide and in the respective interim management areas (endangered area or experimental area), where the incident occurred, potential for additional losses, and a pack’s previous history with livestock when deciding what to do. MFWP and WS tried to connect the management response and the damage closely in space and time, targeting the offending animal/s. WS personnel carried out the lethal control work. MFWP strove to assure the security of the overall wolf population, while addressing depredation losses and control in an incremental fashion responsively and as directed by the state plan.

Because most confirmed incidents of injured or dead livestock in Montana involve livestock producers who were affected 2 or more times and that most incidents occurred on private lands, we believe the combination of proactive non-lethal deterrents combined with strategic incremental lethal control of problem wolves is the best way to resolve wolf-livestock conflicts. Both MFWP and WS also provided advice and technical information to individual livestock producers about proactive strategies that may decrease their risk of wolf depredations. Project personnel also worked collaboratively with interested private organizations and local-level community groups (e.g. watershed groups) to provide technical advice and to investigate non-lethal methods of deterring livestock conflicts.

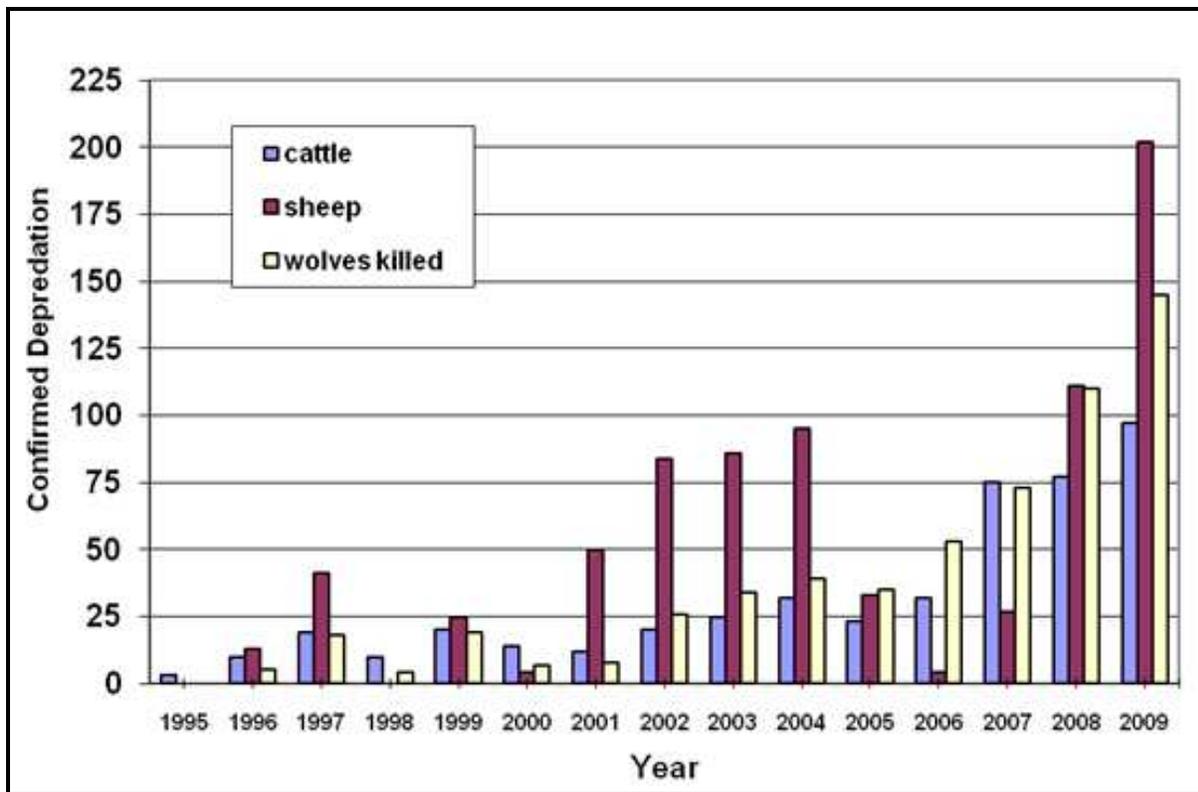


Figure 12. Confirmed cattle and sheep death losses confirmed as wolf-related and the number of wolves lethally controlled in the State of Montana based on investigations by USDA Wildlife Services, 1995-2009.

Depredation Incidents in 2009

The majority of wolf-livestock interactions took place in WMUs 1 and 2. WS confirmed that, statewide, 97 cattle, 202 sheep, 4 domestic dogs, 2 goats, and 4 llamas were killed by wolves in calendar year 2009 (Figure 9). Approximately 38% of Montana packs had confirmed livestock kills at some point during 2009. Additional investigations were determined to be probable wolf depredations or confirmed injured livestock. Furthermore, many livestock producers reported “missing” livestock and suspected wolf predation. Other reported indirect losses include poor weight gain and aborted pregnancies. There is no doubt that there are undocumented losses. It is difficult to quantify direct and indirect economic losses in totality.

Most depredations occurred on private property. To address livestock conflicts and to further reduce the potential for further depredations, 145 wolves were killed. Ten of the 145 were killed by private citizens when the wolf was seen chasing, killing, or threatening to kill livestock. The others were taken by WS using either ground or aerial based methods. Nine packs were removed entirely due to chronic livestock conflicts (Sage, Middle Creek, Centennial, Blacktail3, Nevada Creek, Battlefield, McVey, Livermore, Grasshopper, and Salish).

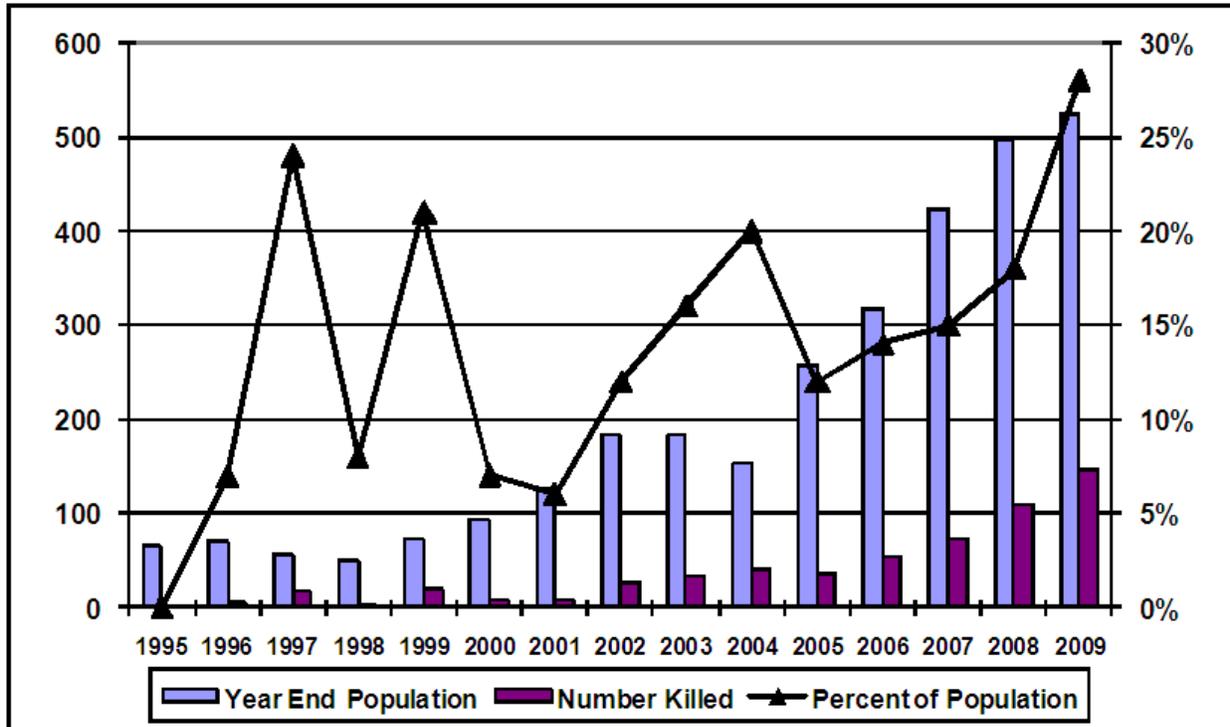


Figure 13. Minimum estimated wolf population (left axis), number of wolves killed to resolve livestock conflicts (left axis), and percent of the population removed (right axis) during calendar years 1995 - 2009.

These 9 packs accounted for 42% of the total number of wolves killed to resolve livestock conflicts. All combined, these packs accounted for 30% of the total confirmed cattle killed and 71% of the total confirmed sheep killed. In some cases, these packs occupied primarily private lands and/or also had some level of failure of nonlethal tools.

In 2009 in WMU 1, the number of livestock and dogs confirmed killed increased from prior years, as did the number of wolves killed. WS confirmed a total of 40 cattle, 9 sheep, 1 dog, 1 goats, and 4 llamas were killed by wolves in 2009. Wolf-livestock conflicts occurred on both the Flathead Reservation and the Blackfeet Reservation. A total of 63 wolves were killed in WMU 1. Two packs were eliminated (Salish, Nevada Ck) due to ongoing conflicts and a very high potential for additional losses.

In 2009 in WMU 2, the number of confirmed livestock losses increased significantly, particularly in the Big Hole where 44% of the all confirmed cattle death loss statewide was documented. WS confirmed a total of 43 cattle, 8 sheep, and 2 dogs were killed by wolves. Fifty one wolves were killed and several packs were eliminated (McVey, Battlefield, Grasshopper, and Middle Ck).

In 2009 in WMU 3, the total number of confirmed cattle death losses livestock losses was about the same from 2008 to 2009. However, the total number of confirmed sheep death losses increased significantly due to larger than average losses by two packs (Centennial and Blacktail3). Both these packs were removed. WS confirmed a total of 14 cattle, 185 sheep, and 1 goat, and 1 dog were killed. A total of 31 wolves were killed.

Private citizens killed a total of 10 wolves caught in the act of chasing, attacking or killing livestock (about 7% of the total livestock related mortality). Nearly all the incidents took place on private lands. MFWP issued 21 kill permits statewide in an effort to remove problem wolves faster, in conjunction with WS efforts. No wolves were killed by citizens.

Between 1987 and 2006, most confirmed cattle depredation events in Montana occurred in spring (March, April, May) when calves were small and most vulnerable. A smaller spike occurred in the fall (September and October), presumably as food demands of the pack increased and pups are traveling with the pack. In addition, wild ungulates were still well dispersed on summer range and young-of-the-year ungulates were more mobile. Most confirmed sheep depredation events in Montana occurred in July, September, and October. Because of their smaller size relative to cattle or other classes of livestock, sheep are vulnerable to wolf predation year round. Similar patterns of peak depredation activity were observed in 2008.

Proactive Non-lethal Efforts

From 1987 – 2006 there was a total of about 314 confirmed incidents of wolf-livestock conflicts (injured or dead livestock confirmed by WS). A total of 162 livestock owners were affected. Previous work has shown that proactive, nonlethal tools have the potential to decrease risk because about half of the total incidents occur twice or more on the same piece of land (Sime et al. 2007). Losses peak in the spring and fall. However, it is difficult to prevent wolves from injuring or killing livestock as most livestock owners have only one confirmed loss. Some however, did have multiple losses during that span of years. Other work has shown that lethal control can provide some relieve, but is not a permanent solution as wolf pack territories were recolonized by other, “new” wolves about 280 days on average after the previous pack was eliminated (Bradley 2004). Thus a combination of proactive nonlethal tools in combination with incremental lethal control offers a variety of management tools to minimize wolf-caused livestock losses and lethal wolf control to the extent possible, recognizing that some livestock will be lost to wolves in the future and some wolves will be killed to address conflicts.

During 2009, MFWP and WS assisted with several efforts to employ proactive non-lethal tools, including fladry, electric fladry, increased human presence, and non-lethal munitions. A few are highlighted below. The reader is also referred to individual pack narratives to learn more. Other efforts occurred without much MFWP involvement. Additionally, most livestock owners who submitted a claim to the Montana Livestock Loss Reduction and Mitigation Board to get reimbursed for a verified wolf loss reported already using some husbandry tools to decrease the risk of wolf depredation.

Fladry

In the Lebo pack territory at the north end of the Crazy Mountains, about five and a half miles of fladry was deployed on three different properties for five different pastures to protect sheep and cattle. Two of the three livestock producers had experienced wolf depredations. Electric sheep netting was also erected to protect sheep after both wolves and a bear had killed sheep in one of the pastures. No depredations were reported in the pastures that were fully enclosed by the fladry or netting. One pasture was so large that the landowner asked to use the available fladry as a drift fence, but the pasture was not fully surrounded by fladry. Two sheep were killed by wolves in that pasture.

In the Welcome Creek territory south of Missoula, a domestic dog was killed at a ranch in February. Wolves continued to move through the area. FWP hung fladry around the calving pasture. No conflicts with livestock occurred.

South of Cascade in response to new wolf activity and confirmed sheep depredations in August, FWP hung electric fladry around areas used for night penning. About one mile of electric fladry was deployed on two different pastures to protect two smaller groups of sheep. No depredations were reported in pens where electric fladry was hung. However, sheep were lost from a larger band utilizing guard dogs but not fladry.

On the Sun Ranch south of Ennis from late May through September, Sun Ranch Institute, the People & Carnivores Project (Northern Rockies Conservation Cooperative), MTFWP, and volunteers from the Greater Yellowstone Coalition deployed electrified fladry barriers on pastures. The project had three objectives: 1) use fladry, in addition to vigilance and opportunistic hazing, to protect a herd of 440 spayed heifers; 2) explore and document best practices for efficient deployment of electrified fladry; and 3) use fladry deployment as an opportunity to expose wolf advocates to the challenges of wolf-livestock coexistence. The Toadflax Pack, which includes two radioed wolves, was sporadically present on the ranch for much of the project. One pasture that the heifers grazed was within half a mile of an active rendezvous site, and wolves were observed near the cattle numerous times. There were no observations of wolves interacting with the electrified fladry. Throughout June and early July, elk dismantled fladry segments frequently; on one occasion when fladry was inoperative due to elk, wolves entered a pasture and fed on lightning-killed cattle. While no heifers were lost to wolves, it is impossible to say conclusively whether fladry was a factor in this outcome.

Challenging terrain, large pastures, elk presence, and weather made this setting an excellent field laboratory for efficient and effective fladry deployment. Surrounding up to 450 acres at a time required lengthy fladry segments and ample electrical charge. The flags and vegetation (particularly sagebrush *Artemisia* spp. and basin wild rye *Elymus cinereus*) created significant voltage leaks, draining battery power and maintaining adequate shock power a challenge. With extensive grounding systems and a powerful energizer (HotShock A 50; 4.5 joule maximum output), we were able to maintain charges of approximately 4,000 volts up to 2 miles from the energizer.

Deploying and moving up to four miles of fladry led us to seek improvements in handling this material. Working with MFWP, we explored ways of winding the fladry onto spools to improve both installation and removal of fladry. We have built three prototypes spoolers for use with

ATVs, and have also successfully used a harness-mounted spooler developed by Val Asher for use on foot. In addition, we developed efficient ways to handle fiberglass fence posts, as well as effective ways to insulate electrified fladry from accidental grounding at fence crossings. All of these best practices will be summarized in a concise manual for fladry users.

Increased Human Presence

The primary goal of these range rider efforts is to reduce livestock/predator interactions. Secondary goals and objectives are to reduce livestock depredation from predators, to detect injured or dead livestock more rapidly, to preserve the evidence and increase the likelihood that an investigation would yield a definitive conclusion about whether or not it was a predation event and the species responsible, to improve livestock management and range conditions, to increase knowledge about livestock/predator interactions in space and time, and to build relationships among project partners.

Although the rider protocols varied from place to place, the underlying premise is similar: increased and continual human presence and immediate response to wolves that are seen interacting with livestock. The rider response towards wolves when they are interacting with livestock ranges from non-lethal harassment to a lethal bullet. By responding as closely as possible in space and time to the inappropriate behavior (e.g. chasing livestock), the wolves are more likely to associate that behavior with something negative than if they had not been harassed while behaving inappropriately. Due to the incredible number of variables from place to place, there is no clear evidence that these efforts have actually prevented depredations. However, when surveyed, many participating producers said they thought it was helpful and indicated an interest in continuing their participation.

Over the years, MFWP has collaborated livestock producers, many organizations and watershed groups, including: Madison Valley Ranchlands Group, Blackfoot Challenge, Boulder Watershed Association, Granite County Headwaters Watershed Group, Turner Endangered Species Fund, USDA Forest Service, Keystone Conservation, USDA Wildlife Services, USDA Natural Resources and Conservation Service, Sweet Grass County Conservation District, and MSU Extension Service

Blackfoot Wolf and Cattle Monitoring 2009 *(Contributed by Peter Brown, University of Montana and Blackfoot Challenge; see Research and Field Studies section for more.)*

The Blackfoot Challenge continued to fund a Wolf and Cattle monitoring position during the 2009 grazing season. This position was a collaborated effort between Montana Fish Wildlife & Parks and the United States Fish and Wildlife Service. Duties included monitoring the established wolf packs (Ovando Mtn, Elevation Mtn, Arrastra Creek) that were located in the vicinity of cattle grazing on summer pastures on private and public lands in the Blackfoot watershed. The rider was also observing cattle distribution, behavior, and health as an indicator of wolf presence to determine the potential for conflict were it to arise. The rider worked closely with WS agents during depredation investigations as well as maintaining communication with ranchers that had their cattle in close proximity to wolf activity. The rider distributed a weekly report to ranchers, natural resource managers, and concerned citizens pertaining to the general

whereabouts of the wolves and any pertinent observations from the field. Additional public contact included ten presentations which discussed wolf track identification, safety in wolf country, the specifics of the MTFWP Wolf Program, and strategies for reducing risk of depredation for cattle producers. There were two confirmed wolf depredations attributed to the Ovando Mtn Pack during the timeline of the program, no other conflicts were reported. Wolf management in ranching landscapes is challenging, this demands unique adaptive strategies including the assistance of community members with monitoring cattle and wolves to determine if conflicts exist.

Montana Livestock Loss Reduction and Mitigation Program: a Montana-based Reimbursement Program

The Montana Wolf Conservation and Management Plan called for creation of a Montana-based program to address the economic impacts of verified wolf-caused livestock losses. The plan identified the need for an entity independent from MFWP to administer the program. The plan also identified that the reimbursement program would be funded through sources independent from MFWP's wolf management dollars and other MFWP funds intended for fish and wildlife management.

The creation of an adequately funded loss reduction and damage mitigation program will help determine the degree to which people will share the land with wolves, to which the success of wolf recovery can be assured into the future, and the degree to which individual livestock operators who are adversely affected economically by wolf recovery are able to remain viable. Maintaining private lands in agricultural production provides habitat for a wide variety of wildlife in Montana and is vital to wolf conservation in the long run.

In keeping with Montana's tradition of broad-based citizen participation in wolf conservation and management, a diverse, 30-member working group met 4 times in 2005. The working group was comprised of private citizens, representatives from non-governmental organizations, and representatives from state and federal agencies. A smaller subcommittee continued to meet in 2006. This group finalized a framework which then became the basis for legislation in the 2007 Montana Legislature.

As a part of the comprehensive wolf program implemented by MFWP and its cooperators, the Montana Livestock Loss Reduction and Mitigation Program (MLLRMP) addresses economic losses due to wolf predation and creates incentives for producers to take proactive, preventive steps to decrease the risk of loss. The large working group agreed that both government and livestock producers want to take reasonable and cost-effective measures to reduce losses, that it is not possible to prevent all losses, and that livestock producers should not incur disproportionate impacts as a result of recovery of Montana's wolf population.

There are three basic components: a loss reduction element, a loss mitigation element, and the state wolf management plan. MFWP and USDA WS would fulfill their responsibilities and roles outlined in the state management plan. The loss reduction and loss mitigation elements are administered by an independent quasi-judicial board that is administratively attached to the Montana Department of Livestock

Of particular concern to all participants was the need to secure funding for both the proactive work and the loss reimbursement components of the Montana wolf program. The working group explored a variety of funding mechanisms. Both the Montana Wolf Advisory Council and the second working group concluded that the MLLRMP would be funded through special state or federal appropriations or private donations. Both groups agreed that MFWP's wolf management dollars, and other MFWP funds (license revenue and federal matching Pittman-Robertson or Dingle Johnson dollars) would not be used to reimburse wolf-caused losses. Private donations will also be sought.

During the 2007 Montana Legislative session, a bill to establish the framework of the working group was introduced and passed (HB364). The legislation created the Livestock Loss Reduction and Mitigation Board to administer programs for the mitigation and reimbursement of livestock losses by wolves. It also established the quasi-judicial board, its purpose, membership, powers and duties, and reporting requirements. The Board is administratively attached to the Montana Department of Livestock, but its role and duties are wholly independent from the Department and the Montana Board of Livestock and vice versa. Late in 2007, the Governor appointed the first Board.

The purposes of the Montana Livestock Loss Reduction and Mitigation Program are to proactively apply prevention tools and incentives to decrease the risk of wolf-caused losses, minimize the number of livestock killed by wolves through proactive livestock management strategies, and provide financial reimbursements to producers for losses caused by wolves based on the program criteria.

The Loss Reduction element is intended to minimize losses proactively by reducing risk of loss through prevention tools such as night pens, guarding animals, or increasing human presence with range riders and herders. Active management of the wolf population by MFWP under the approved Montana Wolf Plan (and the applicable federal regulations for now) should also help decrease the risk of loss.

The Loss Mitigation element implements a reimbursement payment system for confirmed and probable losses that can be verified by USDA WS. Indirect losses and costs are not directly covered, but eventually could be addressed through application of a multiplier for confirmed losses and a system of bonus or incentive payments. Eligible livestock losses are cattle, calves, hogs, pigs, horses, mules, sheep, lambs, goats, llamas, and guarding animals. Confirmed and probable death losses are reimbursed at 100% of fair market value. Veterinary bills for injured livestock that are confirmed due to wolves may be covered at up to 100% of fair market value of the animal when funding becomes available.

The legislation also codified much of the actual draft framework in state law. It directed the Board to establish a program to cost-share with livestock producers who are interested in implementing measures to decrease the risk of wolf predation on livestock. It also directed the Board to establish and administer a program to reimburse livestock producers for losses caused by wolves. While some details of the grant program (loss reduction) and the reimbursement program (loss mitigation) are established in statute, the Board will still need to establish additional details through a rule-making process, which will include public comment

opportunities. Rulemaking is expected in ~~2009~~ 2010 to finalize and establish other program implementation details in the Administrative Rules of Montana.

HB364 also established special state and federal revenue accounts, respectively. The funds may only be used to implement the loss reduction grants program and reimburse wolf-caused losses. HB 364 also established a trust fund with an intended principal of \$5 million dollars. The earned interest from the trust fund pays for the program. The Legislature did not appropriate dollars for either of the special revenue accounts or the trust fund.

The 2007 Montana Legislature appropriated “start up” funds in the amount of \$60,000 in each year of the biennium to pay for initial operating expenses of the Board. The appropriation also included 1.0 FTE who works for the Board and conducts the day to day business of the program. This individual was hired late in 2007 and the initial orientation and coordination got underway. Fundraising efforts began in 2008.

The Montana Livestock Loss Reduction and Mitigation Board met twice in 2009. With the 2009 funding available, the Livestock Loss Reduction and Mitigation Board prioritized payments for animals that were attacked by wolves and died, as verified (probable or confirmed) by USDA WS. Claims were paid on a first-come, first-served basis. Private organizations provided most some of LLRMP’s available funding for 2009, including a \$50,000 donation from Defenders of Wildlife. Donations were also received from the Greater Yellowstone Coalition, Western Wolf Coalition, Keystone Conservation and the Montana Cattlemen’s Association. No grant applications submitted in 2008 were funded. A total of \$87,318 was paid to livestock owners for 238 dead animals between April 15 and December 31, 2008. A total of \$141,462 was paid to livestock owners for 367 dead animals in 2009. Federal legislation introduced by Montana Senator Jon Tester has been signed by the President. This legislation provides for \$1,000,000 for wolf loss prevention efforts and loss payments in all states. Montana will be eligible for a portion of this appropriation in federal fiscal year 2010 (which began October 1, 2009). Montana will have to match the federal dollars with state funds or private donations.

Payments for injured animals or funds for cost-share grants to implement proactive tools intended to decrease risk were unavailable due to a lack of funds. This board and program are primarily funded via private donations and governmental appropriations. Donations are fully tax deductible

If a livestock producer suspects a wolf-related livestock injury or death, USDA WS should be contacted to request an investigation. If the loss is related to wolves, USDA WS will mail a copy of the WS investigation report and a claim form for the MLLRMP to the livestock owner. The livestock owner should complete the claim form and mail it (along with the copy of the USDA WS investigation report) to the Coordinator. The Coordinator will determine the market value of the loss based on USDA market reports from Billings each week. Claims for unique or higher value livestock should be accompanied by documentation of value. Claims are typically submitted about one month after the WS investigation is completed. If forms are complete and no unusual circumstances present themselves, claims are processed and payment is made within 2-3 weeks.

Table 2. Payments for confirmed and probable livestock death losses by the Montana Livestock Loss Reduction and Mitigation Board, 2009.

County	Cattle	Sheep	Goat	Horse	Guard Dog	Llama	Total	Payments
Beaverhead	26	184					210	\$74,074.63
Cascade		10					10	\$1,295.00
Flathead	2						2	\$1,361.00
Glacier	14			1			15	\$8,809.42
Granite	5						5	\$4,242.41
Jefferson	2						2	\$1,118.25
Lake	7						7	\$5,152.77
Lewis & Clark	12	7			2		21	\$10,493.58
Lincoln	4	1					5	\$2,861.00
Madison	12	14					26	\$10,979.41
Meagher		24					24	\$3,690.00
Missoula	1						1	\$684.00
Park	2						2	\$2,525.00
Pondera	1						1	\$707.06
Ravalli	1						1	\$732.88
Powell	9	1					10	\$5,437.58
Sanders	5						5	\$3,566.53
Stillwater		2	1				3	\$375.00
Sweet Grass		1	2				3	\$300.00
Teton	2						2	\$1,316.25
Wheatland		12					12	\$1,740.00
Total	105	256	3	1	2	0	367	\$141,461.77

¹ Confirmed, defined in MCA 2-15-3112 [as determined by USDA Wildlife Services]: reasonable physical evidence that livestock was actually attacked or killed by a wolf, including but not limited to the presence of bite marks indicative of the spacing of canine tooth punctures of wolves and associated subcutaneous hemorrhaging and tissue damage indicating that the attack occurred while the animal was alive, feeding patterns on the carcass, fresh tracks, scat, hair rubbed off on fences or brush, eyewitness accounts, or other physical evidence that allows a reasonable inference of wolf predation on an animal that has been largely consumed.

² Probable, defined in MCA 2-15-3112 [as determined by USDA Wildlife Services]: the presence of some evidence to suggest possible predation but a lack of sufficient evidence to clearly confirm predation by a particular species. A kill may be classified as probable depending on factors including but not limited to recent confirmed predation by the suspected depredating species in the same or a nearby area, recent observation of the livestock by the owner or the owner's employees, and telemetry monitoring data, sightings, howling, or fresh tracks suggesting that the suspected depredating species may have been in the area when the depredation occurred.

PACK SUMMARIES

Wolf Management Unit 1, Northwest Montana

Overview

In 2009, we documented a minimum estimate of 308 wolves in 64 packs in WMU 1 (the Montana portion of the NWMT Recovery area). That is an increase from 253 wolves in 46 packs at the end of the year in 2008. There were 21 newly identified packs in 2009. One of the newly formed packs was removed as a result of habitual depredations. Some of these packs are believed to be first year packs, and some are likely to have existed the previous year. Two of those packs are state border packs that were counted in Idaho in 2008, and counted in Montana in 2009 because they either denned or spent the majority of their time in Montana. There are no state border packs where the inverse is true. Two packs were removed from the population as a consequence of chronic livestock depredation.

Forty-seven radio collared wolves in 36 packs, or 56% of the 64 total packs, were monitored in northwest Montana during at least some portion of 2009. This is slightly lower from 60% of 45 total packs in 2008. An additional 9 radio collared wolves that had dispersed were monitored at some point during the year and 5 of those were still alive at the end of the year. One additional radio collared wolf was also monitored, but spent all of its time in British Columbia, Canada. Radio collared wolves were located from aircraft approximately 1–2 times per month. Radio collared wolves in and around Glacier National Park (GNP) were located more frequently from the ground by GNP staff and personnel from an Oregon State University research project. Twenty-eight collared wolves from 20 packs (31% of the 64 total packs) were monitored by the end of the year. Seven collars are ARGOS GPS for Patch Occupancy Population Modeling research in cooperation with the University of Montana Wildlife Cooperative Research Unit. Three of these were placed in three different packs in 2009. Only two of these collars were still functioning and within the pack at the end of the year.

MFWP traplines were set in 15 pack territories, and 8 wolves were captured and collared in 2009. Three wolves were captured incidentally on different MFWP grizzly bear trap lines. One of those was collared. USDA Wildlife Services trapped in 10 additional areas and collared 6 wolves. Three of these areas were trapped with the cooperation of both the Blackfoot Tribe and the Salish Kootenai Tribes on their respective reservations.

MFWP surveyed a total of 36 areas for wolf presence and pack status. Six of those areas resulted in the verification of new packs. Wolf activity was verified in 1 other area, but it was unclear whether it is a discrete pack or an area used by an adjacent pack. Twenty-two of those surveys were conducted to determine pack status in areas of known packs that do not have functioning radio collars. There was 1 area where definitive wolf sign could not be determined and will be scheduled for survey again in 2010. Seven more new packs were verified by the Salish Kootenai Confederated Tribes (5), and USDA Wildlife Services (2).

The 64 packs included in WMU 1 (the Montana portion of the NWMT recovery area) as of December 2009 are listed in Table 1a. Along the Montana/Idaho transboundary area within the

NWMT Recovery area, the Calder Mountain pack is believed to den and spend most of their time in Idaho and therefore is counted towards the Idaho wolf population. Along the transboundary area between the NWMT and CID recovery areas, the Fish Creek pack dens and spends most of its time in Idaho and are therefore counted towards the Idaho population. Along the US/Canada Border, the Kootenai North and Spruce Creek packs spend most or all of their time in Canada and are not counted towards the WMU 1 population.

We were able to confirm reproduction in 35 of the 64 packs (Table 1a). Twenty-three of those packs met the criteria as breeding pairs. Breeding pair status could not be documented in some packs either because they were uncollared and therefore more difficult to obtain data, or we were unable to confirm a minimum pup or adult survivorship of 2 each at the end of the year.

One hundred twenty-seven wolf mortalities were documented in WMU 1 in 2009. All but 6 were attributed to some form of human cause including 61 lethally removed in agency control actions, 2 killed by private citizens to defend livestock, 38 legally harvested, 10 illegally killed, 7 vehicle collisions, 2 electrocuted by down power line, and 1 was reported killed in self defense. Five other wolves died of unknown causes and one wolf died of natural causes. All control action and legally harvested mortalities are precise numbers, while the number of mortalities from all other causes is a minimum count. Further, these numbers can only be applied to an overall population count that is also known to be a minimum estimate.

A total of 3 radio-collared wolves were missing by the end of the year. Missing collars are due to long-range dispersal, collar failure, or other unknown fate.

Nine dispersals were recorded. NW389F dispersed from the Bearfite pack, 62 miles to the NE, and is occupying an area with at least 1 other wolf 20 miles north of the US/Canada border. NW535F (Cilly pack), NW179M (Piper pack), and another wolf of unknown origin, have dispersed from their respective packs, joined, and are occupying an area adjacent to their natal packs. NW411M dispersed from the Dutch pack, 163 miles to the N, and was harvested 140 miles north of the US/Canada border. NW510F dispersed from the Dutch pack, 12 miles, and is occupying an area south of the Dutch pack with 2 other wolves. 270, an 11-12 year old wolf, left the Fishtrap pack and was still dispersing at the end of the year. NW199M dispersed from the Ksanka pack, 24 miles to the NW, and was harvested 6 miles north of the US/Canada Border. NW526M dispersed from the Lydia pack, and was still dispersing at the end of the year and was around an area 26 miles north of the US/Canada border, and 50 miles northwest of Bonners Ferry, ID. NW111F dispersed from the Spotted Bear pack, 15 miles to the NW, paired with another wolf and has started the Quintonkon pack. Last year NW351 dispersed from the Cilly pack, paired and mated with another wolf, and produced pups forming a new pack. At the end of summer she left that territory for unknown reasons.

Two other dispersals from the end of 2008 were tracked into 2009. NW368M dispersed from the Lazy Creek pack at the end of November 2008, and in January 2009 was hit by a car near Lolo Pass 123miles to the south. NW346M dispersed from the Piper pack at the end of October 2008, and by January of 2009 he paired with a female, produced pups, and started the Ovando Mountain pack 44 miles to the southeast.

In WMU 1, the number of confirmed livestock was up from 2009. Livestock availability varies widely among packs in Northwest Montana, and the majority of packs have no or low levels of livestock present within pack home ranges. The number of confirmed packs in 2009 increased 38%, but the number of packs involved in livestock depredations stayed about the same. Fifteen of 62 packs were involved in some level of livestock depredations in 2009. A third year decline in the whitetail deer population throughout much of Northwest Montana is believed to increase the risk of livestock losses due to wolves. We documented 62 confirmed livestock and dog kills. There were 43 cattle, 9 sheep, 1 dog, and 9 llamas. An additional 16 calves were ranked as probable kills, 6 calves were confirmed injured, 1 cow injured, 1 calf indirectly killed, 2 calves ranked possible, 2 dogs injured, and 1 goat injured. Consequently the number of wolves lethally controlled increased from 49 in 2008 to 63 in 2009. Two entire packs were removed. These figures only account for verified losses. It is not possible to account for the proportion of unverified losses due to wolves. Unverified losses are losses where the cause of dead or missing livestock is not known. Nonlethal measures ranging from range riders to aversive tools such as Radio Activated Guard Boxes and Fladry are routinely deployed where applicable and as available. A range rider was utilized in the Blackfoot Valley, and Fladry was used as a preventative measure in 2 different instances across 2 different packs.

Verified Packs (Table 1a in Appendix 3)

Arrastra Creek

- at least 5 wolves; not a breeding pair
- no confirmed depredations

History: First documented in 2008.

2009 Activities: In early 2009 there were thought to be 5 wolves in the Arrastra Creek pack based on snow tracking. Wolf activity was reported in the Arrastra Creek, Marcum Mountain, and Deer Park areas throughout the year but no trapping efforts were initiated due to high grizzly bear density in that area. Reproductive status of this pack was unknown. We again estimated 5 wolves in this pack at the end of 2009 based on snow tracking.

Ashley

- ? wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: Discovered in 2006. Their home range is northwest of Kalispell.

2009 Activities: Because of increased workloads, we were not able to survey this area. Reports of wolves continue in this area, but numbers and reproduction remain unknown at the end of the year. This pack has not been collared since 2007.

Bearfite

- 3 wolves; not a breeding pair
- no confirmed depredations

History: First documented in 2008. Their home range is north of Libby.

2009 Activities: Wolf NW389F has been missing since 12/5/2008. On 11/20/2008 she was discovered near the North Fork Flathead in British Columbia, Canada. This is a dispersal of 62 miles. This pack is not radio collared.

Belmont

- at least 5 wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: First documented in 2008. Its territory is west of Placid Lake.

2009 Activities: The Belmont pack was believed to consist of 10 wolves in early 2009 and were believed to hold a territory south and southwest of Placid Lake. Very few reports came in from this area during the spring and summer. FWP scouted the area extensively in the late summer and fall and found a concentration of activity near the Flathead reservation boundary west of Placid Lake. A trapping effort was initiated but no wolves were caught. It is suspected that these wolves were using the Jocko River area as well and may have denned on the reservation based on the lack of activity during those months in the Blackfoot watershed, but no pups were ever documented. During the hunting season there were multiple reports from the Gold Creek, Belmont, and Blanchard Creek areas. Based on snow tracking, we estimated 5 wolves in this pack at the end of 2009.

Benchmark

- 2 wolves; not a breeding pair
- 8 cattle confirmed killed, 2 calves probable kills, 2 calves possible; 2 wolves killed by WS, 1 wolf killed by the landowner to defend livestock
- 2 wolves harvested

History: First documented in 2008. This pack occupies a territory west of Augusta.

2009 Activities: All of the cattle depredations occurred between March and May in several different incidents. WS removed 2 wolves from the pack during this period, while also trying to place a collar in the pack as previous attempts by MFWP and WS had been unsuccessful. There was grizzly bear activity concurrent with wolf activity on the ranch, which complicates field work due to human safety concerns. The landowner shot a wolf that was seen harassing cattle in May. All three wolves showed signs of slight mange on the lower legs and tail. MFWP scouted the area and did field surveys. MFWP also met with area landowners and land managing agency personnel periodically during the field season.

Bennie

- 2 wolves; not a breeding pair
- 1 calf confirmed killed, 2 calf probable kill, 1 calf indirectly killed; 1 wolf killed by WS
- 1 wolf harvested

History: First documented in 2008 when a female wolf dispersed (in late 2007) from the Elevation Mountain pack in the Garnett Range. The pack's territory is west of Choteau near the Blackleaf Wildlife Management Area.

2009 Activities: This pack's territory encompasses both public and private lands, as is the case for any wolf pack along the East Front of the Rockies. It was thought to stay primarily east of the Continental Divide. In February, WS determined that a mother cow trampled her calf when a wolf approached. Three other incidents occurred, one each in June, July, and August. WS removed 1 wolf in early August. The collared, breeding female was lawfully harvested during the early back country season west of the Continental Divide. MFWP scouted the area and did field surveys. MFWP also met with area landowners and land managing agency personnel periodically during the field season.

Bisson

- 3 wolves; not a breeding pair
- no depredations reported

History: First documented in 2009 on the Flathead Reservation northeast of Polson.

2009 Activities: There are no radio collars in this pack.

Bitterroot Range

- at least 3 wolves; not a breeding pair
- no confirmed depredations

History: First documented in 2007. Its territory is in a remote area west of Missoula in the Fish Creek area.

2009 Activities: Getting an accurate estimate on this pack has been difficult because they seem to spend most of their time in the backcountry in a heavily timbered area. A Forest Service crew reported consistent wolf activity again up the North Fork of Fish Creek during the summer months in 2009, as they did in 2008. In the fall 3 wolves were confirmed in the Williams Pass area and were believed to be members of this pack. Later in the winter the area was surveyed and wolf activity was found in the Rock Creek drainage but snow conditions were too poor to get any kind of count of individuals. Therefore our estimate for this pack is 3 for 2009 although we believe there are likely more wolves in this pack than were detected.

Blue Mountain

- at least 4 wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: First documented in 2007. Its territory is southwest of Missoula.

2009 Activities: In early 2009 there were thought to be at least 3 wolves in the Blue Mountain pack. A wolf hunter harvested a pup out of this pack in the fall, confirming that the pack had reproduced. This pack is believed to use the O'Brien Creek/Blue Mtn area over to Graves Creek. FWP surveyed the area in December and confirmed a minimum of 4 wolves in this pack.

Cabinet

- 2 wolves; not a breeding pair
- no confirmed depredation
- 1 wolf harvested

History: First documented in 2009. Their home range is south of Libby.

2009 Activities: There have been clusters of reports in and around the Libby Creek area that have waxed and waned since 2004. We documented presence again in 2009, and reports are up again this year. Because of increased workloads, we were not able to survey this area more than a couple of days and therefore, were unable to complete a comprehensive survey. This pack has never been collared.

Cache Creek

- 6 wolves; breeding pair
- no confirmed depredations

History: New pack in 2009. Its territory is west of Missoula in the Fish Creek area.

2009 Activities: B348M was originally collared in the Big Hole pack on Lolo Pass in 2007. He dispersed from the pack at the end of year in 2008 and paired with a female in the South Fork of Fish Creek area. They produced 4 pups in 2009.

Camas Prairie

- 2 wolves; not a breeding pair
- 2 calves confirmed killed; 3 wolves removed

History: First documented in 2008. Its home range is transboundary with the Flathead Indian Reservation between Plains and Hot Springs.

2009 Activities: In early September, two calves were confirmed killed by wolves in the Camas Prairie territory. Three wolves were killed to reduce further depredations. The only radio collared wolf in this pack has been missing since mid-October.

Candy Mountain

- 8 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: The Candy Mountain pack was first discovered as a new pair and an adult female (351) was radio collared in 2003. Their home range is in the Yaak River drainage.

2009 Activities: This pack has a wolf fitted with a gps ARGOS collar for patch occupancy modeling research in cooperation with the University of Montana (see research section). There is 1 collar in this pack at the end of the year.

Chippy

- 7 wolves; breeding pair
- no confirmed depredations

History: New in 2009. Their territory is in the Thompson River drainage.

2009 Activities: This is likely a new pack with both the breeding pair and first year litter. There are no collars in this pack.

Cilly

- 4 wolves; breeding pair
- no confirmed depredations
- 2 wolves harvested

History: New in 2008. Their territory is generally the east side of the Swan Valley.

2009 Activities: At the beginning of the year this pack was not collared. A pack of wolves were identified on the east side of the Swan. In early August, an adult female was captured and fitted with a gps ARGOS collar for patch occupancy modeling research in cooperation with the University of Montana (see research section). It is not yet clear if this is the original Cilly pack or a new pack. By the end of the year, it had left the Cilly pack and was traveling with a collared male wolf from the Piper pack and an additional uncollared wolf. The trio has been occupying portions of both the Cilly and Piper pack territories. The Cilly pack is no longer collared.

Corona (formerly Thompson Peak)

- 8 wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2006. Their home range is north of Plains.

2009 Activities: We could document only 1 pup at the end of the year and therefore this pack does not meet breeding pair criterion. This pack has one radio collar at the end of the year.

DeBorgia

- at least 6 wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: First suspected in 2005 and confirmed in 2006. Its territory is south of the down of DeBorgia in the Lower Clark Fork.

2009 Activities: In early 2009, four wolves were believed to be in the DeBorgia Pack. Collared alpha female NW85F was monitored until her death in June. Cause of death was never determined because she was too decomposed by the time she was located. Around this same time in June, several citizens in the area reported seeing 3 pups on multiple occasions on a heavily traveled road near St Regis, close to the location where the female had died. The pups and wolf activity in that area disappeared shortly thereafter and MFWP was unsure of the status of this pack until the fall and winter. Six wolves were documented at the end of

the year, and the 3 pups were thought to have survived. However this pack was not considered a breeding pair in 2009 because of the death of the alpha female.

Dry Forks

- 6 wolves; breeding pair
- 4 llamas confirmed killed, 2 llamas probable killed, 1 llama possible killed

History: Newly documented in 2009. This pack occupies portions of the former Hog Heaven pack and area around Upper Dry Forks on the Flathead Indian Reservation.

2009 Activities: There are no radio collars in this pack.

Dutch (formerly Whitefish)

- 11 wolves; breeding pair
- no confirmed depredations

History: The Whitefish pack was first documented in 1996 and formerly occupied a territory north of Whitefish Lake. In 2001, the Whitefish pack crossed the Whitefish Range to the east and established a new territory in the North Fork Flathead River drainage, displacing the former South Camas pack. The Whitefish pack's home range is in the North Fork Flathead River drainage, and spends most of their time within GNP.

2009 Activities: In April NW410M's 2 year old collar malfunctioned and was shed early. Wolf NW411M was missing in May. In late October, an Alberta, Canada game warden reported that male wolf NW411 had been harvested west of Calgary. This is a dispersal of about 163 miles. In June, a female was captured and fitted with a gps collar for a trophic cascades research project in cooperation with Oregon State University and Glacier National Park (see research section). By November she had apparently dispersed to the McDonald Creek area within the park and is traveling with 2 other wolves. On 11/9 a pup was captured and radio collared. The pup was traveling by itself days before and after the capture and was very small for his age. He was found dead 1 month after capture. A preliminary necropsy report confirmed the pup was in poor condition. This pack has 1 collar at the end of the year.

Elevation Mountain

- 3 wolves; not a breeding pair
- 1 heifer confirmed killed

History: First documented in 2006. Its territory is in the Garnett Mountains.

2009 Activities: In early 2009, there were three wolves in the Elevation Mountain pack. In the spring, one of the 3 wolves disappeared (an uncollared black wolf) and the other 2 bred and had a litter of 3 pups on private property west of Helmville. FWP and the Blackfoot Challenge hired a range rider (see research section) to work in the valley during the summer months. Because this pack dened and spent considerable time around livestock, they were one of the primary focuses of this project. The rider spent considerable time during the spring, summer, and early fall monitoring the movements of this pack and patrolling cattle in the area. No problems were reported until early December, a couple months after the rider program ended, when the pack was confirmed to have killed a heifer on private property.

Because of the depredation history of this pack, high density of livestock and high potential for further problems, MFWP authorized the removal of this pack. Two wolves (the alpha male and 1 female pup) were removed shortly thereafter and no further conflicts were reported. The collared alpha female and 2 pups were still present at the end of the year.

Ferry Basin

- 3 wolves; not a breeding pair
- no confirmed depredations

History: First documented in 2009. Its territory is on the Flathead Indian Reservation.

2009 Activities: This pack has never had a radio collar.

Fishtrap

- 8 wolves; breeding pair
- no confirmed depredations

History: First documented in 2000. Its territory is in and around the Thompson River, McGuiness Creek, and Fishtrap Creek drainages.

2009 Activities: In April, a young adult female wolf carcass was found. The cause of death is unknown. Wolf 270 was located consistently on the perimeter of the home range during the pup rearing season. By fall he began to leave the Fishtrap pack and by October was located 20 miles outside of the Fishtrap home range. He is estimated at 11-12 years of age. His collar is over 7 years old and still functioning at the end of the year. This pack has one radio collar remaining.

Firefighter

- 6 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: First documented in 2008. Its territory is on the east side of Hungry Horse Reservoir.

2008 Activities: Because of increased workloads, we were not able to conduct more than a few days of field work in this area and presence was confirmed. Pups were documented by US Forest Service crews. This pack is not collared.

Flathead Alps

- ? wolves; not a breeding pair
- no confirmed depredations
- 2 wolves harvested

History: Discovered in 2006. The home range is located in the Bob Marshall Wilderness Area in the White and South Fork Flathead River drainages.

2009 Activities: Because of increased workloads, we were not able to conduct any survey work in this area. It is not known if this pack reproduced in 2009. In June, MFWP bear

biologists trapping grizzly bears for research in the South Fork Flathead incidentally captured a lactating female wolf. That was about 12 miles from the previous year's den area and therefore is not known if she is the breeding female of the Flathead Alps pack or a new pack. This pack has never been collared.

Great Bear

- 7 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: The Great Bear pack was first discovered as a new pair in 2003 after wolf 271 dispersed from the Spotted Bear pack and paired with another wolf of unknown origin. This pack's territory is along the Middle Fork of the Flathead River and tributaries within the Great Bear Wilderness.

2009 Activities: Two attempts were made to collar this pack with a gps ARGOS collar for patch occupancy modeling research in cooperation with the University of Montana (see research section) in June. Both attempts were unsuccessful. This pack is no longer collared.

Great Northern

- ? wolves; not a breeding pair
- no confirmed depredations
- 2 wolves harvested

History: Newly documented in 2009. Its home range is on the west side of the Middle Fork Flathead River drainage.

2009 Activities: This pack has been suspected since 2008. In 2009 presence was verified as well as reproduction. It is not known how many adults or pups existed at the end of the year. This pack is not collared.

Irvine

- 3 wolves; not a breeding pair
- no confirmed depredations

History: New in 2009. Their territory is in the Salish Mountains west of Flathead Lake on the Flathead Indian Reservation.

2009 Activities: There are no radio collars in this pack.

Kintla

- 8 wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: The Kintla pack was first documented as a pack in 2000 in the old North Camas territory. The North Camas pack had previously existed from 1990 to 1996 and then fell apart as the neighboring South Camas pack grew to 18 animals in 1997. From 1997 to 1999,

South Camas appeared to be the only pack in the area until 2000, when the Kintla pack established itself in the old North Camas territory (see Whitefish pack summary for additional information). The Kintla pack's home range is in the North Fork Flathead River drainage, and spends most of their time within GNP.

2009 Activities: MFWP bear biologists trapping grizzly bears for research captured an adult male wolf. That wolf was fit with a gps collar for a trophic cascades research project in cooperation with Oregon State University and Glacier National Park (see research section). That wolf was harvested in this year's hunting season. Three other wolves were found illegally killed. The shooter of two of those wolves was captured, convicted, and sentenced to pay a fine and retribution. One radio collar remains in this pack at the end of the ear.

Kootenai South

- 6 wolves; breeding pair
- no confirmed depredations
- 2 wolves harvested

History: Since 2005 the former Kootenai pack now consists of the Kootenai North and Kootenai South packs through either the mechanisms of dispersal or pack splitting. The Kootenai South pack occupies a territory mainly south of the U.S./Canadian border and west of Koocanusa Reservoir, while the Kootenai North pack occupies a territory mainly north of the border.

2009 Activities: In the spring there was a period of regular wolf activity in and around ranches and houses in the West Kootenai. At that time there were reports of wolves circling a foal and 3 dead or missing calves. No dead calves could be verified. The higher rate of activity this year is attributed to a new den nearby. The den was documented on the north end of the pack territory and indicating that portions of the former territory have now been occupied by 2 packs over the last 2 years. The other newly identified pack is the Thirsty pack. In early May, a young adult female wolf carcass was found and is under investigation. The Kootenai South pack does not have a radio collar.

Ksanka

- 5 wolves; breeding pair
- 1 sheep confirmed killed
- 1 wolf harvested

History: Ksanka was first documented in 2006 with the discovery of dispersing wolf 263 from the Kintla pack. This pack is east and southeast of Eureka.

2009 Activities: Because of increased workloads, we were not able to conduct more than 1 day of field work in this area. A sheep was killed by a wolf/wolves in a private pasture. While investigating a commotion, the property owner shot a wolf after it had approached him and his dog too closely. Wolf NW199M, missing since 12/10/2007, was harvested in the Gold Creek area on the west side of Koocanusa, British Columbia, Canada on 12/16/2009. This is a dispersal distance of ~ 24 miles. This pack is not radio collared.

Landers Fork

- 5 wolves; not a breeding pair
- 4 sheep confirmed killed

History: New in 2009. Its territory is east of Lincoln.

2009 Activities: Four sheep were killed in the Landers Fork area east of Lincoln in late summer and it was unknown what wolf or wolves were involved at the time. During the winter and into early 2010 Forest Service personnel documented 5 gray wolves consistently using the area.

Lazy Creek

- 10 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: The Lazy Creek pack was first discovered as a newly formed pair in 2001. This pack filled the vacant territory left by the Whitefish pack when it crossed the Whitefish range to the east and displaced the South Camas pack in 2001. Their territory is north of Whitefish Lake.

2009 Activities: A 2 year old male wolf was captured and fitted with a gps ARGOS radio collar for patch occupancy modeling research in cooperation with the University of Montana (see research section). This pack has 2 radio collars.

Livermore

- 2 wolves; not a breeding pair
- 10 confirmed cattle killed, 4 probable calves killed, 1 calf injured; 24 wolves removed by WS

History: First documented in 2005 and its home range on the Blackfeet Reservation.

2009 Activities: This pack did not have a radio collar at the end of 2008. During 2009, Blackfeet Wildlife Program staff and WS confirmed that wolves killed 10 calves/yearlings, identified 4 probable calves killed by wolves, and confirmed 1 calf as injured by wolves. Lethal control efforts occurred throughout the period. Blackfeet Wildlife Program staff and WS collared two wolves at the start of the first confirmed depredations in 2009. At the end of 2009 one collar remained in the pack.

Lydia

- ? wolves; not a breeding pair
- 2 calves confirmed killed, 2 calves confirmed injured; 5 wolves removed by WS

History: This pack was first documented in 2006. Their territory is south of Eureka.

2009 Activities: In July, an adult male was captured and fitted with a gps ARGOS collar for patch occupancy modeling research in cooperation with the University of Montana (see research section). The cattle depredation incidents occurred in September and a total of 5 wolves were killed. Three other mortalities were also documented. In late September, an

adult male was found dead. On October 10, two wolves were discovered dead that had been electrocuted by a low hanging power line. A snag had fallen on the line and stretched it to 1.5 feet above the ground. Over an approximate 2 week period the wolves along with 4 bear, 2 deer, 1 coyote, and 1 turkey vulture had been killed by the power line. By the end of November the newly collared male had dispersed from the Lydia pack territory and was spending time about 64 miles south around the southern end of the Cabinet Mountains. By December 31, he was still dispersing, and was located north about 26 miles north of the US/Canada border, and 50 miles northwest of Bonners Ferry, ID. Reproduction was confirmed, but the number of pups that survived to the end of the year could not be determined. There are no longer any radio collars in this pack.

Marias

- 6 wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2005 and occupies an area around the Marias Pass area.

2009 Activities: Because of increased workloads, we were not able to conduct any specific survey work in this area. Two MFWP fish biologists documented a minimum of 6 wolves. This pack has never been collared.

McDonald

- 3 wolves; not a breeding pair
- no confirmed depredations

History: New pack in 2009. This new pack formed late in the year. Its territory is not fully known yet, but appears to include the McDonald Creek area of Glacier National Park.

2009 Activities: An adult female wolf dispersed from the Dutch pack in November, quickly localized in the McDonald Creek area of Glacier National Park. She has been observed with 2 other wolves. There is 1 collar in this pack at the end of the year.

McKay

- ? wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2008. This pack occupies an area east of Noxon.

2009 Activities: Because of increased workloads, we were not able to conduct more than a few days of field work in this area. Wolf presence was verified, but numbers could not be determined. This pack has never been radio collared.

Mineral Mountain

- at least 9 wolves; breeding pair
- 1 calf confirmed injured

History: First documented in 2007. Its territory is in the Lower Clark Fork near St. Regis.

2009 Activities: In early 2009 there were believed to be nine wolves in the Mineral Mountain pack. Both collared wolves NW233F and 326F were alive and still being monitored at the end of 2009. In February FWP took some photos of this pack from the air and by studying the photos noticed that there was an unknown gray wolf in the pack wearing a radio-collar. Both the other radio-collars in the pack were on black wolves. On the next monitoring flight in March FWP listened for all missing collared gray wolves and determined the unknown wolf to be B279M, an adult wolf that was collared by IDFG biologists in the mountains northeast of Boise, Idaho in May of 2006. The wolf was a member of the Timberline pack at that time but then disappeared in September of that same year. His whereabouts were unknown until he was found in northwest Montana, ~250 air miles from his natal pack. FWP monitored this wolf until July when the collar went on mortality mode. The collar was retrieved but no carcass was found and it was difficult to determine whether the collar had been cut (illegal mortality) or had simply torn and fallen off. In October a livestock producer found an injured calf when he pulled all his livestock off his allotment in the Mineral Mountain pack's territory. WS confirmed the injury as wolf caused but since the livestock were removed from the area no lethal control occurred. At the end of the year, 5 adults and four pups were believed to be in this pack. A gray adult wolf was seen during a monitoring flight in December and may have been B279M, as there were no other gray adult wolves documented with this pack besides him earlier in the year.

Mitchell Mountain

- 2 wolves; not a breeding pair
- 1 guard dog confirmed killed, 2 guard dogs confirmed injured, 1 goat confirmed killed, 3 sheep confirmed killed; 7 wolves killed by WS

History: First documented in 2008. Its territory is northwest of Helena and is primarily private land.

2009 Activities: Wolf-livestock conflicts for this pack have occurred primarily in the spring and fall in both 2008 and 2009. This year, livestock losses occurred in March, October, and December. Seven wolves were killed. At the end of 2009, one of the two wolves remaining is collared.

Monitor Mountain

- 5 wolves; not a breeding pair
- no confirmed depredations
- 3 wolves harvested

History: First documented in 2007. Its territory is northeast of Lincoln on the East Front and the Scapegoat Wilderness.

2009 Activities: One wolf was illegally harvested after the wolf season closed. At the end of 2009 this pack had one radio collar.

Mullan

- 6 wolves; breeding pair
- no confirmed depredations
- 3 wolves harvested

History: The Mullan pack was first documented in 2008 and is a transboundary pack between Montana and Idaho. In 2008 it was believed that they denned or spent most of their time in Idaho and was therefore counted in the Idaho population. Its territory is north of I-90 along the Montana/Idaho border.

2009 Activities: The Mullan pack appeared to den and spend most of its time in Montana in 2009 and therefore is counted towards the Montana population. We had extensive efforts to trap and collar this pack, but all attempts were unsuccessful. There is 1 collar in this pack at the end of the year.

Murphy Lake

- 5 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: The Murphy Lake pack was first documented 16 years ago in 1991. This pack had confirmed depredations in only 2 of the last 16 years. Their territory is between Whitefish and Eureka.

2009 Activities: This pack was not collared in the beginning of the year. In early August, two injured cows and three dead calves were reported as potential wolf damage. WS was not able to confirm the damage as wolf-caused. WS caught an adult female and placed a radio collar back in the pack. In late July, a pup was shot illegally.

Nevada Creek

- 0 wolves; not a breeding pair
- 4 calves confirmed killed; 1 calf probable killed; pack removed

History: New in 2009 in an area north of Avon.

2009 Activities: A new pair of wolves formed in the Nevada Creek area north of Avon in spring 2009. WS trapped and collared the adult male in May. The pair appeared localized in the late spring but no pups were documented until this pack starting depredating livestock in October. Four calves were confirmed killed by this pack and 1 dead calf was deemed probable. MFWP authorized the removal of this pack and both adults and four pups were removed.

Ninemile

- 10 wolves; breeding pair
- 1 calf injured, 1 calf probable killed

History: The Ninemile pack has inhabited the Ninemile drainage northwest of Missoula since 1990.

2009 Activities: In early 2009 at least five wolves were believed to be in the Ninemile pack: 3 adults, and 2 pups. MFWP monitored the pack throughout 2009 via a yearling male that was collared in 2008. In April, WS confirmed a calf had been injured by wolves in the upper Ninemile. A second calf was missing and was presumed a probable wolf depredation. In response WS collared an adult gray male. No further problems were reported. However, this collared wolf was never located again after release. The Ninemile pack consisted of 3 adults and 7 pups at the end of 2009.

Nyack

- 3 wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented after discovering a dispersing collared wolf from the Halfway pack in 2006.

2009 Activities: Because of increased workloads, we were not able to conduct surveys in this area. Glacier National Park biologists were able to record a minimum of 2 adults and 1 pup. This pack is no longer radio collared.

Ovando Mtn

- 6 wolves; breeding pair
- 2 calves confirmed killed

History: New pack in 2009.

2009 Activities: At the end of 2008 a GPS collared adult male wolf (NW346M, part of a University of Montana research project) from the Piper pack dispersed from the Swan Valley into the Blackfoot Valley just north of Ovando. NW346M was located with 2 other wolves in early 2009. He paired with a female and they denned and raised a litter of 4 pups. After May, both the GPS and VHF portion of the radio-collar failed, leaving no working collars by which to monitor this pack. MFWP and the Blackfoot Challenge hired a range rider (see research section) to work in the valley during the summer months. Cattle were grazed during the summer months close to where this pack denned and raised their pups and so this pack was one of the primary focuses of the range rider project. Despite the lack of collar, the rider was able to monitor the pack's activity through the summer months and spent considerable time patrolling cattle in the area as well. In early September, WS confirmed 2 calves killed on private property. FWP and the Blackfoot Challenge responded by hanging fladry around an adjacent pasture, the range rider stepped up monitoring efforts, and WS attempted to trap and collar a member of this pack since there was no longer a functioning radio collar. No wolves were caught and no further problems were reported. The Ovando Mountain pack consisted of 2 adults and 4 pups at the end of the year.

Piper (formerly Squeezer)

- 6 wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2006. Their territory is in the Swan Valley.

2009 Activities: Because of increased workloads, we were not able to conduct surveys in this area. There is 1 radio collar in this pack.

Pistol Creek

- 3 wolves; not a breeding pair
- no confirmed depredations

History: Newly documented in 2009 on the Flathead Reservation southwest of Ravalli.

2009 Activities: There are no radio collars in this pack.

Pulpit Mountain

- 6 wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2006. Their territory is east of Troy and northwest of Libby.

2009 Activity: MFWP efforts to trap and place a collar in this pack were unsuccessful. In mid-June, a pup was found dead of unknown causes.

Quartz Creek

- at least 3 wolves; not a breeding pair
- no confirmed depredations
- 2 wolves harvested

History: New pack in 2009 but likely present since 2008. Its territory is in the Lower Clark Fork near Lozeau.

2009 Activities: In 2008 we found wolf activity in the Meadow Creek and Quartz Creek areas near Lozeau. It was thought at the time that it was likely the Bitterroot Range pack using that area. However further investigation revealed this was a separate pack from the Bitterroot Range pack. Five –six wolves were reported seen in the Meadow Creek area during the summer. MFWP followed up and confirmed 2 pups and trapped and radio-collared one of the pups. The collar had to be padded to allow for growth, since the pup was only ~45 lbs at the time of capture. Within a month, the foam had been torn or fallen off and the pup slipped the collar. During the fall 2 wolves were harvested out of this pack: an adult male and a male pup (not the one that had been collared). We estimated at least 2 adults and 1 pup in this pack at the end of the year.

Quintonkon

- 5 wolves; breeding pair
- no confirmed depredations

History: New in 2009. This pack was newly formed in 2009 after a female wolf dispersed from the Spotted Bear pack (18 miles) and mated with a male wolf of unknown origins. The packs territory is east of Swan Lake.

2009 Activities: We verified reproduction from the ground, while all other data was collected during regular monitoring flights. There is 1 collar in this pack at the end of the year.

Red Shale

- 4 wolves; not a breeding pair
- no depredations reported
- 2 wolves harvested

History: The Red Shale pack (historically referred to as Gates Park or Sun River) was first documented as a pair in 2000 and was believed to have had continuous tenure in the North Fork of the Sun River (east side of the Bob Marshall wilderness) ever since.

2009 Activities: During 2009 the collared wolf dispersed to Idaho and was shot legally by a livestock owner defending cattle. Backcountry travelers continued submitting reports of wolf sightings and sign throughout the summer into the fall. During winter game counts an MFWP biologist observed 4 wolves in the North Fork of the Sun. At the end of 2009 this pack remained uncollared.

Salish

- 0 wolves; not a breeding pair
- 4 calves confirmed killed; 3 calves probable killed; 7 wolves (entire pack) killed

History: New in 2007. Their territory was in the Salish Mountains west of Flathead Lake.

2009 Activities: This pack began depredating in 2007, continued through 2008 and into 2009. This year four calves were confirmed killed and 2 calves were probable killed by wolves during the first half of March after wolves began frequenting and patrolling a calving area. The entire pack, 7 wolves, was removed as a result of that 3 year history. The pack no longer exists.

Satire (formerly Meadow Peak)

- ? wolves; not a breeding pair
- no confirmed depredations

History: This pack was first documented in 2006. Their territory is north of Thompson Chain of Lakes.

2009 Activity: Wolf NW216F has been missing since February. Because of increased workloads, we were not able to conduct surveys in this area. A pup was killed by a vehicle on the edge of the Satire territory border. This pack is no longer radio collared.

Selow

- 9 wolves; breeding pair
- 1 calf confirmed killed and 2 calves probable killed

History: First documented in 2008 on the Flathead Reservation near Dixon.

2009 Activities: CSKT and WS trapped 2 pups from this pack during the summer of 2009 and radio-collared one. They occupy territory formerly held by the Hewolf pack which was removed in 2007 and 2008.

Silcox

- 5 wolves; breeding pair
- no depredations
- 2 wolves harvested

History: New in 2009. Its territory is near Thompson Falls.

2009 Activities: We had three attempts to trap and radio collar this pack, all of which failed. We were, however, able to determine pack numbers and reproductive status. This pack is not collared.

Silver Lake

- 13 wolves; not a breeding pair
- no depredations reported

History: First documented in 2007. This pack's territory straddles the MT/ID border near Haugan, west of DeBorgia.

2009 Activities: The Silver Lake pack is a MT/ID border pack and was thought to have denned in Idaho in 2008 and therefore counted in Idaho estimates that year. In 2009 there were numerous reports of wolf activity south of Haugan and a MFWP biologist saw 1 black pup in that area, confirming the pack had reproduced and likely denned on the Montana side. MFWP trapped and collared a yearling female in October and a flight in December revealed 13 black wolves in this pack. We were unable to ascertain from the air if any of the 13 wolves spotted were pups so breeding pair status for this pack is unknown.

Sixmile

- 5 wolves; not a breeding pair
- 3 calves confirmed killed

History: New in 2009. Its territory is north of Avon.

2009 Activities: This new pack of wolves was documented in the Avon Valley, south of the Nevada Creek pack's territory, after that pack started killing livestock. A calf was confirmed killed by this pack in March and WS tried to trap and collar a wolf at that time but efforts were unsuccessful. Two more calves were confirmed killed by this pack in November and MFWP authorized WS to kill 1 wolf and collar 1 wolf. Efforts to find this pack were again unsuccessful. There were 5 wolves estimated in this pack at the end of the year.

Smoky

- 4 wolves; breeding pair
- no confirmed depredations
- 1 wolf harvested

History: First documented in 2009. Its territory is north of Columbia Falls.

2009 Activities: This pack was discovered by MFWP bear biologists trapping grizzly bears and running cameras on their traps. Wolves were coming into traps regularly, and a pup was captured in a culvert trap in early September. This is believed to be the first time a wolf has been captured in a culvert trap. That pup was too small to be collared and was released after taking routine samples and measurements. This pack has never been radio collared.

Solomon Mountain

- ? wolves; not a breeding pair
- no confirmed depredations

History: This pack was documented in 2007 after radio collared Idaho wolf B296 dispersed from the Boundary pack (Idaho panhandle) into this area. Their territory straddles the MT/ID border between the Moyie and Yaak Rivers.

2009 Activities: The only radio collared wolf has been missing since early 2008. Because of increased workloads, we were not able to conduct surveys in this area. This pack is no longer radio collared.

Spotted Bear

- 8 wolves; not a breeding pair
- no confirmed depredations
- 1 wolf harvested

History: A Murphy Lake female wolf dispersed to the Bitterroot Valley and mated with a male wolf of unknown origin forming the Bass Creek pack in 1998. The Bass Creek pack was involved in cattle depredations in June 1999. The entire pack (2 adults and 8 pups) was removed from the wild and held at a facility in McCall, Idaho. The alpha male died in a handling accident while in captivity. Three pups died of canine parvovirus in captivity. The alpha female and surviving pups were translocated to a holding pen in the Spotted Bear area in December 1999. The pen was intended to hold the pack for several days to allow acclimation to the new area, and prevent the pack from splitting and dispersing from the area. The first night in the pen, male wolf 117 from the Pleasant Valley Pack, translocated to the same area almost a year previous, was hanging around the pen. The Bass Creek pack was released the next day and joined with the former Pleasant Valley male wolf. The new group established a territory in the South Fork of the Flathead and became the Spotted Bear pack.

2009 Activities: All monitoring activities were conducted during routine telemetry flights. There is 1 radio collar in this pack.

Superior

- at least 6 wolves; breeding pair
- no depredations reported

History: First documented in 2005. Its territory is south of Superior in the Lower Clark Fork.

2009 Activities: In early 2009, seven wolves (three adults, four pups) were believed to be in the Superior pack. In March an adult black male was hit and killed by a car on I-90. The collared alpha male and alpha female both continued to be monitored throughout 2009. The alpha female has a GPS collar as part of a University of Montana study (see research section) and although the VHF signal continues to function, the GPS portion of the collar failed. The pack localized during the denning season but no pups were documented until the end of the year. In the fall a landowner reported wolves coming into his horse pasture and chewing on his irrigation hoses. This same problem had been documented to occur on the neighbor's property in prior years. In response MFWP hung fladry around the pasture. At least 6 wolves were thought to be in this pack at the end of the year: 4 adults and 2 pups.

Tallulah

- 5 wolves; not a breeding pair
- 1 calf confirmed killed, 1 cow confirmed injured, 1 calf confirmed injured, 3 wolves lethally removed

History: New in 2008. This pack occupies an area north of Highway 2 around Lost Prairie and Pleasant Valley.

2009 Activities: Depredations began in 2007 and continued in 2009 from early July to late August. Three wolves were removed as a result. On August 27, the breeding female, and the only radio collared wolf in the pack was hit and killed by a car on Hwy 2 near McGregor Lake. This pack is no longer radio collared.

Thirsty

- 5 wolves; breeding pair
- no confirmed depredations

History: The Thirsty pack is newly documented in 2009, but was possibly mistaken for the Kootenai South pack last year. Its territory is west of Koocanusa Reservoir.

2009 Activities: Because of increased workloads, we were not able to conduct more than a few days of survey in this area. We discovered 3 dead pups near the denning area. The cause of death is unknown. This pack has never been radio collared.

Twilight

- 4 wolves; no a breeding pair
- No confirmed depredations
- 1 wolf harvested

History: First documented in 2008. This pack is transboundary pack with ID and occupies an area south of Troy.

2009 Activities: Because of increased workloads, we were not able to conduct more than a few days of survey in this area. One wolf was harvested in the hunting season. This pack has never been collared.

Wolf Prairie

- ? wolves; not a breeding pair
- unknown depredations

History: The Wolf Prairie pack was first documented in 2004, after receiving livestock depredation complaints. Its territory is northwest of Pleasant Valley.

2009 Activities: Because of increased workloads, we were not able to conduct more than a few days of survey in this area. We still get reports of wolves in this area. This pack is no longer radio collared.

Verified Border Packs Counting in the Idaho Population Estimate (Table 3 in Appendix 3)

Fish Creek

History: The Fish Creek pack was first documented in 2001 and is believed to have had a continuous tenure since then.

2009 Activities: The Fish Creek pack has increasingly shifted its territory into ID but still uses parts of the Fish Creek drainage in Montana. See Idaho 2009 annual report for more information on this pack.

Verified Border Packs in Canada that Do Not Count in the Montana Population Estimate

Kootenai North

- ? wolves
- no confirmed depredations on the U.S. side of the border

History: Kootenai North formed from the former Kootenai pack as a product of either pack splitting (into Kootenai North and Kootenai South) or of dispersal. The former Kootenai pack was a transboundary pack that has denned both in Canada and the US. The Kootenai North pack occupies a territory mainly north of the U.S./Canadian border and west of Koocanusa Reservoir, while the Kootenai South pack (collared wolf 329) occupies a territory mainly south of the border and west of Koocanusa Reservoir.

2009 Activities: Last year the pack reared pups on the US side of the border during at least part of the pup rearing season. Because this pack is no longer collared and increased workloads, we were not able to conduct more than a few days of survey in this area.

Spruce Creek

- ? wolves
- no confirmed depredations on the U.S. side of the border

History: This pack was first documented as a new pack in 1990 and spends most of its time in the North Fork River drainage, Canada. This pack has been monitored irregularly and opportunistically since then because it spends most of its time in Canada.

2009 Activities: Because this pack is no longer collared and increased workloads, we were not able to conduct more than a few days of survey in this area.

Miscellaneous / Lone Individuals in Wolf Management Unit 1

270: An adult wolf, 11-12 year old, was originally collared 2002 as a member of the Fishtrap pack. In 2009, he seemed to be unassociated with the rest of the pack during the pup rearing season and spent much of the time on the outer perimeter of the pack's home range. By the end of the year he had left the pack completely.

NW535F and NW179M: dispersed from the Cilly and Piper packs respectively, joined, and are occupying an area adjacent to their natal packs.

NW420M: A wolf was radio collared in the Heart Butte area when a coyote trapper on the Blackfeet Reservation incidentally caught it in 2008. It still seems to be a lone wolf. The Blackfeet Tribe is monitoring wolves in this area.

NW526M: In September an adult male in the Lydia pack was captured and fitted with a GPS ARGOS collar for patch occupancy modeling research in cooperation with the University of Montana (see research section). By November he had dispersed from the pack to the southern end of the Cabinet Mountains about 64 miles to the southeast. He then shifted directions and headed north and by the end of the year he was in Canada 25 miles north of the US/Canada border or 50 miles north of Bonners Ferry, ID.

An uncollared pair of wolves was documented in the Keep Cool Creek area north of Lincoln at the end of 2009.

Three uncollared wolves were confirmed using the Blackfoot Clearwater Wildlife Management Area in the Blackfoot Valley during the winter.

In April an adult gray male wolf was hit and killed by a vehicle near Lubrecht in the Blackfoot Valley.

One ewe was confirmed killed by wolves in the Carten Creek area east of Drummond in June. It is unknown what wolf or wolves were involved.

Suspected Packs in Wolf Management Unit 1

Rimini Area: FWP still receives reports of wolves and wolf sign in the Rimini area southwest of Helena. A photo was submitted of a black wolf north of Highway 12 on Priest Pass. Poor tracking conditions prohibited the verification of other wolf activity before the end of 2009.

Chief Mountain Area (Blackfoot Reservation): Wolves were reported as being seen on the Blackfoot Reservation. No depredations were reported in the area. The wolves are thought to possibly be denning and spending the majority of the time in Canada.

Potomac: There have been numerous sightings in the Garnet Mountains south of Potomac and tracks have been documented in the area. It is unknown whether this is a new pack or dispersing animals passing through.

Evaro: There have been several reports north of Missoula in the Wye and Evaro areas of wolves on both the east and west side of the highway. Six sets of tracks were reported in early January 2010 between LaValle Creek and Evaro Hill.

There are several other areas of interest in Northwest Montana where we get reports or have documented sign, but information may not be significant enough to suspect actual pack activity. These areas remain of interest and will be scheduled for survey in the 2010 field season. Some of these areas include: the lower Clark Fork River, Bull River, upper Little Bitterroot River, Good Creek, Wigwam River, Danaher Creek, and portions of the Middle Fork Flathead in Glacier National Park.

Wolf Management Unit 2, Western Montana

Overview

In 2009, we documented a minimum of 110 wolves and 20 packs in the Wolf Management Unit 2 (the Montana portion of the Central Idaho Experimental Area). This about the same number as existed at the end of 2008. There were 4 newly identified packs in 2009. Some of these packs are believed to be first year packs and some are likely to have existed the previous year.

Previously verified packs that still existed in 2009 were the Brooks Creek, Divide Creek, East Fork Rock Creek, Flint Creek, Grasshopper, Horse Prairie, Lake Como, Pintler, Miner Lakes, Mt Haggin, Painted Rocks, Ram Mountain, Sula, Trail Creek, Trapper Peak, and Welcome Creek packs. Newly documented packs in 2009 included the Bender, Gird Point, Middle Creek, and Table Mountain packs. The Big Hole Pack is counted in the Montana population in 2009 but had denned in ID and counted in the ID population in 2008. The Battlefield, Grasshopper, McVey, and Middle Creek packs were removed in 2009 due to livestock depredations. The Feely and East Fork Bitterroot packs appeared to disband and were believed to no longer exist by the end of the year.

The Black Canyon and Hughes Creek packs (ID/MT border packs) denned and spent the majority of their time in ID in 2009 and will therefore count in the ID population estimate.

During 2009, 13 (65%) of 20 verified packs were monitored using ground and aerial telemetry at some point during the year. At the end of 2009, 7 (35%) of 20 verified packs were being monitored using ground and aerial telemetry. Thirteen wolves in 10 packs were captured and radio collared in WMU 2 in 2009. Five wolves were radio collared during MFWP trapping efforts and 7 were radio collared by WS. Radio collared wolves were located 1- 2 times per month by fixed-wing aircraft when possible.

Eleven of 20 packs monitored in WMU 2 straddled the MT/ID border and were counted in the MT population and monitored by MFWP primarily: Battlefield, Big Hole, Brooks Creek, Horse Prairie, Lake Como, Miner Lakes, Middle Creek, Painted Rocks, Sula, Trail Creek, and Watchtower packs. The Battlefield, Brooks Creek, Horse Prairie, Middle Creek, Miner Lakes and Trail Creek packs have been verified to spend time on the ID side of the border. The others were only suspected to spend time in ID, based on proximity of sightings or telemetry locations. Because these 11 packs denned in Montana, or were known to have spent most of their time in Montana, they were counted as Montana packs for 2009.

MFWP conducts most of the monitoring of these packs in close coordination with IDFG and the NPT. The Hughes Creek and Middle Creek packs spent most of their time in ID and were monitored primarily by IDFG.

Reproduction was confirmed in 12 packs: Bender, Big Hole, Divide Creek, Grasshopper, Horse Prairie, McVey Creek, Middle Creek, Miner Lakes, Painted Rocks, Trapper Peak, Trail Creek, and Welcome Creek packs. Although pups were documented in the Grasshopper, McVey Creek, Middle Creek, Miner Lakes, Big Hole packs their survival either could not be confirmed at the end of 2009 or pups were known to have died for various reasons. For the remaining 7 packs, a minimum of 24 pups were produced and 5 packs Divide Creek, Painted Rocks, Horse Prairie, Trail Creek and Welcome Creek met the breeding pair requirement. Reproductive status of the Battlefield, Brooks Creek, East Fork Rock Creek, Flint Creek, Gird Point, Lake Como, Mt Haggin, Pintler, Ram Mountain, Sula, Table Mountain, and Watchtower packs was unknown.

Four dispersals were documented in 2009. SW184F dispersed from the old Sapphire pack and was located in the lower Big Hole. SW83M dispersed from the old Sapphire pack and joined with SW334 from the Trail Creek pack and formed the new Bender pack. B348M of the Big Hole pack dispersed to the South Fork of Fish Creek to form the Cache Creek pack. Two wolves were missing at the end of the year, and it is unknown whether they dispersed, the collar failed, or they were killed illegally: SW115F (East Fork Bitterroot pack) and SW458M (Grasshopper pack).

Eleven packs were confirmed to have killed livestock or dogs: Big Hole, Battlefield, Flint Creek, Grasshopper, Horse Prairie, McVey Creek, Middle Creek, Miner Lakes, Pintler, Trapper Peak, and Welcome Creek. Single or unknown wolves were responsible for killing 6 cattle and 8 sheep. One pack was involved in cattle injury respectively, although no confirmed death losses were documented. In total, 43 cattle, 8 sheep, and 2 dogs were confirmed killed. A total of 36 sheep were killed, 10 sheep were injured and 2 sheep were probable kills in ID by the Middle Creek pack (a MT pack). Seven cattle were confirmed injured and 0 cows and calves were documented as probable wolf kills. MFWP issued about 17 kill permits in 2009.

Eighty two wolf mortalities were documented in 2009. Fifty one wolves were killed in response to depredations: 5 were shot by private citizens when the wolf was seen chasing or attacking livestock, 1 by WS when the wolf was seen harassing cattle, and 45 were killed by WS. Five wolves were killed illegally. One wolf was hit by a vehicle. One wolf died of natural causes. Twenty one were legally harvested in the wolf hunting season. Three wolves died of unknown causes. All agency control efforts and legal wolf harvest are precise numbers, while the number

of mortalities from all other causes is a minimum count. Further, these numbers can only be considered within the context of an overall minimum population count that is also known to be a conservative minimum estimate.

Verified Packs (Table 1c in Appendix 3)

Battlefield

- pack no longer exists
- 12 calves confirmed killed, 2 calves confirmed injured; 4 wolves removed by WS, 1 killed by livestock owner to defend livestock
- border pack with ID; counted in MT in 2009

History: First documented in 2002. Its territory is west of Wisdom.

2009 Activities: At the end of beginning of 2009 this pack did not have a collar. In March WS confirmed that wolves killed a calf. The calf was discovered when a producer legally killed a wolf that harassing cattle. In early April WS confirmed that wolves killed 2 calves in separate incidences and two wolves were killed. Between May and November, WS confirmed that wolves killed 9 calves and injured 2 calves. Lethal control efforts occurred throughout this period. Multiple attempts by MFWP and WS to place a collar in the pack were unsuccessful. Lack of a collar made lethal control efforts more difficult. In late November, WS collared one wolf. On December 28, WS killed two wolves. At the end of 2009, the single radio collared wolf remained but was known to be travelling widely.

Bender

- 3 wolves; 1 radio collar; not a breeding pair
- 1 calf confirmed injured; 1 wolf removed by WS when seen chasing livestock
- 2 wolves harvested

History: This new pack formed in 2009 when one wolf dispersed from the Trail Creek pack and found another wolf that had dispersed from the Sapphire pack. Both wolves were radio collared. Its territory is north of Wisdom.

2009 Activities: The new pair denned in 2009 and a litter was produced. A calf was confirmed injured in late November. While out doing other work WS killed a wolf that was seen harassing and chasing livestock on private land. During the 2009 hunting season, 2 wolves were taken, and one was the radio collared alpha male.

Big Hole

- at least 5 wolves; no radio collar; not a breeding pair
- 1 dog killed
- border pack with ID; counted in MT in 2009

History: The Big Hole pack formed when B7 and B11 (released in 1995 as part of the original reintroduction efforts) paired up in 1996. B7 and B11 were translocated out of the Big Hole Valley, Montana twice, in 1996 and 1997, before settling and establishing a territory near Lolo Pass, west of Missoula. The Big Hole pack has had a continuous tenure since 1997.

2009 Activities: Five wolves were believed to be in the Big Hole pack in early 2009. Collared male B348M dispersed and paired with a female in the south fork of Fish Creek, forming the Cache Creek pack. Collared adult female B347F was monitored through the year until October when she was shot in Idaho, near Lolo Pass. It was unknown whether this was an illegal mortality or a possible wounding loss from a wolf hunter, since this mortality occurred when the wolf season was open in Idaho. Three other mortalities were documented from this pack throughout the year: an adult male was illegally killed in Montana in March, a yearling male was hit by a car on Highway 12 in May, and a wolf was harvested from this pack during the fall. In January this pack killed a pit bull that had been accidentally left outside at night. During the summer an Idaho Nez Perce Tribe biologist documented 4 pups after seeing 1 pup cross Highway 12. The fate of these pups is unknown but may very well comprise at least part of the 5 wolves detected in the Lolo Pass area this winter while snow tracking.

Brooks Creek

- at least 3 adults; no radio collar; breeding pair status unknown
- no depredations reported
- border pack with ID; counted in MT in 2009

History: First documented in 2005. Its territory is west of Florence.

2009 Activities: In early 2009, there were thought to be 3 wolves in the Brooks Creek pack. There were no depredations reported in this pack's territory in 2009 but the pack still seemed to be using their same territory west of Florence. Reproductive status of this pack was unknown. We estimated a minimum of 3 wolves in this pack at the end of the year.

Divide Creek

- at least 3 adults, 4 pups; 1 radio collar; breeding pair
- no depredations reported

History: First confirmed in 2006. Its territory is northeast of Darby.

2009 Activities: Seven wolves were believed to be in the Divide Creek pack in early 2009 (5 adults and 2 pups). The pack reproduced again in 2009 and 4 pups were documented from the air in July. At the end of the year this pack had shifted its territory south and was using parts of the old East Fork Bitterroot pack's territory. At least 7 wolves were in this pack at the end of the year.

East Fork Bitterroot

- pack does not exist
- no depredations confirmed

History: First confirmed in 2006 and its territory was east of Sula. Pack disbanded or disappeared in 2009.

2009 Activities: In early 2009 there were 3 adult wolves in the East Fork Bitterroot pack. In early March a houndsman reported 2 of his dogs killed by wolves in a drainage in the East

Fork that this pack was known to frequent. Later in March the collared male, SW336M, was found on mortality. The carcass was fairly intact and was sent to the MFWP Bozeman Lab for necropsy but no cause of death could be found. After this incident the collared female and the other uncollared wolf disappeared and have not been found since. In the spring, MFWP scouted denning areas used by this pack in the past but no wolf sign was found. The Divide Creek pack moved south into this pack's territory at the end of 2009, providing further evidence that the East Fork Bitterroot pack no longer exists.

East Fork Rock Creek

- at least 4 wolves; no radio collar; not a breeding pair
- no depredations reported

History: First documented in 2007. Its territory is in the upper East Fork of Rock Creek.

2009 Activities: In early 2009, this pack was believed to consist of 8 wolves. In early May a local resident photographed 4 gray wolves feeding on a cow elk near the Middle Fork of Rock Creek. Traps were set near the carcass in an attempt to radio-collar a member of this pack, but no wolves were caught. Another short trapping effort was initiated for this pack during the summer but was hampered by bad weather. We estimated at least 4 wolves in this pack at the end of the year.

Feeley

- pack does not exist
- no depredations reported

History: First documented in 2008. Its territory was northwest of Divide.

2009 Activities: A new group of at least 2 wolves was documented in the Fleecer Mountain area in 2008. The Feeley pack remained uncollared at the end of 2008 and occupied a territory including the MFWP Fleecer Wildlife Management Area. During 2009 no hunter reports or public sightings came in. No tracks or sign were detected by MFWP during field surveys so MFWP concluded that there was no longer pack activity in the area.

Flint Creek

- at least 2 wolves; no radio collar; not a breeding pair
- 1 steer confirmed killed
- 1 wolf harvested

History: First documented in 2007. Its territory is in the northern Flint Mountain range.

2009 Activities: In early January 2009, a steer calf was killed by wolves on the same property where losses had occurred the year before. MFWP authorized WS to remove 2 wolves but no wolves were taken. There were numerous reports from hunters in the north end of the Flints and one wolf was harvested from this pack in the Gold Creek area. At the end of the year we estimated a minimum of 2 wolves in this pack.

Gird Point

- at least 4 wolves; no radio collar; not a breeding pair
- no depredations reported

History: New in 2009. Its territory is east of Hamilton.

2009 Activities: Several reports by local residents in the Gird Creek area confirmed a new pack in the Bitterroot. This area was the former territory of the Skalkaho pack that was removed in 2008 due to livestock depredations. WS made a collaring attempt in the summer and set traps around a cattle carcass that a member of this pack was feeding on but the wolf was not caught. This group of at least 4 wolves is likely a pair with pups but the pups could not be confirmed.

Grasshopper

- pack does not exist
- 5 calves confirmed killed, 3 calves confirmed injured; 6 wolves removed by WS

History: First documented in 2007. Its territory was at the south end of the Pioneer Mountains near Polaris.

2009 Activities: At the end of 2008 the Grasshopper pack was uncollared. In January, WS confirmed that wolves killed 3 calves and injured 1 on private land in 2 separate incidents. Losses were also confirmed in May and December. A total of 6 wolves were killed during this period by WS and one wolf had been collared in May. At the end 2009, the collared wolf had left the area and was missing, despite efforts by WS and MFWP to find it. No wolves remained in the Grasshopper territory and the Horse Prairie pack to the west started travelling into the area by years end.

Horse Prairie

- 6 wolves; breeding pair
- 2 calves confirmed killed, 1 calf confirmed injured; 2 wolves removed by WS; 1 killed by private citizen when caught chasing livestock
- border pack with ID; counted in MT in 2009
- 2 wolves harvested

History: First documented in 2008. Its territory is southwest of Dillon on the MT/ID border.

2009 Activities: At the end of 2008 the Horse Prairie pack was uncollared. In late January WS collared a wolf in the pack opportunistically. In March, a wolf was killed by a livestock owner when it was seen chasing livestock. Also in March, WS confirmed that wolves killed a calf and 1 wolf was removed by WS. Losses also occurred in August and December. WS had removed 2 additional wolves by December and efforts to remove more continued into 2010. Two wolves were harvested in Montana during the hunting season.

Lake Como

- at least 3 wolves; no radio collar; not a breeding pair
- no depredations reported
- border pack with ID; counted in MT in 2009
- 2 wolves harvested

History: First documented in 2002. Its territory is southwest of Hamilton.

2009 Activities: Very little is known about this pack through 2009. Two wolves were harvested in Montana in the fall. There continued to be reports of sightings in the Lake Como, Roaring Lion, and Sawtooth drainages. At the end of the year there were believed to be at least 3 wolves in this pack.

McVey Creek

- pack does not exist
- 7 calves confirmed killed; 11 wolves removed by WS
- 2 wolves harvested

History: First documented in 2008. Its territory was east of Wisdom in the west Pioneers.

2009 Activities: At the end of 2008 the McVey pack remained uncollared. MFWP began trapping in the spring of 2009 and verified denning activity. In June, WS confirmed that wolves had killed two calves in separate incidents and WS collared one wolf from the pack. In July WS confirmed that wolves killed three calves. During July WS killed 5 wolves. In August, WS killed 3 wolves. In September WS confirmed that wolves killed 2 calves and 3 wolves were killed. During the 2009 hunting season hunters legally harvest two wolves from the McVey pack.

Middle Creek

- pack does not exist
- 36 sheep confirmed killed in ID, 10 sheep confirmed injured in ID, 2 sheep probable killed in ID; 8 wolves removed by WS
- border pack with ID; denned in MT near the MT/ID border

History: Pack verified in 2009, but may have started as a new pair in 2008. Its territory was west of Monida Pass.

2009 Activities: Numerous reports of wolf activity were reported in the fall of 2008. Poor tracking conditions prohibited verification in the winter of 2008/2009. From June 26 to July 22, Idaho WS confirmed that wolves killed 36 sheep, injured 10, and determined 2 as probable kills in 7 different incidents on the Idaho side of the border. ID WS killed 8 wolves (7 in Montana and 1 in ID).

Miner Lakes

- 4 wolves; 1 radio collar; not a breeding pair
- 6 cattle confirmed killed; 8 wolves removed by WS, 1 killed by producer
- border pack with ID; counted in MT in 2009
- 3 wolves harvested

History: First documented in 2006 when and wolf B191F dispersed into the Big Hole from ID. It is a border pack shared with ID, and its territory is west of Jackson.

2009 Activities: In 2009, FWP verified denning activity early in the year. In May, WS confirmed that wolves killed 2 yearlings and 3 wolves were killed. In June, a livestock

owner legally killed a wolf that was chasing and harassing cattle. Between October and December, WS confirmed that wolves killed 4 calves in three separate incidents. Lethal control efforts during this same period removed 5 wolves.

Mt. Haggin

- 3 wolves; no radio collar; not a breeding pair
- no depredations reported

History: First documented in 2007. Its territory is south of Anaconda, mainly on the MFWP Mount Haggin Wildlife Management Area.

2009 Activities: In early 2009, there were 3 wolves in the Mt Haggin pack. They showed no signs of having successfully reproduced. Hunters consistently reported visuals or tracks of 3 wolves. During 2009, the radio collar was chewed off.

Painted Rocks

- at least 3 adults, 4 pups; no radio collar; breeding pair
- no depredations reported
- border pack; counted in MT in 2009
- 2 wolves harvested

History: First documented in 2001. Its territory straddles the MT/ID border in the upper West Fork of the Bitterroot near Alta.

2009 Activities: In January, wolf SW20M who was being tracked with this pack turned up on mortality in ID. Cause of death was unknown. Several trapping efforts were initiated for this pack during the summer but no wolves were caught. In August, a hiker photographed 3 adults and 5 pups. In the fall, 2 wolves were harvested from this pack, one of which was a pup. Seven wolves (3 adults, 4 pups) were estimated in this pack at the end of the year.

Pintler

- 10 wolves; no radio collar; not a breeding pair
- 1 calf confirmed killed

History: First documented in 2007. Its territory is on the south side of the Anaconda-Pintler Wilderness Area.

2009 Activities: Ten wolves including SW217F were believed to be in the Pintler pack at the end of 2008. However, at the start of 2009, the collared wolf was missing and not detected the entire year. MFWP trapping efforts to replace the collar were unsuccessful. MFWP field surveys and hunter reports in the fall of visuals or tracks were consistently about 8-10 wolves. On December 3, WS confirmed that wolves killed a calf. No wolves were killed and no other cattle were reported and dead or injured by the end of 2009.

Ram Mountain

- at least 5 wolves; no radio collar; not a breeding pair
- no depredations reported

History: First documented in 2007. Its territory is west of Phillipsburg.

2009 Activities: In early 2009, there were believed to be 5 gray wolves in the Ram Mountain pack. In the summer, ranchers in the area were reporting agitated cattle and several missing calves. In July, MFWP initiated a trapping effort for this pack and captured and collared a yearling female. The wolf was believed to be a member of the Ram Mountain pack but disappeared within a week of capture. Several months later this wolf was found with the Welcome Creek pack to the northwest and has been located with that pack for most of the rest of the year. It is therefore likely that she was caught during a pre-dispersal foray and was not associated with the Ram Mountain pack. A minimum of 5 wolves were believed to be in this pack at the end of the year.

Sula

- at least 5 wolves; not a breeding pair
- no depredations reported
- border pack with ID; counted in MT in 2009
- 2 wolves harvested

History: First documented in 2005 though likely present in 2004. Its territory is west of Sula.

2009 Activities: The Sula pack was believed to consist of at least 5 wolves in early 2009. Very little was known about this pack during the year but 2 wolves were harvested during the fall. There were believed to be a minimum of 5 wolves in this pack at the end of the year.

Table Mountain

- 5 wolves; no radio collar; not a breeding pair
- no depredations reported

History: New Pack in 2009. Its territory is at south end of the Highlands.

2009 Activities: MFWP received a few reports in this area in 2008; however no activity could be verified and the old Fleecer pack and the newer Feeley packs were both known to cross the Interstate Highway. Numerous reports of wolf activity were received in the fall during the hunting season from the south end of the Highlands. MFWP was able to verify wolf activity in the fall and early winter.

Trail Creek

- 4 adults, 2 pups; breeding pair
- no depredations reported; 1 wolf killed by private citizen when seen chasing cattle
- border pack with ID; counted in MT in 2009
- 1 wolf harvested

History: First documented in 2007 though likely present in 2006. Its territory is near Chief Joseph Pass northwest west of Wisdom.

2009 Activities: In early 2008 the Trail Creek pack was believed to consist of at least 5 wolves. In April, a rancher in the East Fork of the Bitterroot shot an adult female from this

pack when she was caught chasing cattle. The pack were reported near cattle on several occasions during the spring and MFWP initiated a trapping effort in June and collared the breeding female with a GPS collar as part of a University of Montana study (see research section). A male pup was also caught but was too small to collar and was released. Three pups total were seen by MFWP biologists during capture efforts. The wolves moved to higher elevations later in the summer and no further problems were reported. In the fall a female pup was harvested from this pack. At the end of the year there were 4 adults and 2 pups in this pack.

Trapper Peak

- 6 wolves; 1 radio collar; not a breeding pair
- 1 calf confirmed killed, 1 wolf removed by WS; 1 wolf killed by a private citizen when seen attacking a dog

History: First documented in 2007 but likely present in 2006.

2009 Activities: In early 2009, there were 3 wolves in this pack: collared alpha female SW170F, collared alpha male SW361M, and an uncollared gray male. The female was wearing a GPS collar as part of a University of Montana research project (see research section) but both the GPS and VHF portions of the collar failed after April. The pack denned in the spring and was confirmed to have killed a calf in May. In response WS killed the uncollared adult male. In late August a local resident shot the collared male when he was caught attacking a dog. In fall several local landowners reported wolves close to their ranches and reported seeing 5 pups. MFWP initiated a trapping effort and collared a black male pup. Monitoring flights confirmed the reports of 5 pups, which were seen traveling with the alpha female at the end of the year.

Watchtower

- at least 6 adults; breeding pair status unknown
- no depredations reported

History: First documented in 2008 but likely present in 2007. Its territory is in the upper Nez Perce drainage up the West Fork of the Bitterroot.

2009 Activities: The Watchtower pack was still active in its usually territory through 2009. In late summer, a Forest Service employee documented 7 wolves on the north side of Bare Cone Lookout. In late November, hunters found an adult female wolf in Flat Creek that had been killed and buried by a mountain lion. Reproductive status of this pack was unknown. We estimated 6 wolves in this pack at the end of the year.

Welcome Creek

- 4 adults, 5 pups; 3 radio collars; breeding pair
- 1 dog confirmed killed; 1 dog suspected killed

History: First documented in 2006. Its territory is east of Florence.

2009 Activities: In early 2009 there were 6 wolves estimated in this pack. A domestic dog was confirmed killed at a ranch in February and because the wolves seemed to be frequenting

the area MFWP hung fladry around their calving pasture. No conflicts with the livestock occurred but later in the spring another dog was reported killed at an adjacent residence. The wolves dened in the spring and MFWP trapped and collared 2 wolves: the lactating alpha female and a yearling female. The alpha female was fitted with a GPS collar for a University of Montana research project (see research section). In July, FWP collared a yearling female in the Philipsburg area that was later determined to be a member of the Welcome Creek pack (see Ram Mountain pack). At the end of the year 9 wolves were seen traveling together: 4 adults and 5 pups.

Verified Border Packs Counting in Idaho Population Estimate (Table 3 in Appendix 3)

Black Canyon: See the 2009 Idaho Annual Report. Historically this pack as has spent time in Montana near Lemhi Pass. No activity was detected in Montana in 2009.

Hughes Creek: See 2009 Idaho Annual Report. Historically, this pack territory is northeast of Shoup, ID.

Miscellaneous / Lone Individuals in Wolf Management Unit 2

SW587: SW587 was the last wolf from Battlefield pack at the end of 2009. She traveled throughout the west side of the Big Hole Valley, moving around both inside and outside of her old territory.

SW184: SW184F was last found traveling alone in Copper Creek in August 2008 and was known to have been around the Ross' Fork area in the early fall but had not been for the rest of 2008. She was found traveling in the lower Big Hole area at the end of 2009.

Smart Creek Area: A calf was confirmed killed in the old Willow Creek pack territory (west of Phillipsburg) in July and it was unknown what wolf or wolves were involved. In August, a border collie was confirmed killed. Traps and calling were attempted on both occasions to try to kill 1 wolf and collar 1 wolf but no wolves were found. In early fall, a rancher west of Maxville reported his cattle coming down off his private allotment. Not long after in late September, a heifer was confirmed killed in the Smart Creek area. Three gray wolves were seen by the rancher a couple days later harassing his cattle again. MFWP authorized the removal of all 3 wolves and trapped and collared an adult male to help with the control action. An adult female and the collared male were killed but the third wolf could not be found. Local landowners reported tracks of a single wolf in the area in the fall and early winter.

SW462F Pair: In early March WS proactively collared a black female wolf (SW462F) in the Hall area. She moved around quite a bit and was seen with 1 other black wolf, presumably a male through the spring. She disappeared for the rest of the year until she was found in early December in the Rock Creek area. She once again was with 1 other black wolf, probably this same male. This pair will be monitored in 2010 to see if they localize, breed and establish a territory.

Medicine Lake Area: A group of 3 wolves were documented in the Medicine Lake area in the Ross' Fork of Rock Creek in the fall. One of these wolves was harvested but the other 2 are thought to still be in the area.

Suspected Packs in Wolf Management Unit 2

Big Sheep Creek (Tendoy Mountains west of Dell): Landowners and lion hunters in the areas west of Dell submitted reports of wolf sightings and tracks at the end of 2009. Poor tracking conditions made detection difficult for pack verification in 2009.

Elk Park/Bernice: Landowners and hunters reported wolf sightings and tracks. On June 24, WS confirmed a calf was killed by wolves and one calf was a probable wolf kill. Attempts to identify a pack or collar a wolf were unsuccessful in 2009.

Medicine Lodge Creek (Tendoy Mountains northwest of Dell): Numerous reports were submitted of wolf sightings in the Medicine Lodge area. A landowner also legally shot a wolf that was chasing and harassing cattle. WS confirmed one calf as injured by wolves in February and WS confirmed one calf killed by wolves and 1 as a probable wolf kill in March. In June sheep were killed in 3 separate incidents and 1 was injured. In July sheep was confirmed as killed by wolves. Attempts to identify a pack or collar a wolf were unsuccessful.

Philipsburg area: MFWP followed up on a report of wolves in the fall not far from the town of Philipsburg in the Flints. Old wolf sign was indeed found in the area but it is unknown whether this is a new pack or the Flint Creek pack.

Roaring Lion: IDFG documented a wolf pack around the Moose Lake area just across the Montana border (southwest of Hamilton) in Idaho. But it is unknown whether this pack is distinct from Lake Como.

Other Miscellaneous Information in Wolf Management Unit 2

An adult male black wolf was found illegally killed near Sawtooth Creek in the Bitterroot Valley in early February. The case is under investigation.

Two wolves from unknown packs were legally harvested from the Bitterroot Valley in the fall. One was in the Robbins Gulch area and the other from the Railroad Creek area (Skalkaho Creek).

Two calves were killed on private land in the Middle Fork of Rock Creek in March. It is unknown what wolves were involved.

Jackson area in the Big Hole: A landowner reported a wolf dead in his field in the Jackson area. MFWP wardens determined it was illegally shot.

Bannock Pass: A wolf was reported as being hit by a car near Bannock Pass. MFWP determined that it was illegally shot and the person was cited and paid a fine.

Waddell Creek Pair: A pair of wolves appeared in the Bitterroot Valley between the Lake Como and Trapper Peak territories in late February. A calf was confirmed injured and the wolves continued to frequent the pasture where calving was ongoing. WS collared the adult female and killed the adult male, because further problems seemed imminent. In mid-April the female's collar was on mortality near Lake Como. Though the carcass was too decomposed to accurately determine cause of death, illegal mortality is suspected.

Wolf Management Unit 3, Southwest Montana

Overview

Packs in Wolf Management Unit 3 (southwest Montana portion of the Greater Yellowstone Experimental Area) have been documented from Red Lodge to Dillon. Several packs live on the borders of YNP. Agencies (YNP, MFWP, TESP primarily) monitor these packs through flights and ground tracking. The location of the den site and the percent area / time in an area determines where that pack will be tallied in the population estimates. See the respective pack summaries below.

In 2009, a minimum estimate of 106 wolves in 17 verified packs, 9 of which qualified as a breeding pair. In 2008, MFWP estimated a minimum of 130 wolves in 18 packs, 11 of which met the breeding pair criteria. This represents a decrease of about 23% from 2008 to 2009 in the minimum number of wolves documented. A higher percentage of the WMU 3 wolf population was removed due to conflicts with livestock in 2009 compared to 2008. Agency control combined with hunter harvest mortality were both factors in the decline.

The number of packs, however, stayed about the same as did the number of breeding pairs. One newly documented pack in 2009 survived until the end of the year (Slip n Slide). Packs that were verified in 2008 and still existed in 2009 are: Rosebud, Buffalo Fork/Slough, Baker Mountain, Mill Creek, Eagle Creek, Eightmile, Lebo Peak, Beartrap, Slip n Slide, Horse Creek, Jack Creek, Cedar Creek, Toadflax, Cougar 2, Heyden, Black Mountain, and Horn Mountain. Of the 17 packs left at the end of the year, 9 met the breeding pair criteria. This is a decrease over 2008 levels.

There was one border pack shared with the ID (Sage). Significant sheep losses in ID at the U.S. Sheep Experimental Station were attributed to this pack. It was removed as a result. Two other border packs are shared with YNP (Cougar2 and Heyden) and are counted in the MT population.

Three packs were eliminated in 2009 due to conflicts with livestock either in Montana, Idaho or both in the case of border packs. They are: Sage Creek, Centennial, and Blacktail3. Of the total sheep death loss confirmed statewide in 2009 (202), about 92% (185 sheep) was attributed to the Centennial and Blacktail3 packs. The same number of packs was eliminated WMU 3 in 2008.

Project staff documented the dispersal of several wolves. One wolf dispersed from the Mill Creek pack in the Paradise Valley in 2008 and was killed in a control action in Wyoming in 2009. One moved into YNP from Paradise valley and joined two females. Another wolf

(equipped with a gps ARGOS satellite collar) dispersed from the Mill Creek pack and traveled southward through YNP and into the southern parts of WY by the end of 2008. She was found dead in Colorado in March of 2009. A collared wolf from Idaho was found dead in the Eightmile pack territory in Paradise Valley.

The number of collared wolves and the number of wolf packs with at least 1 member radio collared varies throughout the year as new wolves are collared. Additionally, the total number changes as collared wolves die, radio collars malfunction, or collared wolves disperse and are not relocated. At the end of 2009, 11 of 17 (65%) of verified packs were being monitored using ground and aerial telemetry. Radio-collared wolves were located 1-2 times per month by fixed-wing aircraft and ground telemetry.

In 2009, 10 of the total 20 packs that did exist at one time during the year (50%) were confirmed to have killed livestock (Table 1b), resulting in the lethal removal of 31 total wolves [3 of which were killed by private citizens in defense of property either under the applicable federal experimental rule (10j) or state regulations after delisting]. Three packs (Centennial, Blacktail3, and Sage Creek) were removed in their entirety due to chronic conflicts. One of the 31 wolves controlled was a lone wolf with no pack affiliation. No wolves were killed under shoot on sight permits issued to livestock producers, although FWP issued about 4 kill permits in 2009.

Forty six total mortalities were documented. Thirty one wolves were killed to resolve livestock conflicts, and 9 wolves were harvested by hunters. Four wolves died of unknown causes. One mangy wolf was euthanized by FWP and 1 illegal mortality was documented. All wolves killed in agency control actions or legally harvested are precise numbers, while the number of mortalities from all other causes is a minimum that MFWP documented. The actual number is unknown. Further, these numbers can only be applied to an overall population count that is also known to be a minimum estimate.

Verified Packs (Table 1b in Appendix 3)

Cougar Creek II

- 9 wolves; 1 radio collar; breeding pair
- no depredations reported
- border pack with YNP; counted in MT in 2009
- 2 wolves harvested

History: The Cougar Creek II pack formed in 2006. Three members of the Cougar Creek pack split off and formed this new pack. The original Cougar Creek pack's home range was mostly inside YNP, and NPS personnel did all the monitoring. The Cougar II pack is a border pack and spends most of the winter outside of YNP and FWP does most of the monitoring.

2009 Activities: During Montana's first wolf-hunting season 2 wolves were legally harvested in the territory of Cougar II. One was an uncollared gray adult female and the second was a collared adult black male (477M) that was originally collared by YNP as part of the Cougar Creek pack. This wolf split with 3 other wolves in 2006 forming the Cougar II pack. This was a non-functioning collar that was last heard in February 2006. Cougar II spent the

winter in the Gallatin and was not found in the Madison Valley during 2009 as it had been in previous years.

Hayden

- 8 wolves; 1 radio collar; breeding pair
- no depredations reported
- border pack with YNP; counted in MT in 2009

History: This pack has historically been an YNP pack. But due to pack/territory disputes within YNP, it began spending more time in Montana in 2008.

2009 Activities: MFWP looked for the Hayden collar on all monitoring flights and it was not found until October. They were in their normal territory and pups could be distinguished. It is not known whether the collar works intermittently or if they have increased their territory going south back into YNP.

Horn Mountain

- 8 wolves; 2 radio collars; not a breeding pair
- 3 calves confirmed killed; 3 wolves removed by WS

History: New pack in 2008. It occupies a territory at the south end of the Madison Range in the Antelope Basin area.

2009 Activities: In a total of four separate incidents, 2 calves were killed and 2 calves were injured on the Antelope Basin grazing allotment in July and August. Three wolves total were killed, one of which was known to be the breeding male. WS was successfully able to dart a wolf and collar it in mid-September. Cattle were moved off of the allotment and no other depredations were reported.

Sage Creek

- pack no longer exists
- border pack with ID; counted in MT in 2009
- 1 calf confirmed killed, 1 calf probable killed in MT; 26 sheep confirmed killed in Idaho; 10 wolves (pack removal) removed by WS

History: A collared Madison Valley disperser SW072F was located around the Blacktail / Sage Creek areas in 2007 and hooked up with two other wolves forming a new pack. Its territory is from Sage Creek south to Peet Creek and the ID border.

2009 Activities: In early May, US Sheep Experimental Station herder accidentally snared 1 wolf in a coyote snare. It was a juvenile wolf and it was found dead in the snare. One June 6, ID WS confirmed 5-buck sheep killed, 1 injured (likely to die). One set of tracks was seen at the kill site on the US Sheep Experiment Station Humphrey Ranch. IDFG authorized removal of 1 wolf. ID WS, MT WS, and MFWP agree that the control work could take place on either side of the state border. One wolf was killed by ID WS on June 16.

Wolves continue to move back and forth across border. On July 16, ID WS confirms 1 buck sheep killed on US Sheep Experiment Station Humphrey Ranch. IDFG authorized removal

of 2 wolves, which was completed by ID WS by July 24. On July 30, ID WS confirmed 13 buck sheep killed in ID at Monida Pass. On August 4, ID WS confirmed 7 sheep were killed by wolves on the US Sheep Experiment Station Humphrey Ranch. IDFG authorized removal of 3 wolves which was completed by IDWS on August 5. On August 17, MT WS confirmed 1 yearling calf was killed by wolves and one was a probable kill on the south side of Centennial Valley near the ID state line. MFWP authorized removal of the remaining 4 wolves. This was completed by October 1.

Centennial:

- pack no longer exists
- 105 sheep confirmed killed and 40 sheep probable killed; 5 wolves (pack removal) removed by WS; See Blacktail3 pack below.

History: New pack in 2008. It occupied Freezeout's old territory of the Ruby River drainage in the Gravelly / Snowcrest Mountain range.

2009 Activities: In 2009, the Centennial pack denned above the Robb-Ledford WMA on the West side of the Snowcrest Mountains which was a different location from the previous year. A sheep producer lost sheep first in July from a group of 3 wolves (Blacktail3, 2 blacks and 1 gray). MFWP authorized the removal of all three wolves and WS killed the gray and mortally wounded 1 of the blacks. The other black wolf got away. On August 17, WS got a call from the same sheep producer that an unknown number of buck sheep had been killed in the Rock Creek area (private land) of the Blacktail south of Dillon in the same general area as the July losses.

On August 18, WS flew the sheep pasture looking for the one or two remaining blacks and found the Centennial Pack within about 3/8 of a mile of the sheep pasture (3 adult grays and 5 pups) and had also determined that at least 20 some buck sheep had been recently killed. WS removed the uncollared adult gray on the 18th. Later that same day, WS confirmed a total of 82 sheep bucks killed by wolves. Forty additional bucks were determined as probable kills by wolves. It appeared to be in 3 separate depredation events. This was the first depredation incident for the Centennial pack in 2009.

On October 18, WS confirmed 10 lambs were killed and 13 lambs were injured by wolves, and the injured were not expected to live. This occurred on the Blacktail on private land in the same area as the previous depredations. These sheep were moved from public land allotments in the Gravelly Mountains to the private land pasture in the Balcktail in early October. WS flew on October 20 and found the Centennial pack in the area so it was assumed they were responsible for the killing. A control action for the full pack removal of the Centennial pack was authorized. WS flew again on 10/20 and removed one gray pup (SW589U). A group of five was seen (3 adults and 2 pups), which was consistent with what had been seen on recent FWP monitoring flights. A black adult had recently joined the Centennial pack since the August 18 depredation. It is uncertain if this was the remaining member of the Blacktail3 pack or if it was a lone disperser from somewhere else. On October 21, WS flew & found wolves high in the timber, believed to be coming out of sheep that morning, but no damage was reported or confirmed; WS shot at a wolf (believed to be a pup), but didn't think they hit it although it was never seen with the group again. On

November 16, WS killed two of the adults in the Centennial pack a black female and one of the collared gray males. The third adult male, which is also collared, was thought to have been killed but survived and had moved a few miles away. WS killed the last radio collared male wolf on November 25 in the upper Ruby. This ended the control action and the entire Centennial pack was removed. Domestic sheep in this area had also been killed by the Blacktail3 pack and it, too, was eliminated.

Jack Creek:

- 1 wolf; 1 radio collar; not a breeding pair
- 3 calves confirmed killed; 2 wolves removed by WS

History: New pack in 2008. It occupies a territory in the North end of the Gravelly and the Greenhorn Mountains.

2009 Activities: On July 11, WS investigated a dead calf on public land near Morgan Creek and determined it to be a probable wolf kill. On July 12, WS confirmed a calf was killed on public land by a wolf or wolves in the Ruby near Short Creek. No control action at this time it was uncertain if this was still in the Jack Creek pack territory or if a new pack had moved in based on the probable depredation the day before 10-15 miles to the North. On July 21 during a routine radio monitoring flight FWP found both Jack Creek radios plus an uncollared wolf in the Lazyman area of the Ruby, which was in close proximity to the July 12th depredation. Based on this FWP initiated a control action for 1 uncollared wolf which was completed on July 22 when a breeding female was killed. On July 30, WS confirmed wolves in the Upper Ruby had killed a calf that was found the by riders and covered up the previous day. MFWP authorized removal of another uncollared adult. On August 20, WS confirmed another calf in the same area as the last depredation and killed a wolf the same day. During a routine monitoring flight in mid-December, the collar of the alpha male was emitting a mortality signal. MFWP personnel retrieved the collar on January 14, 2010 and the findings are still under investigation by MFWP.

Horse Creek:

- 6 wolves; 1 radio collar; breeding pair.
- 1 calf confirmed injured; no wolves killed

History: New pack in 2008. It occupies a territory in the Gravelly Mountains from Ruby Creek to Standard Creek including FWP's Wall Creek Wildlife Management Area.

2009 Activities: For unknown reasons, all five of the 2008 pups disappeared from this pack in late 2008, leaving only the original 3 adults in early 2009. This pack again denned above MFWP's Wall Creek Wildlife Management Area and spent the summer in and around the public land grazing allotment. On July 5, WS confirmed a calf as being injured by wolves on the Wall Creek Management Area (public land). No lethal control was immediately authorized and the situation was monitored. No further depredations were reported in 2009.

Toadflax:

- 10 wolves; 2 radio collars; breeding pair
- no depredations reported

History: New pack in 2008 after three wolves showed up in the area after the Wedge pack was removed in 2007. The Toadflax pack occupied a territory at the south end of the Madison Range from Beaver Creek north to Indian Creek.

2009 Activities: The Toadflax pack used the same den area and rendezvous sites as the previous Wedge pack. Wolves dened and had rendezvous sites in close proximity to grazing cattle on private land all season long. The Sun Ranch, which holds a large portion of this pack's territory deployed up to two miles of turbo fladry around grazing cattle when possible and moved the fladry and pastures on a monthly basis.

Black Mountain:

- 3+ wolves; no radio collar; not a breeding pair
- 2 calves confirmed killed; 2 wolves removed by WS; 2 wolves killed by private citizens to defend property

History: New pack in 2008. It occupied a territory in the Madison Range from Bear Creek to Indian Creek.

2009 Activities: On July 31, an employee of a ranch near Cameron shot a mangy collared wolf about 100 yards from the shop building. A MFWP warden investigated and retrieved the carcass that same morning. Everything checked out in accordance with the state statute of wolves harassing livestock. This collared / mangy wolf had been seen numerous times in cattle and had been run off from close to the shop / buildings / stock dogs a couple times already. MFWP confirmed wolf tracks going into and out of the building and the wolf had secured some dog food on the porch at night (when dogs were inside / secured elsewhere). The employee killed the wolf about 20 yards from the dogs.

On October 29, WS confirmed 2 calves were killed by wolves in the Bear Creek area near Cameron. The rancher had been seeing up to 5 wolves, but there is no longer a radio in this pack after the mangy wolf was killed. Two wolves were killed by WS by November 4. On December 29, a landowner in the Cameron area shot a female gray wolf (SW680F) that was acting aggressively towards a dog in his yard. MFWP enforcement investigated and confirmed it as being a legal take under the state statute of defense of property.

Cedar Creek:

- ? wolves, status unknown; no radio collar; not a breeding pair
- 2 sheep confirmed killed; 1 cow probable killed; 1 wolf removed by WS

History: New pack in 2007. It occupies a territory at the north end of the Madison Range from Jack Creek to Cedar Creek.

2009 Activities: In mid July, WS confirmed that 2 ewes were killed by a wolf or wolves on private land in a pasture near a house and corrals near Jeffers (just outside of Ennis). The Cedar Creek pack was suspected but the collar in the pack did not appear to be functioning. WS was authorized to kill one wolf and to collar one wolf. A SOS permit was also issued to the landowner. MFWP also talked with the sheep owner and neighbors and described state law and regulations pertaining to wolf-livestock conflicts and human safety. WS killed a black female wolf and the SOS permit was cancelled. Efforts to place a collar in the group were ongoing but

additional wolves were never located. In early October, WS looked at a dead cow on the Cedar Creek Ranch and called it a probable wolf kill. Ranch employees had been seeing wolves in the area, but the status of the Cedar Creek pack was unknown at the end of 2009.

Blacktail3:

- pack no longer exists
- 38 sheep confirmed killed; 2 wolves removed by WS; See Centennial pack above.

History: New pack in 2009. It occupied a territory in the Blacktail area south of Dillon, from the Sweetwater south to Rock Creek.

2009 Activities: On June 18, WS confirmed 12 adult yearling sheep killed by wolves on private land south of Dillon. The producer saw 3 wolves (1 grey, 2 blacks) from a distance in the sheep. Due to the lack of a collar in the pack MFWP initially requested WS to radio collar and release a wolf. On July 22, WS confirmed 10 buck sheep killed by the 3 wolves in the same general area in what WS believed was two different depredation events. On July 25, WS confirmed 16 sheep bucks killed by 3 wolves in the same pasture as the previous losses. WS saw 3 wolves leaving the sheep from a distance, and MFWP authorized removal of all three (2 blacks and 1 gray) and to continue efforts to radio collar any wolves in the area. On July 27 WS called in all 3 wolves, shooting an adult gray female (SW530F) & mortally wounded 1 black wolf. The other black wolf got away and its fate was unknown. Domestic sheep were also killed in this area by a different pack (Centennial), which was also eliminated.

Rosebud

- 3 wolves; no radio collar; not a breeding pair
- 1 lion hound reported killed, 2 injured

History: Pack formed late in 2005. Its territory is from Redlodge to the Fishtail/Nye area.

2009 Activities: Tracking efforts in 2009 confirmed a pair travelling together and one other individual in the area. It remains to be seen if all three are travelling together. Efforts to collar and release were unsuccessful. On December 28, a lion hunter reported one dog killed and two other injured by 1-2 wolves in the Rosebud pack territory.

Baker Mountain

- 5 wolves; 1 radio collar; breeding pair
- no depredations, but see narrative below
- 2 wolves harvested

History: This group was documented in fall 2005 shortly after SW57F was caught and collared near a depredation site. Its territory is in the West Boulder area, south of Big Timber.

2009 Activities: One calf was killed by a single wolf in March just east of the Baker Mountain territory (old Moccasin Lake territory). A SOS permit was issued for one wolf on private land. No wolves were removed and no more depredations were reported. It is unknown if this wolf was part of the Baker Mountain pack or an animal passing through. The calf will be tallied in the lone/misc column in table 1b. A dispersed male wolf from the Mill

Creek pack joined Baker Mountain late fall of 2008 and was illegally killed in May of 2009. Two wolves were harvested in the fall, one of which wore a non-functioning radio collar. This wolf turned out to be a disperser from YNP (Geode pack, 374M). This wolf was first documented in the pack January of 2009 due to his unusual blue/gray coat.

Buffalo Fork/Slough Creek

- 3+ wolves; no radio collar; breeding status unknown
- no depredations reported
- 4 wolves harvested

History: The Buffalo Fork pack formed in 2003, north of YNP in Montana in the Buffalo Fork drainage. In June 2003, the only radio-collared member of the pack died and contact was lost. At the end of the year, 3 wolves were believed to be left in the pack. In 2005, numerous public reports were received from backcountry recreationists. In July 2005, project personnel backpacked through the historic Buffalo Fork territory in the Absaroka-Beartooth Wilderness and found sign of wolf activity. It was believed to still exist from 2005-2008.

2009 Activities: Even less is known about the Buffalo Fork pack in 2009, and it may not exist this year in the way hypothesized in 2008 because of interactions with the Slough Creek pack towards the end of 2008 and early 2009. The known use and presence of the Cottonwood pack in the Hellroaring drainage and on Buffalo Plateau combined with the known use and presence of the Eagle Creek pack west of the Cottonwood suggests that the Buffalo Fork pack (if it still exists), must have shifted its territory to the east (Slough Creek). By February 2009, the seven remaining Slough Creek pack members were missing and were not detected on the northern range and did not den inside YNP. Thus, YNP staff concluded that one of a few possibilities must have occurred: the pack broke apart, some wolves died and the rest dispersed / joined other packs (possibly with Buffalo Fork animals), or the group stayed together and moved north of the park. Four wolves were harvested during the backcountry hunt from a group of animals occupying the Anderson ridge/Slough Creek area. YNP personnel have documented at least three animals in this group and do not consider them it YNP pack. One wolf, a male, wears a non functioning radio collar originally from the Agate pack along with two females from Slough Creek. It is unknown if more animals are in the group at the end of 2009. For now we will call them Buffalo/Slough and hope to learn more in 2010.

Mill Creek

- 8 wolves; 1 radio collar; breeding pair
- 2 calves confirmed killed; kill permit issued but no wolves killed

History: The Mill Creek pack formed in 2000. It spent a fair amount of time on or near private property on the east side of Paradise Valley and the Yellowstone River, near Emigrant.

2009 Activities: The pack localized during denning season and seemed to stay on Forest Service land for most of the year. WS confirmed two calves killed in the fall and a kill permit was given to the livestock owner. No wolves were lethally removed and no more

depredations were reported, although the wolves had been seen on private land on several occasions. Wolf 266M dispersed from the pack in early fall of 2008 and its whereabouts was unknown. It was killed in a control action along with other wolves in Wyoming in October of 2009. Another wolf (equipped with a gps ARGOS satellite collar as part of a University of Montana research project) dispersed from the Mill Creek pack in 2008 and traveled southward through YNP and into the southern parts of WY by the end of 2008. She was found dead in Colorado in March of 2009. Her mortality is under investigation.

Eightmile

- 7 wolves; 1 radio collar; breeding pair
- no depredations reported

History: New pack formed in early 2007 and occupies a territory on the west side of Paradise Valley, south of Livingston.

2009 Activities: The only radio collared animal in the pack, SW147M, dispersed in the spring to YNP and has been seen with two grays by YNP personnel. Denning activity and pups were noted by landowners in the Eightmile territory. Fall tracking by FWP personnel confirmed at least 7 wolves. A landowner reported a collared dead wolf on private property in July. The wolf turned out to be an Idaho animal collared in the fall of 2003 and missing shortly after. It is unknown how long he was in the area as the collar was not working. Cause of death is unknown as the carcass was clean and bones white. One wolf was caught in a coyote trap and collared by FWP in the Eightmile territory in December. Pack affiliation of this wolf has yet to be determined but assumed an Eightmile wolf.

Eagle Creek

- 12 wolves; 1 radio collar; breeding pair
- no depredations reported
- 1 wolf harvested

History: This pack replaced the Casey Lake pack and comprised of a pair of adults and two pups by the end of 2006. Its territory is on the east side of the Yellowstone River north of Gardiner.

2009 Activities: FWP confirmed denning and pups in June of 2009. Trapping efforts to deploy a second collar were unsuccessful. One wolf was harvested in the fall.

Slip n Slide

- 3 wolves; no radio collar; not a breeding pair
- no depredations reported

History: New pack formed when a wolf collared in the 8-mile area moved to the Dome Mountain area with two other wolves in January of 2009. This is the northern most end of the Eagle Creek pack territory.

2009 Activities: Only one pup was confirmed in the pack. The collared female SW452 became missing in August and contact with the pack has been lost.

Beartrap

- 22 wolves; no radio collar; breeding pair
- no depredations reported

History: The Beartrap pack formed in 2002. It occupied a territory at the north end of the Gallatin Mountain Range near the Spanish Peaks consistently since then.

2009 Activities: A total of 22 animals were documented at the end of 2009, at least 5 of these are pups of the year. This pack seems to spend the majority of its time on private land.

Lebo Peak

- 3 wolves; no radio collar; not a breeding pair
- 30 sheep confirmed killed; 3 kill permits issued; 1 wolf killed by a private citizen to protect a dog and 1 wolf killed by WS

History: New pack in 2008. Its territory is on the northeast end of the Crazy Mountains.

2009 Activities: In January, a landowner reported wolves on his property during calving season. Close to two miles of fladry was strung as a preventative measure and no depredations were reported. In late February, sheep were confirmed killed by wolves. A SOS was issued to the landowner and WS removed one wolf and collared an adult male. More sheep were killed in early June effecting two separate landowners in two days. SOS permits were issued to the landowners who suffered the losses. In addition, non-lethal tools were implemented on these properties and MFWP increased monitoring. A neighbor to these landowners shot the collared male under state statute to protect his dog in late June. It is thought the combination of the removal of the male and non-lethal efforts to protect livestock pastures ended depredations for the year.

Verified Border Packs Counting in Wyoming Population Estimate (Table 2 in Appendix 3)

There were two border packs shared between MT and WY (Cottonwood and Cougar Creek) that were counted in the WY population. See Table 2 and the U.S. Fish and Wildlife Service's Wyoming Annual Report (Jiminez et al. 2010).

Miscellaneous / Lone Individuals in Wolf Management Unit 3

Reed Point area: Two ewes and 1 goat were killed in January by the remaining animal of the Reed Point pair that had previously killed livestock on this same ranch in 2008. Lethal control efforts initiated in 2008 continued into early 2009. The male, SW448, was removed January 9 and no depredations have been reported since.

Gardiner area: A collared mangy wolf from YNP, 625F, was euthanized by FWP personnel in March outside of Gardiner. The collar and wolf was returned to YNP.

On June 29, FWP got a report of small wolf pups playing in a logging road on the Sun West Ranch South of Cameron, MT. Having no known denning activity in the area wolf project personnel and the local game warden responded to verify. A small gray pup was observed sleeping in the grass and from ranch reports 2 additional grays were seen in the area. The pup

was left and project personnel returned again on 6/30. No pups were seen on this day but numerous pup tracks and scat were found. Ranch personnel had no further pup or adult sightings in the area the rest of the summer or fall. It is unknown what happened to the pups or if they were tied to a new pack or the Toadflax pack which denned a few miles to the east.

Suspected Packs in Wolf Management Unit 3

Trail Creek area (south of Livingston, west side of Yellowstone River): Reports continue of 1-3 wolves in the trail creek area. No depredations have been reported and it is unknown if these animals are passing through or establishing a territory.

Prior Mountains: FWP followed up on reports of wolves in the Prior Mountains this year. No wolf activity was confirmed at the time and we will continue to look in 2010.

Sheep Mountain: Reports in early January 2010 indicate a pair of wolves may be occupying the area north of Springdale on the south end of the Crazy Mountains. Project personnel will monitor this area in the coming year.

Snowy Mountains: FWP followed up on reports of three wolves in the Snowy Mountains. No wolf sign was found at the time and reports seemed to decrease as we entered the fall. Follow up will continue in 2010.

Canyon Ferry/Big Belts: Reports have been received of wolves occupying the Big Belts/Canyon Ferry area. MFWP confirmed tracks of a single wolf on the south end of the Big Belts. Efforts to follow up in this area will continue in 2010.

Tobacco Roots: In June, WS investigated a calf killed on private land in South Meadow Creek (southeast end of the Tobacco Roots) and confirmed it as a wolf kill. Traps were set for a collar and release effort. The ranch hand had seen 3 blacks in the area a time or two over the winter. No wolves were caught and there were no other confirmed depredations or sightings. It is unknown at this time how many wolves or if there is pack activity in this area.

Elk Park/Bernice: Landowners and hunters in this area have submitted reports of wolf sightings and tracks. On June 24 WS confirmed a calf as killed by wolves and one as a probable wolf kill. Attempts to identify a pack or collar a wolf were unsuccessful.

Hound Creek Area: WS confirmed 1 sheep killed and 2 injured in early June and confirmed 7 killed and 4 injured by wolves in July. Attempts to place a collar were unsuccessful. Landowners reported several reports of wolves during the fall/winter. A pack could not be verified by the end of 2009.

Northwest of White Sulphur Springs area: A landowner shot one wolf in June of 2008. Hunters and ranchers continue to submit reports of wolf sightings and tracks from nearby areas in 2009. A wolf pack could not be verified by the end of 2009.

OUTREACH AND EDUCATION

MFWP's wolf program outreach and education efforts are varied, but significant. Outreach activities take a variety of forms and include: meeting people in the field, visiting landowners on their ranches, phone conversations and email to share information and answer questions, and granting interviews with the media, writers, and others. MFWP wolf staff also gave presentations at organized functions. MFWP also prepared and distributed a variety of printed outreach materials and media releases to help Montanans become more familiar with the Montana wolf population, the state's plan, and the current federal regulations. During the course of the year, MFWP staff note most their outreach efforts and activities in the Montana Wolf Weekly Report.

Other MFWP staff and volunteers are instrumental in accomplishing MFWP's outreach efforts. These include area game wardens, area wildlife biologists, block management personnel, information officers and front desk staff, staff of the Education Bureau, State Parks employees, the Helena staff (who work closely with the MFWP Commission, the legislature, and a variety of other elected or appointed officials), hunter education instructors, etc.

An increasingly important aspect of outreach is the Internet. The MFWP website hosts 126 pages specific to the wolf program. These pages were viewed a total of 109,648 times in 2009. There were 81,847 unique pageviews. The wolf web pages are visited between 150 and 400 times per day. See <http://fwp.mt.gov/wolf>.

According to diagnostic statistics, the four most popular wolf pages are: the opening page (i.e. information about listing status), wolves and big game (i.e. information about wolves and elk), wolf population (i.e. information about the size and distribution of Montana's wolf population), and the wolf weekly. These four pages accounted for about 60% of the total visits to all of the wolf program web pages.

Diagnostic statistics also suggest that the public visitors spend more time on the wolf pages (one minute, 19 seconds) compared to the average of all other MFWP web pages visited (fifty eight seconds). Additionally, visitors to the wolf-specific pages have a higher bounce rate (44%) than the average for all other MFWP web pages (32%). This suggests that visitors may have the MFWP wolf pages bookmarked and visit them directly for specific information periodically (e.g. visitors go to a wolf page directly and then exit the MFWP website without visiting any other MFWP web pages).

Because of the interest in the wolf hunting season and opportunity to provide the hunting public with an additional way to monitor the progress towards filling the wolf quota, MFWP added an extra feature to the Hunt Planner section of the MFWP website. Web visitors could determine whether the wolf hunting season was still open and what the current reported harvest was. MFWP updated that web page at the same time as the recorded telephone message. These two options could be used by hunters to determine pending wolf season closures. Web diagnostic statistics revealed that the wolf hunting pages in the Hunt Planner were viewed a total of 32,848 times between September 15 (when the backcountry season opened) and November 2 (when the wolf season was closed in all three management units).

The “Report a Wolf” application continued to bring valuable information so the public can help MFWP with monitoring efforts for existing packs and documenting wolf activity in new areas. Several hundred reports were received through the website. Countless more were received via postal mail on a pre-printed card and over the phone.

Additionally, the MFWP website receives email comments and questions from a wide variety of interested publics. Efforts are made to respond to as many as possible. A wide variety of media requests are also received, ranging from daily newspapers, magazines, documentary filmmakers, and authors.

Most wolf program staff spend 2-15 days at hunter check stations each hunting season in MFWP Regions 1-4 to talk with hunters about wolves, wolf management, and their hunting experiences. Hundreds of conversations are held. MFWP wolf staff also receive invitations for presentations from a wide variety of groups every year. Staff try to accommodate as many as possible given other work priorities and the time of year.

Presentation Outreach Categories:

Civic: Kiwanis Club, Rotary Club, Lions Club, church groups, etc.

Teacher/school: K-12, teachers

College/Professional: colleges, conferences, and adult education

Hunting: non-profit hunting and sportsperson related, check stations, outfitting, rod and gun, etc.

Landowner / Livestock: livestock groups, permittees, watershed groups, etc.

Agency/government: Forest Service, BLM, NPS, county, Montana Legislative Committees, etc.

Wildlife Advocacy / Conservation: non-profit wolf advocacy or non-consumptive group

<u>Outreach Categories</u>	<u># of Programs</u> (% of total programs)	<u>Number of attendees</u> (% of total attendees)
Civic	12 (16%)	394 (14%)
Teacher/school	7 (10%)	249 (9%)
College/professional	8 (15%)	825 (29%)
Hunting	8 (5%)	330 (11%)
Landowners / Livestock	15 (33%)	595 (21%)
Agency/government	7 (13%)	165 (6%)
Wildlife Advocacy	6 (8%)	301 (10%)
Total:	63 (100%)	2859 (100%)

RESEARCH, FIELD STUDIES, AND PROJECT PUBLICATIONS

Each year in Montana, there are a variety of research projects and field studies in varying degrees of development, implementation, or completion related. These efforts range from wolf ecology, predator-prey relationships, wolf-livestock relationships, policy, or wolf management. Additionally, the findings of some completed projects get published. The 2009 efforts are summarized below.

Trophic Cascades Involving Humans, Wolves, Elk, and Aspen in the Crown of the Continent Ecosystem

Graduate Student: Cristina Eisenberg, Boone and Crockett Club Fellow, Oregon State University

Committee Chair: Dr. William J. Ripple, Oregon State University, Corvallis

Project Summary: Predation by wolves may be critical for maintaining biodiversity and sustaining aspen communities. Currently in decline in portions of the West, aspen provides key habitat for songbirds and beaver, among other species. One of the major controversies in ecology in the past century concerns whether food has a stronger influence on herbivore population regulation than predation. Predation can drive strong lethal and non-lethal effects throughout food webs, referred to as trophic cascades. We are studying trophic cascades involving human land use, wolves, elk, and aspen in the Crown of the Continent Ecosystem. Our objective is to investigate how an apex predator affects aspen communities by influencing abundance and behavior of large herbivore prey. This work will contribute to our knowledge of food webs, via a gradient analysis of the magnitude of trophic cascades in areas of high, medium, and low wolf density, and investigation of temporal and spatial trophic interactions in a geographic location where they have not been studied previously. It is part of the *Southern Alberta Montane Elk Study*, an interagency, transboundary collaboration in which we are working with 98 elk fitted with GPS collars, and 8 radio-collared wolf packs. Project partners include Shell Canada, Alberta Fish and Wildlife Division, Montana Fish Wildlife and Parks, Waterton Lakes National Park, Glacier National Park, the University of Alberta, the University of Calgary, Oregon State University, and the Boone and Crockett Club.

Project Activity in 2009: During this third year of field research, Montana Fish, Wildlife, and Parks radio-collared 3 wolves in Glacier National Park with our assistance for our project, deploying 2 GPS collars and 1 VHF collar, and put GPS collars on another cohort of 35 elk in Waterton Lakes National Park. We completed vegetations sampling, to measure the indirect effects of wolf presence, via trophic cascades. This included a fire ecology survey in the aspen in our study area.

Preliminary Results: Wolf presence affects multiple levels of the food web, within a classic three-part trophic cascades framework (predators-prey-vegetation), with these effects mediated by wolf and prey density. In our study area (two national parks) elk represent the dominant herbivore in elk winter range, as measured by pellet transects. Changes in elk herbivory due to wolf predation may be creating richer songbird habitat, increasing biodiversity.

Scat and stable isotope analysis of summer wolf diet

Graduates Student: Jonathan Derbridge, University of Montana

Committee Chair: Dr. Paul R. Krausman, University of Montana, Missoula

Wolf diet can be estimated from undigested remains of prey in scats. Stable isotope analysis may derive the same information from tissue of wolves because isotopic ratios of $^{13}\text{C}/^{12}\text{C}$ and $^{15}\text{N}/^{14}\text{N}$ therein reflect those of their prey. Using both techniques with temporally and spatially matched samples may provide information on proportions of prey consumed and insight on the relative

accuracy, efficiency, and future applicability of these methods for this and similar ecosystems. We collected scat samples from wolf packs ($n = 4$) in northwestern Montana from June to October 2008, and hair samples of wolves ($n = 48$) from packs ($n = 12$) from May to July 2009 (including those from which scat was sampled). This study will provide baseline data on the feeding ecology of wolves in this region. Such information will be useful to managers who must respond to wolf-related questions from the public.

Heavy Metal Contaminants in North American Grey Wolves

Supervisors: R. Given Harper, and Jeff Frick, Illinois Wesleyan University, Bloomington, IL; Steven Hoffmann, Purdue University, West Lafayette, IN

Undergraduate students: Susan Blunck, Patrick Chess, Stacy Hynes, Emily Jones, Jason Koval, Ryan Misek, Sarah Rueth, Patricia Troxell

Collaborators: Mark Atkinson, Montana Fish, Wildlife and Parks; Kimberlee Beckmen, Alaska Department of Fish and Game; Dean Cluff, Environmental and Natural Resources, Government of the Northwest Territories; Mark Collinge, APHIS Wildlife Services, Idaho; Mark Drew, Idaho Department of Fish and Game; Carolyn Sime, Montana Fish, Wildlife and Parks

Project Description: Due to its location at the top of terrestrial food chains, the grey wolf (*Canis lupus*) may contain high levels of heavy metals. However, few studies have documented these compounds in wolves throughout much of their North American range, which is the purpose of this study. The wolves were either found dead, collected via lethal control methods or harvested legally in Alaska, Idaho, Montana and the Northwest Territories. Wolf kidneys were removed from carcasses by personnel from state and Canadian wildlife agencies from 2005-2007. The kidneys were then frozen and shipped to Illinois Wesleyan University for preparation. The concentration of heavy metals (cadmium, copper, iron, and zinc) in wolf kidneys was determined via inductively coupled plasma emission spectroscopy at the University of Wisconsin-Madison. There were no significant effects of age class (adult or subadult) or sex on levels of cadmium, copper, iron and zinc from wolves collected in Idaho and the Northwest Territories. Females had significantly higher iron levels than males in wolves collected from Alaska, while adults had significantly higher levels of copper than subadults in wolves collected from Montana. With few exceptions, the mean metal levels in wolves fell within or near the level ranges as indicated by previous studies.

Anticipated Completion Date: 2010

Combining hunter surveys and territorial dynamics to monitor wolf pack abundance and distribution in Montana

Graduate Student: Lindsey Rich, University of Montana

Committee Chair: Dr. Mike Mitchell, Montana Cooperative Wildlife Research Unit, University of Montana, Missoula

Project Summary: The goal of my masters research is to help create a new long-term population monitoring technique for wolves that is accurate and both time and cost-effective for FWP to

employ. I will determine if hunter surveys can be used to populate a Patch Occupancy Model (POM) which accurately estimates the number of wolf packs in Montana and their distribution. To do this, a grid of patches will be placed over Montana where patch size is equal in area to territory size. I will use GPS collars to accurately estimate territory size throughout the state. The patches are then surveyed to determine which are occupied (the species is detected) and unoccupied (the species is not detected). One time- and cost-effective approach to collect this detection/nondetection data may be to use hunter's sightings of wolves. Several questions pertaining to hunter's sighting of wolves were added to FWP's annual phone surveys of a sample of resident deer and elk license holders. Patch occupancy modeling (POM) uses these data to estimate the number of wolf packs in the state and their distribution.

Currently, changes in wolves' territory sizes can be estimated directly with radiotelemetry collars. In the future, this may not be possible due to changes in population size, funding and monitoring. Data from the large numbers of GPS and VHF collared wolf packs can be used to link territory size to specific ecological factors (e.g., prey density and landscape variables). A POM can then be developed with patch sizes that vary spatially and temporally corresponding to spatial and temporal variation of these ecological factors. This approach will ensure that the POM is robust to violations of constant territory size even when changes in territory size cannot be estimated directly.

Project Activity in 2009: Coursework, 5 more GPS collars were deployed by FWP wolf specialists (4 collared wolves remain in the territories they were collared in, 1 wolf dispersed and was shot), made preliminary estimates of territory size for GPS collared wolves, explored how ecological factors effect spatial variation in wolf territory size, ran preliminary patch occupancy models for 2007 and 2008 using the hunter survey data

Anticipated Completion Date: December 2010

Development of a monitoring protocol for wolves in the northern Rockies based on patch occupancy modeling

Post doctoral Researcher: Betsy Glenn

Principal Investigator: Mike Mitchell

Cooperating Researchers: David Ausband, Robin Russell, Justin Gude, Carolyn Sime, Pete Zager, Curt Mack, Lindsey Rich, Ed Bangs

Funding Source: Montana Fish, Wildlife & Parks, Idaho Fish and Game, Nez Perce Tribe, US Fish and Wildlife Service, the Frankenberg Foundation

Project Duration: 2009 – 2011

Project Summary: Prior to the early 20th century, the gray wolf (*Canis lupus*) was common throughout the northern Rocky Mountains (NRM). By the 1930s, wolves were extirpated as a result of poisoning, unregulated trapping, and bounty campaigns, and the gray wolf was listed as an endangered species in 1974. After the reintroduction of 66 individuals in 1995 – 1996, the wolf population expanded and approximately 1,500 wolves now live in the NRM. Throughout reintroduction and recovery, wolves in the NRM have been monitored intensively using radio-

telemetry and aerial surveys, supported almost entirely with USFWS funding. Federal funding for intensive monitoring will be eliminated following delisting and agencies will have reduced resources to obtain the information needed to document wolf numbers. Realizing 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 populations that do not necessarily rely on radio-collaring wolves. Beginning in 2006, the Nez Perce Tribe collaborated with the Montana Cooperative Wildlife Research Unit and Idaho Department of Fish and Game to evaluate the potential of these alternative methods for monitoring wolf populations.

We are in the process of testing a population monitoring program we developed 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 have demonstrated that a patch occupancy model can provide reasonably accurate estimates of abundance of wolf packs using only on-line public sightings (Ausband et al. 2009). In 2006-2008, we surveyed 2,000 hunters annually and found that there was a strong correlation between the number of wolves detected by hunters and the density of wolves in each of 4 study areas in Idaho. Hunters are present across much of the landscape and offer a unique opportunity to record detections of wolves across a broad landscape. While hunter surveys may not be able to resolve details at smaller spatial scales, our initial analyses indicated that these surveys have strong potential for estimating the numbers of wolf packs on the landscape, and may be useful for estimating numbers of wolves as well.

Because hunter surveys alone may be limited in their usefulness for estimating wolf populations sizes, we are evaluating a variety of additional survey methods to 1) enable the reliable detection of reproductively active wolf packs, 2) refine estimates of number of packs/wolves on the landscape from hunter survey data, and 3) be more cost-effective than traditional radiotelemetry. 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 area 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 2010-2011, Betsy Glenn will refine the methods developed by Ausband et al (2009) to determine the most effective strategy for integrating the suite of survey data into a patch occupancy framework. She will incorporate data on wolf removals from hunting and livestock depredation into the patch occupancy models, and 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 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 by the end of 2011.

Progress and Status: Betsy Glenn was hired as a post-doctoral researcher in December 2009. She has met with Drs. Jim Nichols and Jim Hines at the Patuxent Wildlife Research Center in February 2010 to develop specific strategies for evaluating the utility of hunter survey, rub pad, scat, and rendezvous site survey data for use in a patch occupancy model framework to estimate numbers of wolf packs and numbers of wolves in Montana and Idaho. She will evaluate different techniques for integrating these data in a patch occupancy framework to obtain estimates of numbers of packs and numbers of wolves with the least bias and greatest precision.

Publications:

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- Mitchell, M. S., J. A. Gude, D. E. Ausband, C. A. Sime, E. E. Bangs, M. D. Jimenez, C. M. Mack, T. J. Meier, and M. S. Nadeau. 2010. Test of an estimator for successful breeding pairs of wolves in the U.S. northern Rocky Mountains. *Wildlife Biology*, in press.
- Gude, J.A., M. S. Mitchell, D. E. Ausband, C. A. Sime, and E. E. Bangs. 2009. Internal validation of predictive logistic models for decision making in wildlife management. *Wildlife Biology*. 15:352-369.

Winter Distribution, Habitat Use, and Browse Utilization Patterns of the Shiras Moose on the Mount Haggin Wildlife Management Area

Investigators: Braden Burkholder and Robert Garrott, Department of Ecology, Montana State University, Bozeman; Vanna Boccadori, and Kurt Alt, Montana Fish Wildlife & Parks.

Collaborators: Montana Fish, Wildlife & Parks; Montana State University.

Project Overview: Moose populations across Montana have expanded in the last century, both in geographic range and in population size. This expansion has had a negative impact on moose winter range in some locations where moose have overutilized key browse species such as aspen and willow. Excessive and unsustainable browsing has the potential to reduce local biodiversity and carrying capacity of moose and other ungulates. The browse species of interest in this study are willow (*Salix* spp.), a highly palatable and abundant browse source for moose on many winter ranges, including our study area in southwestern Montana. Knowledge of spatial and temporal patterns of moose willow community use and willow utilization patterns is limited in Montana and would be helpful in moose population management.

The objectives of this study are to determine patterns of willow community use by selected female moose during winter and to quantify willow utilization across the study area southwest of Butte to examine population scale habitat use through browse patterns. To accomplish these objectives we deployed GPS collars on 18 cow moose, 6 each in the winters of 2007, 2008, and 2009, and completed large scale, systematic browse surveys in the springs of 2008 and 2009.

Preliminary results indicate cow moose spend the majority of the winter within willow communities (55% of all locations in 2007 and 44% in 2008) or in conifer cover adjacent to riparian areas, but the estimated percent of browsed willow twigs across the study area is low (<12% in both years). Our data suggest that while moose have the potential to significantly impact willow communities, this does not appear to be the case on the Mount Haggin WMA at current moose densities. Preliminary analysis indicates that areas of higher browse utilization are associated with larger proportions of preferred willow species and previously browsed willow. Results from this study will help local and regional biologists to better understand moose-willow dynamics and choose appropriate methods for managing moose populations and their habitats.

As part of this research focused on moose-willow habitat relationships, we are also collecting baseline moose movement and demographic data. These data will be available for comparison to any wolf movement/location data collected from this study area. Additionally, wolf-moose interaction data are being collected opportunistically, such as observations of wolves, field necropsies of moose for cause of mortality, and adult moose and calf survival rates. To date, numerous instances of wolf tracks have been noted on the study area and one wolf has been observed feeding on a moose carcass (cause of mortality was unknown).

Blackfoot Range Rider Progress Report: Pilot Season (contributed by Peter Brown and the Blackfoot Challenge)

Investigators: Peter Brown, Blackfoot Challenge, University of Montana

Collaborators: area landowners, Blackfoot Challenge, Montana Fish, Wildlife & Parks

Project Overview / What: The project will seek out an action plan for the potential conflict that may arise between wolves and livestock in the Blackfoot Valley, MT with the intent of decreasing wolf and livestock loss through the development of non lethal techniques for deterring depredation events. The 2009 Range Rider Pilot season will inform future development of a Range Rider program in the Blackfoot Valley.

How:

- Monitor cattle for willing ranchers in an attempt to determine if the herds have been subjected to wolf depredation attempts, as well as document herd health to determine the risk that the herd has for possible depredation if wolves were present.
- Monitor known wolf pack locations to determine their prey base and if they have chosen to prey on adjacent cattle herds. Locations are determined through telemetry, track/scat surveys, and anecdotal observations by local citizens.
- Ride herds with a motorcycle and drive roads in the general vicinity of pack point locations to determine their home range use patterns. Home range use patterns help in developing a risk of depredation assessment for areas of heavy cattle use.
- Begin conversations with ranchers in an attempt to develop predator action plans on their land and grazing leases that can reduce their risk of depredations. Topics discussed include: predator attractant sources (carcasses, adjacent wildlife concentrations), den/rendezvous locations, daily wolf movements and patterns of use, herd health and associated risk issues, Grazing lease stewardship goals (noxious weeds, water development, spring/wetland

exclosures, fencing conditions, grazing mgmt plans, patterns of grazing use), Hazing and predator management techniques.

- Seek out new pack locations and continually contact landowners in adjacent areas, which will inform them of options for mgmt and monitoring assistance that I can provide them.

Why:

- Proactive liason between wildlife management agencies and ranchers in the Blackfoot Valley. Historically ranchers have been unsatisfied with the communication of locations and current issues related to management of predators which threaten their livelihood. Open lines of communication will hopefully alleviate distrust and promote positive local management of predators.

Lessons:

- 1) Wolves are located adjacent to large concentrations of natural prey species ie. Deer and elk. Modern agricultural practices have attracted deer and elk onto irrigated hay and grain fields, cattle are at risk when they are located near large concentrations of deer and elk.
- 2) Remote grazing leases are difficult to monitor, often times if a thorough survey has not been conducted prior to release of cattle for the summer they could inadvertently be located close to den or rendezvous sites which would put the cattle at higher risk. Thorough surveys and establishment of use patterns can help to dictate cattle locations thus reducing risk of depredation.
- 3) Many ranchers have lost their trust in wildlife managers and likewise wildlife managers have lost trust in ranchers, thus creating volatile working relationships between these two groups, with this breakdown of communication cattle may be at risk. Building trust is essential so that open communication can help to direct management strategies for reduced risk of depredation.
- 4) Attractant sources also include carrion and scavenged carcasses left in the field. By removing attractant sources, risk of depredation can be decreased thus allowing wolves and other predators to rely on natural prey sources.
- 5) Wolves have become comfortable with human presence, positive non-lethal hazing near livestock will allow them to develop a fear of humans, human scent, and livestock.
- 6) Wolves exhibit patterns that can be studied and recorded allowing ranchers and wildlife managers to potentially predict presence on a temporal and spatial scale throughout the year. Positive ID of wolf sign and sightings, if documented and housed in a central location, can be useful information to assess risk across a rural landscape. Community participation is essential.
- 7) Radio collared wolves are very useful in locating packs on a daily basis thus creating use patterns throughout the year for that particular pack.
- 8) Pack size is closely linked to how much the pack will eat and what type of prey they are capable of taking down. Packs larger than six adults have enough members to take down adult cattle.

- 9) Range riding can be effective. Ranchers have in depth knowledge of their herd and the dynamics that dictate herd behavior. This information is essential to the Rider and should be shared in the field so that grazing use patterns can also be discussed and established. Range Riding can help to distribute cattle across the range in an effective way thus reducing range resource degradation.
- 10) Range riding is time consuming and requires a commitment to reducing loss due to depredation. Most ranchers are not willing to spend the amount of time or money necessary to have an effective program, thus increasing their risk when predators are present on the landscape. A Range Rider program can provide assistance to producers that are interested in reducing their risk through non-lethal, cost share programs. One range rider can possibly cover about 20,000 acres which might have about 600 cow calf pairs present. If a pack is present in that area the Rider can effectively follow the wolves through tracking, howling surveys, and scat analysis.
- 11) An effective range rider needs to know wolf behavior as well as cattle behavior and habits.

LAW ENFORCEMENT

All wolf mortalities that are not the result of authorized agency lethal control, of a shoot on sight permit, or obviously related to a vehicle / train strike, are reported to law enforcement personnel. All other wolf mortalities are under investigation until a full determination is made regarding cause of death. The USFWS Office of Law Enforcement was the lead agency to investigate wolf deaths until delisting in May. MFWP representatives collaborated and provided assistance to federal law enforcement on request. Upon delisting, MFWP officers took the lead on all investigations.

MFWP Game Wardens, by nature of their positions make valuable contributions with respect to outreach about wolves, their management, and the Montana program. In addition, wardens have assisted with various field activities such as retrieving road-killed wolves or responding to wolves caught incidentally by recreational trappers. Wardens have also passed along wolf reports to project personnel and contributed to monitoring efforts.

FUNDING

Montana Fish, Wildlife & Parks

Historically, MFWP's core wolf program has been funded through 2 separate federal sources. Approximately half was obtained through a direct annual Congressional line-item appropriation and half was obtained directly from USFWS as a part of the agency base budget. These sources were identified in the state-federal wolf cooperative agreement which outlines the scope of MFWP's work and how the money can be spent. Funds are transferred on a federal fiscal year cycle which is offset from the state fiscal year cycle by six months. Federal funds could be spent anywhere in Montana for the wolf management and conservation activities specified in the

cooperative agreement through June 30, 2010 (independent of the listed status). Any of the unspent funds will revert back to the Federal Treasury 90 days after the extermination date of the 5-year agreement.

Although the agreement states that a total of \$637,000 is to be available to Montana annually, federal budget constraints have sometimes resulted in Congressional recessions (across the board percentage cuts). Therefore, Montana received about \$607,000 in federal fiscal year (FFY) 2005. In 2006, Montana received about \$641,000. In FFY 2007, Montana again received about \$641,000 in federal funds. In FFY 2008, USFWS transferred \$396,000 (President’s budget language and \$323,000 from USFWS base funding) to MFWP. In addition, FY08 Congressional earmark language included \$243,000 in additional funding for wolf monitoring to be distributed by USFWS to Montana, Idaho, and Wyoming. That funding was split evenly between the 3 States. Funding levels in FFY 2009 and FFY 2010 were \$609,261 and \$721,177, respectively. MFWP and USFWS will begin work to develop a new cooperative agreement outlining responsibilities and funding for the next 5-year period beginning with state FY2011 (July 1 2010).

Accounting for overhead (19%) and the 6-month offset between the state and federal fiscal year cycles, MFWP has spent a total of about \$2,381,806 in federal dollars over a 10-year period since FY2000 when MFWP first began drafting a wolf management plan to pave the way for delisting the recovered wolf population. Some of this funding has been spent on recovery coordination, but the majority has been spent for on-the-ground implementation of Montana’s wolf program. This funding has paid for wolf monitoring, radio collaring, data management, depredation response, research, public outreach, and reporting to USFWS (Table 3). These activities provide both directly and indirectly support to the work of USDA WS and MLLRB.

Other FWP staff make significant contributions to the program above and beyond the work done by staff whose primary responsibilities are wolf-related. Examples include administration, biologist support, law enforcement, public outreach, and legal support. Exact figures have not been quantified.

Table 3. Federal funds spent by FWP to implement wolf management on the ground and support the work of USDA Wildlife Services and the Montana Livestock Loss Reduction and Mitigation Board.

State Fiscal Year	Federal funds to FWP to implement wolf management on the ground (after overhead is taken out)
2006	\$ 401,464
2007	\$ 473,546
2008	\$ 485,968
2009	\$ 609,261
2010	\$ 584,153
2011	\$ 507,060

USDA Wildlife Services

USDA WS is the federal agency assisting MFWP with wolf depredation management. WS personnel conduct investigations of injured or dead livestock to determine if it was a predation event and, if so, what predator species was responsible for the damage. Verification (either as confirmed or probable) by WS that damage is due to a wolf is an important aspect of the managing the wolf-livestock interface. Livestock owners may be eligible to receive reimbursement through the Montana Livestock Loss Reduction and Mitigation Program. MFWP determines what, if any, is an appropriate response of wolves were responsible for the damage.

As a federal agency, USDA WS is funded through the regular Congressional al budgeting process, particularly with respect to wolf-related work due to the wolf's federally listed status. WS also receives money from other sources in Montana for other agency activities, including the state per capita fee and county livestock assessments.

In FFY 2005 and 2006, Montana USDA WS was funded through the regular Congressional budgeting process for federal agencies and did not receive USFWS-direct funding. Historically and beginning in the early 1990s, USFWS provided funding to USDA WS western region to assist in wolf recovery and management in the tri-state area. By 2001, about \$100,000 per year was being transferred from USFWS to USDA WS across the tri state area for field assistance. At that same time, USDA WS also began receiving direct annual appropriations through the USDA Congressional budget process in recognition of the increased workload in the northern Rockies. USFWS continued to fund USDA WS until 2005 through a direct Congressional appropriation and USDA WS western region continued to receive special Congressional directives.

However, in FFY 2005, Congress deleted the federal appropriation that had been given to USFWS and subsequently transferred to USDA WS for their work in the tri state area. In its place, other special Congressional directives had been incorporated into the USDA WS western region budgets to address funding needs as a result of increased workloads beginning in FFY 2001. These special directives have been maintained each year since. Both MFWP and MT WS have concerns that Congressional earmarks and/or special directives will be cut or eliminated at the Congressional level. That would have important implications for the two agencies and their ability to fulfill their respective agency responsibilities and the commitments made in the Montana Wolf Plan.

There has been confusion over the coincidental timing of elimination of USFWS funding received by MT WS and MFWP taking on wolf management responsibilities. In FFY 2005, the USFWS Congressional appropriation that had been provided to the western region of USDA WS was eliminated. In the same FFY, an interagency cooperative agreement was completed between MFWP and USFWS. As a condition of MFWP signing the agreement, USFWS agency base funding was transferred to MFWP since MFWP was now doing the field program with state personnel. The loss of USFWS funding for tri-state USDA WS gray wolf field activities had nothing to do with a different, independent Congressional earmark appropriation and USFWS base funding for to MFWP to implement work outlined in an MFWP-USFWS interagency cooperative agreement to manage wolves in Montana.

In FFY 2008, WS maintained a \$100,000 Congressional directive for responding to complaints of wolf damage as well as a \$1,000,000 directive (reduced from \$1,300,000 in FFY 2007) for Montana, Idaho, and Wyoming to investigate and address predator damage, including that by wolves. This was also maintained in FFY2009. In FFY2010, Congress again provided \$926,000 to WS in MT, ID, and WY to investigate and address predator damage, including wolf damage.

In FFY 2007, WS spent an estimated \$183,924 responding to wolf complaints and assisting MFWP with depredation management responses such as radio collaring or killing problem wolves. This is an increase above the estimated \$152,000 spent in federal fiscal year 2006. In FFY 2008, Montana WS expended approximately \$227,437. This is an increase of about \$43,500 over the previous year. In FFY 2009, WS expenditures increased another \$187,133 to \$414,567 in FFY 2009. Administrative time is not reflected in the total.

The increase in expenditures is due in part to increases in fixed costs (e.g. aircraft fuel, vehicles, cell phones, computer fees, or personnel). It is also due in part to the increasing number of investigation requests received by WS, and more frequent management responses required. This would be expected as the wolf population has increased from the 66 in Montana in 1995 at the time of reintroduction to today's level.

In calendar year 2008, MFWP and WS modified the Cooperative Agreement and the work plan to redirect \$110,000 of funding toward assistance with wolf depredation management. WS management activities include capture and incremental control of wolves, reporting, as well as proactive preventative actions to help reduce or minimize potential for wolf predation on livestock. MFWP and WS renewed the work plan in 2009 and expect to do so again in 2010.

PERSONNEL AND ACKNOWLEDGEMENTS

By now, literally hundreds of people have assisted with wolf recovery efforts in a wide variety of ways, and we are indebted to them all. Since 2000, countless more have assisted with the development of the Montana wolf plan and many more continue to assist during the transition from federal management to state management. We especially want to acknowledge the support and understanding of our families and friends.

The MFWP wolf team is comprised of Kent Laudon in Kalispell, Carolyn Sime in Helena, Mike Ross and Val Asher in Bozeman, Liz Bradley in Dillon/Missoula, and Nathan Lance in Butte. But the wolf team is part of a much bigger team of tremendously dedicated agency professionals that make up Montana Fish, Wildlife & Parks. In particular, Dr. Jennifer Ramsey (MFWP's wildlife veterinarian) over saw our animal handling protocols welfare guidelines, in addition to being the MFWP lead for wolf disease surveillance and necropsy work. Additional staff at the MFWP Wildlife Research Laboratory also provide significant logistical support and services for the wolf program, including Neil Anderson (Lab Supervisor) and Kevin Hughes. Salish Kootenai Confederated Tribes biologist Stacey Courville and Blackfeet Tribe biologist Dan Carney captured and monitored wolves in and around their respective tribal reservations. We thank them for sharing information contained in this report and the close coordination throughout the year.

In 2009, the Montana wolf management program benefited from the contributions from our seasonal technicians Kris Boyd and Karen Loveless, who excelled at their jobs and contributed enormously. The Montana wolf management volunteer program was very fortunate to have Tyler Parks, Tim Swearingen, Seth Thompson, Charlie Bahnson, Erika Edgley, and Anna Valan -- who worked enthusiastically and with good humor and dedication through long days and weeks. We also want to thank the Swan Ecosystem Center and Northwest Connections for their avid interest and help in documenting wolf presence and outreach in the Swan River Valley.

MFWP's wolf program is supported by others throughout the agency. We thank Adam Messer of MFWP Information Services for his patience, good humor, and expertise in creating the maps for this report, his work on all our other wolf project data requests, and for his help with data management. Regional biologists and game wardens, information officers, front desk staff, and program managers contribute their time and expertise in a variety of ways and have been invaluable. Justin Gude provided important data analysis and support, as did the University of Montana Cooperative Wildlife Research Unit. We appreciate the MFWP Helena staff from all the Divisions who contributed their expertise and time. We thank Caryn Amacher, Denise Dawson, Rebecca Cooper, Adam Brooks for assisting us with interagency cooperative agreements, grant agreements, and budgeting. We appreciate the wise counsel and participation of the MFWP legal staff, especially Bob Lane. We appreciate the work and dedication of the MFWP Website Team. Jay Lightbody and Don Bartsch at the Print shop prepared and printed outreach materials. We thank the staff of the Communications and Education Division for their thoughtful reviews of our work and for their media contributions throughout the year. The Montana Governor's Office, MFWP Director's Office, the MFWP Legal Unit, and the MFWP Commission deserve special recognition for their leadership, contributions and steady guidance throughout the year.

We also thank the private citizens who served on the working group to develop the framework for a Montana Livestock Loss Reduction and Mitigation Program. We also thank the members of the Montana Wolf Management Advisory Council for their ongoing contributions. Their participation on these working groups, respectively, provides valuable guidance from a diversity of perspectives. Their continued collaboration, along with many other Montanans, continues to be the foundation of the program's success to date.

We acknowledge the work of the citizen-based Montana Livestock Loss Reduction and Mitigation Board, which oversees implementation of Montana's reimbursement program. Program Coordinator George Edwards has been very diligent about processing claims and pursuing funding in support of the Board's charge.

USFWS personnel in Montana included wolf recovery coordinator Ed Bangs (Helena) who shepherded the development of the state-federal cooperative agreement and freely shared information and data about wolves in Montana. We are especially grateful for the financial support and his confidence in the developing state program. Law enforcement agents investigated wolf mortalities throughout Montana and provided important guidance about the federal regulations.

USDA APHIS WS investigates suspected wolf damage and carries out wolf damage management activities in Montana. We thank them for contributing their expertise to the state's wolf program and for their willingness to complete investigations and carry-out lethal control and radio-collaring activities in a timely fashion, 7 days a week. WS personnel involved in wolf management in Montana in 2009 included State Director John Steuber; eastern district supervisor Mike Foster; western district supervisor Kraig Glazier; western assistant district supervisor Chad Hoover; eastern assistant district supervisor Alan Brown; wildlife disease biologist Jerry Wiscomb; wildlife specialists Denny Biggs, John Bouchard, Owen Murnion, Rick Glover, Steve Demers, Mike Hoggan, Danny Thomason, Brian Noftsker, Mike Thomas, Dick. Martin, Graeme McDougal, Ted North, Jim Rost, Pat Sinclair, John Maetzold, Joe Carpenter, Bart Smith, and Jim Stevens; and pilots Stan Colton, Tim Graff, Eric Waldorf, and Guy Terril.

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TO REPORT A DEAD WOLF OR POSSIBLE ILLEGAL ACTIVITY:

U.S.Fish and Wildlife Service

- Special Agent, Missoula MT: (406) 329-3000
- Special Agent, Great Falls MT (406) 761-2286
- Special Agent, Cody WY (307) 527-7604

Montana Fish, Wildlife & Parks

- Dial 1-800-TIP-MONT (1-800-847-6668)

TO SUBMIT WOLF REPORTS ELECTRONICALLY AND TO LEARN MORE ABOUT THE MONTANA WOLF PROGRAM, SEE:

- <http://fwp.mt.gov/wolf>

APPENDIX 2

Gray Wolf Chronology in Montana

1800

- Wolves are common throughout Montana.

1884

- Wolf-bounty law initiates Montanas official eradication effort.

1915

- Federal authorities begin wolf control in the West.

1925

- Wolf populations eliminated from most of the West.

1936

- Gray wolf believed extinct in Montana although wolves and wolf sign still occasionally observed.

1950

- Wolves still seen in Wyoming, Montana, and Idaho occasionally but no self-sustaining breeding documented; wolves, likely dispersing from Canada, are killed in Montana and Idaho in every decade through 2000.

1973

- Montana protects wolves as state endangered species.

1974

- Wolves protected under federal Endangered Species Act of 1973.

1979

- A wolf is monitored in British Columbia, just north of Glacier National Park.

1980

- A lone wolf kills livestock near Big Sandy, Montana and is killed by the U.S. Fish and Wildlife Service. This is Montana's first documented wolf depredation in more than 50 years.

1986

- A wolf den is confirmed in Glacier National Park. The Magic Pack establishes a territory in the North Fork Flathead River valley, in the western portion of Glacier National Park.
- A pack denned on the Blackfeet Reservation, but was not discovered until 1987 when they began to depredate on livestock.

1987

- Camas Pack established in the North Fork of the Flathead River valley in Glacier National Park.
- First livestock depredation occurs on the Blackfeet Reservation.

1990

- The U.S. Congress establishes a Wolf Management Committee to recommend wolf recovery strategies for Yellowstone National Park and central Idaho.

1991

- Congress directs the US Fish and Wildlife Service to prepare a Draft Environmental Impact Statement on wolf recovery in Yellowstone National Park and central Idaho.

1993

- An estimated 45 wolves in five packs occupy the federal Northwestern Montana Recovery Area. One pack establishes west of Helena, founded by a female wolf which dispersed from Canada.

1994

- Federal EIS on the reintroduction of wolves into Yellowstone National Park and central Idaho completed. Wolves to be reintroduced into Yellowstone National Park and central Idaho for three to five years under the Endangered Species Acts experimental, non-essential rules that grant additional management flexibility. Wolf recovery is defined as 30 breeding pairs--an adult male and an adult female raising two or more pups to Dec. 31--in Montana, Idaho, and Wyoming for three successive years.

1995

- Fifteen wolves from four packs captured in Canada are relocated to Yellowstone National Park and 17 individual wolves are released in central Idaho.

1996

- Yellowstone National Park receives 17 more wolves from Canada and 10 wolf pups from a depredating pack in northwestern Montana. Twenty wolves are released in central Idaho; 1st pups are born in the wild.

1999

- Governors of Montana, Idaho, and Wyoming renew a 1997 Memorandum of Understanding to coordinate public involvement to pursue plans to manage a recovered wolf population in the northern Rockies and to assure a timely delisting.

2000

- Montana Governor Marc Racicot appoints 12 Montana citizens to the Montana Wolf Management Advisory Council. The council, chaired by rancher Chase Hibbard of Helena, is charged to advise Montana Fish, Wildlife & Parks on wolf management in anticipation of the wolf's delisting.

- US Fish and Wildlife Service determines there are 30 breeding pair in the tri-state Rocky Mountain Recovery Area, marking 2000 as the first year of the three-year countdown to meet wolf population recovery goals.
- An estimated 97 wolves in 8 breeding pairs are counted in Montana.

2001

- Montana Wolf Management Advisory Council presents its Report to the Governor to Governor Judy Martz, who directs MFWP to draft wolf conservation and management planning document.
- Montana Legislature removes the gray wolf from Montana's list of predatory species once the wolf is delisted. Upon delisting, wolves will be legally reclassified in Montana as species in need of management. New law includes provisions for the defense of life and private property when a wolf is attacking, killing, or threatening to kill a person, or livestock.
- Montana Fish, Wildlife & Park's draft of the Montana Wolf Conservation and Management Planning Document is reviewed, amended and approved by the Montana Wolf Management Advisory Council.
- An estimated 35 breeding pair, in 51 packs, are counted in the tri-state Rocky Mountain Recovery Area, totaling about 550 wolves. The US Fish and Wildlife Service determines 2001 is second year of the three-year countdown to trigger an official proposal to delist the wolf.
- An estimated 123 wolves in 7 breeding pairs are counted in Montana.

2002

- Montana Wolf Conservation and Management Planning Document is released in January. Montana Fish, Wildlife & Parks begins to develop an environmental impact statement (EIS) on the state management of wolves. The public is invited to participate at community work sessions around the state and asked to identify issues and help develop management alternatives.
- Montana Fish, Wildlife & Parks develops draft EIS with five alternatives.
- An estimated 43 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area, totaling about 663 wolves. The US Fish and Wildlife Service determines 2002 is the third year of the three-year countdown to trigger official proposal to delist the wolves.
- U.S. Fish and Wildlife Service announces that the northern Rockies gray wolf population has achieved biological recovery under the federal Endangered Species Act.
- An estimated 183 wolves in 17 breeding pairs are counted in Montana.

2003

- Montana's EIS process includes a 60-day public comment period and statewide community work sessions. The final EIS recommends the adoption of the "updated council" alternative. The Montana Fish, Wildlife & Parks Commission approves the adoption of the preferred alternative – the Council's Update.
- State conservation and management plans completed by MT, ID, and WY and submitted to USFWS.
- States of Montana, Idaho, and Wyoming request funding from Congress.

- U.S. Fish and Wildlife Service expected to begin the official administrative process of delisting gray wolves in the northern Rockies.
- An estimated 761 wolves in 51 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area at the end of the year.
- An estimated 182 wolves in 10 breeding pairs are counted in Montana.

2004

- U.S. Fish and Wildlife Service approves state management plans from Montana and Idaho and rejects Wyoming's plan. Delisting is officially delayed until the impasse is resolved.
- Montana Fish, Wildlife & Parks and the Montana Fish, Wildlife & Parks Commission approve amending the Record of Decision to pave the way for interim state participation in northwest Montana through a limited cooperative agreement.
- In February, Montana Fish, Wildlife & Parks and U.S. Fish and Wildlife Service complete a cooperative agreement covering northwest Montana.
- Montana Fish, Wildlife & Parks receives federal funding and hires staff who begin implementing the state plan prior to delisting and in consultation with U.S. Fish and Wildlife Service.
- Montana Fish, Wildlife & Parks begins close coordination with USDA Wildlife Services to investigate and resolve wolf-livestock conflicts.
- An estimated 835 wolves in 66 breeding pairs are counted in the tri-state Rocky Mountain Wolf Recovery Area at the end of the year.
- An estimated 153 wolves in 15 breeding pairs are counted in Montana.

2005

- Wolves in northwest Montana recovery area reclassified as "endangered" by court order.
- U.S. Fish and Wildlife Service adopts more flexible regulations [known as 10(j) regulations] for the experimental population areas of Montana and Idaho.
- Montana Fish, Wildlife & Parks and U.S. Fish and Wildlife Service complete a cooperative agreement paving the way for Montana to assume independent and full responsibility for wolf management and conservation statewide. Montana begins implementing the state plan to the extent allowed by federal regulations throughout the state. Funding from U.S. Fish and Wildlife Service and through special Congressional appropriations fund Montana Fish, Wildlife & Park's wolf team.
- Montanans form a diverse working group of private citizens, non-governmental organizations, and state and federal agencies to begin developing the Montana Livestock Loss Reduction and Mitigation Program. Work is ongoing.
- An estimated 256 wolves in 19 breeding pairs are counted in Montana.

2006

- Montana implements as much of approved state plan as possible and within federal guidelines.
- Funding from U.S. Fish and Wildlife Service and special Congressional appropriations continue.

- Montana Fish, Wildlife & Parks and USDA Montana Wildlife Services update an existing interagency cooperative agreement to include gray wolves
- Montana Livestock Loss Reduction and Mitigation Program draft framework completed and draft legislation is prepared for the 2007 Montana Legislature.
- An estimated 316 wolves in 21 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana.

2007

- Montana implements as much of approved state plan as possible and within federal guidelines.
- Funding from U.S. Fish and Wildlife Service and special Congressional appropriations continue.
- HB 364 passed the 2007 Montana Legislature, creating the Montana Livestock Loss Reduction and Mitigation Program; Oversight Board is appointed by the Governor and administrative officer of the Board is hired. First Board meeting, fundraising, and rule-making to begin early in 2008.
- MFWP proposes a tentative wolf hunting/trapping season structure proposal which is approved by the MFWP Commission, enabling the agency to gather public comment. (decision timeline is occurs in 2008).
- U.S. Fish and Wildlife Service proposes modification of the Experimental Rules (10j) to provide additional flexibility to northern Rockies states with approved plans that applies to the experimental areas of those states, respectively.
- U.S. Fish and Wildlife Service approves Wyoming's wolf management plan and state laws.
- U.S. Fish and Wildlife Service proposes a Northern Rockies Distinct Population Segment and to delist wolves in the northern Rockies in states with approved plans in February (2-8-07). Two options are presented.
- USFWS extended the comment period on the delisting proposal on 7-6-07.
- An estimated minimum of 422 wolves in 39 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana

2008

- Montana implements as much of approved state plan as possible and within federal guidelines.
- Funding from U.S. Fish and Wildlife Service and special Congressional appropriations continue.
- The proposed U.S. Fish and Wildlife Service modification of the Experimental Rules (10j) to provide additional flexibility to northern Rockies states with approved plans that applies to the experimental areas of those states, respectively is published in the Federal Register in January and took effect late February. Became moot from March to July when wolves officially delisted. Took effect again in mid-July when the delisting decision was enjoined. This federal regulation is challenged in court and litigation was still ongoing at the end of the year.

- MFWP proposes a tentative wolf hunting/trapping season structure proposal (in December 2007), gathers public comment. MFWP Commission approves 2008/2009 biennial wolf hunting season in February.
- In June, MFWP proposed a tentative wolf quota for the possible 2008 wolf season and received public comment in July.
- In June, MFWP also initiated formal rulemaking to adopt rules relating to how the agency will implement lethal control under Montana's owl plan and to reclassify the gray wolf as a species in need of management upon delisting.
- Formal rules adopted by the MFWP Commission in September. New rules are effective as of October, but will not be applied (i.e. take effect) until the wolf is delisted.
- Montana Livestock Loss Reduction and Mitigation Board met twice. The program received a \$50,000 grant from Defenders of Wildlife and donations from the Greater Yellowstone Coalition, the Montana Cattlemen's Association, and others. Combined runding allows payments to begin in April with the first claim. Approximately \$83,000 is paid in claims for livestock that are verified by USDA Wildlife Services as having been killed by wolves.
- On February 27, USFWS publishes the final delisting rule, recognizing the NRM DPS and removing it from the List of Endangered and Threatened Wildlife; USFWS had determined Wyoming's 2007 regulatory mechanisms were adequate.
- Delisting decision took effect March 28.
- Twelve parties filed a lawsuit challenging the identification and delisting of the NRM DPS on April 28. The plaintiffs also moved to preliminarily enjoin the delisting.
- Oral arguments are heard in May.
- On July 18, the U.S. District Court granted the plaintiff's motion for a preliminary injunction. The ruling placed the gray wolf back under the ESA; the 1999 Interim Wolf Control Plan and the 2005/2008 10j regulations reinstated... The NRM DPS wolf population was officially delisted from March 28 to July 18; FWP suspects preparations for a 2008 wolf hunting season.
- In September, USFWS asked the Court to vacate the delisting rule and remand it back to the agency for further consideration.
- The Court agreed on October 14. On October 28, USFWS re-opens a 30-day public comment period on the February 2007 delisting proposal specific to issues raised in the preliminary injunction and contemplates delisting without WY after having rejected the WY plan upon reconsideration.
- USFWS analyzed public comments and was expected to make a decision by the end of 2008.
- Blackfeet Nation finalizes a wolf management plan for the Blackfeet Reservation.
- An estimated minimum of 497 wolves in 34 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana.

2009

- On January 15, USFWS notified WY Governor that WY plan no longer approved. Wolves in WY managed by USFWS and regulations adopted in the 1994 EIS are reinstated due to the lack of an approved WY plan.
- April 2, USFWS publishes the final delisting rule which designated the NRM distinct population segment and delists the gray wolf throughout the DPS except WY.

- May 4, the final delisting rule takes effect. Wolves in MT are classified as a species in need of management statewide under Montana law; state rules and the state management plan take full effect.
- FWP Commission adopts tentative wolf quotas for public comment in May. A statewide quota was proposed and broken down into three wolf management units. Public comment taken during June. Commission adopts the final 2009 wolf quotas in July. The final statewide quota approved by the FWP Commission is 75.
- On June 2, same coalition of groups file a lawsuit challenging the federal delisting decision; suit filed in Missoula MT. MT granted intervenor status in July and files legal briefs according to schedule approved by the court..
- WY challenges the same final delisting rule on the basis of the USFWS rejection of the WY state plan in January 2009. Suit filed in Cheyenne WY.
- Confederated Salish and Kootenai Tribes complete a wolf management plan for the Flathead Reservation.
- On August 20, plaintiffs request preliminary injunction. Hearing on August 30.
- FWP begins selling wolf hunting licenses on August 31.
- Injunction request is denied on September 8.
- The wolf hunting season opens in the Absaroka-Beartooth Wilderness and the west side of the Bob Marshall complex on September 15.
- On October 9 (half hour after sunset) the Absaroka-Beartooth backcountry season was closed after a total of 9 wolves were harvested.
- General deer / elk season opened on October 25. Wolf hunting season opened statewide except in the Absoraka-Beartooth area.
- WMU 3 (southwest MT) closed on October 26, with a total of 13 wolves harvested. The WMU 3 quota of 12 was exceeded by 1 wolf.
- On November 10, the N. Fork Flathead subunit was closed to harvest after the prescribed number of 2 wolves were reported harvested.
- On November 16, the wolf season closed statewide. A total of 72 wolves were harvested out of the total statewide quota of 75. Thirty-eight of the quota of 41 wolves had been taken in WMU 1 and 21 of 22 in WMU 2. WMU 3 was closed on October 26 2009, the quota of 12 wolves was exceeded by 1.
- An estimated minimum of 524 wolves in 37 breeding pairs are counted in Montana. Distribution continues to be the western one-third of Montana.

APPENDIX 3

NORTHERN ROCKIES WOLF PACK TABLES

Table 1a. Montana wolf packs and population data for Montana's portion of the Northwest Montana Recovery Area, 2009.

Table 1b. Montana wolf packs and population data for Montana's portion of the Greater Yellowstone Experimental Recovery Area, 2009.

Table 1c. Montana portion of the Central Idaho Experimental Recovery Area (Montana statewide totals): wolf packs and population data, 2009

Table 2a Wyoming wolf packs (outside of Yellowstone National Park) and population data for Wyoming's portion of the Greater Yellowstone Experimental Recovery Area, 2009.

Table 2b. Yellowstone National Park (YNP) wolf packs and population data for YNP's portion of the Greater Yellowstone Experimental Recovery Area, 2009.

Table 2c. Wolf Population Data for the Greater Yellowstone Experimental Recovery Area, 2009.

Table 3a. Idaho wolf packs and population data for Idaho's portion of the Central Idaho Experimental Recovery Area, 2009.

Table 3b. Idaho wolf packs and population data for Idaho's portion of the Northwest Montana Recovery Area, 2009.

Table 3c. Idaho wolf packs and population data for the Greater Yellowstone Experimental Recovery Area, 2009.

Table 3d. Idaho population data for the Central Idaho Experimental Recovery Area, 2008.

Table 4a. Northern Rocky Mountains minimum fall wolf population and breeding pairs 1979-2009 by recovery area.

Table 4b. Northern Rocky Mountains minimum fall wolf population and breeding pairs 1980-2009 by state.

Table 5a. Northern Rocky Mountain states: confirmed wolf depredation and wolf management by recovery area, 1980-2009.

Table 5b. Northern Rocky Mountain states: confirmed wolf depredation and wolf management, by state, 1987-2009.

Table 5c. Confirmed wolf depredation elsewhere, Northern Rocky Mountain Distinct Population Segment, 2009.

Table 6. Wolf Packs and Population Data for Oregon and Washington inside the Northern Rocky Mountain Distinct Population Segment, 2009.

Table 7. Wolf Packs and Population Data for Washington Outside the Northern Rocky Mountain Distinct Population Segment, 2009.

Table 1a: Montana Wolf Packs and Population Data for Montana's Portion of the Northwest Montana Recovery Area, 2009.

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED					KNOWN	CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009			MORTALITIES											
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
1	Arrastra Creek	NWMT	MT	2	?	5											
2	Ashley	NWMT	MT	?	?	?				1							
3	Bearfite	NWMT	MT	2	1	3						1					
4	Belmont	NWMT	MT	2	?	5				1							
5	Benchmark	NWMT	MT	2	?	2				2	3					8	
6	Bennie	NWMT	MT	2	?	2				1	1					1	
7	Bisson (CSKT)	NWMT	MT	3	?	3											
8	Bitterroot Range #	NWMT	MT	3	?	3											
9	Blue Mountain	NWMT	MT	4	?	4				1							
10	Cabinet	NWMT	MT	2	?	2				1							
11	Cache Creek #	NWMT	MT	2	4	6											
12	Camas Pr. (CSKT)	NWMT	MT	2	0	2					3		1			2	
13	Candy Mountain	NWMT	MT	5	3	8				1							
14	Chippy	NWMT	MT	2	5	7											
15	Cilly	NWMT	MT	1	2	3				2		1					
16	Corona	NWMT	MT	7	1	8											
17	DeBorgia #	NWMT	MT	3	3	6			1	1							
18	Dry Forks (CSKT)	NWMT	MT	2	4	6											4
19	Dutch	NWMT	MT	7	4	11	1					2					
20	Elevation Mountain	NWMT	MT	1	2	3					2					1	
21	Fairy Basin (CSKT)	NWMT	MT	3	?	3											
22	Firefighter	NWMT	MT	2	4	6				1							
23	Fishtrap	NWMT	MT	4	3	7			1			1					
24	Flathead Alps	NWMT	MT	?	?	?				2							
25	Great Bear	NWMT	MT	3	4	7				1							
26	Great Northern	NWMT	MT	?	?	?				2							
27	Irvine (CSKT)	NWMT	MT	3	?	3											
28	Kintla	NWMT	MT	7	1	8		4		1							
29	Kootenai South	NWMT	MT	2	4	6			1	2							
30	Ksanka	NWMT	MT	2	3	5		1		1		1				1	
31	Landers Fork	NWMT	MT	?	?	5											4
32	Lazy Creek	NWMT	MT	6	4	10				1							
33	Livermore (BFN)	NWMT	MT	2	0	2					24					10	

Table 1a: Montana Wolf Packs and Population Data for Montana's Portion of the Northwest Montana Recovery Area, 2009.

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED					KNOWN	CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009			MORTALITIES											
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
34	Lydia	NWMT	MT	?	?	?		2	1		5	1		2			
35	Marias	NWMT	MT	6	?	6											
36	McDonald	NWMT	MT	3	0	3											
37	McKay	NWMT	MT	?	?	?											
38	Mineral Mountain	NWMT	MT	5	4	9											
39	Mitchell Mountain	NWMT	MT	?	?	2					7			3	1	1	
40	Monitor Mountain	NWMT	MT	?	?	5		1		3							
41	Mullan #	NWMT	MT	4	2	6				3							
42	Murphy Lake	NWMT	MT	3	2	5		2		1							
	Nevada Creek	NWMT	MT	0	0	0					6			4			
43	Ninemile	NWMT	MT	3	7	10											
44	Nyack	NWMT	MT	2	1	3											
45	Ovando Mtn	NWMT	MT	2	4	6								2			
46	Piper	NWMT	MT	4	1	5						1					
47	Pistol Creek (CSKT)	NWMT	MT	3	?	3											
48	Pulpit Mountain	NWMT	MT	2	5	7			1								
49	Quartz Creek	NWMT	MT	2	1	3				2							
50	Quintonkon	NWMT	MT	2	3	5											
51	Red Shale	NWMT	MT	?	?	4				2		1					
	Salish (CSKT)	NWMT	MT	-	-	-					7			4			
52	Satire	NWMT	MT	?	?	?		1					1				
53	Selow (CSKT)	NWMT	MT	4	5	9					1			1			
54	Silcox	NWMT	MT	3	2	5				2							
55	Silver Lake #	NWMT	MT	?	?	13											
56	Sixmile	NWMT	MT	?	?	5								3			
57	Smoky	NWMT	MT	2	2	4				1							
58	Solomon Mountain#	NWMT	MT	?	?	?							1				
59	Spotted Bear	NWMT	MT	7	1	8				1							
60	Superior #	NWMT	MT	4	2	6		1									
61	Tallulah	NWMT	MT	2	3	5		2			3			2			
62	Thirsty	NWMT	MT	2	3	5		3			1						
63	Twilight#	NWMT	MT	3	1	4				1							
64	Wolf Prairie	NWMT	MT	?	?	?											
	Misc/Lone	NWMT	MT	11	0	11		3							1		

Table 1a: Montana Wolf Packs and Population Data for Montana's Portion of the Northwest Montana Recovery Area, 2009.

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED						CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009			MORTALITIES						KNOWN					
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
	MT in NWMT (Table 1a)	NWMT	MT	167	101	308	1	20	5	38	63	9	3	40	9	1	5
	ID in NWNMT (Table 3b)	NWMT	MT	6	11	11	0	1	0	4	0	0	2	0	0	0	0
	NWMT RECOVERY AREA	NWMT	MT/ID	173	112	319	1	21	5	42	63	9	5	40	9	1	5

1 Underlined packs are counted as breeding pairs toward recovery goals. CSKT = Flathead Indian Reservation; BFN = Blackfeet Indian Reservation.

2 Excludes wolves killed in control actions to address livestock depredation and lawful public harvest.

3 Does not include pups that disappeared before winter.

4 Collared wolves that became missing in 2009.

5 Agency lethal control whether under state or federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a kill permit.

6 Includes only domestic animals confirmed killed by wolves.

7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative.

8 Number legally harvested by hunters in 2009; does not include wounding loss or illegal harvest

Border pack shared with the State of Idaho; dens in Montana.

Table 1b: Montana Wolf Packs and Population Data for Montana's Portion of the Greater Yellowstone Experimental Area, 2009.

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED					KNOWN	CONFIRMED LOSSES ⁶					
			AREA	STATE	PACK SIZE DEC 2009	MORTALITIES						CATTLE	SHEEP	DOGS OTHER			
#	WOLF PACK ¹			ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴				
65	<u>Rosebud</u>	GYA	MT	3	0	3										1	
66	<u>Baker Mountain</u>	GYA	MT	3	2	5		1		2							
67	<u>Buffalo Fork/Slough Ck</u>	GYA	MT	?	?	?				4							
68	<u>Slipnslide</u>	GYA	MT	3	1	4							1				
69	<u>Mill Creek</u>	GYA	MT	3	5	8									2		
70	<u>Eightmile</u>	GYA	MT	2	5	7			1			1					
71	<u>Eagle creek</u>	GYA	MT	7	5	12			1	1							
72	<u>Beartrap</u>	GYA	MT	17	5	22											
73	<u>Lebo Peak</u>	GYA	MT	3	0	3					2					30	
74	<u>Cougar2 %</u>	GYA	MT	6	3	9				2							
75	<u>Hayden %</u>	GYA	MT	5	3	8											
76	<u>Horn Mountain</u>	GYA	MT	4	4	8					3				3		
	<u>Sage-Cr #⁷</u>	GYA	MT	0	0	0					10				1	(26 ID)	
	<u>Centennial</u>	GYA	MT	0	0	0					5					105	
77	<u>Jack Cr</u>	GYA	MT	1	?	1		1			2				3		
78	<u>Horse Cr</u>	GYA	MT	3	3	6											
79	<u>Toadflax</u>	GYA	MT	5	5	10											
80	<u>Black Mtn</u>	GYA	MT	3	?	?					4				2		
81	<u>Cedar Cr</u>	GYA	MT	?	?	?					1					2	
	<u>Blacktail3</u>	GYA	MT	0	0	0					3					38	
	<u>Misc/Lone</u>	GYA	MT	0	0	0		1			1	1			3	10	
MT in GYA (Table 1b)		GYA	MT	68	41	106	0	3	2	9 ⁹	31	2	1	14	185	1	1

1 Underlined packs are counted as breeding pairs toward recovery goals.

2 Excludes wolves killed in control actions to address livestock depredation and lawful public harvest.

3 Does not include pups that disappeared before winter.

4 Collared wolves that became missing in 2009.

5 Agency lethal control whether under state or federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a kill permit.

6 Includes only domestic animals confirmed killed by wolves.

7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative.

8 Number legally harvested by hunters in 2009; does not include wounding loss or illegal harvest

9 Four harvested wolves from the Cottonwood pack (a MT/WY border pack) shown in Table 2 (Wyoming and Greater Yellowstone Area)

Border pack shared with State of Idaho; dens in Montana and majority of time in Montana; sheep losses occurred in ID and are included in ID Table 3 livestock loss totals

% Border pack shared with Yellowstone National Park, Wyoming;majority of time in Montana

Table 1c: Montana Portion of the Central Idaho Experimental Area (Montana statewide totals): wolf packs and population data 2009

REF.	WOLF PACK1	RECOV		MINIMUM ESTIMATED PACK SIZE DEC 2009			MORTALITIES					KNOWN		CONFIRMED LOSSES6			
		AREA	STATE	ADULT	PUP	TOT	NAT	HUMAN2	UNKN3	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING4	CATTLE	SHEEP	DOGS	OTHER
82	Big Hole #	CID	MT	?	?	5		3		2							1
83	Brooks Creek #	CID	MT	3	?	3											
84	Lake Como #	CID	MT	3	?	3				2							
85	Trapper Peak	CID	MT	1	5	6					2			1			
86	Watchtower #	CID	MT	2	?	6	1										
87	Painted Rocks #	CID	MT	3	4	7			1	2							
88	Sula #	CID	MT	?	?	5				2							
	East Fork Bitterroot	CID	MT	0	0	0			1				2				
89	Trail Creek #	CID	MT	4	2	6				1	1						
90	Divide Creek	CID	MT	3	4	7											
91	Gird Point	CID	MT	2	?	4											
92	Welcome Creek	CID	MT	4	5	9											1
93	Ram Mtn	CID	MT	2	?	5											1
94	East Fork Rock Creek	CID	MT	4	?	4											
95	Flint Creek	CID	MT	2	0	2				1				1			
96	Bender	CID	MT	2	1	3				2	1	2		1			
97	Table Mtn	CID	MT	?	?	5											
98	Mt Haggin	CID	MT	3	0	3											
99	Pintler	CID	MT	10	?	10											1
	McVey	CID	MT	0	0	0				2	11						7
	Battlefield #	CID	MT	0	0	0					5						13
100	Miner Lakes #	CID	MT	2	?	4				3	9			6			
	Grasshopper	CID	MT	0	0	0					6		1	5			
	Middle Creek #	CID	MT	0	0	0					8						(36 ID)
101	Horse Prairie #	CID	MT	3	3	6				2	4			2			
	Misc/Lone	CID	MT	6	0	7		3	1	3	4	2		6	8		
	MT Total in CID	CID	MT	59	24	110	1	6	3	21	51	4	3	43	8	2	0

Table 1c: Montana Portion of the Central Idaho Experimental Area (Montana statewide totals): wolf packs and population data 2009																	
REF. #	WOLF PACK1	RECOV		MINIMUM ESTIMATED PACK SIZE DEC 2009			MORTALITIES					KNOWN		CONFIRMED LOSSES6			
		AREA	STATE	ADULT	PUP	TOT	NAT	HUMAN2	UNKN3	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING4	CATTLE	SHEEP	DOGS	OTHER
	MT in NWMT total (Table 1a)	NWMT	MT	167	101	308	1	20	5	38	63	9	3	40	9	1	5
	MT in GYA total (Table 1b)	GYA	MT	68	41	106	0	3	2	9	31	2	1	14	185	1	1
	MT in CID total (Table 1c)	CID	MT	59	24	110	1	6	3	21	51	4	3	43	8	2	0
	MT STATE TOTAL		MT	294	166	524	2	29	10	68⁸	145	15	7	97	202	4	6

1 Underlined packs are counted as breeding pairs toward recovery goals.

2 Excludes wolves killed in control actions.

3 Does not include pups that disappeared before winter.

4 Collared wolves that ceased transmitting in 2009.

5 Includes agency lethal control and take by private citizens under 10j regulation.

6 Includes only domestic animals confirmed killed by wolves.

7 Pack did not exist on December 31, 2009 and is not displayed on the map; see pack narrative.

8 Four wolves harvested from the Cottonwood pack shown in Table 2 (Wyoming and Greater Yellowstone Area).

Border pack shared with State of Idaho; dens and majority of time in Montana; ID livestock losses in Table 3. (Big Hole pack; 1 harvested, 1 killed illegally in ID).

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Table 2a: Wyoming Wolf Packs (Outside YNP) and Population Data for Wyoming's Portion of the Greater Yellowstone Experimental Area, 2009.

REF #	WOLF PACK ¹	RECOV AREA	STATE	MINIMUM ESTIMATED			DOCUMENTED					KNOWN				CONFIRMED LOSSES ⁶			
				PACK SIZE DEC 2009	MORTALITIES		MORTALITIES		MORTALITIES		MORTALITIES		DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER	
				ADULT	PUP ³	TOT	NATURAL	HUMAN ²	UNKN	HARVEST ⁸	CONTROL ⁵								
Wyoming Outside Yellowstone National Park																			
102	Absaroka	GYA	WY	2	2	4			1		4								4
103	Antelope	GYA	WY	5	0	5	2		2				1						
104	Beartooth	GYA	WY	2	3	5													
105	Big Piney	GYA	WY	5	?	5													1
106	Black Butte	GYA	WY	1	2	3					6							1	37
107	Bold Mtn.	GYA	WY	2	0	2													
108	Buffalo	GYA	WY	8	14	22							1						3
109	Butte Creek	GYA	WY	4	4	8					1								
110	Carter Mtn.	GYA	WY	2	2	4			1		3							1	
111	Chagrin River #	GYA	WY	4	3	7													
112	Daniel	GYA	WY	4	?	4													1
113	Dog Creek	GYA	WY	1	5	6					5							45	3
114	East Fork	GYA	WY	4	4	8					2							2	
115	Elk Fork Creek	GYA	WY	3	2	5													
116	Gooseberry	GYA	WY	4	4	8													
117	Green River	GYA	WY	3	5	8					4							7	
118	Greybull River	GYA	WY	4	3	7			1										
119	Gros Ventre	GYA	WY	3	0	3													
120	Hoodoo	GYA	WY	6	4	10													
121	Lava Mtn.	GYA	WY	3	4	7													
122	Pacific Creek	GYA	WY	10	4	14			1										
123	Pahaska	GYA	WY	5	4	9													1
124	Phantom Springs	GYA	WY	5	4	9			1				1						
125	Pinnacle Peak	GYA	WY	8	6	14							1						
126	Popo Agie	GYA	WY	2	0	2													
127	Rim	GYA	WY	4	2	6													
128	South Fork	GYA	WY	4	2	6					1								
129	Sunlight	GYA	WY	2	2	4													
130	Washakie	GYA	WY	6	4	10													

131 Whiskey Basin	GYA	WY	3	0	3											
Sub-total	GYA	WY	119	89	208	2	0	7	0	26	4	0	17	82	7	0
Misc. wolves																
Deer-Creek ^z	GYA	WY	0	0	0							2	1			
Huckleberry	GYA	WY	0	0	0							6				
Prospect	GYA	WY	0	0	0					2			1			
Snake River	GYA	WY	0	0	0							4				
Big Horn	GYA	WY	0	0	0					3				113		
Misc/Lone wolves ⁹	GYA	WY	16	?	16		1						1			
Sub-total	GYA	WY	16	0	16	0	1	0	0	5	0	12	3	113	0	0
WY Total (outside YNP)		WY	135	89	224	2	1	7	0	31	4	12	20	195	7	0

Table 2b: Yellowstone National Park (YNP) Wolf Packs and Population Data for YNP's Portion of the Greater Yellowstone Experimental Area, 2009.

REF	RECOV	MINIMUM ESTIMATED	PACK SIZE DEC 2009				DOCUMENTED MORTALITIES				KNOWN				CONFIRMED LOSSES ⁶			
			ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER		
#	WOLF PACK ¹	AREA	STATE															
Yellowstone National Park Northern Range																		
694F-Group ⁷	GYA	WY		0	0	0	1											
132682M Group	GYA	WY		2	0	2	1											
133Agate	GYA	WY		3	0	3												
134Blacktail	GYA	WY		5	4	9	1	1										
Cottonwood #	GYA	WY		?	?	?				4								
135Druid	GYA	WY		11	0	11	1											
136Everts	GYA	WY		4	0	4	2											
137Lava Creek	GYA	WY		3	0	3												
138Quadrant Mountain	GYA	WY		4	3	7												
Misc/Lone wolves	GYA	WY		1	0	1	1					1						
Northern Range Total				33	7	40	7	1	0	4	0	2	0	0	0	0	0	
Yellowstone National Park Non-Northern Range																		
139Bechler %	GYA	WY/ID		6	?	6	1											
140Canyon	GYA	WY		3	0	3							1					
141Cougar Creek #	GYA	MT/WY		3	3	6												
142Gibbon Meadows	GYA	WY		11	6	17				1		1	1					

143	Grayling	GYA	WY	2	2	4	1										
144	Mollie's	GYA	WY	10	5	15											1
145	Yellowstone Delta	GYA	WY	4	?	4											3
	Misc/Lone wolves	GYA	WY	1	0	1	1										
	Non-Northern Range Total		WY	40	16	56	3	0	0	0	1	1	6	0	0	0	0
	YNP Total in WY	GYA	WY	73	23	96	10	1	0	4	1	4	6	0	0	0	0
	WY Total (outside YNP)	GYA	WY	135	89	224	2	1	7	0	32	4	12	20	195	7	0
	WY STATE TOTAL	GYA	WY	208	112	320	12	2	7	4	32	8	18	20	195	7	0

Table 2c: Wolf Population Data for the Greater Yellowstone Recovery Area, 2009.																	
REF	-	RECOV	MINIMUM ESTIMATED				DOCUMENTED					CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009	MORTALITIES			KNOWN										
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
WY in GYA (Table 2b)		GYA	WY	208	112	320	12	2	7	4	32	8	18	20	195	7	0
MT in GYA (Table 1b)		GYA	MT	68	41	106	0	3	2	9	31	2	1	14	185	1	1
ID in GYA (Table 3c)		GYA	ID	22	7	29	0	3	0	5	6	0	3	3	97	5	1
GYA RECOVERY AREA		GYA	WY/MT/ID	298	160	455	12	8	9	18	69	10	22	37	477	13	2

1 Underlined packs are counted as breeding pairs toward recovery goals.

2 Excludes wolves killed in control actions and lawful harvest.

3 Does not include pups that disappeared before winter.

4 Collared wolves that became missing in 2009.

5 Includes agency lethal control under federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a lethal take permit.

6 Includes only domestic animals confirmed killed by wolves.

7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative

8 Number legally harvested by humans in 2009.

9 See narrative text for explanation.

Border pack shared with Montana; dens in Wyoming.

% Border pack shared with Idaho; dens in Wyoming.

Table 3a: Idaho Wolf Packs and Population Data for Idaho's Portion of the Central Idaho Recovery Area, 2009.

REF #	WOLF PACK ¹	RECOV AREA	STATE	MINIMUM ESTIMATED			DOCUMENTED					CONFIRMED LOSSES ⁶						
				PACK SIZE	DEC 2009	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	KNOWN DISPERSE D	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER	
146	<u>Aparejo</u>	CID	ID	9	2	11												
	<u>Applejack</u>	CID	ID	0	0	0						5			1	4		
147	<u>Archie Mountain</u>	CID	ID	2	4	6			1									
148	<u>Avery</u>	CID	ID	?	3	3												
	<u>Basin-Butte</u>	CID	ID	0	0	0			1	2	9	1			4			
149	<u>Battle Ridge</u>	CID	ID	?	?	?												
150	<u>Bear Pete</u>	CID	ID	?	6	?					1	1					5	
151	<u>Bear Valley</u>	CID	ID	?	3	?		1		1								
152	<u>Bear Wallow</u>	CID	ID	2	4	6				1	2					10	1	
153	<u>Big Buck</u>	CID	ID	?	4	?												
154	<u>Bimerick Meadow</u>	CID	ID	?	4	?												
155	<u>Black Canyon #</u>	CID	ID	?	1	?						5			3			
156	<u>Blue Bunch</u>	CID	ID	5	0	5					1	7			2		1	
157	<u>Buffalo Ridge</u>	CID	ID	?	?	?					2							
158	<u>Calderwood</u>	CID	ID	6	2	8												
159	<u>Casner Creek</u>	CID	ID	2	5	7					2		1	2				
160	<u>Chamberlain Basin</u>	CID	ID	?	?	?												
161	<u>Chesimia</u>	CID	ID	?	2	2					1	2			1			
	<u>Gold Springs</u>	CID	ID	0	0	0												
162	<u>Coolwater Ridge</u>	CID	ID	?	?	?												
163	<u>Deception</u>	CID	ID	?	3	?				1								
164	<u>Doublespring</u>	CID	ID	?	?	?									9	11		
165	<u>Eagle Mountain</u>	CID	ID	?	?	?												
166	<u>Earthquake Basin</u>	CID	ID	1	5	6									1			
	<u>East Fork</u>	CID	ID	0	0	0						4			1			
167	<u>Eldorado Creek</u>	CID	ID	3	5	8				1								
168	<u>Fish Creek #</u>	CID	ID	?	6	?					3							
169	<u>Fishhook</u>	CID	ID	?	2	?						3						
	<u>Five Lakes-Butte</u>	CID	ID	0	0	0												
170	<u>Florence</u>	CID	ID	?	?	?												
171	<u>Galena</u>	CID	ID	?	2	?					1					3		
172	<u>Giant Cedar</u>	CID	ID	5	3	8					4							

173	<u>Golden Creek</u>	CID	ID	3	5	8							
	<u>Gospel Hump</u>	CID	ID	0	0	0							
174	<u>Grandad</u>	CID	ID	6	4	10	1	1					
175	<u>Hard Butte</u>	CID	ID	?	4	?		1	2			2	
176	<u>Hemlock Ridge</u>	CID	ID	?	1	?	1	2			1		
177	<u>Honey Jones</u>	CID	ID	?	5	?							
178	<u>Hoodoo</u>	CID	ID	?	3	?		1					
179	<u>Hornet Ck</u>	CID	ID	2	1	3		1	2			1	5
180	<u>Horsethief</u>	CID	ID	?	0	?		1				2	
181	<u>Hughes Creek #</u>	CID	ID	?	?	?		2			2		
	<u>Hyndman</u>	CID	ID	0	0	0	1						
182	<u>Indian Creek</u>	CID	ID	?	?	?							
183	<u>Iron Creek</u>	CID	ID	?	?	4		1				2	
184	<u>Jersey Creek</u>	CID	ID	?	?	5							
185	<u>Jungle Creek</u>	CID	ID	?	4	?							12
186	<u>Jureano Mountain</u>	CID	ID	?	2	?		1					
187	<u>Kelly Creek</u>	CID	ID	?	?	6							
188	<u>Kootenai Peak</u>	CID	ID	?	3	?							
189	<u>Landmark</u>	CID	ID	?	3	?							
190	<u>Lemhi</u>	CID	ID	?	?	?			3			5	
191	<u>Lick Creek</u>	CID	ID	?	4	?				1			
192	<u>Little Anderson</u>	CID	ID	?	1	?							
193	<u>Little Wood River</u>	CID	ID	5	1	6			6			3	25 2
194	<u>Lochsa</u>	CID	ID	13	2	15		2					
195	<u>Magruder</u>	CID	ID	?	?	?							
196	<u>Mahoney</u>	CID	ID	?	?	6		1					
197	<u>Marble Mountain</u>	CID	ID	?	2	?	1	1					
198	<u>Monumental Creek</u>	CID	ID	?	1	9							
199	<u>Morgan Creek</u>	CID	ID	?	1	?							
200	<u>Moyer Basin</u>	CID	ID	5	5	10							
201	<u>Musselshell</u>	CID	ID	?	2	2							
202	<u>Nakarna Mtn</u>	CID	ID	?	3	?		1					
	<u>O'Hara Point</u>	CID	ID	0	0	0							
203	<u>Owl Creek</u>	CID	ID	?	?	?							
204	<u>Pen Basin</u>	CID	ID	?	1	?	1						
205	<u>Pettibone Creek</u>	CID	ID	?	?	?							
206	<u>Phantom Hill</u>	CID	ID	?	3	?	1	2			1	14	2
207	<u>Pilot Rock</u>	CID	ID	?	?	?							

Table 3b: Idaho Wolf Packs and Population Data for Idaho's Portion of the Northwest Montana Recovery Area, 2009.

REF #	WOLF PACK ¹	RECOV AREA	STATE	MINIMUM ESTIMATED			DOCUMENTED					CONFIRMED LOSSES ⁶					
				PACK SIZE DEC 2009	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	KNOWN DISPERSE D	MISSING ⁴	CATTLE	SHEEP	DOGS
228	Boundary #	NWMT	ID	?	?	?											
229	Bumblebee	NWMT	ID	?	2	?											
230	Calder Mtn #	NWMT	ID	?	?	?											
231	Copper Falls #	NWMT	ID	?	4	?											
232	Cutoff Peak #	NWMT	ID	?	?	?											
233	Pond Peak #	NWMT	ID	6	5	11							2				
234	Snowy Top #	NWMT	ID	?	?	?											
	Misc/Lone	NWMT	ID	?	?	?											
	Unknown	NWMT	ID	?	?	?		1		4							
ID in NWMT (Table 3b)		NWMT	ID	6	11	11	0	1	0	4	0	0	2	0	0	0	0

Table 3c: Idaho Wolf Packs and Population Data for Idaho's Portion of Greater Yellowstone Experimental Area and Idaho Statewide totals, 2009.

REF #	WOLF PACK ¹	RECOV AREA	STATE	MINIMUM ESTIMATED			DOCUMENTED					CONFIRMED LOSSES ⁶					
				PACK SIZE DEC 2009	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	KNOWN DISPERSE D	MISSING ⁴	CATTLE	SHEEP	DOGS
235	Biscuit Basin	GYA	ID	3	1	4				1	4				71	5	1
236	Bishop Mountain #	GYA	ID	4	1	5							2				
237	Bitch Creek #	GYA	ID	5	2	7					1			3			
238	Fogg Butte	GYA	ID	4	3	7											
239	Henry's Lake #	GYA	ID	6	0	6		1									
	Unknown wolves	GYA	ID	?	?	?		2		4	1						
	Misc / Lone	GYA	ID	?	?	?							1				
	MT border packs	GYA	MT	0	0	0									26		
ID in GYA (Table 3c)		GYA		22	7	29	0	3	0	5	6	0	3	3	97	5	1
ID in NWMT (Table 3b)		NWMT		6	11	11	0	1	0	4	0	0	2	0	0	0	0
ID in CID (Table 3a)		CID		109	159	803	2	15	24	125	87	9	8	72	227	8	0
ID STATE TOTAL		GYA/NWMT/CID		137	177	843	2	19	24	134	93	9	13	75	324	13	1

Table 3d: Wolf Population Data for the Central Idaho Experimental Area, 2009.

REF #	WOLF PACK ¹	RECOV		MINIMUM ESTIMATED PACK SIZE DEC 2009			DOCUMENTED MORTALITIES					KNOWN DISPERSE D	MISSING ⁴	CONFIRMED LOSSES ⁶			
		AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵			CATTLE	SHEEP	DOGS	OTHER
MT in CID (Table 1c)		CID	MT	59	24	110	1	6	3	21	52	4	3	43	8	2	0
ID in CID (Table 3a)		CID	ID	109	159	803	2	15	24	125	87	9	8	72	227	8	0
CID RECOVERY AREA		CID	ID/MT	168	183	913	3	21	27	146	139	13	11	115	235	10	0

1 Underlined packs are counted as breeding pairs toward recovery goals.

2 Excludes wolves killed in control actions to address livestock depredation and lawful public harvest.

3 Does not include pups that disappeared before winter.

4 Collared wolves that became missing in 2009.

5 Agency lethal control whether under state or federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a kill permit.

6 Includes only domestic animals confirmed killed by wolves.

7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative.

8 Number legally harvested by hunters in 2009; does not include wounding loss or illegal mortality which was counted towards ID harvest limits.

Border pack shared with adjacent state or province; dens in Idaho.

FINAL_2009_Table 3a_3b_3c_3d_CID_03-08-10.xls

Table 4a: Northern Rocky Mountain minimum fall wolf population and breeding pairs* 1980-2009, by Federal Recovery Area.

(Includes only Montana, Idaho, and Wyoming within the Northern Rocky Mountain Distinct Population Segment. See Figures 2-4.)

Minimum Fall Wolf Population by Recovery Area:

Year	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09
<u>Recovery Area</u>																														
NWMT	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	66	70	56	49	63	64	84	108	92	59	126	171	230	282	319
GYA																21	40	86	112	118	177	218	271	301	335	325	390	453	449	455
CID																14	42	71	114	156	196	261	284	368	452	565	739	830	914	913
TOTAL	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	101	152	213	275	337	437	563	663	761	846	1016	1300	1513	1645	1687

Breeding Pairs by Recovery Area:

Year	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09
<u>Recovery Area</u>																														
NWMT							1	2	1	1	3	2	4	4	5	6	7	5	5	6	6	7	12	4	6	11	12	23	18	26
GYA																2	4	9	6	8	14	13	23	21	31	20	31	33	35	38
CID																	3	6	10	10	10	14	14	26	29	40	43	51	42	49
TOTAL							1	2	1	1	3	2	4	4	5	8	14	20	21	24	30	34	49	51	66	71	86	107	95	113

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

NOTE: Each year, wolf packs discovered in the current year that contain ≥ 2 yearlings and ≥ 2 adults are added to the previous year's breeding pair and population totals; similarly, if evidence in the current year indicates that < 2 pups or < 2 adults survived on December 31 of the previous year, that wolf pack is deleted from the previous year's breeding pair counts and population totals. Therefore, breeding pair counts and population totals are updated in current annual reports.

Table 4b: Northern Rocky Mountain minimum fall wolf population and breeding pairs* 1980-2009, by State.

(Includes only those within the Northern Rocky Mountain Distinct Population Segment. See Figure 1.)

Minimum Fall Wolf Population by State:

Year	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09
State																														
MT	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	66	70	56	49	74	97	123	183	182	152	256	316	422	497	524
WY																21	40	86	112	107	153	189	217	234	272	252	311	359	302	320
ID																14	42	71	114	156	187	251	263	345	422	512	673	732	846	843
OR																														14
WA																														5
TOTAL	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	101	152	213	275	337	437	563	663	761	846	1020	1300	1513	1645	1706

Breeding Pairs by State:

Year	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09
State																														
MT							1	2	1	1	3	2	4	4	5	6	7	5	5	7	8	7	17	10	15	19	21	39	34	37
WY																2	4	9	6	7	12	13	18	16	25	16	25	25	22	27
ID																3	6	10	10	10	10	14	14	25	26	36	40	43	39	49
OR																														1
WA																														1
TOTAL							1	2	1	1	3	2	4	4	5	8	14	20	21	24	30	34	49	51	66	71	86	107	95	115

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

NOTE: Each year, wolf packs discovered in the current year that contain ≥ 2 yearlings and ≥ 2 adults are added to the previous year's breeding pair and population totals; similarly, if evidence in the current year indicates that < 2 pups or < 2 adults survived on December 31 of the previous year, that wolf pack is deleted from the previous year's breeding pair counts and population totals. Therefore, breeding pair counts and population totals are updated in current annual reports.

Table 5a: Northern Rocky Mountain States Confirmed Wolf Depredation¹, 1987-2009, by Recovery Area.

(Does not include Oregon and Washington. See Table 5c.)

YEAR	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	TOTAL	
Northwest Montana Recovery Area:																									
cattle	6	0	3	5	2	1	0	6	3	9	16	9	13	10	8	9	6	6	9	6	26	37	40	230	
sheep	10	0	0	0	2	0	0	0	0	0	30	0	19	2	5	13	3	1	1	1	5	0	9	101	
other 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	1	0	2	1	10	5	28	
dogs	0	0	0	1	0	0	0	0	3	1	0	0	2	3	1	4	0	0	0	1	3	2	1	22	
wolves moved	0	0	4	0	3	0	0	2	2	10	7	0	4	0	5	0	0	0	0	0	0	0	0	37	
wolves killed	4	0	1	1	0	0	0	0	0	4	14	4	9	4	3	9	14	1	2	15	19	50	63	217	
Greater Yellowstone Recovery Area:																									
cattle										0	0	5	3	4	7	22	33	45	100	61	135	79	60	37	591
sheep										0	13	67	7	13	39	117	71	90	99	53	41	35	111	477	1233
other 3										0	0	0	0	1	0	0	0	10	4	0	1	13	5	2	36
dogs										1	0	0	4	7	8	4	1	0	6	2	0	3	1	13	50
wolves moved										6	8	14	0	0	6	8	0	0	0	0	0	0	0	0	42
wolves killed										0	1	6	3	9	6	9	23	38	55	60	56	87	83	69	505
Central Idaho Recovery Area:																									
cattle										0	2	1	9	16	15	10	10	13	24	27	43	78	117	115	480
sheep										0	24	29	5	57	39	16	15	118	170	190	205	173	244	235	1520
other 3										0	0	0	0	0	0	0	0	0	0	2	0	0	3	0	5
dogs										0	1	4	1	6	0	1	4	6	3	9	7	7	11	10	70
wolves moved										0	5	0	3	15	10	5	0	0	0	0	0	0	0	0	38
wolves killed										0	1	1	0	5	10	7	14	7	30	41	71	80	131	138	536
Total, 3 Recovery Areas:																									
cattle	6	0	3	5	2	1	0	6	3	11	22	21	33	32	40	52	64	130	97	184	183	214	192	1301	
sheep	10	0	0	0	2	0	0	0	0	37	126	12	89	80	138	99	211	270	244	247	213	355	721	2854	
other 3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	5	10	5	2	3	14	18	7	69	
dogs	0	0	0	1	0	0	0	0	4	2	4	5	15	11	6	9	6	9	11	8	13	14	24	142	
wolves moved	0	0	4	0	3	0	0	2	8	23	21	3	19	16	18	0	0	0	0	0	0	0	0	117	
wolves killed ²	4	0	1	1	0	0	0	0	0	6	21	7	23	20	19	46	59	86	103	142	186	264	270	1258	

1 Numbers of animals confirmed killed by wolves in calendar year. Excludes Oregon and Washington. See Table 5c.

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

3 Total livestock other than cattle and sheep confirmed killed by wolves between 1987 and 2009 are: 25 llamas, 31 goats and 10 horses.

Table 5b: Northern Rocky Mountain Confirmed Wolf Depredation¹, 1987-2009, by State.
(Does not include Oregon and Washington. See Table 5c.)

YEAR	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	TOTAL	
Montana																									
cattle	6	0	3	5	2	1	0	6	3	10	19	10	20	14	12	20	24	36	23	32	75	77	97	495	
sheep	10	0	0	0	2	0	0	0	0	13	41	0	25	7	50	84	86	91	33	4	27	111	202	786	
other 3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	5	0	3	2	2	14	17	6	53	
dogs	0	0	0	1	0	0	0	0	4	1	0	1	2	5	2	5	1	4	1	4	3	2	4	40	
wolves moved	0	0	4	0	3	0	0	2	8	22	20	0	14	6	17	0	0	0	0	0	0	0	0	96	
wolves killed	4	0	1	1	0	0	0	0	0	5	18	4	19	7	8	26	34	40	35	53	73	110	145	583	
Wyoming																									
cattle										0	0	2	2	2	3	18	23	34	75	54	123	55	41	20	452
sheep										0	0	56	7	0	25	34	0	7	18	27	38	16	26	195	449
other 3										0	0	0	0	1	0	0	0	10	2	0	1	0	0	0	14
dogs										0	0	0	3	6	6	2	0	0	2	1	0	2	0	7	29
wolves moved										0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1
wolves killed										0	0	2	3	1	2	4	6	18	29	41	44	63	46	32	291
Idaho																									
cattle										0	1	1	9	11	15	10	9	6	19	20	29	53	96	75	354
sheep										0	24	29	5	64	48	54	15	118	161	184	205	170	218	324	1619
other 3										0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
dogs										0	1	4	1	7	0	2	4	5	3	9	4	8	12	13	73
wolves moved										0	1	0	3	5	10	1	0	0	0	0	0	0	0	0	20
wolves killed										0	1	1	0	3	11	7	14	7	17	27	45	50	108	93	384
Total, 3 States																									
cattle	6	0	3	5	2	1	0	6	3	11	22	21	33	32	40	52	64	130	97	184	183	214	192	1301	
sheep	10	0	0	0	2	0	0	0	0	37	126	12	89	80	138	99	211	270	244	247	213	355	721	2854	
other 3	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	5	10	5	2	3	14	18	7	69	
dogs	0	0	0	1	0	0	0	0	4	2	4	5	15	11	6	9	6	9	11	8	10	14	24	139	
wolves moved	0	0	4	0	3	0	0	2	8	23	21	3	19	16	18	0	0	0	0	0	0	0	0	117	
wolves killed ²	4	0	1	1	0	0	0	0	0	6	21	7	23	20	19	46	59	86	103	142	186	264	270	1258	

1 Numbers of animals confirmed killed by wolves in calendar year. Excludes Oregon and Washington. See Table 5c.

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

3 Total livestock other than cattle and sheep confirmed killed by wolves between 1987 and 2009: are 25 llamas, 31 goats and 10 horses.

See Interagency Report narrative for compensation paid in each state.

FINAL_2009_DEP_by_STATE_Table 5b_03-08-10.xls

Table 5c: Confirmed Wolf Depredation¹ Elsewhere, Northern Rocky Mountain Distinct Population Segment, 2009.

(Includes only portions of Oregon and Washington within the Distinct Population Segment. See Figure 1.)

YEAR	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	TOTAL	
<u>Oregon</u>																									
cattle																							1	1	
sheep																							28	28	
other 3																							1	1	
dogs																							0	0	
wolves moved																							0	0	
wolves killed																							2	2	
<u>Washington</u>																									
cattle																							0	0	
sheep																							0	0	
other 3																							0	0	
dogs																							0	0	
wolves moved																							0	0	
wolves killed																							0	0	
<u>Total, 2 States</u>																									
cattle																								1	1
sheep																								28	28
other 3																								1	1
dogs																								0	0
wolves moved																								0	0
wolves killed2																								2	2

1 Numbers of animals confirmed killed by wolves in calendar year.

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

3 Total livestock other than cattle and sheep confirmed killed by wolves in 2009: 1 goat.

See Interagency Report narrative for compensation paid in each state.

FINAL_2009_DEP_by_STATE_Table 5b_03-08-10.xls

Table 6: Wolf Packs and Population Data for Oregon and Washington Inside the Northern Rocky Mountain Distinct Population Segment.
(See Figures 1 and 7)

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED					KNOWN	CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009			MORTALITIES											
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
240	<u>Imnaha</u>	NRM	OR	5	5	10											
241	Wenaha	NRM	OR	?	?	4											
	<u>Keating Valley</u>	NRM	OR	0	0	0					2			1	28		1
242	<u>Diamond #</u>	NRM	WA	2	3	5											
OR/WA Total in NRM DPS (Table 6)				7	8	19	0	0	0	0	2	0	0	1	28	0	1

- 1 Underlined packs are counted as breeding pairs toward recovery goals.
- 2 Excludes wolves killed in control actions to address livestock depredation and lawful public harvest.
- 3 Does not include pups that disappeared before winter.
- 4 Collared wolves that became missing in 2009.
- 5 Agency lethal control whether under state or federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a kill permit.
- 6 Includes only domestic animals confirmed killed by wolves.
- 7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative.
- 8 Number legally harvested by hunters in 2009; does not include wounding loss or illegal harvest
- # Border pack shared with the State of Idaho; dens in Washington.

Table 7: Wolf Packs and Population Data for Washington Outside the Northern Rocky Mountain Distinct Population Segment.
(See Figure 7)

REF	-	RECOV	MINIMUM ESTIMATED			DOCUMENTED					KNOWN	CONFIRMED LOSSES ⁶					
			PACK SIZE DEC 2009			MORTALITIES											
#	WOLF PACK ¹	AREA	STATE	ADULT	PUP	TOT	NATURAL	HUMAN ²	UNKN ³	HARVEST ⁸	CONTROL ⁵	DISPERSED	MISSING ⁴	CATTLE	SHEEP	DOGS	OTHER
1	<u>Lookout</u>		WA	3	4	7											
WA total outside NRM DPS (Table 7)				3	4	7	0	0	0	0	0	0	0	0	0	0	0

- 1 Underlined packs are counted as breeding pairs toward recovery goals.
- 2 Excludes wolves killed in control actions to address livestock depredation and lawful public harvest.
- 3 Does not include pups that disappeared before winter.
- 4 Collared wolves that became missing in 2009.
- 5 Agency lethal control whether under state or federal regulations. Includes wolves killed by private citizens to defend livestock or under terms of a kill permit.
- 6 Includes only domestic animals confirmed killed by wolves.
- 7 Pack did not exist on Dec. 31 2009 and is not displayed on the map; see pack narrative.
- 8 Number legally harvested by hunters in 2009; does not include wounding loss or illegal harvest

Final_2009_Table_6_and_7_OR_WA_03-08-10.xls

APPENDIX 4

NORTHERN ROCKIES PACK DISTRIBUTION MAPS 2009

- Figure 1. (map) Central Idaho, Northwest Montana and Greater Yellowstone wolf recovery areas (Key: Tables 1 - 3).
- Figure 2. (map) Northwest Montana Wolf Recovery Area (Key: Table 1a).
- Figure 3. (map) Greater Yellowstone Wolf Recovery Area (Key: Tables 1b, 2).
- Figure 4. (map) Central Idaho Wolf Recovery Area (Key: Tables 1c, 3 a, b, c, d).
- Figure 7. (map) Oregon Washington Wolf Pack Locations (Key: Tables 6 and 7).

Figure 1: Northern Rocky Mountain Gray Wolf Distinct Population Segment Area

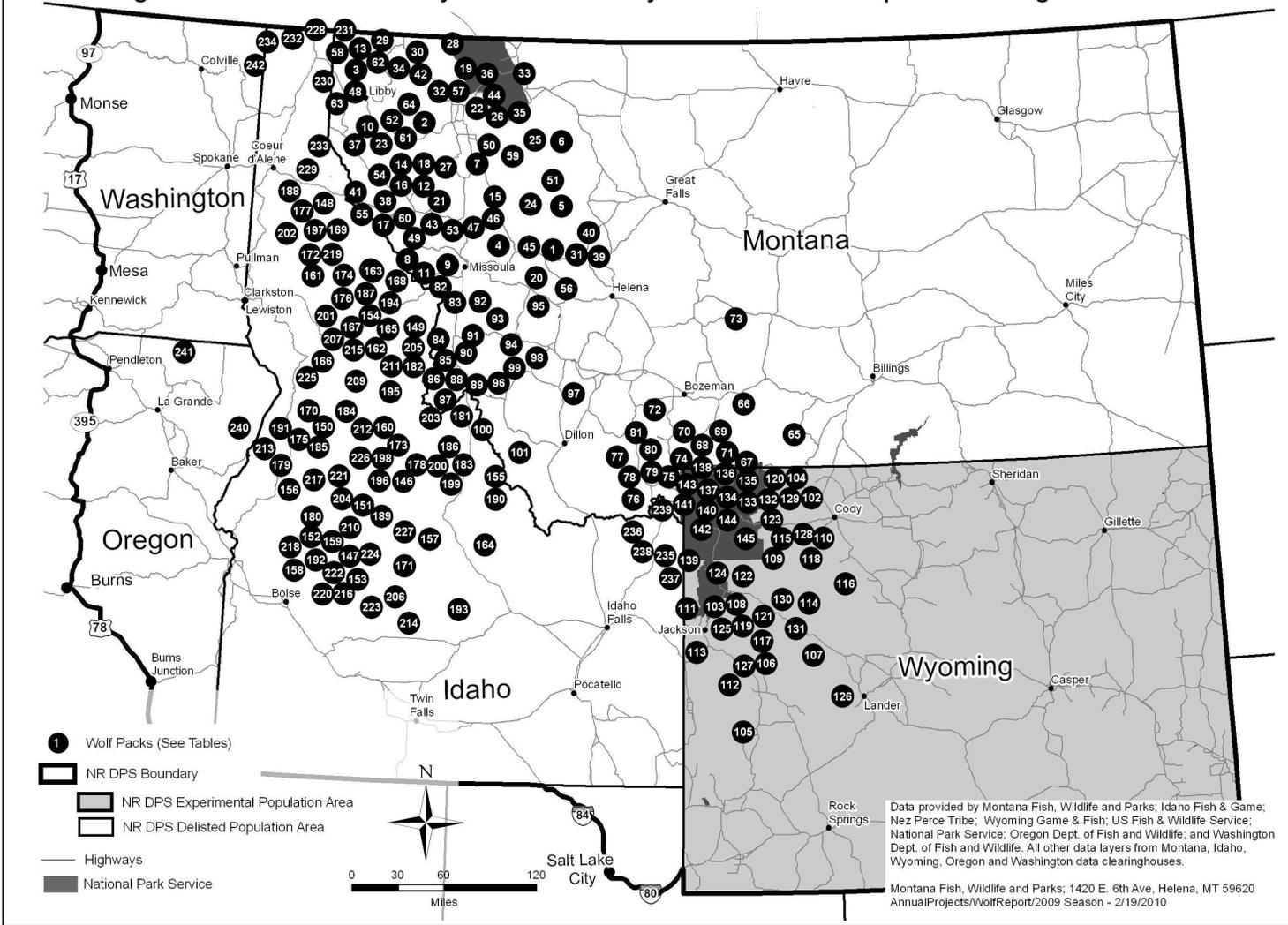
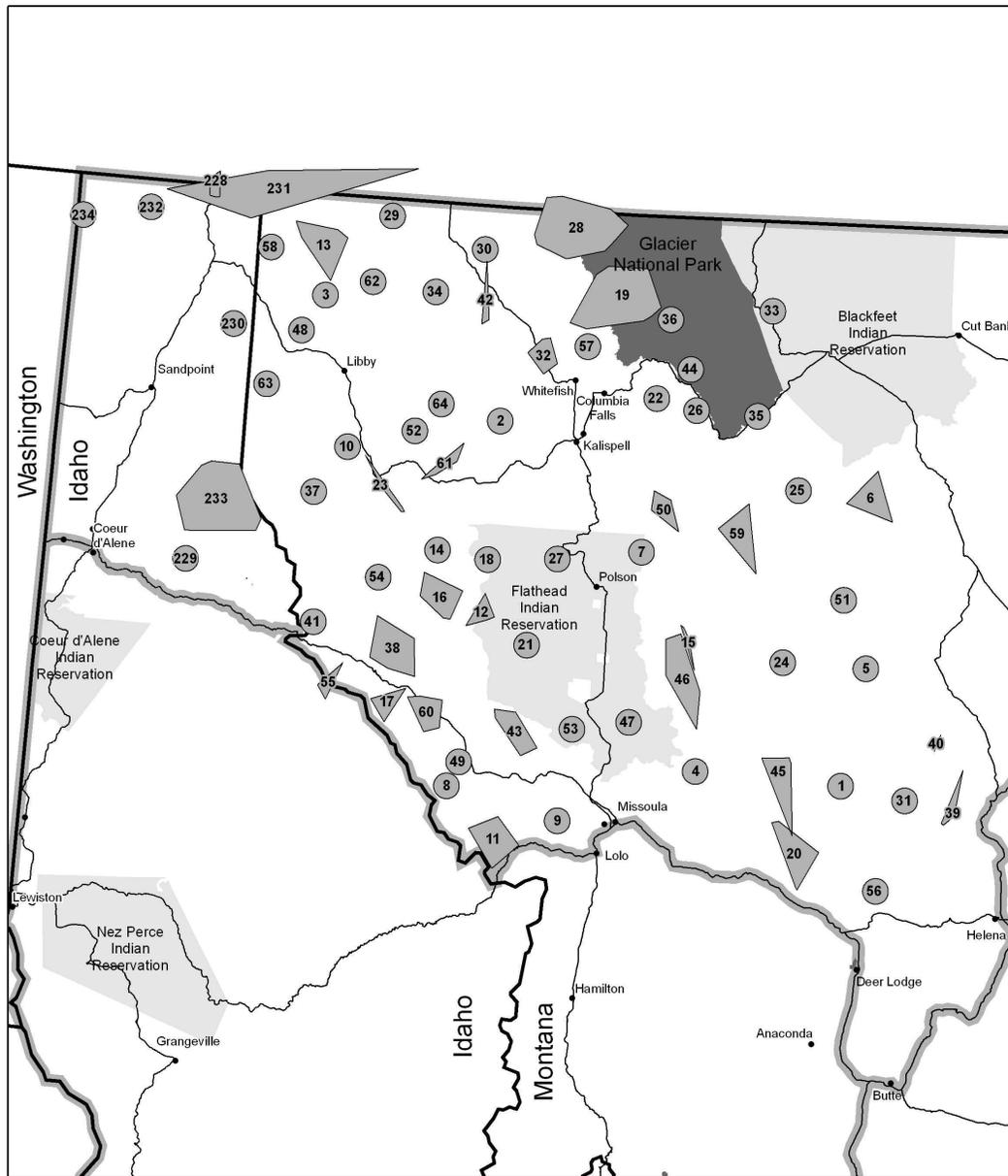
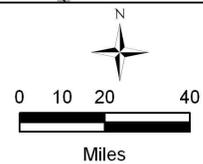


Figure 2. Northwest Montana Wolf Recovery Area



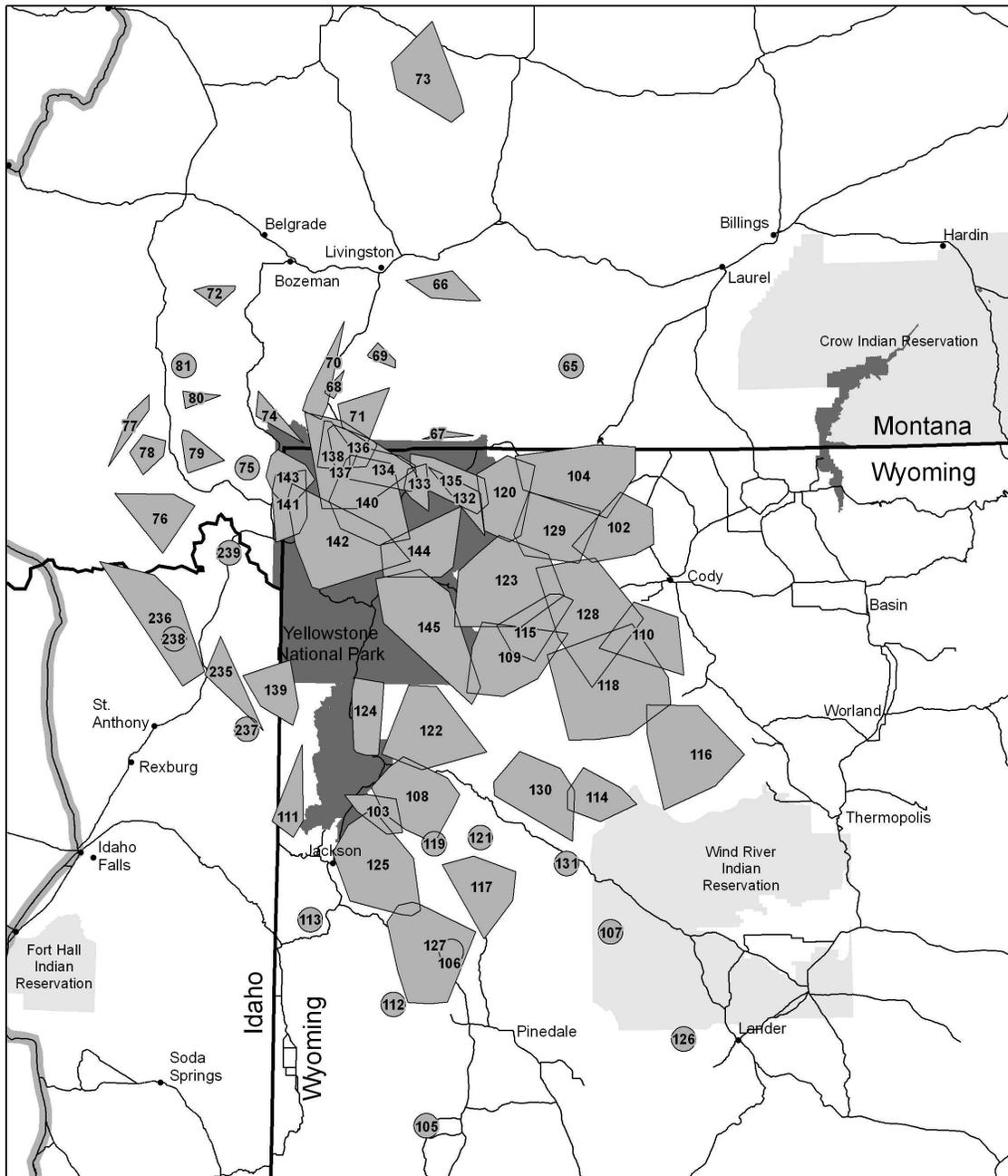
- 1 Wolf Pack Distribution (See Tables)
- Recovery Area Boundary
- State Boundary
- Major Highways
- National Park Service



Data provided by Montana Fish, Wildlife and Parks; Idaho Fish & Game; Nez Perce Tribe; Wyoming Game & Fish; US Fish & Wildlife Service; National Park Service; Oregon Dept. of Fish and Wildlife; and Washington Dept. of Fish and Wildlife. All other data layers from Montana, Idaho, Wyoming, Oregon and Washington data clearinghouses.

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Figure 3. Greater Yellowstone Wolf Recovery Area



-  Wolf Pack Distribution (See Tables)
-  Recovery Area Boundary
-  State Boundary
-  Major Highways
-  National Park Service

Data provided by Montana Fish, Wildlife and Parks; Idaho Fish & Game; Nez Perce Tribe; Wyoming Game & Fish; US Fish & Wildlife Service; National Park Service; Oregon Dept. of Fish and Wildlife; and Washington Dept. of Fish and Wildlife. All other data layers from Montana, Idaho, Wyoming, Oregon and Washington data clearinghouses.

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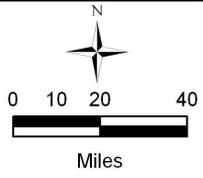
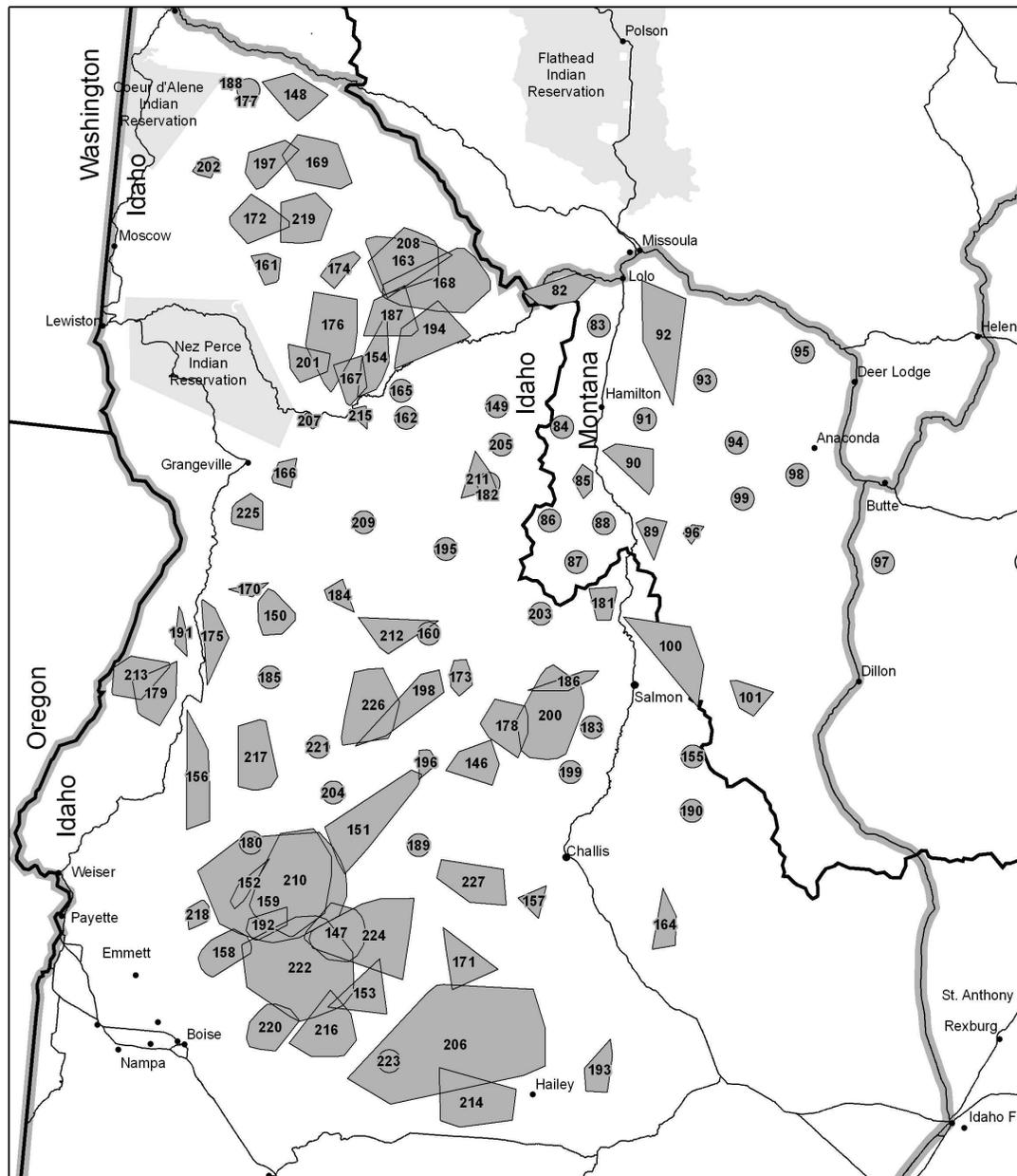
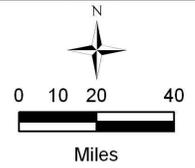


Figure 4. Central Idaho Wolf Recovery Area

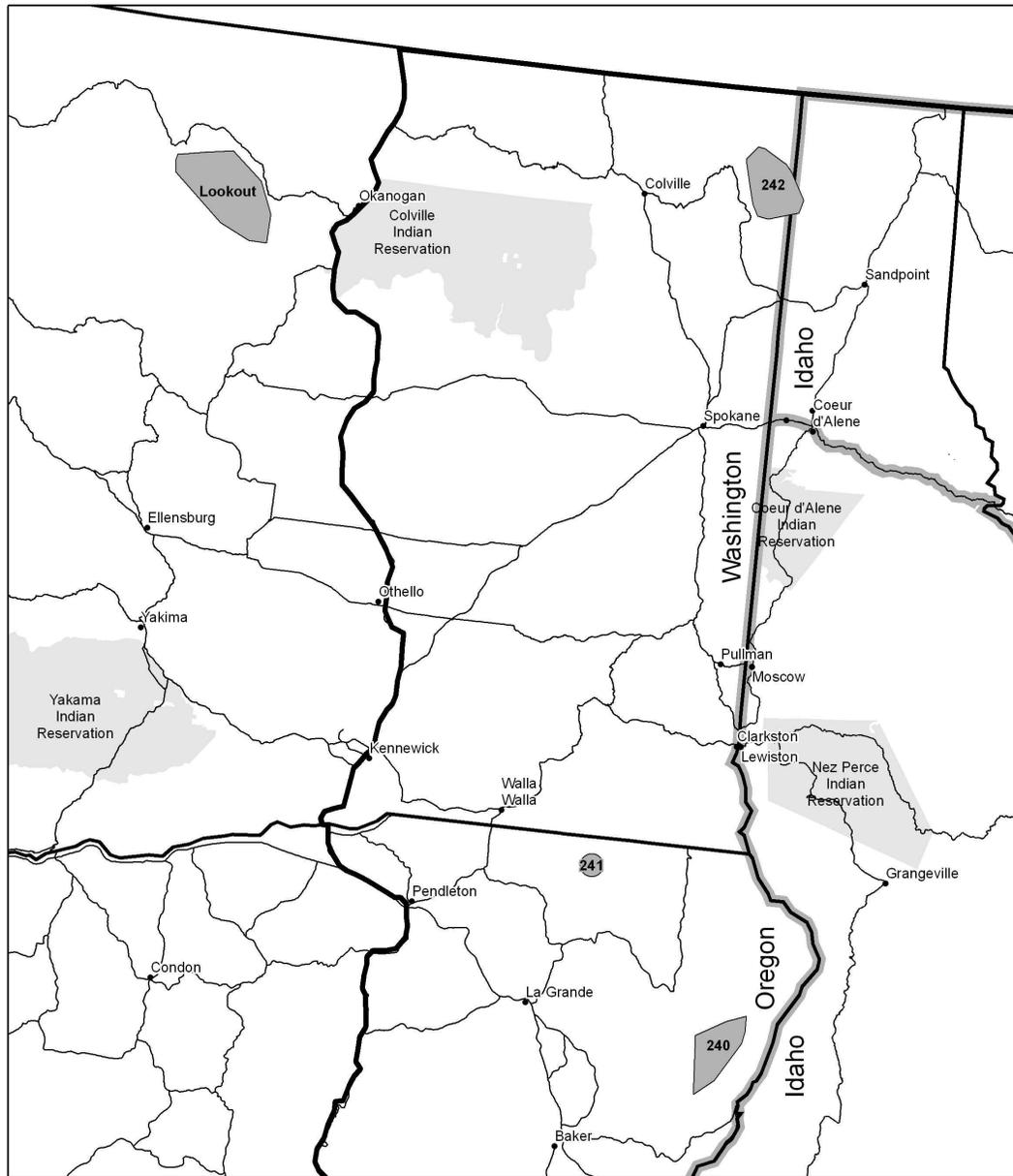


-  Wolf Pack Distribution (See Tables)
-  Recovery Area Boundary
-  State Boundary
-  Major Highways
-  National Park Service



Data provided by Montana Fish, Wildlife and Parks; Idaho Fish & Game; Nez Perce Tribe; Wyoming Game & Fish; US Fish & Wildlife Service; National Park Service; Oregon Dept. of Fish and Wildlife; and Washington Dept. of Fish and Wildlife. All other data layers from Montana, Idaho, Wyoming, Oregon and Washington data clearinghouses.
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Figure 7. Oregon / Washington Wolf Pack Locations



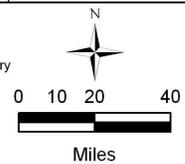
1 Wolf Pack Distribution (See Tables)

Northern Rockies Distinct Population Segment Boundary

Recovery Area Boundary

State Boundary

Major Highways



Data provided by Montana Fish, Wildlife and Parks; Idaho Fish & Game; Nez Perce Tribe; Wyoming Game & Fish; US Fish & Wildlife Service; National Park Service; Oregon Dept. of Fish and Wildlife; and Washington Dept. of Fish and Wildlife. All other data layers from Montana, Idaho, Wyoming, Oregon and Washington data clearinghouses.
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APPENDIX 5

NORTHERN ROCKIES WOLF POPULATION GRAPHS

Figure 5. Northern Rocky Mountain wolf population trends 1980-2009, by recovery area.

Figure 6. Northern Rocky Mountain wolf population trends 1980-2009, by state.

Figure 5. Northern Rocky Mountain Wolf Population Trends, by Recovery Area, 1980-2009
(excludes Oregon and Washington)

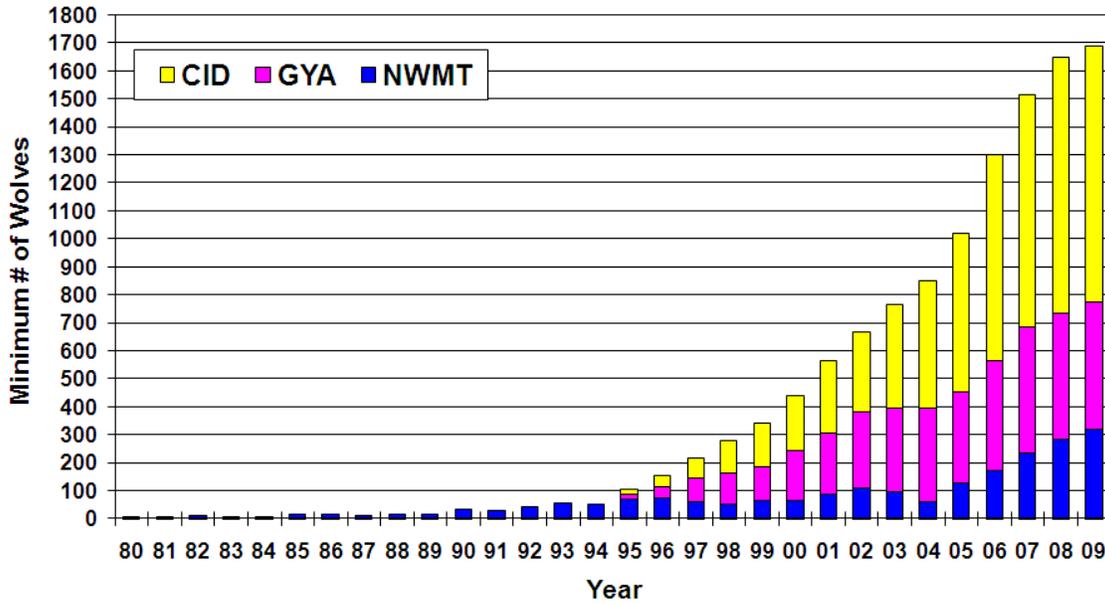


Figure 6. Northern Rocky Mountain Wolf Population Trends in Montana, Idaho and Wyoming: 1980-2009

