

SUPPLEMENT TO THE ENVIRONMENTAL ASSESSMENT WOLF DAMAGE AND CONFLICT MANAGEMENT IN WISCONSIN

Agency Draft
December 2009

In 2006, the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service, Wildlife Services (WS), the United States Department of the Interior, Fish and Wildlife Service (USFWS) and the Wisconsin Department of Natural Resources (WDNR) cooperated in the preparation of an Environmental Assessment (EA) on the potential environmental impacts of alternatives for managing gray wolf (*Canis lupus*) damage and conflicts in Wisconsin while wolves were federally listed as a threatened or endangered species (USDA 2006). After consideration of information in the EA and public comments, on April 24, 2006, the agencies chose Alternative 2, Integrated Wildlife Damage Management, as the strategy to address wolf damage and conflicts in Wisconsin. The alternative permitted use of the full range of nonlethal and lethal methods to reduce wolf damage, and included USFWS issuance of permits for the lethal take of depredating wolves. On August 9, 2006, a U.S. District Court in the District of Columbia enjoined the permit¹ and all lethal take of wolves for depredation management was discontinued until February 8, 2007, when the USFWS removed wolves from the federal list of threatened and endangered species (delisted the wolves). The February 8, 2007, decision to delist wolves and a similar decision that went into effect on May 4, 2009, were challenged in court and, in each instance, status as an endangered species was restored. While wolves have been federally-listed, the agencies have managed wolves in accordance with the 2006 EA and Decision with the exception that permits were not issued for the take of wolves for damage management. After the July 2, 2009, court settlement which returned wolves to endangered status, the WDNR requested a new permit to conduct studies critical to the management and recovery of the gray wolf in the state (e.g., monitoring population size and health), and to use aversive conditioning (e.g., shock collars; Hawley et al. 2009), nonlethal projectiles, and lethal methods to reduce wolf damage and conflicts. This supplement was prepared to update the analysis in the 2006 EA and to reevaluate USFWS options for the issuance of permits to the WDNR for wolf management in Wisconsin.

The WDNR has authority to conduct many of the activities included in the permit request because of an Endangered Species Act (ESA) Section 6 Cooperative Conservation Agreement with the USFWS and authorities granted in the ESA. However, the WDNR has included these methods in the permit request to address the risk of unintentional wolf mortality associated with authorized activities and to clearly communicate the nature of their wolf management activities to the USFWS. In states with Cooperative Conservation Agreements, any qualified and authorized employee or similarly qualified and authorized agent of the State Conservation Agency may take an endangered species without a permit or 4(d) rule from the USFWS provided the taking is not reasonably expected to result in: 1) the death or permanent disabling of the specimen; 2) the removal of the specimen from the state where the taking occurred; 3) the introduction of the specimen to an area outside the historical range of the species; or 4) holding the species in captivity for a period of more than 45 days. (50 CFR 17.21 (c)(5)). Additionally, under the ESA, anyone can take a wolf in response to an immediate and demonstrable threat to human life (i.e., when a wolf is attacking a person) without a permit from the USFWS. The ESA also grants the USFWS, federal land management agencies, WDNR or their designated agents (e.g., WS) the authority to take wolves in cases of non-immediate but demonstrable threats to human safety without a permit from the

¹ Instead of contesting the Court's decision, the USFWS chose to pursue removal of wolves from the federal list of threatened and endangered species. However, the Safari Club International and Safari Club International Foundation were interveners on the case and continued to pursue the issue. In 2008, a three judge appellate panel vacated the District Court's opinion.

USFWS. The USFWS, WDNR, federal land management agencies, or their designated agents, may take a wolf to aid a sick or injured wolf.

Table 1. Summary of wolf status and management since the completion of the EA on wolf damage management in 2006 (USDA 2006).

	Date – Federal Status of Wolves					
	Apr. 24, 2006 – Aug. 9, 2006	August 9, 2006 – February 8, 2007	February 8, 2007 – Sept. 29, 2008	Sept. 29, 2008 – May 4, 2009	May 4, 2009 – June 2, 2009	June 2, 2009 – Present
Management Methods	Endangered	Endangered	Delisted	Endangered	Delisted	Endangered
Nonlethal methods that do not involve take*	Available to all	Available to all	Available to all	Available to all	Available to all	Available to all
Capture and relocation and radio activated frightening devices	Available to WDNR and agents through Cooperative Conservation Agreements	Available to WDNR and agents through Cooperative Conservation Agreements		Available to WDNR and agents through Cooperative Conservation Agreements		Available to WDNR and agents through Cooperative Conservation Agreements
Aversive Conditioning and Nonlethal Projectiles	Permit from USFWS granted	Not Available	Available with Permit from WDNR	Not Available	Available with Permit from WDNR	Not Available
Lethal methods for immediate threat to human safety	Available to all	Available to all	Available to all	Available to all	Available to all	Available to all
Lethal methods for non-immediate threat to human safety	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel	Available with Permit from WDNR	Available to qualified agency and tribal personnel	Available with Permit from WDNR	Available to qualified agency and tribal personnel
Lethal methods to aid sick or injured wolf	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel	Available to qualified agency and tribal personnel
Lethal methods to reduce predation on domestic animals	Permit from USFWS granted	Not Available	Available with Permit from WDNR	Not Available	Available with Permit from WDNR	Not Available

* Permitted methods include animal husbandry practices, habitat modification, physical exclusion, compensation for damage, guarding and hazing, and frightening devices which do not involve capture of or contact with wolves.

The WDNR Permit request for the use of lethal wolf damage management (WDM) is similar to that analyzed in the 2006 Wolf EA and requests the same level of take analyzed for Alternative 2 of the EA (10% of the previous winter wolf population). If the permit for lethal take of wolves for depredation management is issued, lethal removal of wolves would only be conducted under the following conditions:

- 1) The depredations must have occurred within the calendar year.
- 2) The depredation occurred on lawfully present livestock (as defined by the Wisconsin Wolf Management Plan (WWMP; WDNR 1999, 2007), livestock guarding animals, and/or pets that are near residences and farm buildings. Lethal methods would not be used to address depredations by wolves on pets running at large or used in hunting and training.
- 3) The depredation must be verified by trained personnel from WS, the WDNR, other agents of the state listed under the permit request, the USFWS, or Tribal natural resources staff.
- 4) Additional wolf depredations are likely to continue in the immediate future if depredating wolf or wolves are not removed.
- 5) Taking of wolves will only occur within ½ mile of the depredation site.
- 6) Pups of the year will be released back to the wild prior to August 1 and will be marked with ear tags, and/or microchips if available. Pups that weigh at least 30 lbs may be fitted with radio collars.

In addition to evaluating the applicant's request, the USFWS will consider whether to authorize lethal take of wolves for a study designed to compare the efficacy and impacts of nonlethal and lethal strategies for wolf depredation management. This proposed research is considered in a separate Alternative (Alternative 5 – Research Option). The Research Option would involve comparing sites using nonlethal methods for wolf damage management to sites using lethal methods for wolf damage management (See Section 3.4 below). Under the Research Option, only some of the sites involved in the study would be able to use lethal methods for WDM. The remaining study sites and all sites which are not included in the research project will only use nonlethal methods for wolf damage management. Consequently, the total lethal take of wolves for the Research Option would be less than the take if the WDNR damage management permit request is granted (Alternative 2).

I. PURPOSE

The purpose of the 2006 EA was to evaluate the potential impacts of alternatives for managing conflicts with wolves and wolf damage in Wisconsin including actions that may be taken with permits issued by the USFWS under Section 10(a)(1)(A) of the ESA. Management activities would be intended to protect agricultural resources, pets, and human health and safety in Wisconsin, and to conserve wolf populations. This supplement has been prepared to aid the USFWS in reviewing a 2009 permit application requesting a permit to use specific nonlethal and lethal WDM methods throughout the State, and a request to conduct a research project comparing the efficacy and impacts of nonlethal and lethal WDM strategies (Research Option). This EA supplement also provides data on the wolf population and WDM activities that have been conducted since the completion of the 2006 EA.

When preparing this supplement, the agencies reviewed information from the scientific literature and other wolf management information obtained by WS, the USFWS and the WDNR since the completion of the 2006 EA.

II. DECISION TO BE MADE

In 2006, the USFWS and WS issued separate decisions based on the EA and associated public comments. Both agencies selected Alternative 2, Integrated Wolf Damage Management, as the management strategy to be used. For the USFWS, selection of Alternative 2 meant issuing permits for the use of shock collars, nonlethal projectiles, and limited lethal take of wolves to reduce wolf predation on domestic animals. The USFWS decision to issue the permits was overturned by the federal court in 2006. Instead of contesting

the Court's decision, the USFWS pursued removal of the wolf from the federal list of threatened and endangered species. The delisting went into effect on March 12, 2007. However, the Safari Club and Safari Club International Foundation were interveners on the case and continued to pursue the litigation regarding permits. On June 3, 2008, an appellate panel vacated the Court's opinion regarding the issuance of permits. On September 29, 2008, the court also vacated the USFWS decision to delist wolves and restored protection for the gray wolf under the ESA. The USFWS subsequently attempted to delist the wolf, but has not been successful in doing so.

Given that wolves have been restored to endangered status, and that the court decision denying the issuance of permits for lethal WDM was vacated; the WDNR has asked the USFWS to reconsider the issue of permits for lethal WDM.

The USFWS is evaluating its alternatives including the issuance of a permit that is fully responsive to the Applicant's request (i.e. nonlethal and lethal WDM – Alternative 2). The USFWS is also considering whether to issue a permit for a research project designed to evaluate the efficacy and impacts of nonlethal and lethal WDM strategies (Research Option – Alternative 5). Implementation of the Research Option would be conducted instead of (not in addition to) the usual wolf damage management response at study sites, and would have lower lethal take of wolves than proposed in the WDNR permit request.

For WS, selection of Alternative 2 in 2006 meant WS would use the full range of legally available methods to reduce damage by and conflicts with wolves. The court decisions have not changed WS' management decision; they have just limited the list of wolf damage management methods legally available to WS. The impact of USFWS decisions regarding the issuance of permits for WDM on actions by the WS program is addressed in the 2006 EA (Section 3.0). WS selection of Alternative 2 in the 2006 EA allows for WS involvement in wolf research if the research does not result in cumulative impacts in excess of those analyzed for WS' chosen management alternative (Alternative 2). As noted above, USFWS selection of the new Research Option would have a lower lethal take of wolves than proposed under Alternative 2 which was selected by WS in the 2006 EA. WS has monitored the impacts of WDM actions in Wisconsin and available research on wolf management since the completion of the 2006 EA and has determined that a new Decision is not warranted at this time (USDA 2007, 2008, 2009).

III. NEED FOR ACTION

3.1 Wolf Predation on Livestock and Pets

Wolf predation on livestock and pets remains as described in EA Sections 1.3.7. Updated information on livestock losses to wolf predation is provided in Figure 1 and Tables 3 and 4 below.

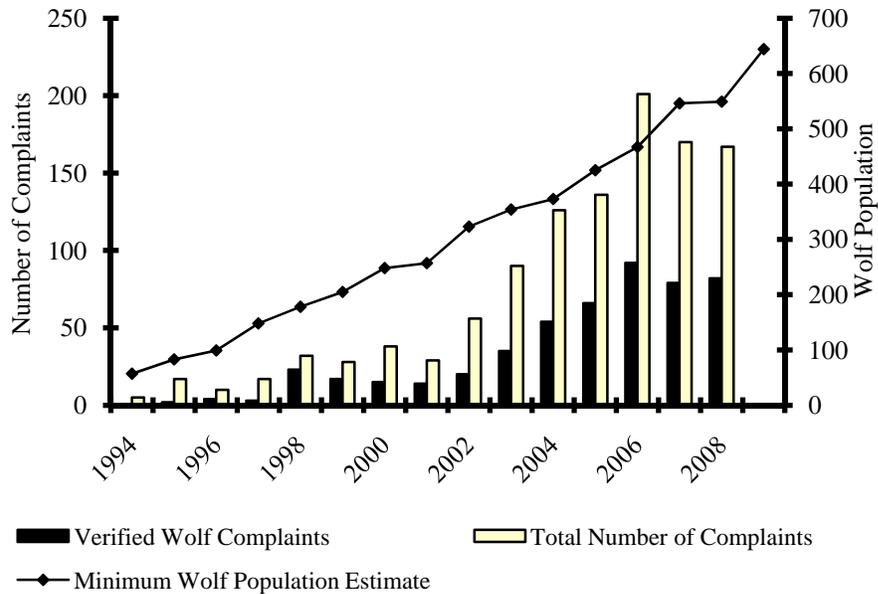


Figure 1. Annual wolf depredation complaints and annual minimum wolf population estimates in Wisconsin.

Negative interactions associated with livestock depredation do not necessarily increase proportionately with wolf abundance; rather, they are localized events. In situations where there is suitable unoccupied habitat in locations that will not result in a high degree of interaction between wolves and livestock, there is little relationship between wolf density and wolf conflicts. Stronger relationships between wolf density and wolf conflicts occur when wolf populations expand into areas where wolf habitat, agriculture and human development are mixed. This appears to have been the case in Wisconsin as the wolf population expanded from relatively remote areas in Wolf Management Zones 1 and 2 into the more heavily developed and agricultural areas in Zone 3 and portions of Zone 1 (Fig. 2). Prior to 2000, there wasn't a clear trend between wolf population size and verified wolf complaints. In 2000, the Wisconsin wolf population approached 250 animals statewide which is the recovery goal established by the WDNR for removing wolves from the state list of T/E species. This is also the time when WDNR and WS started seeing increased wolf activity in forest/agricultural/urban transitional habitats. Using regression analysis (Sokal and Rohlf 1996) for comparing the independent variables of cattle depredated, verified wolf complaints, total wolf complaints, and farms with verified livestock depredations from 2000 through 2006 to the growth of the WI wolf population shows a statistically significant positive correlation between the size of the wolf population and conflicts with wolves (Table 2). In 2003, wolves killed 26 calves from one farm. This level of conflict is an anomaly with most farms losing 1 or 2 calves per year to wolf depredation. For statistical analysis, 25 of the depredated calves were removed from the data set, that is, instead of 37 cattle depredated that year, for analysis purposes we used 12 calves.

Independent Variable	<i>P</i> value	Adjusted R ²
Cattle Depredated	0.0032	0.883
Verified Wolf Complaints	0.0004	0.919
Total Wolf Complaints	0.0004	0.923
Compensation	0.1437	0.315
Farms with verified depredations	0.0013	0.872

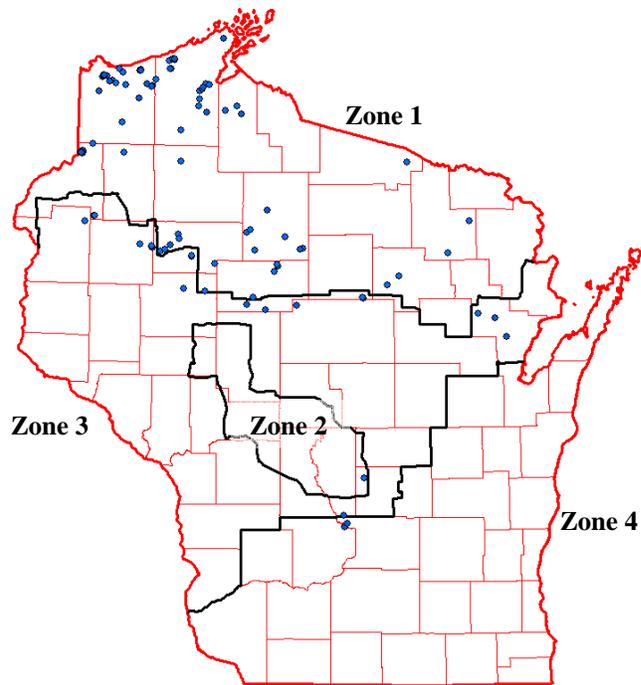


Figure 2. Wolf management zones and the locations of 76 farms which had verified wolf/livestock depredations in Wisconsin, 2001-2006.

Wolves are social animals and young of the year probably learn to identify acceptable prey items from adults (Fuller et al. 2003). An assessment of factors which may have increased wolf depredations in Minnesota suggested that wolf colonization, range expansion, and learning seemed to contribute to depredation increases (Harper et al. 2008). Even though one or 2 pack members may actually depredate livestock, the adults often move the entire pack to farms and establish rendezvous sites where kills have been made at which point the entire pack including young of the year are exposed to livestock routinely. This exposure likely predisposes wolves to prey on livestock in the future. Additionally, prey populations, such as white-tailed deer, are typically higher around agriculture areas, which may attract wolves to farms resulting in wolf/livestock conflicts.

Table 3. Annual Wolf depredation on domestic animals in Wisconsin (verified losses only).

Wolf Depredation	2000	2001	2002	2003	2004	2005	2006	2007	2008
Farms Affected	8	5	10	14	22	25	25	30	30
Wolf Population	248	257	323	335	373	425	467	546	549
Horses killed			3	-	-	2	-	2	-
Horses injured			-	-	-	1	3	2	-
Sheep killed	-	-	7	24	5	3	6	6	1
Sheep injured	-	-	-	-	-	-	-	-	-
Cattle killed	6	11	37	20	27	31	35	30	38
Cattle Injured	1	1	-	-	-	4	5	6	5
Farm Deer	3	-	5	1	6	-	-	-	1
Poultry	4	74	-	-	-	-	50	-	2

Wolf Depredation	2000	2001	2002	2003	2004	2005	2006	2007	2008
Losses									
Dogs killed	5	17	10	6	15	17	25	13	21
Dogs injured	-	1	4	4	3	6	10	9	7
Total Losses*	19	104	66	55	56	64	134	68	75

Losses include killed & injured. Wildlife-caused losses or damages confirmed by WS. These figures usually represent a fraction of the total losses (Connolly 1992).

Table 4. Wisconsin annual wolf damage payment summary. Prior to 2005, payment procedures including negotiations with landowners on the value of animals killed and injured by wolves lead to delays in making payments, so the compensation payments listed below may include some payments for previous year's losses and will not necessarily be directly correlated to numbers in Table 2.

Resource	2000 (\$)	2001 (\$)	2002 (\$)	2003 (\$)	2004 (\$)	2005 (\$)	2006 (\$)	2007 (\$)	2008 (\$)	Totals (\$)
Sheep	0	0	2,453	1,425	2,025	750	970	1,400	150	9,173
Cattle/calves	3,505	15,003	7,125	8,400	64,239	21,409	42,347	25,735	53,734	241,497
Cattle/adult	0	0	3,500	2,400	7,250	9,175	9,450	1,000	18,000	50,775
Turkeys	0	120	0	0	0	0	0	0	0	120
Pets	2,100	28,150	25,000	12,550	26,400	34,319	55,000	32,235	54,700	270,454
Game Animals (captive)	13,000	0	8,100	1,200	5,300	0	0	0	3,500	31,100
Chickens	25	3,731	0	0	0	0	350	0	0	4,106
Equine	0	0	10,000	2,250	0	4,750	0	6,500	0	23,500
Vet. Services	0	449	819	1,882	4,727	1,952	6,682	2,038	2,668	21,217
Totals	18,630	47,453	56,997	30,107	109,941	72,355	114,799	68,908	132,752	651,942

3.2 Indirect Impacts of Livestock Predation

Wolf impacts on livestock are not limited to death and injury of animals and are discussed in EA Section 1.3.7; Lehmkuhler et al. (2007), and Kleuver et al. (2009). The presence of predators near cattle can invoke a fear response in the cattle. Fear is a strong stressor and can result in disease and weight loss, reduce the value of meat, and interfere with reproduction. In a study by Kleuver et al. (2009), cattle exposed to a combination of wolf effigies, wolf scat and wolf urine exhibited increased vigilance behavior and decreased foraging rates. The stress of being repeatedly chased can cause cattle to abort calves, calf early or give birth to a weak calf. Harassment by predators may also cause livestock to become nervous or aggressive which can increase risk of injury to humans working with the animals and to nearby cattle. Cattle sometimes run through fences when being chased by wolves which results in costs to repair the fence, time and cost in locating the missing animals, and veterinary expenses for animals injured by the fence. Producers with wolf predation problems also spend extra time on herd surveillance in addition to the time spent dealing with the damage.

3.3 Wolf-Dog Hybrids

The issue of wolf-dog hybrids was not addressed in the 2006 EA but is a concern for the USFWS and WDNR. A wolf-dog hybrid is the offspring of the mating of a wolf with a domestic dog (*Canis familiaris*). Normally these animals are bred in captivity. These animals tend to be

intelligent, semi-wild, and independent, and have, to varying degrees, retained normal “predatory behaviors” of wild wolves. However, like domestic dogs, hybrids usually lack a fear of humans. These characteristics can make wolf-dog hybrids highly unpredictable and difficult to manage. It is common for owners of wolf-dog hybrids to find themselves with an animal they lack the knowledge and skill to handle.

Injuries and deaths caused by wolf-dog hybrids have received national media attention. The death of a four year old in Florida in August, 1988 by a wolf-dog hybrid that, just two hours earlier, had been adopted from an animal shelter set a national precedent for animal shelters/agencies: wolf-dog hybrids are to be put down or returned to their original owner, but are not to be adopted out to an uneducated, unsuspecting public. This policy makes it difficult for owners of hybrids to find good homes for animals they cannot manage. Unfortunately, many overwhelmed hybrid owners resort to "setting their wolf-dog hybrid free" when they cannot find a suitable home for it. These freed hybrids generally lack the hunting skills and pack structure needed to survive by hunting wild prey. When these animals become hungry they instinctively return to humans for food and often are shot by local enforcement officers. There were twenty-one cases of free-roaming wolf-dog hybrids in Wisconsin between 1989 and 1998 (WDNR 1999, 2007b).

Free-roaming hybrids are often mistaken for wild wolves. The problems they cause reflect badly on wild wolves and adversely impact the social tolerance for wild wolves. Additionally, wolf-dog hybrids interbreeding with wild wolves are viewed as a threat to the gene pool of wolves. Wolf traits are important to survival in the wild. This introgression threatens the instincts and behaviors of wild wolves (Hope 1994). Dog genes in a wolf population threaten the long term viability of the wolf population.

The WDNR and USFWS may ask WS to remove wolf-dog hybrids either because the hybrids were causing a damage problem or a human health and safety risk, or because the animals were interbreeding with wild wolves and posing a risk to the genetics of the native Wisconsin wolf population. Determining if an animal is a wolf-dog cross or wolf-like dog is often very difficult under field conditions. If site investigation by WS and consultation with the WDNR and USFWS, as appropriate, indicates that removal of the animal is warranted, WS will use foot-hold traps and cable restraints to live-capture the animal. If the animal has identification (e.g., collar) it is returned to the owner. All other suspected wolf-dog hybrids are turned over to the WDNR for holding until genetic analysis may be completed. In the event that wolf-dog hybrids are removed from the wild, these animals will not be included in the numbers authorized for “take” since they are not considered to be part of the wild population of gray wolves (*Canis lupus*).

3.4 Research on Wolf Damage Management (Research Option)

The USFWS is considering issuance of permits for the limited lethal take of wolves for depredation management. Available information indicates that prompt, effective management of depredation problems helps to maintain or improve public tolerance of wolves and is in the best interest of the recovery of the species (EA Sections 1.2 and 2.2.4 and EA Chapter 6 responses to questions 7, 23, and 25-27). However, although information is available on the efficacy of individual WDM methods, little data is available comparing WDM strategies. The current lack of clear, comparative information on the efficacy of these two management approaches fuels debates from those opposed to or in favor of lethal or nonlethal controls. The USFWS has received a proposal to conduct research comparing impacts and efficacy of nonlethal and lethal strategies for addressing wolf depredation on domestic animals (Breck et al. 2009).

The proposed study would be conducted in Wisconsin and/or Michigan on farms where wolves have caused confirmed or probable depredations. Farms with verified wolf depredation on livestock will be assigned to nonlethal or lethal treatment strategies. Assignment of farms to

treatment types will be based on a protocol that minimizes subjective allocation of treatments and maximizes independence of sampling units. Treatments will be applied in accordance with standard protocols including guidelines developed by WDNR and Wildlife Services for the use of lethal control (e.g., trapping and euthanasia). Properties assigned to the non-lethal treatment will have at least one and possibly a combination of tools applied to scare/repel wolves from livestock. Techniques will include aversive conditioning (trap-collar-release), fladry, and light and scare devices. Implementation of non-lethal tools will not be consistent among farms and will vary primarily based on the size of the farm. However, protocols for the use of various techniques will be followed by all WS specialists implementing the non-lethal treatments. The goal is to maximize the effectiveness of the non-lethal tools by implementing them in ways recommended by previous research and practical experience. While the non-lethal devices are deployed, both the producer and WS specialist will check and maintain the functioning of the devices. WDNR and Wildlife Services personnel also intend to interview the farmers participating in the study and some of their neighbors on their acceptance of the nonlethal or lethal controls methods. The agencies propose to conduct the research in 2010 and into 2011 if funding is available.

The effectiveness of lethal and nonlethal techniques would be determined by monitoring the following response variables: 1) whether or not another conflict occurred on the property after implementation of the management strategy, 2) time until next conflict on the property, 3) number of conflicts subsequent to the initial conflict, and 4) number of days that wolves were detected on the property (tracks, howls, or visual observation) subsequent to the initial conflict. The agencies will also monitor a variety of variables for each property which may impact the efficacy of the management methods including but not limited to: 1) the size of the property or pasture, 2) proximity of conflict to other conflict areas, 3) number and type of livestock on the property, 4) number of days the treatment was in effect on the property, 5) number of person-hours spent implementing the treatment, and 6) wolf pack size if known. Additionally, an economic cost-benefit analysis will be conducted that compares the costs of each management technique by accounting for the cost of materials, labor, and supplies as well as amount of damage.

In order to evaluate the effects of implementing the Research Option, it is important to note that the level of lethal take associated with conducting the study would be lower than that which would occur if the WDNR permit request is granted. The reduced take would occur because not all damage management sites would qualify for inclusion in the study. Additionally, only a subset of the study sites would be assigned to the lethal damage management treatment. Consequently, the total number of sites where lethal WDM would be used and the associated take of wolves would be less than what would occur if the WDNR permit request is granted.

IV. ISSUES

Issues relevant to the management of wolf damage and conflicts in Wisconsin are addressed in EA Chapter 2, the Chapter 4 analysis of environmental impacts, and in responses to public comments provided in Chapter 6. Issues addressed in detail in Chapter 4 of the EA include:

- Effects on wolf populations in Wisconsin
- Effects on public and pet health and safety
- Humaneness of method used for WDM
- Impacts to stakeholders, including aesthetics of wildlife
- Effects on non-target species populations, including T&E species

New issues that have developed since the completion of the EA and updates to issues discussed in the EA are provided below.

4.1 Issuance of permit would be contrary to the August 9, 2006 decision by the District Court of the District of Columbia indicating that the issuance of permits for the take of depredated wolves, “contravenes the plain meaning and clear intent of Congress as set forth in Section 10(a)(1)(A) of the Endangered Species Act” (Civil Action No. 06-1279).

Instead of contesting the Court’s decision, the USFWS chose to pursue the removal of wolves from the federal list of threatened and endangered species. However, the Safari Club International and Safari Club International Foundation were interveners on the case and continued to pursue the issue. On June 3, 2008, a three judge appellate panel vacated the District Court’s opinion. The USFWS is mindful of the District Court’s opinion and will consider information from the case in their decision whether or not to issue a permit to the WDNR for lethal take to address depredation or lethal take specifically to implement a proposed research project. It is important to note that the proposed research project is designed to address some of the concerns of the Court by evaluating the efficacy and impacts of WDM methods and public perceptions of WDM.

4.2 How would a new decision by the USFWS impact management decisions and actions by WS and the WDNR?

The relationship among decisions made by the WDNR, WS and the USFWS is discussed in detail in EA Section 3.0. As noted in the EA, the decisions made by the agency with regulatory authority can restrict the actions taken by the other agencies. For example, in WS’ 2006 Decision and FONSI, WS selected the alternative that involves use of the full range of legally available non-lethal and lethal WDM techniques (Alternative 2). However, it is the USFWS’ decision about issuing permits that will determine which methods are available to WS and the WDNR.

4.3 EA should consider the importance of wolves in moderating the impacts of mesopredators (e.g., coyotes) and the role of top predators as a potential buffer to the impacts of global warming on prey species and scavenger populations.

The agencies are aware of recent studies and population models documenting the impact of wolves on the distribution and abundance of coyote populations and associated impacts on ungulate populations (e.g., mesopredator suppression; Berger and Gese 2007, Berger and Conner 2008, Berger et al. 2008). For example, coyote densities in study areas in Grand Teton National Park and the Greater Yellowstone Ecosystem varied spatially and temporally in accordance with wolf abundance (Berger and Gese 2007). A strong negative relationship between coyote and wolf densities supported the hypothesis that wolves were limiting coyote populations. Impacts of wolves appeared to be greatest for transient coyotes with 56% of mortality in transient coyotes attributable to wolves. Transient coyotes in areas with abundant wolf populations also had a much higher emigration rate (117%) than transient coyotes in areas without wolves. Data on coyote, pronghorn and wolf populations in the Grand Teton National Park and Bridger Teton National Forest provided evidence that in some situations, the presence/reintroduction of large carnivore may actually help increase populations of prey species that are heavily impacted by mesopredators (Berger and Conner 2008, Berger et al. 2008). Pronghorn survival was four times higher in areas with wolves and fewer coyotes than in areas with no wolves and higher coyote populations. Based on simulation modeling, Berger and Conner (2008) predicted that the presence of wolves and associated improvements in pronghorn survival could change the pronghorn population growth rate from 0.92 to 1.06, the difference between a slightly decreasing to an increasing pronghorn population.

A model created by Wilmers et al. (2006) demonstrates how the presence of top predators, specifically wolves, can help to stabilize prey population fluctuations. Based on their models, the authors concluded that variation in climate tends to lead to strong fluctuations in age-structured prey populations. Additive mortality from predation helps to suppress the fluctuations in prey populations by slowing the rate of population growth during good years. However, if there are many good years in a row, prey populations may escape the predator pit and reach high densities despite predation. In poor years, the authors predicted that predation would likely be compensatory to other forms of mortality (e.g., starvation, disease), and would help the population. Wilmers et al. (2007) also predict that the presence of wolf-provided carrion could also help to buffer climate-induced changes in the availability of carcasses for scavengers. In the absence of wolves, the availability of carcasses is largely dependent upon abiotic factors such as weather, but when wolves are present, carcasses will be generated no matter what other factors are affecting prey populations.

As noted in the EA and the population impacts section of this supplement, Wisconsin wolf damage management activities, including the lethal removal of wolves, when permitted, has not resulted in a decrease in the state or regional wolf population. In fact, the Wisconsin wolf population has continued to increase. Implementation of lethal wolf removal for damage management, as described for Alternative 2 is not anticipated to result in substantive adverse impact on the wolf population. Consequently, wolves would continue to fill their valuable role in Wisconsin ecosystems.

4.4 The EA should consider the potential positive impacts wolves may have on disease transmission among wild ungulates and between wild ungulates and domestic animals.

Wolf impacts on livestock may not always be negative. High density of host species may lead to higher incidence of disease because of increased disease transmission rates. Some biologists have hypothesized that wolf predation on wild ungulates may help to reduce prevalence of diseases that are detrimental to prey populations and transmissible to livestock (e.g., bovine tuberculosis (*Mycobacterium bovis*), brucellosis (*Brucella abortus*)) by decreasing the size of wild ungulate populations and reducing average group size (Creel and Winnie 2005, Stronen 2007). Others have hypothesized that the ability of wolves to recognize and focus predation efforts on individuals which are not as healthy as herdmates may serve to remove animals early in the process of developing and, potentially shedding, the disease (Associated Press 2003). However, at this time, these hypotheses are untested. Even if these beneficial impacts are proven, the level of lethal wolf removal proposed in Alternative 2 is unlikely to have an impact on this issue. The Wisconsin wolf population has continued to increase despite the fact that wolves have been lethally taken for damage management at intervals since 2003. As discussed in Chapter 4 of the EA, lethal removal of up to 10% of the population for damage management is not anticipated to result in substantive adverse impact on the wolf population. Consequently, the proposed action would not adversely impact any benefits of wolves in terms of reducing disease in wild ungulates and disease transmission between wild ungulates and livestock.

4.5 EA needs to Address Indirect Impacts of Wolves on Livestock.

Wolf impacts on livestock are not limited to death and injury of animals (Lehmkuhler et al. 2007 and Kleuver et al. 2009). The presence of predators near cattle can invoke a fear response in the cattle. Fear is a strong stressor and can result in disease and weight loss, reduce the value of meat, and interfere with reproduction. In a study by Kleuver et al. (2009), cattle exposed to a combination of wolf effigies, wolf scat and wolf urine exhibited increased vigilance behavior and decreased foraging rates. The stress of being repeatedly chased can cause cattle to abort calves, calf early or give birth to a weak calf. Harassment by predators may also cause livestock to

become nervous or aggressive which can increase risk of injury to humans working with the animals and to nearby cattle. Cattle sometimes run through fences when being chased by wolves which results cost to repair the fence, time and cost in locating the missing animals, and veterinary expenses for animals injured by the fence. Producers with wolf predation problems also spend extra time on herd surveillance in addition to the time spent dealing with the damage.

4.6 The WDNR should/should not relocate depredating wolves.

Relocation of depredating animals is one of the damage management tools available to the WDNR and their designated agents because of the Section 6 Cooperative Conservation Agreement with the USFWS. However, in its permit application, the WDNR notes that relocation is no longer a feasible option because: 1) relocated wolves often do not remain near release sites, and some return to their original territories; 2) given the widespread distribution of wolves across the state, any relocated wolves would probably be killed by resident packs; 3) relocated wolves may continue to exhibit problem behavior (e.g., human habituated wolves); and 4) relocating wolves gives the false impression that the WDNR is introducing additional wolves to the area, which contributes to the decline in public support for wolves and WDNR wolf management.

V. ALTERNATIVES

The purpose of this supplement is to analyze the USFWS alternatives for responding to the WDM permit request from the WDNR and the research request. The actions requested by the WDNR are similar to those in the permit request analyzed in the 2006 EA (Alternative 2). Consequently the first 4 management alternatives have not changed from those described in detail in Chapter 3 of the EA. However, an additional alternative which would allow use of lethal WDM methods only for the proposed research on WDM methods has been added (Alternative 5). The following is a brief summary of program components common to all alternatives and descriptions of the alternatives as they relate to the USFWS decision to issue a Section 10(a)(1)(A) permit for wolf management to the WDNR.

5.1 Factors Common to All Alternatives

- Agencies would conduct wolf damage management in accordance with the Wisconsin Wolf Management Plan (WDNR 1999, 2007), USFWS permits for WDM, the Eastern Gray Wolf Recovery Plan (USFWS 1992), WDNR guidelines for conducting depredation control (EA Appendix E), and all applicable policies, agreements and guidelines among WDNR, WS, USFWS and the tribes.
- Wolf damage management would be conducted on private or public property in Wisconsin when the resource owners/ managers (property owners/ land managers) request assistance to alleviate wolf damage, wolf damage is verified by WS, the USFWS, the WDNR or other agents authorized by the WDNR, and an *Agreement for Control* or other comparable document has been completed.
- The WWMP (WDNR 1999, 2007) establishes that in order for producers to receive financial assistance with WDM supplies or operational assistance with WDM, the producer/owner must sign a depredation management plan (farm plan) for the property which includes damage abatement recommendations.
- An integrated management approach would be used which involves the sequential or simultaneous use of multiple methods to reduce wolf damage and conflicts while minimizing harmful effects of damage management measures on humans, wolves, other wildlife species, domestic animals, and the environment. Methods available for use in the integrated approach vary depending upon the alternative selected by the agencies.
- The WS' Decision Model thought process, designed to identify the most appropriate wildlife damage management strategies and their impacts, would be used.

- Agencies would implement the standard operating procedures in Section 3.5 of the EA.

5.2 Alternative 1 - Non-lethal WDM Only

Under this alternative, the USFWS would not issue permits for the lethal take of wolves to resolve damage problems, but would issue permits for the use of aversive conditioning and nonlethal projectiles such as rubber bullets (EA Section 3.3.3). Aversive conditioning and shock collars involve intentionally using painful stimuli to manage wolf behavior, and the USFWS has determined that, while wolves are federally protected as a threatened or endangered species, permits or other authorizations are required to use these methods. The USFWS has the option of restricting the use of nonlethal projectiles to WS and the WDNR, or the USFWS may grant the WDNR and WS the authority to train and equip personnel outside their agencies to use this method. In its permit request, the WDNR has requested that USFWS grant the WDNR and WS the authority to train and equip landowners/managers to use non-lethal projectiles. Methods that require capture and handling of wolves (e.g. aversive conditioning using shock collars, collar-activated frightening devices) would be conducted only by personnel from the WDNR, WS or the tribes.

In addition to the nonlethal methods authorized under permits from the USFWS, private individuals and agencies will have access to the non-lethal WDM techniques which do not result in “take” as defined by the ESA and its implementing regulations, and do not require a permit or authorization from the USFWS (EA Section 3.3.1 and Appendix B). These methods include, but are not limited to: animal husbandry practices, installation of fencing and use of livestock guarding animals. The WDNR and their appropriately trained and designated agents may use additional non-lethal techniques involving harassment or handling of wolves without permits from the USFWS (EA Section 3.3.2) including capture and relocation and collar-activated frightening devices like the Radio Activated Guard (EA Appendix B).

The ESA allows for the lethal take of an endangered species in response to a demonstrable (either immediate or non-immediate) threat to human safety and to aid a sick or injured wolf. This type of lethal take does not require a permit from the USFWS and could still occur under this alternative.

5.3 Alternative 2 - Integrated WDM (Proposed Action/No Action Alternative²)

Under this alternative, the full range of practical, effective WDM methods would be available for use in reducing wolf damage and conflicts. The USFWS would issue permits for the lethal take of wolves for depredation management as well as the use of aversive conditioning and nonlethal projectiles. In determining the damage management strategy for a site, preference would be given to non-lethal methods when they are deemed practical and effective. Lethal WDM methods would not be implemented at livestock operations or on other private lands that fail to follow technical assistance guidelines for reducing or preventing wolf depredation in a timely manner.

In their permit request, the WDNR asked for authority for lethal take of up to 10% of annual wolf population estimate each year.³ Actual annual lethal take of wolves for WDM is anticipated to usually be lower than this level. The annual maximum value of 10% was estimated based on review of a similar WDM program which has been in effect in Minnesota since 1986 and wolf damage management take data from Wisconsin during periods when lethal methods have been

² Reasons for classifying this as the “No Action” alternative remain as discussed in EA Chapter 3.

³ These estimates are derived from surveys conducted during late winter, prior to pup production, when population size is at an annual low.

permitted. Study of radio-collared wolves in a Minnesota wildland-agriculture matrix typical of many areas in Minnesota and Wisconsin by Chavez and Gese (2006) indicates that, although radio collared wolves in Minnesota went through and were in close proximity to farms, few livestock were actually killed. During the 3-year monitoring of wolves from 3 different packs, wolves passed through livestock pastures on 28% of the nights of tracking, were within 1 km of a livestock pasture on 58% of the nights, and were < 5 km from a pasture on 95% of the nights. However, only 8 animals (all young or vulnerable livestock) were killed. This supports the hypothesis that not all wolves are involved in depredation and that livestock predation problems are likely caused by only a small portion of the wolf population. Consistent with the proposal in this alternative, Chavez and Gese (2006) recommended an integrated strategy for managing wolf depredation on livestock that included maintaining healthy wild prey populations, encouraging effective and proper animal husbandry practices (e.g., carcass disposal), and removing wolves that kill livestock.

The WDNR has also requested that USFWS grant the WDNR and WS the authority to train and equip landowners/managers to use non-lethal projectiles such as rubber bullets.

5.4 Alternative 3 - Technical Assistance Only and Alternative 4 - No Federal WDM in Wisconsin

The USFWS action would be identical under both alternatives. Specifically, the USFWS would not issue any Section 10(a)(1)(A) permits for wolf damage management (e.g., use of aversive conditioning, nonlethal projectiles, and lethal removal). Additionally, the USFWS would not permit the lethal take for the WDM research project. Individuals with wolf damage problems could still use the nonlethal methods available to all without a permit from the USFWS (EA Section 3.3.1). The State could operationally use and authorize others to use many non-lethal WDM techniques under authority granted by the Section 6 Cooperative Conservation Agreements (Section 3.3.2). As with Alternative 1, lethal take for the protection of human safety and to aid a sick or injured wolf would be permitted under authority granted by the ESA.

5.5 Alternative 5 – Research Option – Permit for Lethal Removal Only Issued for WDM Research

Under the Research Option, farms with wolf depredation which meet study criteria would be included in the research project. Study sites would be assigned to a “nonlethal damage management” treatment or a “lethal damage management” treatment. Other sites will not meet criterion for inclusion in the study or the landowner/manager may choose to not participate in the study. Consequently, lethal damage management will only be conducted at a portion of the sites which might qualify for lethal WDM if the USFWS were to issue permits under Alternative 2. Total lethal take under Alternative 5 would be lower than the MDNR WDM permit request for lethal take of up to 10% of the previous winter’s wolf population.

VI. ENVIRONMENTAL IMPACTS

This section focuses on the environmental impacts of Alternatives 2 and 5. Environmental impacts of Alternatives 1-4 have not changed from those analyzed in the EA. However, since the EA was completed, lethal WDM similar to that proposed in Alternative 2 has been conducted under permits, authority granted by the ESA and while wolves were delisted. Analysis of information on the wolf population since the completion of the EA provides a valuable opportunity to review whether the conclusions based on the impact assessments in the EA are still valid. Alternative 5 is a new alternative which requires analysis at this time.

6.1 Impact on Wolf Population

6.1.1 Alternative 2 – Integrated WDM (Proposed Action/No Action Alternative)

The EA contains a detailed discussion of the impacts of each alternative on the wolf population. This section evaluates the data on the Wisconsin wolf population that has become available since the 2006 EA was completed and determines whether the impacts on the wolf population are consistent with the predictions and impact analysis in the EA.

The WDNR carefully monitors the state wolf population and prepares annual reports on wolf population monitoring and research results (Wydeven et al. 2008a, b). Data indicate the Wisconsin gray wolf population has increased 48% from the 2005 population estimate of 435 wolves in 113 packs at the time the EA was prepared in 2006 to approximately 644 wolves in 162 packs in 2009 (Figure 2). This increase has occurred in spite of wolf removals for damage management and wolf mortality from other causes including disease, collisions with vehicles, illegal killing and other factors (Tables 4 and 5).

Factors Impacting the Wisconsin Wolf Population

Available habitat, prey density, and prey vulnerability are important in determining what areas wolves inhabit and the number of wolves that can be sustained by a given area. The Wisconsin wolf population grew at an average of 12.3% annually over the period from 2002-2009 (Table 5), and it is unlikely that prey or habitat availability has been limiting the wolf population in the state. However, data from the WDNR wolf population monitoring indicate that most primary habitat is occupied and wolves are starting to spread into secondary habitat (Wydeven et al. 2008a). Survivorship is much lower in marginal habitat, and population growth rates for wolves in these areas are likely to be much lower than when the wolf population had room to expand in primary habitat. Biologists anticipate that the state wolf population should start to stabilize as has been the case in Minnesota (Erb 2008).

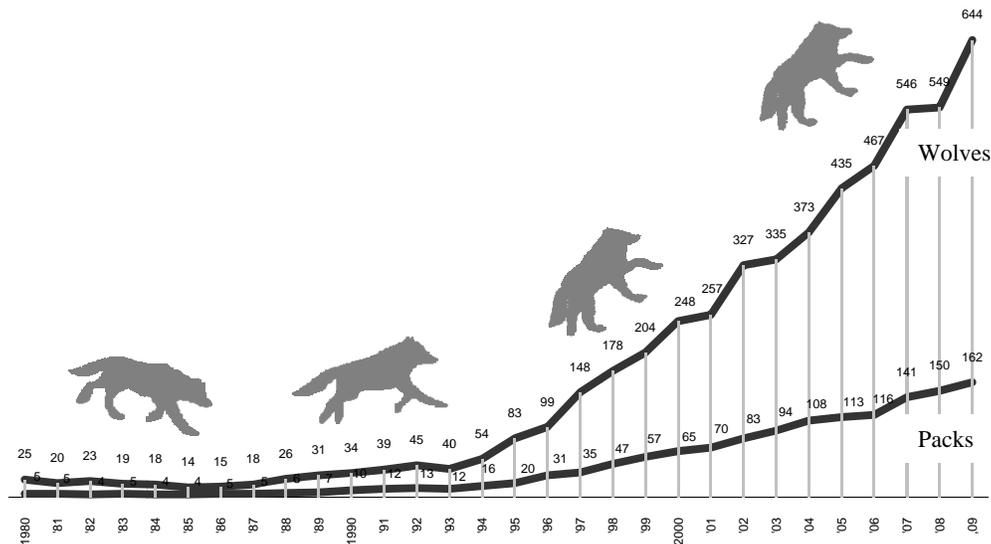


Figure 3. Changes in Wisconsin gray wolf population 1980-2009 from mid-late winter population surveys (USDA 2006, WDNR 2009, Wydeven et al. 2007, 2008a, 2009).

Table 4. Causes of mortality for radio-collared wolves in Wisconsin 2002 - 2008 (Wydeven et al. 2003-2007, 2008a, 2009). The number in parenthesis is the percentage of radio-collared wolves dying from various causes compared to total mortality (natural and human caused) observed in radio-collared wolves.

Mortality Factor	2002	2003	2004	2005	2006	2007	2008	Total
Disease	2	7	3	3	3	1*	3	21 (24)
Accident	1	0	0	0	0	0	0	1 (1)
Other wolves	2	1	1	0	0	0	3	7 (6)
Unknown	2	4	0	3	0	4	1	10 (11)
Vehicle	2	3	2	0	0	3	0	9 (11)
Illegal kill	4	4	4	6	6	2	4	34 (34)
Starvation	0	0	0	0	0	1*	0	0(0)
Capture related	1	0	2	0	0	1	2	3 (3)
Depredation	0	1	1	3	0	4	1	6 (7)
Total	14	20	13	15	9	16	14	87 (100)

* Disease and starvation were recorded as cause of mortality for 2 wolves. For purposes of table one animal was assigned to each category.

Table 5. Wisconsin estimated wolf population, known mortality from all causes, and effects of mortality and WDM on the wolf population, 2002-2006 (WDNR 2009, Wydeven et al. 2003-2007, 2008a, 2009).

Year	Estimated Wolf Population	Total Known Mortality*	Total Known Mortality as % of Population	Wolves Taken for Damage Management	% of Population Taken for Damage Management	% Wolf Population Increase
2002	327	59	18	0	0	27
2003	335	53	16	17	5	2
2004	373	66	18	24	6	11
2005	435	68	16	32	7	17
2006	467	70	15	18	4	7
2007	546	90	16	37	7	17
2008	549	94	17	39	7	0.5
2009	644	Not Avail.	Not Avail.	Not Avail.	Not Avail.	17
Average		71	17	28 ('03-'08)	6 ('03-'08)	12.3

* Includes wolves euthanized for damage management.

The unintentional (e.g., vehicle collisions) and intentional (e.g., authorized take, poaching) killing of wolves by humans also is important in determining the distribution and density of wolf populations (Fuller et al. 2003). Illegal killing of wolves still occurs in Wisconsin. In Wisconsin, from 1 July 2000 - 31 December 2008, there were 87 known illegal wolf kills. Of 105 radio collared wolves known to have died, 32% were illegally killed (USDA 2008, Wydeven et al. 2009). It's likely that other illegal wolf killing occurs but is undetected and not represented in these data. A large percentage of illegal wolf killings occur during the 9 day deer gun season in Wisconsin. Frustration with restrictions on the methods which may be used to address depredation by wolves may have an impact on the extent of illegal killing. In fall 2006, shortly after the federal district court vacated the Section 10(a)(1)(A) permits for wolf depredation management issued by the USFWS, 9 wolves were discovered illegally shot during the 9 day deer gun season, the most ever recorded. Total known illegal wolf kill for 2006 was 17 wolves, 24% of all known wolf mortality for the year (17 of 71 dead wolves) and 67% of known mortality for actively monitored collared wolves (6 of 9 dead wolves). In contrast, during 2007 when wolves were no longer federally-listed, total illegal wolf kill was 9 wolves, 10% of all known wolf mortality and 13% of known mortality in actively monitored collared wolves (Tables 4 and 5).

However, there does not appear to have been a large increase in illegal killing in response to the September 29, 2008 federal court decision to vacate the 2007 USFWS delisting of the Great Lakes Distinct Population Segment of gray wolves. In 2008 total illegal wolf kill was 14 wolves 15% of all known mortality and 29% of known mortality in actively monitored collared wolves (4 of 14 wolves; Wydeven et al. 2009).

Wolf populations do not appear to be greatly affected by other human factors such as snowmobiles, vehicles, or logging activities, except when they result in accidental or intentional killing of wolves or changes to prey density (Fuller et al. 2003). If the wolf population is large enough, even when these factors have an adverse effect on individuals, these activities seem to have little effect on the wolf population (Fuller et al. 2003). From July 1, 2000- June 30, 2008, 116 (30% of known mortalities) wolves are known to have been killed in Wisconsin as a result of vehicle/train collisions. This level of mortality has not inhibited the increase of the Wisconsin wolf population over the same period (Table 4).

Source populations are important in establishing new populations and maintaining populations that are heavily harvested or experience high mortality from other causes (Fuller et al. 2003). As Wisconsin has had a resident wolf population for over 20 years and is not presently subject to heavy harvesting or other forms of excessive mortality, connectivity with source populations in Michigan, Minnesota, and Canada is probably of lesser importance at this time. However, immigration and emigration of wolves among the Wisconsin, Michigan Upper Peninsula, Minnesota and Canada wolf populations occurs. For example, in 2007/2008, 1 radio-collared wolf from Michigan entered Wisconsin and 1 wolf that was radio-collared in Wisconsin is believed to have dispersed to Minnesota. Immigration may not have a large annual effect on the Wisconsin wolf population but it likely contributes to genetic diversity and the long-term sustainability of the population.

Natural mortality factors were responsible for an average of 48% of all known mortality in Wisconsin wolves from 2000-2008. Unlike the information from Fuller (2003), disease, and not starvation, appears to be one of the primary sources of mortality in Wisconsin wolves. From 2000 to 2008, WDNR documented that natural mortality resulting from mange is the cause of 24% of all radio-collared wolf deaths in Wisconsin (Table 4). In 2008, mange appeared to be a contributing factor in up to 62% of deaths of radio-collared wolves. Additionally, in 2007, a wolf was found that died of a new type of mange, Demodectic mange (Wydeven et al. 2008). Previously, mange in Wisconsin was primarily considered to be Sarcoptic mange. The impact the new type of mange may have on the wolf population is not clear at this time, but given the population increase from 2008 to 2009, it is not likely to be a significant threat to the state wolf population.

Status of Regional Wolf Population

The gray wolf population in the western Great Lakes states has exceeded the numerical recovery goals as listed in the Federal and State recovery plans (EA Section 1.3.2). The Federal plan requires that at least two viable wolf populations must exist within the eastern United States. One of these populations must be reestablished outside of Minnesota and Isle Royale. The Federal recovery plan provides two alternatives for reestablishing this second viable wolf population. If the wolf population is more than 100 miles from the Minnesota population, it must contain 200 wolves for at least 5 consecutive years (USFWS 2003). If the wolf population is less than 100 miles from the Minnesota population, it must contain at least 100 wolves for at least 5 consecutive years (USFWS 2003). The Michigan/Wisconsin wolf population is less than 100 miles from Minnesota and 2008/2009 survey data indicate there are more than 1,219 wolves in these two states. The Federal recovery plan also required that the wolf population in Minnesota be stable or growing, and that its continued survival must be assured. In Minnesota, the wolf

population size is not surveyed or estimated annually, however during the winter of 2007-2008, the Minnesota Department of Natural Resources (MNDNR) conducted a new survey of wolf distribution and abundance in Minnesota (Erb 2008). The survey estimated that there were 2,921 wolves (range 2,192 – 3,525) in the state. Comparison of total wolf range, occupied range and population size over the last 10 years suggests that the Minnesota wolf population has been, on average, geographically and numerically stable (Erb 2008).

Impact of the Proposed Action

The EA concluded that the proposed action would not have an adverse impact on the state wolf population. Data on wolves taken for damage management and the status of the wolf population in Wisconsin and the Western Great Lakes Region support this conclusion. The Wisconsin wolf population has continued to increase despite wolf removal for damage management and all other forms of mortality. Based on this information, the analysis in the EA, and the information above, we conclude that the USFWS issuance of permits for the intentional take of up to 10%⁴ of the Wisconsin wolf population would not result in adverse impacts on the state wolf population.

6.1.2 Alternative 5 – Research Option - Permit for Lethal Removal Only for WDM Research

Under this alternative, intentional lethal take of wolves would be restricted to approximately half the sites with verified livestock depredation, and the relatively rare instance of wolf take to protect human safety or to aid a sick or injured wolf. The number of sites where lethal WDM may be used to reduce damage for the study will likely be lower than half the total sites with verified wolf depredation depending on study design and cooperator willingness to participate in the study. The exact number of wolves that might be taken for the research project would be difficult to predict because it would depend on whether the depredation is caused by an individual wolf or a pack, pack size, and the degree of removal required to address the depredation problem (i.e., can the problem be solved by only removing a few members of a pack). However, intentional lethal wolf take under this alternative is not expected to exceed 70% of the maximum that would have been permitted under Alternative 2 and is likely to be closer to 50% of that which would occur under Alternative 2. For the same reasons provided for Alternative 2 in the EA and this supplement, this level of lethal take would not adversely impact the state wolf population.

6.2 Humaneness

6.2.1 Alternative 2 – Integrated WDM (Proposed Action/No Action Alternative)

Wildlife Services and WDNR personnel are experienced and professional in their use of WDM methods. As permitted depending on the alternative selected, wolves would be trapped, captured by cable restraints, or shot by experienced personnel as humanely as possible using the best methods available. Tranquilizer trap devices (TTDs) can be used on wolf traps to reduce the incidence of self-inflicted injuries by captured animals. All activities would be conducted in accordance with USFWS permit requirements and Wisconsin wolf trapping guidelines which require that traps be checked at least once every 24 hours. Daily trap checks minimize the amount of time target and non-target animals remain in traps, and improve the likelihood that a non-target animal may be released unharmed.

Some individuals would consider lethal removal of depredating wolves to be inhumane because they oppose all lethal methods of damage management. Others will be opposed to this alternative because they object to specific lethal WDM methods like traps and cable restraints and perceive

these methods as being unjustifiably cruel and inhumane. It should be noted, that some use of these methods will occur no matter what the alternative selected, although the extent of use will vary as discussed in the EA. Some individuals would prefer that cage traps be used to capture wolves and would perceive this method as being more humane than traps and cable restraints. Unfortunately, the use of cage traps to capture wolves is both impractical and ineffective because it is extremely difficult to get a cage trap big enough for an adult wolf into remote locations, and because it is rare to capture an adult wolf in a cage trap. Individuals with animals that have been injured, threatened or killed by wolves may see this alternative as being more humane because it has the greatest likelihood of preventing further injuries to their livestock and pets. Effects on this issue remain as discussed in the EA.

6.2.2 Alternative 5 – Permits for Lethal Removal Only Issued for WDM Research

As with Alternatives 1 and 2 in the EA, opinions on the humaneness of this alternative will vary depending on individual perspectives and values. Individuals opposed to the use of lethal WDM methods will still consider this alternative inhumane. Some livestock owners will likely consider it inhumane not to do everything possible to reduce wolf predation on animals under their care, including lethal removal of wolves (i.e., implement Alternative 2).

Foot-hold traps would be used for nonlethal and lethal WDM and wolf population monitoring. Some individuals consider the use of foot-hold traps inhumane even when used as a live-capture method for nonlethal WDM. A portion of the individuals who would otherwise be opposed to the use of lethal methods, and others who might oppose a nonlethal only alternative may tolerate this alternative for a short period (e.g., 1-2 years) because they value the information that will be obtained from a comparison of nonlethal and lethal WDM strategies.

Wildlife Services and WDNR personnel are experienced and professional in their use of WDM methods. Under this alternative, wolves would be trapped, snared, or shot by experienced personnel as humanely as possible using the best methods available. All activities would be conducted in accordance with Wisconsin wolf trapping guidelines which require trap sets to be checked at least once each day. Daily trap checks minimize the amount of time target and non-target animals remain in traps, and improve the likelihood that a non-target animal may be released unharmed.

While damage methods are restricted, some property owners may take illegal action against localized populations of wolves out of frustration with continued damage and lack of legal access to the full range of WDM methods. Some illegal methods, like poisons, may be less humane than methods that would be used by experienced agency personnel. While this is not presented as an argument to justify a decision on the merits of any particular agency decision, it is important to recognize that the lack of legal alternatives to manage problem wolves does create a problem relative to public sentiment and the political climate in which agency personnel operate.

6.3 Effects on Public and Pet Safety

6.3.1 Alternative 2 – Integrated WDM (Proposed Action/No Action Alternative).

There are two ways that WDM activities may affect human and pet safety. The first is through risks to human and pet safety from the use of WDM methods, the second is benefits to human and pet safety from WDM actions conducted to reduce risks and threats to human and pet safety from wolves. There have been no reported injuries to WS or WDNR personnel or the public from wolf management activities in Wisconsin during the period of 2006-2008. WS has captured 1 cat and 8 dogs during Fiscal Years 2006-2008 while conducting WDM activities in Wisconsin, but has been able to release all captured animals (Table 6). During this same time, WS has responded to

5 requests for assistance with wolf-related threats to human safety. In these situations, wolf damage management activities had a beneficial impact on human safety. The EA concluded that WS' WDM activities would not have a significant adverse impact on human health and pet safety. Analyses of the data available since the completion of the EA indicate that this conclusion is still valid.

6.3.2 Alternative 5 – Research Option - Permit for Lethal Removal Only Issued for WDM Research

As discussed in the EA for Alternatives 1 and 2 and for Alternative 2, above, risks to human and pet safety from WDM methods would continue to be very low. The ESA allows for the use of lethal methods if needed to reduce a demonstrable risk to human safety from wolves. Consequently, response to threats to human safety are unlikely to vary substantially among alternatives.

The research program would only involve properties with verified livestock damage. Situations where there is a risk to pet safety from wolves would only be impacted by the study if the risks occurred in conjunction with verified depredation on livestock. Consequently, impacts of this alternative on human health and safety are expected to be similar to Alternative 1.

There would also be the potential risk to human and pet safety from the use of WDM methods. However, as noted above for Alternative 2, there have been no reports of injuries to WS or WDNR personnel or the public from wolf management activities in Wisconsin during the period of 2006-2008 (i.e., since the completion of the EA). WS has captured 1 cat and 8 dogs during Fiscal Years 2006-2008 (i.e., since the completion of the EA) while conducting WDM activities in Wisconsin, but has been able to release all captured animals (Table 6). WS would use traps and snares for both the nonlethal and lethal components of the study, so risks to pets and the public are likely to be similar to or slightly lower than for Alternative 2. The EA concluded that WS' WDM activities would not have a significant adverse impact on human health and pet safety. Based on the available information, this conclusion is also valid for Alternative 5.

6.4 Impacts to Stakeholders, Including Aesthetics of Wildlife

6.4.1 Alternative 2 – Integrated WDM (Proposed Action/No Action Alternative).

As discussed in the EAs on wolf damage management in Wisconsin (USDA 2006, 2008) and the WWMP (WDNR 1999, 2007) public attitudes towards and tolerance of wolves and conflicts with wolves are highly varied. This variation in perspective and the passionate feelings individuals can have regarding wolves are reflected in public surveys and comments received on this EA and a subsequent WS EA on management of delisted wolves in Wisconsin (USDA 2008). The Wisconsin Department of Natural Resources (WDNR) has been proactive and energetic in surveying public opinions and supporting partners' efforts to understand public opinion of wolf management in Wisconsin (Treves et al. 2007).

In general, Wisconsin residents are supportive of the presence of a wolf population in the state, although individual perceptions of the appropriate size of the wolf population and the approach to be used to address conflicts with wolves may vary considerably. The extent of an individuals' exposure to wolves and perception of threats from or competition with wolves play a key role in determining whether or not an individual will be supportive of the presence of wolves and individual perceptions of the appropriate size of the wolf population. For example, in a survey of Wisconsin residents conducted by Naughton-Treves et al. described in the addendum to the WWMP (WDNR 2007), in general, rural people in wolf range wanted the lowest wolf numbers, while urban people outside wolf range wanted the highest numbers. This is consistent with

surveys of public attitudes toward wolves from other areas of the world (Decker et al. 2006, Karlson and Sjöström 2007). Interestingly, in surveys of Wisconsin residents, almost 11% of hunters stated they would consider shooting wolves while hunting for deer. Given that research conducted in the Great Lakes area shows support for wolf conservation among about 70% of hunters, not everyone who responded affirmatively to the question is actually likely to follow through on the survey response (Treves et al. 2007). However, this does provide support for agency concerns regarding the importance of maintaining community support for wolf restoration. It is the belief of the lead and cooperating agencies that prompt and effective response to depredation problems is essential to maintaining community support for the presence of wolves in the state (EA Section 1.3.10 and Chapter 6 response to Issue 14).

Most Wisconsin residents are supportive of compensating livestock producers for wolf depredation on livestock and pets, but approval ratings are lower for similar programs for depredation on hunting dogs running on public land (Treves et al. 2007). Treves et al. (2007) interpreted results of multiple surveys conducted in the state to indicate that lethal removal of depredating wolves was generally considered acceptable by many Wisconsin residents, but that approval would decline if removal was conducted on public land or if removal is conducted by individuals other than government agents. Nonlethal methods continue to be popular, but there is some evidence that the public is unaware of the limitations of some methods (e.g., the general lack of suitable sites for relocating wolves).

6.4.2 Alternative 5 – Research Permit for Lethal Removal Only Issued for WDM Research

The impacts of this alternative to stakeholders would primarily depend on their values towards wildlife and their relationship to the damage problem. Livestock owners who perceive an integrated approach including lethal methods as having the greatest likelihood of successfully resolving wolf conflicts would probably prefer this alternative to Alternative 1, but consider it less desirable than Alternative 2. Individuals opposed to lethal removal would likely oppose this alternative because some wolves would be removed.

As discussed in EA Section 2.1.5.2, wolves have high nonconsumptive (viewing, calling, photographing) and indirect values (e.g., spiritual, and existence values) for many people. The ability to view and aesthetically enjoy wolves at a particular site could be temporarily limited if the wolves are removed. New animals would most likely use the site in the future, although the length of time until new wolves arrive is variable, depending on the habitat type, time of year, and population density of wolves in nearby areas. Given the increasing number of wolf packs in Wisconsin, this alternative is not expected to reduce the overall wolf population in Wisconsin. Opportunities to view, call and aesthetically enjoy wolves would be available to people who make the effort to visit sites with adequate habitat outside of the area where lethal methods are used. Incidence of this type of impact will be less than with Alternative 2, but greater than with Alternatives 1, 3 and 4.

6.5 Impact on Non-target Species Populations

6.5.1 Alternative 2 – Integrated WDM (Proposed Action/No Action Alternative)

The agencies use the WS Decision Model (Slate et al. 1992) thought process to select the most effective and selective methods for each wolf damage management situation. WS Specialists are trained in the safe and proper use of the most selective and effective tools for capturing wolves. All foothold traps are equipped with pan tension devices to exclude some smaller non-target animals. Cable restraints are equipped with “stops” to prevent the device from restraining smaller non-target species. Wisconsin WS biologists review scientific literature, collaborate with other

wolf biologists/specialists, and attend wolf symposiums routinely and will adapt new techniques if they are developed and become available for use. WS is currently using the most effective and selective management techniques available to resolve wolf damage complaints in Wisconsin.

Wildlife Services helps to reduce impacts on non-target species by ensuring that WDM actions are only conducted in response to damage by wolves. Wisconsin WS conducted 167 site investigations during CY2008 to resolve wolf damage complaints. WS determined that 51% of the complaints were attributable to species other than wolves. WS scrutinizes every complaint and will only document a complaint as verified-wolf if sufficient evidence is present.

Despite the preventive measures discussed above and in the EA, wolf damage management activities do pose some risk to non-target species. WS non-target take for the period of 2006-2008 is summarized in Table 6. Not all coyotes reported as killed in Table 6 were unintentionally killed during WDM. Most coyotes were live-captured and subsequently euthanized because the property also had a history of problems with coyote predation on livestock. In these instances, the livestock producer may request that WS euthanize all coyotes captured while WS is working to solve depredation problems with wolves.

Table 6. Wisconsin WS non-target take associated with the wolf damage management program relative to licensed harvest by hunters and trappers^A 2006-2008.

Species	WS Take of Non-target Species Killed(Released)			Licensed Harvest		
	2006	2007	2008	2005-2006	2006-2007	2007-2008
Black Bear	(1)	(2)	(6)	3,068 ^E	2,797 ^E	2,955 ^E
Coyote	28(9)	54	42(4)	14,474 ^B	21,830 ^B	19,002 ^B
Bobcat	0	(6)	(3)	497 ^C	356 ^C	477 ^C
Red Fox	0	(4)	1(5)	5,472 ^B	9,236 ^B	7,884 ^B
Badger	(1)	(1)	0	-----	-----	-----
Striped skunk	0	1	1	5,930 ^B	9,692 ^B	8,179 ^B
Raccoon	1(14)	2(9)	(10)	106,669 ^B	167,195 ^B	145,589 ^B
Wild turkey	1(1)	1	(1)	56,783 ^{F,G}	64,590 ^{F,G}	64,438 ^{F,G}
Cat	(1)	0	0	-----	-----	-----
Dog	(1)	(3)	(4)	-----	-----	-----
White-tailed deer	1	1(2)	0	509,536 ^H	525,356 ^H	459,058 ^H
Sandhill Crane	0	(1)	0	-----	-----	-----

^A Federal Fiscal year runs from 1 October to 30 September.

^B Dhuey and Olson 2006, 2007a, 2008

^C Dhuey and Olson 2007b

^E Dhuey et al. 2009

^F Dhuey and Hull 2008a.

^G Dhuey and Hull 2008b.

^H Dhuey and Warnke 2007, 2008; Dhuey et al. 2009

The implementation of various wolf damage management strategies since the completion of the EA in 2006 has not resulted in any unintentional take of state or federally-listed Threatened or Endangered species. This is consistent with the predictions made in the EA.

The EA concluded that although the use of foot-hold traps and cable restraints for nonlethal and lethal wolf damage management and research would result in the unintentional death of some animals, the level of take would be low and would not adversely impact on non-target species populations. Non-target take which has occurred since the completion of the EA has remained at levels consistent with those analyzed in the EA. Data available since the completion of the EA indicates that this is still the case. Impacts on non-target species are expected to remain as analyzed in the EA.

6.5.2 Alternative 5 – Research Option - Permit for Lethal Removal Only Issued for WDM Research

Under this alternative lethal WDM activities would only occur at a limited number of sites. However, WS and the WDNR would also use traps and snares to capture wolves for wolf population monitoring and some non-lethal WDM methods. Total use of traps and snares by agency personnel is likely to be slightly greater than with Alternative 1 and similar to or slightly lower than with Alternative 2.

All actions would be conducted in accordance with Wisconsin wolf trapping guidelines which require trap sets to be checked at least once each day. Daily trap checks minimize the amount of time target and non-target animals remain in traps, and improve the likelihood that a non-target animal may be released unharmed. As with Alternatives 1 and 2, trap and snare selection, settings (stops on snares, pan tension devices, etc.), placement and lures would be designed to minimize risks to non-target species. Measures used by the agencies to prevent injuries and keep wolves alive in traps and snares also reduce risks to non-target species. Methods to reduce risks to non-target species are discussed in the EA section on Standard Operating Procedures (Chapter 3) and in Appendix B.

Unfortunately, despite these precautions, traps and snares may occasionally capture non-target species such as white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americanus*), bobcat (*Felis rufus*), coyote and dogs (Table 6). Overall risks to non-target species from legal WDM actions would be similar to or slightly lower than Alternative 2 (no action / proposed action). These risks are very low and take is anticipated to be well below the sustainable harvest level for non-target species populations.

Some individuals frustrated with wolf management policies might attempt to illegally shoot, trap, snare, or poison wolves with potential detrimental effects on non-target species including threatened and endangered species (Schueler 1993, USDA 1997, Revised). Illegal use of toxicants represents one of the cheapest forms of predator removal, but it also presents the greatest environmental risks (Allen et al. 1996). Under this alternative, risks to threatened and endangered and other non-target species from illegal actions, especially the use of poisons, would probably be greater than Alternative 2.

This alternative does not include the use of any new methods or techniques that have not already been addressed in the EA for Alternatives 1 and 2. Risks to state and federally-listed threatened and endangered species from WDM methods as discussed for these two alternatives.

VII. SUMMARY OF IMPACTS

The EA and Supplement recognize that the total annual removal of individual animals from wildlife populations by all causes is the cumulative mortality. Cumulative impacts of other factors such as development and environmental variables, while not quantified, are reflected in the status of the population of the species and species population trends. Based on the analysis in the EA and this

supplement, no single or cumulative adverse environmental consequences are expected to result from the proposed action/no action alternative or from Alternative 5 which was analyzed in this supplement.

When used in accordance with all appropriate Federal, State and WS requirements and guidance, impacts on non-target species from the proposed methods would be extremely low. None of the federally protected threatened, endangered, or candidate species listed by the USFWS or WDNR in Wisconsin would be jeopardized by the proposed action (J. Smith, USFWS, August 12, 2003; L. Lewis, USFWS, May 9, 2001). Economic and social impacts would primarily be beneficial, although some segments of the human population are opposed to the killing of wolves. Negative impacts to the physical environment would be non-existent.

Any localized reduction of wolf populations would likely be short term as habitats reoccupied by individuals from the surrounding areas. All actions would be conducted in strict compliance with the requirements set by the USFWS for wolf management and associated policies and agreements between WDNR, WS, USFWS and Tribes. The proposed action may have negative effects on individual wolves but will not result in declines in the state wolf population, and, in fact, is expected to result in a net benefit to the Wisconsin wolf population. Based on past experience with the WDM programs in Minnesota, Wisconsin and Michigan, the Wisconsin wolf population will continue to grow even with the intentional and incidental take anticipated for Alternative 2 and all other cumulative impacts on the wolf population until it reaches limits imposed by the availability of food and suitable habitat.

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