

Final Environmental Assessment

**Wildlife Services
Gray Wolf Damage Management
In Oregon**

Lead Agency:

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

Cooperating Agencies:

State of Oregon
Department of Fish and Wildlife

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List of Acronyms and Abbreviations Used in this Document

APHIS	Animal and Plant Health Inspection Service (USDA agency)
AVMA	American Veterinary Medical Association
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management (USDI agency)
CEQ	President’s Council on Environmental Quality
CFR	Code of Federal Regulations
CTUIR	Confederated Tribes of the Umatilla Indian Reservation
DM	Department of the Interior’s Departmental Manual
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered species Act
FR	Federal Register
GYA	Greater Yellowstone Area
IDFG	Idaho Department of Fish and Game
IUCN	International Union for Conservation of Nature
km	kilometer
MIS	Management Information System
MOU	Memorandum of Understanding
NASS	National Agricultural Statistics Service
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRM	Northern Rocky Mountain
OAR	Oregon Administrative Rule
ODA	Oregon Department of Agriculture
ODFW	Oregon Department of Fish and Wildlife
OFWC	Oregon Fish and Wildlife Commission
ORS	Oregon Revised Statute
OSP	Oregon State Police
OWCMP	Oregon Wolf Conservation and Management Plan
RAG	Radio Activated Guard
T&E	Threatened and Endangered
TTD	Tranquilizer Trap Tab
USC	United States Code
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFS	United States Forest Service (USDA agency)
USFWS	United States Fish and Wildlife Service (USDI agency)
WDNR	Wisconsin Department of Natural Resources
WSA	Wilderness Study Area
WS	Wildlife Services (USDA-APHIS program)

EXECUTIVE SUMMARY

This environmental assessment (EA) evaluates a proposed action and alternatives to assist the State of Oregon, Department of Fish and Wildlife (ODFW) and Native American tribal governments with management of gray wolf (*Canis lupus*) conflicts throughout the state. The actions to protect livestock are immediately necessary in portions of the state where the gray wolf population is managed by ODFW and by the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The need for action is based on confirmed and *chronic* livestock depredation, and although less likely, the potential for wolves to threaten human safety.

Legal status of wolves in Oregon

The legal status of gray wolves in Oregon has changed several times after a 60 year absence from the state. In 1999, wolves were identified as beginning to reenter Oregon from an experimental population in Idaho, part of a successful reintroduction effort that also included Montana and Wyoming. Wolves in eastern Oregon have both increased in number, and have been the subject of several status changes of federal Endangered Species Act (ESA) designations. Regardless of the federal listing, gray wolves in Oregon have been protected by State ESA. The lively and rapidly changing legal history of gray wolves in Oregon is summarized in the EA.

The most pertinent and recent regulatory actions have been a March 5, 2011 federal delisting of wolves from the federal ESA in eastern Oregon, *which will not be subject to judicial review* (76 FR 25590; May 5, 2011, as mandated by Public Law 112–10). The federal delisting applies to those gray wolves that are within the boundary of the Northern Rocky Mountain Distinct Population Segment (NRM DPS) which in Oregon is defined by that portion of Oregon east of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of Highway 95 south of Burns Junction (74 FR 15123; April 2, 2009). This boundary falls within ODFW’s east wolf management zone. On June 13, 2013, Federal Register Volume 78, No. 114, the U.S. Fish and Wildlife Service issued a proposed rule to remove gray wolves from the list of species receiving federal protections under the ESA. If gray wolves in the western two-thirds of the state are delisted, they would be managed solely by ODFW under the OWCMP (ODFW 2010a). Wolves in Oregon have been classified as State endangered species since 1987. The OWCMP has outlined conservation and management guidelines to ensure the State meets the intent of Oregon ESA rules and policies to “prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state” (ODFW 2010a). This contingency has been described in the EA in Chapter 1, sections 1.1, 1.3, and 1.4.

On October 5, 2011, Cascadia Wildlands, Center for Biological Diversity, and Oregon Wild petitioned the Oregon Court of Appeals for judicial review of OAR 635-110-0010(6)-(8), the ODFW rule permitting ODFW to authorize the lethal take of wolves that chronically depredate on livestock, provided certain conditions are met. The Court granted petitioners a “stay” of the rule pending review (Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review). On

May 23, 2013, the Oregon Fish and Wildlife Commission adopted the temporary revised Oregon Administrative Rule (OAR) 635-110 and subsequently approved the final OAR 635-110 rules on July 12, 2013. By adopting and following the revised OAR 635-110, ODFW does have the authority to remove or authorize the removal of State protect wolves.

Wolves in the eastern third of Oregon within the NRM DPS boundary are now managed by the State of Oregon, or for those lands of Indian Nations which are identified as reservation lands, by the sovereign tribal authority. Gray wolves are currently classified as endangered under Oregon state law throughout the state (Oregon Revised Statute (ORS) 496.171-192). Based on the expected re-establishment of wolves in Oregon, ODFW developed an Oregon Wolf Conservation and Management Plan (OWCMP) in 2005 (http://www.dfw.state.or.us/Wolves/management_plan.asp), updated in 2010, to meet the requirements of both the Oregon ESA and Oregon Wildlife Policy. The goal of OWCMP is to “. . . ensure the conservation of gray wolves as required by Oregon law while protecting the social and economic interests of all Oregonians.” (ODFW 2010a).

Gray wolves are expected to continue to increase in number and to migrate from those portions of eastern Oregon where wolves no longer receive protections under the federal ESA, and into other parts of Oregon to eventually establish populations in the Cascade Mountains. Outside of the NRM DPS boundary, wolves would receive additional protections under the federal ESA where they are currently classified as endangered (74 FR 15123; April 2, 2009). A status review for gray wolves outside of the NRM DPS in Oregon is expected to be completed by September 30, 2012. The outcome of the review will identify if gray wolves should continue to receive protections under the federal ESA (USFWS 2012). Where gray wolves are federally protected, the Federal/State Coordination Strategy for Implementation of Oregon’s Wolf Plan (as updated March 2011, F/S Strategy), governs agency roles and responsibilities. The federal U.S. Fish and Wildlife Service would be the responsible federal agency for regulatory compliance for any management decisions affecting wolves found in those portions of Oregon west of the NRM DPS line while wolves are protected under the federal ESA. However, it is not unreasonable to expect that wolf management outside of the NRM DPS in Oregon may become a responsibility of ODFW as a result of a federal delisting. If a federal delisting were to occur, gray wolves throughout the State would be managed according the OWCMP (ODFW 2010a, or as amended), and OAR 635-110 (Appendix A) which would provide criteria for conservation and management, similar to wolves within the NRM DPS in eastern Oregon. Again, the exception to state management authority would be those lands managed under sovereign tribal authority.

Need for Action

The increasing presence of wolves in Oregon has initiated a growing need to mitigate and resolve conflicts when wolves cause harm to livestock. The EA discusses the direct and indirect effects of wolf depredation on livestock. The numbers of livestock confirmed to have been killed by wolves to date in Oregon may represent a minimal number, with more livestock kills probably going unconfirmed.

Actions Analyzed

Wildlife Services (WS) proposes to assist ODFW with resolving gray wolf damage to livestock, as directed by ODFW under OAR 635-110. Actions would include assisting ODFW to reduce wolf conflicts to protect livestock¹, which includes herding and guarding dogs, and possibly human safety, as strictly defined in OWCMP (ODFW 2010a) and OAR 635-110 (Appendix A). WS would also assist ODFW with identifying wolf predation events on livestock and provide a variety of non-lethal damage management assistance to livestock producers. At the request and direction of ODFW, WS may lethally remove individual wolves that have been identified as being involved in chronic livestock depredations.

On tribal lands, WS proposes to take similar actions to assist tribal governments with non-lethal wolf management. Additionally, WS proposes to assist CTUIR with wolf depredation on livestock and possibly human safety with both non-lethal and lethal control actions as directed by CTUIR.

Alternatives

A “No Action” alternative was evaluated for comparison to describe the environmental baseline. If WS took no action, ODFW would implement the OWCMP to the best of its ability, including targeting depredating wolves for lethal control (Appendix B), as provided under OAR 635-110 and ODFW (2010a). CTUIR have indicated that they would also implement wolf depredation management if WS were unable to assist (Appendix B). A non-lethal methods only alternative, which would increase the WS role in providing information and non-lethal wolf damage management services, was also evaluated. The non-lethal methods only alternative would preclude any lethal actions or recommendations by WS.

Environmental Consequences

The proposal was examined to reveal its effects on the Oregon wolf population, including the potential for wolves to be conserved to the point of a State ESA delisting throughout Oregon, and the potential for establishment of wolf packs outside the current federally delisted NRM DPS area. The EA also examined the effects on non-target animals, human safety, and on social and aesthetic perspectives including public acceptance, humanness and aesthetic enjoyment of wolves. The effectiveness of the alternatives in meeting the purpose and need is also discussed and how well the alternatives alleviate livestock damages. The assessment finds that there would continue to be a growing wolf population in Oregon if the proposal is adopted, and it would likely have no or very little negative effects on other animals and humans. A variety of social viewpoints are likely to be held by the public. The proposal would be likely have a net positive effect on the public’s opportunity to view wolves in the wild because professional wolf damage

¹ The OWCMP (ODFW 2010a) uses the term livestock to include a provision in the state agricultural laws (ORS 609.125) which defines “livestock” to mean: horses, mules, jackasses, cattle, llamas, alpacas, sheep, goats, swine, domesticated fowl and any fur-bearing animal bred and maintained commercially or otherwise, within pens, cages and hutches (ORS 609.125). In addition, for purposes of authorizing response to wolf-related conflicts, ODFW adds to that definition bison and working dogs (guarding dogs or herding dogs) (ODFW 2010a).

management is an important component of overall wolf conservation, and because WS assistance would allow ODFW and CTUIR to maximize efforts to manage wolf conservation activities (Appendix B). All of the alternatives would involve state, federal or tribal agency action to reduce chronic livestock losses because ODFW and CTUIR would be implementing lethal removal actions if WS were not (Appendix B). Because the proposed action is limited in scope, both negative and positive environmental consequences would be relatively minor. The proposed action would be the most effective in managing chronic livestock depredation conflicts outlined in OAR 635-110 and OWCMP (ODFW 2010a).

The No Action alternative was found to have some of the same effects as the proposed action because if Wildlife Services does not adopt the proposed action, it would be implemented by the State of Oregon, or its agents, as has been demonstrated and discussed in the EA, under the same strict guidelines as allowed in the OWCMP (ODFW 2010a). It is also likely that tribal governments would similarly implement the same actions to manage wolf conflicts, and indeed the CTUIR has indicated that it would. ODFW has indicated that without the assistance of the WS program, the no action alternative would likely result in increased livestock losses, and ODFW's overall wolf conservation efforts in Oregon would be challenged.

A Non-lethal Only Alternative was also evaluated in detail. It would have no direct negative effect on wolves or non-target animals, but once again, ODFW and CTUIR would remove problem wolves as allowed under the OWCMP (ODFW 2010a) and OAR 635-110, or tribal management authority, therefore the net effect would be the same as No Action alternative. Some members of the public might prefer this alternative if no lethal actions were taken, but lethal actions would be taken as prescribed by the OWCMP (ODFW 2010a) whether WS assisted or not. Social perspectives should be similar to the No Action and Proposed Action alternatives since any necessary lethal wolf damage to livestock will be initiated by ODFW and/or CTUIR if WS chose not to assist.

CHAPTER 1. PURPOSE AND NEED FOR ACTION

Introduction

In 1999, a radio-collared female gray wolf from the Idaho experimental population was discovered in Oregon, captured by the U.S. Fish and Wildlife Service (USFWS), and returned to Idaho. This was the first wolf confirmed in Oregon in the 60 years since wolves had been purposefully eradicated from the state. Two other wolves were subsequently found dead in Oregon in 2000. One was a radio collared male from Idaho that was struck by a vehicle, and the other was an un-collared male wolf which was found shot. The un-collared wolf was also determined to have originated from the Idaho experimental population.

Continued dispersal of wolves has been, and is expected as a result of the re-establishment of wolf populations in the states of Montana, Wyoming and Idaho through the federal wolf recovery program. Since wolves in these states have increased in numbers and/ or expanded their range, wolf biologists correctly predicted they would disperse into Oregon from Idaho and establish breeding populations. Dispersal of wolves from Idaho into Oregon has resulted in eight known packs, four of which are counted as breeding pairs for 2013, covering portions of Wallowa, Union, Baker, and Umatilla Counties. As of December 31, 2013, the minimum number of wolves in eastern Oregon at the end of 2013 was 64 (ODFW 2014). In addition, ODFW receives frequent reports of wolves in the Cascade Mountains and Blue Mountains. Historically, wolves occurred throughout most of the state (ODFW 2010a).

Managing human/wolf conflicts is an integral part of wolf management in Oregon where emphasis is placed on goals and objectives that the Oregon Fish and Wildlife Commission (OFWC) adopted in the Oregon Wolf Conservation and Management Plan (OWCMP) (ODFW 2010a). The OWCMP (ODFW 2010a) put forth strategies to minimize wolf conflicts by incorporating conflict avoidance, information, education, and limited removals when chronic livestock depredations occur.

The OWCMP (ODFW 2010a) uses the term livestock to include a provision in the state agricultural laws (ORS 609.125) which defines “livestock” to mean: horses, mules, jackasses, cattle, llamas, alpacas, sheep, goats, swine, domesticated fowl and any fur-bearing animal bred and maintained commercially or otherwise, within pens, cages and hutches (ORS 609.125). In addition, for purposes of authorizing response to wolf-related conflicts, ODFW adds to that definition bison and working dogs (guarding dogs or herding dogs) (ODFW 2010a.)

The OWCMP (ODFW 2010a) also allows for responding to potential threats to human safety.

OWCMP (ODFW 2010a) was first developed in 2005 to address the inevitable need to manage wolves in the state. The OWCMP (ODFW 2010a) would also serve the State’s legal obligations under the Oregon ESA. OWCMP was updated in 2010 and is the basis for the environmental baseline in terms of wolf management in Oregon.

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Although livestock losses to wolves are minimal industry-wide, losses to individual operators can be significant (Fritts et al. 1992, Mack et al. 1992). Control of offending wolves, along with increased livestock management practices (*e.g.*, carcass management, fencing, etc.), compensation for losses, and communication with the public have all contributed to wolf recovery where wolf-livestock conflicts exist (Fritts et al. 1992, Mack et al. 1992, Niemeyer et al. 1994, Bangs et al. 2006).

The Oregon Department of Fish and Wildlife (ODFW) and The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) have requested that APHIS, Wildlife Services (WS) assist with managing gray wolf damage to livestock and potentially human safety, as defined in OWCMP (ODFW 2010a) and in CTUIR management decisions respectively. As wolves have become established in parts of the state, livestock damages have occurred as a result of actions by some wolves. The reason WS is requested to assist in this case is because WS has special expertise in evaluating and confirming depredation by predators on livestock, technical expertise in non-lethal methods to minimize depredation on livestock, and expertise in live-capturing for radio collaring /monitoring, as well as in removing individual predators responsible for depredation or that are deemed to be threats to livestock. WS also has personnel distributed in the State in field locations to provide wildlife damage management assistance, as well as aircraft and pilots/crews, or access to or ability to contract with private sources of aerial operations, and thus is readily suited to providing the requested assistance in an efficient and effective manner.

The proposed action would more immediately occur where gray wolves are not federally managed within Oregon's portion of the Northern Rocky Mountain, Distinct Population Segment boundary² (NRM DPS) (Figure 1). Gray wolves throughout Oregon are protected under State law as endangered (ORS 496.171-192), with two management zones having been established by ODFW and Oregon Fish and Wildlife Commission (Figure 2). Therefore, gray wolves in NRM DPS area of the State (a portion of ODFW Eastern management zone) fall under the protection and management authority of ODFW.

Recent Legal Status Changes

Wolves had been absent from Oregon for more than 30 years when they gained endangered status in 1974 with their listing under the federal ESA. In 1987, USFWS completed the revised Northern Rocky Mountain Wolf Recovery Plan. Four years later Congress initiated an administrative process to reintroduce wolves into Yellowstone National Park (YNP) and central Idaho. In 1995 and 1996, 66 wolves were captured in Alberta and British Columbia, Canada. Of those, 35 were released in central Idaho and 31 were released into YNP. Wolves were protected as a "non-essential experimental population" under the federal ESA within a specified zone that included portions of Idaho, Wyoming and Montana.

² The NRM DPS in Oregon includes that portion of Oregon east of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of Highway 95 south of Burns Junction. (FR: April 2, 2009 (Vol. 74, No. 62, Page 15123-15188))

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When the OWCMP was first adopted in 2005, gray wolves in Oregon were under the primary jurisdiction of the USFWS and were federally listed as endangered under the federal ESA of 1973. On May 4, 2009, wolves in the NRM DPS (east of Hwy. 395/78/95) of Oregon were removed from the protections of the federal ESA (Figure 1). However, on August 5, 2010, federal protections for wolves in the NRM DPS portion of Oregon were reinstated, which meant that all wolves in Oregon were federally-listed as endangered.

Subsequently, on May 5, 2011, the USFWS published a final rule implementing Public Law 112-10, Section 1713, directing the Secretary of Interior to effectively delist wolves in the identified NRM DPS, including the portion of that boundary identified in Oregon (Figure 1), (76 FR 25590). That act of Congress changed the legal status of wolves in the eastern third of Oregon (the NRM DPS portion of Oregon) to no longer fall under any federal protection. Thus the only protections in effect in this area are those established by State law under the Oregon Endangered Species Act (ORS 496.171-192).

On October 5, 2011, Cascadia Wildlands, Center for Biological Diversity, and Oregon Wild petitioned the Oregon Court of Appeals for judicial review of OAR 635-110-0010(6)-(8), the ODFW rule permitting ODFW to authorize the lethal take of wolves that chronically depredate on livestock, provided certain conditions are met. The Court granted petitioners a “stay” of the rule pending review (Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review).

On May 23, 2013, following the negotiations between the Plaintiffs, ODFW, the Oregon Cattleman’s Association and Governor’s Office, the parties reached an agreement that led to the ending of the lawsuit. The outcome of the agreement between the parties resulted in the Oregon Fish and Wildlife Commission approving the final OAR 635-110 rules on July 12, 2013. By adopting and following the revised OAR 635-110, ODFW does have the authority to remove or authorize the removal of State protect wolves.

On June 13, 2013, Federal Register Volume 78, No. 114, the U.S. Fish and Wildlife Service issued a proposed rule to remove gray wolves from the list of species receiving federal protections under the ESA. If gray wolves in the western two-thirds of the state are delisted, they would be managed solely by ODFW under the OWCMP (ODFW 2010a). Wolves in Oregon have been classified as State endangered species since 1987. The OWCMP has outlined conservation and management guidelines to ensure the State meets the intent of Oregon ESA rules and policies to “prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state” (ODFW 2010a). This contingency is described in the EA later in the chapter, sections 1.1, 1.3, and 1.4.

Wolf management is a relatively new issue in Oregon. During the initial phases of conservation of the gray wolf under the Oregon State ESA as outlined in OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a), wolves involved in chronic depredation may be killed by ODFW, ODFW authorized agents or WS personnel after confirmation by ODFW. ODFW will issue a

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conflict deterrence plan to help resolve the situation through non-lethal means (OAR 635-110). The OAR 635-110 and the OWCMP (ODFW 2010a) provides that in Phases I and II, WS may assist ODFW with determining the cause of death in wolf damage complaints, however ODFW will make the final determination.

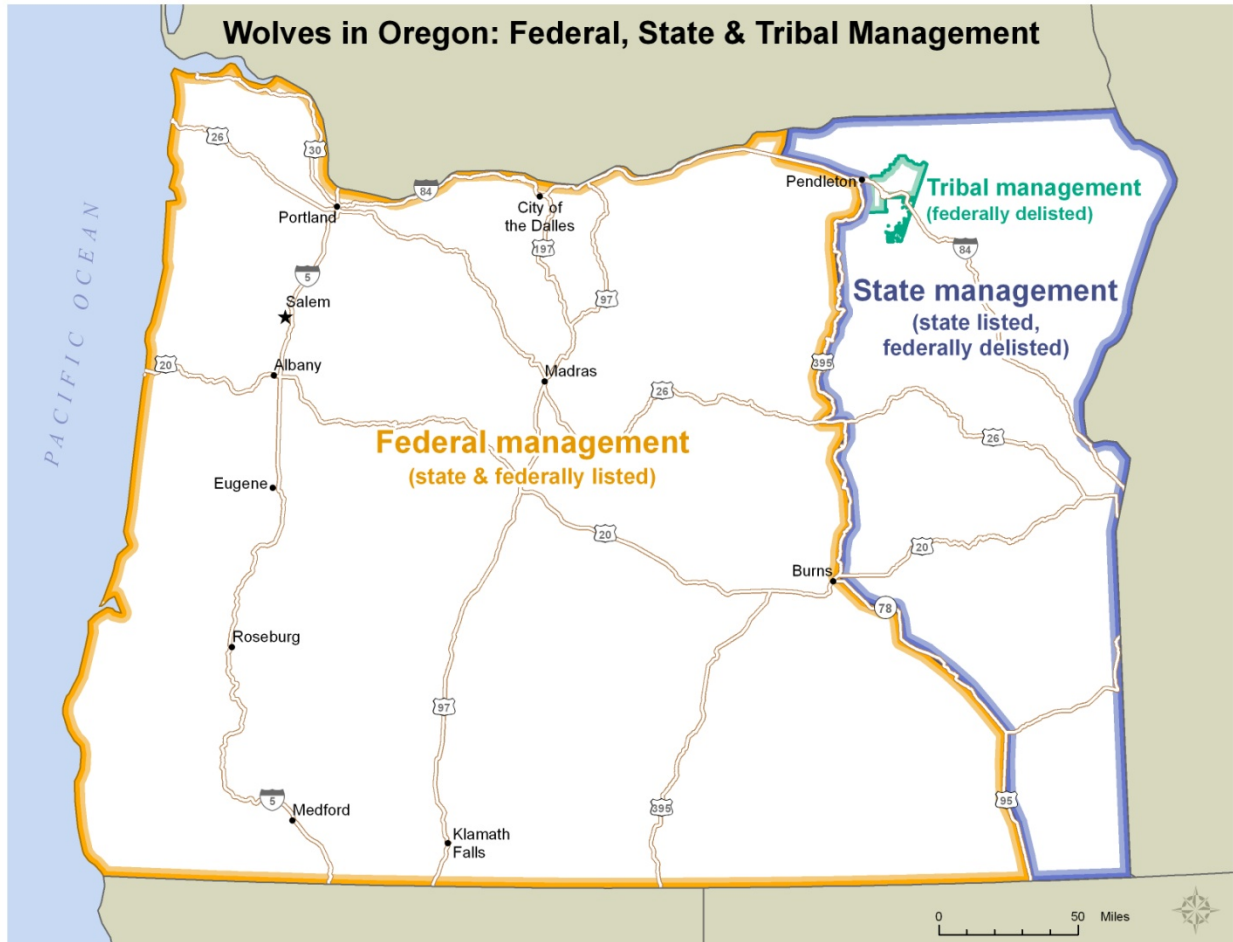


Figure 1. Map showing boundary of federal, State of Oregon, and Confederated Tribes of the Umatilla Indian Reservation wolf management jurisdictions. Wolves in the federal management zone are classified under the federal ESA as endangered. Wolves in the state and Tribal management zones (both within the NRM DPS) are federally delisted and managed accordingly.

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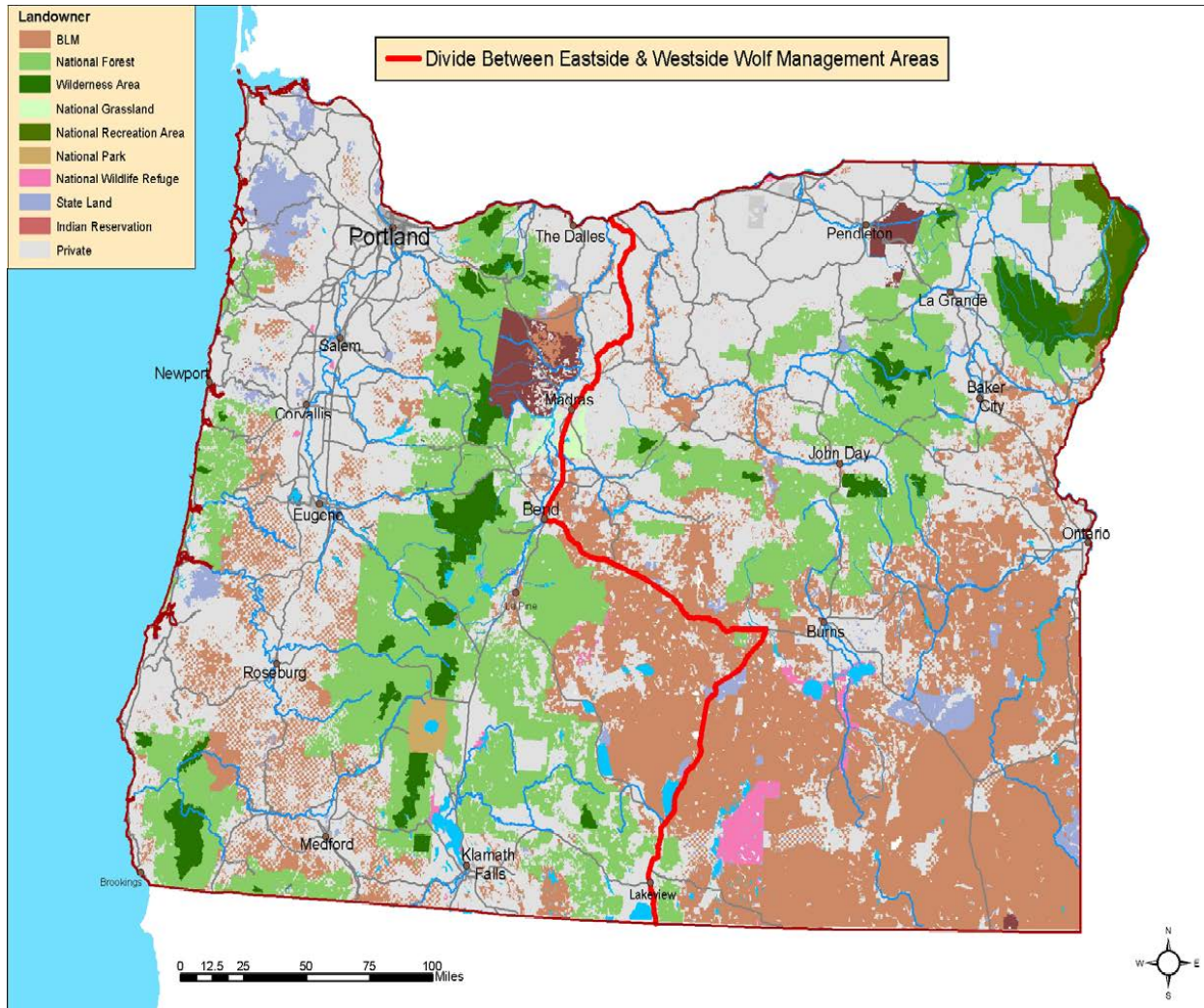


Figure 2. ODFW's eastside and westside wolf management areas, as shown by the red line, is defined by U.S. Highway 97 from the Columbia River to the junction of U.S. Highway 20, SE on U.S. Highway 20 to the junction with U.S. Highway 395, south on U.S. Highway 395 to the California border (ODFW 2010a).

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1.1 Purpose

Purpose of the EA

The purpose of the EA is to respond to ODFW's requests to reduce livestock depredation by gray wolves in Oregon and on sovereign Native American tribal reservation lands, where gray wolves are not managed by the federal government under the federal Endangered Species Act (ESA) as defined in the EA, Chapter 1.3. Additionally, the purpose of the EA is to be available to assist ODFW and sovereign tribal governments in the unlikely event that wolves threatened human safety. Any actions undertaken on behalf of ODFW must conform with ODFW's conservation and management objectives and goals as defined in detail in OAR 635-110 (EA Appendix A) and OWCMP (ODFW 2010a, Section II).

1.2 Need for Action

Direct predation on livestock

ODFW's OWCMP (ODFW 2010a) calls for conservation and management of wolves as a species in the State, which provides a reasonable expectation that wolves in Oregon will increase in number in the foreseeable future. Along with the expectation of increased wolf numbers is the expectation that depredation on livestock will also increase.

In Oregon, livestock depredation events (including predation and injury) by wolves have been *confirmed* by ODFW or FWS (while federally listed), in Baker, Wallowa, and Umatilla counties (ODFW 2012a, 2013, 2014, http://www.dfw.state.or.us/Wolves/depredation_investigations.asp last access 7/3/14):

- 2009* (April through August): 28 lambs, 1 calf, and 1 goat
- 2010*: 8 calves
- 2011: 13 cattle depredations (USFWS confirmed 3 cattle killed; ODFW confirmed 5 calves and 4 cows killed, 1 cow injured).
- 2012: 8 cattle depredations (3 cows and 1 calf killed, 2 cows and 2 calves injured); 9 sheep depredations (3 lambs, 2 ewes, and 3 rams killed, and 1 injured ram)
- 2013: 11 cattle depredations (2 cows and 3 calves killed, 3 cows and 3 calves injured); 7 sheep attacked (2 ewes and 4 lambs killed, 1 ram injured), and 1 goat killed.
- 2014 (January through June): 1 cow injured; 36 sheep depredations (5 ewes and 6 lambs killed, 20 lambs, 5 ewes injured).

*USFWS reported confirm depredation as livestock killed.

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Other investigations have occurred showing possible and probable, but unconfirmed, wolf kills. The criteria and numbers of investigations can be found at: http://www.dfw.state.or.us/Wolves/livestock_loss_investigations.asp.

Confirmed losses underestimate probable losses

It is important to recognize that the numbers of livestock that have been confirmed to be killed by wolves to date in Oregon may represent only the minimum numbers of livestock actually killed and injured by wolves, and that more livestock were probably killed but not confirmed as wolf predation (Bjorge and Gunson 1985, Oakleaf et al. 2003). For example, in the Order Staying Enforcement of Rule Pending Judicial Review Conditioned on Providing Security, one Oregon cattle producer declared that he suffered the loss of two pregnant cows, one bull, and two yearlings to wolves during part of a one year, but only two of his animals were confirmed as wolf kills (Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review). For the confirmed wolf kills, he received a compensation payment in the amount of \$800³ but he incurred additional losses of \$6,600. Thus, this producer was compensated for about 11 % of his direct losses which totaled \$7,400.

Oakleaf et al. (2003) conducted a study on wolf-caused predation losses to cattle on U.S. Forest Service (USFS) summer grazing allotments near Salmon, Idaho, and concluded that for every calf found and confirmed to have been killed by wolves, there were as many as 8 other calves killed by wolves but not found by the producer. Bjorge and Gunson (1985) likewise recovered only 1 out of every 6.7 missing cattle during their study and suggested that wolf-caused mortalities were difficult to detect.

Confirmed incidents of wolf predation on livestock may involve only one or several livestock killed or wounded per incident, but there have also been situations where larger numbers of livestock have been killed in a single incident, particularly in the case of wolf attacks on sheep. Muhly and Musiani (2009) reviewed data on wolf predation on livestock in Idaho, Montana and Wyoming from 1987-2002 and found that while most wolf attacks on cattle involved the death of only 1 animal per incident, wolf attacks on sheep typically involved killing about 14 animals per incident, with up to 98 sheep killed in a single attack. In Oregon, one producer suffered 22 lamb losses to wolves in one day. The same producer also incurred additional lamb losses and the loss of a goat in the days and months that followed, all by the same wolves (ODFW 2012a).

ODFW requires a standard of conclusive evidence before wolf-caused livestock depredations are confirmed (ODFW 2010b). In many cases, wolves may have been responsible for the death of a rancher's livestock, but there was insufficient evidence remaining to confirm wolf predation. In some cases, those portions of the livestock

³ Compensation was provided by a Defenders of Wildlife fund which is no longer in effect.

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carcass that might have contained the evidence of predation may already have been consumed, carried off, or decomposed. Some of these incidents might be classified as “probable” predation, depending on other evidence that might still remain. But in many cases, there may be little or no conclusive evidence of predation, other than the fact that wolves are known to be in the area and some livestock have seemingly just disappeared.

As wolf populations increase and expand their range, local decision makers must choose management strategies that balance competing needs for wolf protection and the reduction of wolf-caused damage (Mech 2001). Wolves prey on domestic animals in all parts of the world where the two coexist (Mech and Boitani 2003, OWCMP 2010a,). Data from the Northern Rocky Mountain Recovery Area suggest that individual wolves do not automatically prey on livestock, but members of wolf packs encountering livestock on a regular basis are likely to depredate sporadically (Bangs and Shivik 2001).

The relative risk of predation on livestock posed by individual wolves was analyzed by WS for Idaho (USDA 2011a). The author, Collinge (2008), measured the likelihood for depredation to occur from wolves, black bears, cougars and coyotes and showed that individual wolves were more likely to depredate on sheep and cattle than individual coyotes, bears and cougars.

Where and how livestock are managed and where and how wolves are managed will influence depredation rates (ODFW 2010a). In Alberta, Canada, cattle on heavily forested but less intensively managed grazing allotments suffered three times as many depredation incidents as more intensively managed lease areas having less forest cover (ODFW 2010a). In North America and Europe, untended livestock occupying remote pastures suffered the greatest losses from wolves. Newborn livestock held in remote pastures are more vulnerable to wolf predation.

Indirect depredation effects on livestock

Although direct losses of livestock due to predation are often conspicuous and economically significant to affected producers, they likely underestimate the total impact on producers because they do not consider indirect effects as a result of livestock being exposed to the threat of predation (Howery and DeLiberto 2004, Lehmkuhler et al. 2007). Shelton (2004) suggested that the value of livestock killed by predators is the “tip of the iceberg” in assessing the actual costs that predators impose on livestock and producers including time and effort spent looking for missing livestock, and increased costs associated with efforts to mitigate predation which may include night confinement, improved fencing, additional livestock guarding animals, early weaning, choice of grazing area, and/or increased feeding costs related to loss of grazing acreage.

Using the example of the producer in Oregon who incurred \$7,400 in direct cattle losses (Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review), increased

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labor and other costs brought his economic impact from wolves during a portion of one year to over \$18,000. Indirect costs are not included in compensation payments, therefore, when considering his compensation payment of \$800 for a portion of his direct losses, this producer was compensated for only about four percent of his total (direct and indirect) losses. In another example (Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review), a cattle producer which estimated \$4,900 in cattle losses to wolf depredation, (not including lost profits), also incurred additional management costs of \$19,000. These examples illustrate the severity of indirect economic consequences that wolf depredation and threats can have on individual livestock operations.

Indirect impacts to livestock arise from the stress and disruption associated with the presence of wolves or wolves pursuing herd mates. Effects on livestock may include reduced weaning weights, increased cattle aggressiveness, and delayed rebreeding, as well as increased production costs associated with an increased level of vigilance, alteration of pasture rotation and turnout timing, and handling costs. Harassment by predators may directly cause livestock to lose weight due to increased energy expenditure associated with running and loss of sleep, but may also indirectly reduce the ability of ruminants to convert plant nutrients into weight gain due to decreased rumination time (Howery and DeLiberto 2004). Cattle and sheep exposed to harassment by predators become very skittish and spend much of their time remaining vigilant for predators (Kluever et al. 2008). They do not disperse and feed normally, and therefore may not take in the quantity and quality of feed they would have if unstressed, resulting in reduced weight gains at the end of the grazing season (Muhly et al. 2010). In addition, cattle are sometimes stampeded through fences and injured when wolves chase them (Lehmkuhler et al. 2007). Lehmkuhler et al. (2007) also suggested that wolves could stress cattle by chasing them repeatedly which can also cause cattle to abort calves, calve early or give birth to a weak calf.

Wolf predation on dogs

As wolves expand their range in Oregon, dog owners will need to be aware of the potential risks to their animals. Areas or situations where wolves and domestic dogs encounter each other can result in dog mortality. In some instances, wolves may alter their regular movements or activities to seek out and confront domestic dogs (ODFW 2010a). In Wisconsin, wolf depredation on hounds used for black bear hunting resulted in more compensation payments than for livestock (Treves et al. 2002). In Minnesota, 25 dogs were reported killed by wolves in 1998 alone (Bangs and Shivik 2001, Mech and Boitani 2003). The killing of guard dogs by wolves has been documented in the Rocky Mountain Recovery Area. However, guard dogs appear to be more effective and less at risk when an adequate numbers of dogs per herd are present coupled with the presence of trained herders. Livestock producers using working dogs in conjunction with trained herders face added costs to protect their livestock from potential wolf depredation.

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Working dogs and trained herders may be more effective for protecting sheep flocks than cattle (ODFW 2010a).

In Oregon, some wolves are likely to occupy areas near human habitation or areas used for recreation which could put pets or working dogs at risk. Dogs working cattle or sheep could be vulnerable in these situations. Public education will be important in preventing wolf/domestic dog interactions. Livestock guarding and herding dogs are often highly valued animals, both from a monetary standpoint and in terms of the human-social bond. Individual livestock guarding dogs may be worth more than \$1,000 each.

To date, no working dogs have been confirmed as lost due to a wolf attack in Oregon, however, as wolf numbers increase, potential conflicts could be expected.

1.3 Scope of Analysis – Location and Actions Analyzed

Location

The location for immediate action for wolf management activities is within the Oregon portion of the NRM DPS which is defined as the area east of the centerline of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of the centerline of Highway 95 south of Burns Junction (Figure 1). Presently, wolves are known to occur in Wallowa, Baker, Union and Umatilla Counties. ODFW has received reports of sightings in all counties in eastern Oregon (R. Morgan pers. comm., February 27, 2012). Wolf damage management may occur as requested by ODFW or sovereign tribal governments wherever confirmed chronic depredations arise within the boundary described as the NRM DPS in Oregon, or where wolves are no longer protected by the federal ESA. To date, CTUIR is the only tribal government that has requested to have assistance with wolf depredation on livestock. The location of the reservation is shown in Figure 1.

Wolf depredation management actions to assist ODFW or sovereign tribal governments are currently expected to occur in very limited and isolated geographic locations because wolves are not yet numerous and widely distributed in Oregon, and thus resultant conflicts have been relatively few, compared with conflicts in other states or by other predators in Oregon. Even when wolf numbers increase, lethal removals would be limited to those constraints presented by OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) and or by CTUIR management authority.

The locations included in the analysis would include any land jurisdiction where wolves are not federally managed, at or near the depredation incident and is likely to occur on private lands, state land, CTUIR land, or federal lands including USFS or Bureau of Land Management (BLM) lands where livestock are grazed.

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If wolves are removed from the federal ESA outside the NRM DPS, they would be managed by ODFW under the OWCMP (ODFW 2010a). Thus any actions allowed by the OWCMP (ODFW 2010a), as amended, would apply to wolves throughout the state. While no packs have yet become established in the Oregon Cascades, there have been confirmed sightings of individual wolves indicating expected expansion into the western two-thirds of Oregon is imminent.

Site Specificity

This EA analyzes the potential impacts of WS' wolf damage management on all public, tribal and private lands in Oregon where wolves are not protected under the federal ESA, where conflicts with livestock and human safety may occur. Specific locations or times where such damage will occur cannot be predicted due to the mobility and unpredictability of wolves, and the distribution of livestock across the Oregon landscape. Therefore, *this EA anticipates all substantive environmental issues that are likely to exist where wolf damage management may occur.* The WS Decision Model (Slate et al. 1992) is the site-specific mechanism for determining the most appropriate actions to take within the scope of actions allowed under any NEPA decision (see Chapter 3 for a description of the Decision Model). Any substantive new issue or change in circumstance that might arise with wolf damage management which has not been considered in this EA may require additional NEPA compliance. Therefore this EA meets the intent of NEPA with regard to site-specific analysis.

Actions Analyzed

This EA evaluates WS proposed actions to assist ODFW in providing advice, information, and direct assistance to livestock producers with non-lethal methods that can be used to aid in wolf conflict prevention, and to lethally remove wolves at ODFW's request if they have been confirmed as having caused chronic livestock depredation. Chronic depredation is defined in OAR 635-110 (Appendix A), which includes four qualifying incidences of confirmed depredations by wolves on livestock within a six-month time frame in the designated area. WS will also provide assistance to CTUIR in conducting lethal removal of wolves confirmed as having caused chronic livestock depredation or as authorized, and by providing nonlethal technical assistance. WS also proposes to assist ODFW and sovereign tribal governments by using its expertise to determine whether or not wolves were responsible for depredation. Other than on sovereign tribal lands, only ODFW can make the final confirmation of chronic livestock depredation. In addition, livestock producers, their agents or grazing permittees, may remove wolves under permits from ODFW (OAR 635-110). WS may act as an authorized agent on a depredation permit, to remove gray wolves under ODFW permit conditions for livestock producers or permittees. The specific non-lethal and lethal measures to reduce wolf conflicts are discussed in detail in the Sections 2.2 and 2.3.

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A critical factor guiding this analysis is that WS wolf damage management activities would be conducted only at the request of the ODFW, affected property owners, and tribal governments. With the exception of sovereign tribal lands, *any order for lethal removal of wolves can only be made by ODFW*. WS has no decision making authority for where or when to remove problem wolves when acting at the request of ODFW or ODFW authorized depredation permit holders. WS can only decide if it will accept ODFW's and or CTUIR request to remove problem wolves. Wolf management strategies are established in OAR 635-110 and OWCMP (ODFW 2010a) to ensure conservation and management goals will be met, therefore, any action selected must fall within those allowed under OWCMP (ODFW 2010a) and OAR 635-110, or as it is updated. As discussed under the proposed action, on tribal lands WS would conform to similar implementation guidelines for the management of wolf depredation including limitations on the lethal removal of wolves.

ODFW has clearly indicated that it will remove problem wolves in the absence of assistance from WS (Appendix B). Similarly, CTUIR has indicated that it would remove problem wolves if necessary (Appendix B). Requests for assistance by other sovereign tribal governments in the foreseeable future are possible but not highly likely. Therefore the actions analyzed in this EA are weighed against the environmental baseline or the environmental status quo of wolf depredation management by the responsible wildlife management agencies.

1.4 ODFW Wolf Management Goals and Objectives

For the purposes of this EA, any APHIS-WS actions must abide by limitations set forth in OWCMP (ODFW 2010a) and OAR 635-110. While sovereign tribal governments may request wolf damage management, any work performed by WS on tribal lands would conform to tribal regulations as well as to similar implementation guidelines outlined in OWCMP (2010a) and OAR 635-110 (Appendix A), as amended.

Managing livestock conflicts: ODFW's objectives for addressing wolf damage to livestock, as stated in the 2010 OWCMP (ODFW 2010a), are to develop and implement a phased approach based on population objectives for wolves that ensures conservation of the species while minimizing conflicts with livestock.

Managing wolf populations: ODFW's wolf population objectives are separated into two regions, ODFW's east management zone and west management zone (as defined by a dividing line of U.S. Highway 97, U.S. Highway 20, and U.S. Highway 395 Figure 2). A portion of ODFW's east management zone falls outside the NRM DPS, as well as the entire west management zone, and is currently under federal ESA rules until delisted and full management authority turned over to the State. Population objectives will be met through three management phases. Phase I focuses on reaching the conservation objective. Phase II focuses on reaching the management objective and in Phase III,

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continuing the management objective while balancing the wolf population with their potential conflicts, OWCMP (2010a, Ch. II, B).

For wolves in ODFW eastern management zone, the population objective for *conservation* (Phase I) is for four breeding pairs of wolves present for three consecutive years. The *management* population objective (Phase II) is for seven breeding pairs of wolves present for three consecutive years. A breeding pair is defined by an adult male and adult female with at least two pups surviving to the end of December. Wolves in the conservation stage will be protected under the State ESA. When in Phase II, ODFW would manage wolves so that the populations do not decline.

Following any federal delisting, wolves in Oregon's west management zone and the portion of the east management zone outside the NRM DPS will be managed under a regime that replicates Oregon ESA protections with a population objective of four breeding pairs of wolves present for three consecutive years, and management population objective of seven breeding pairs of wolves present for three consecutive years.

Meeting the delisting criteria outlined in OWCMP (ODFW 2010a) will necessitate tolerance for wolves on both public and private lands. Therefore, to achieve conservation of wolves in Oregon as required by the state ESA, OWCMP outlines a range of options for livestock producers to deal with problem wolves. While OWCMP describes measures that ODFW will take to conserve and manage the species, it provides for both non-lethal and lethal management strategies that could be taken to protect livestock from wolf depredation and address human safety concerns. These measures are outlined in Section 2.3 and fully detailed in the OAR 635-110 (Appendix A) and OWCMP (2010a, Ch. III).

1.5 Period for which this EA Remains Valid

This EA may remain valid through ODFW's gray wolf Conservation and Management Phases I and II (ODFW 2010a and OAR 635-110, as amended), and until WS, in consultation with ODFW and affected sovereign tribal governments, determines that the need for action, issues driving this EA, environmental conditions, or wolf management plans have changed substantially⁴. Substantive changes may trigger the need to review and amend the analysis in this EA, further involve the public, and provided the decision-maker with additional information necessary to make an informed decision about WS' role in wolf damage management in Oregon. The need for action to protect livestock from wolf predation, as described in Sections 1.2.2 and 1.2.3, would be expected to increase over time as Oregon's wolf populations grow and expand. OWCMP (ODFW

⁴ OAR 635-110 and OWCMP (635-110) describe wolf damage management actions that ODFW may authorize during Phase III of wolf management. WS is not proposing to participate in lethal wolf damage management actions during Phase III.

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2010a) uses adaptive management to incorporate new information into ODFW's management schemes which may affect when and where WS would take actions. WS would follow this adaptive management scheme by adjusting to the changes. Wolf management as conducted by ODFW is expected to continue into the foreseeable future and result in an eventual State delisting.

1.6 Decision to be Made

Based on agency relationships, Memoranda of Understanding (MOUs) and legislative direction, WS is the lead agency for this EA, and therefore responsible for the scope, content and decisions made. The ODFW has cooperated in the development of the EA, and the USFS, BLM, Oregon Department of Agriculture (ODA), Burns Paiute Tribe, Klamath Tribes, The Confederated Tribes of the Umatilla Reservation, and the Confederated Tribes of Warm Springs Reservation have all had opportunity for input during preparation of the EA.

Based on the scope of this EA, the decisions to be made are:

- Should the Oregon WS program respond to ODFW requests for assistance with Phase I and II wolf damage management activities as authorized by OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) as well assisting CTUIR and other sovereign tribal governments?
- Might there be other reasonable alternatives that could be selected?
- What are the likely environmental effects of the alternatives, and could the proposed action have significant effects on the quality of the human environment and therefore require preparation of an EIS?

1.7 Summary of Public Involvement Efforts

Scoping, agency, and public input in the NEPA process for this EA were conducted consistent with WS NEPA procedures. Issues related to the proposed action were identified from: cooperating agency input from ODFW, including the OWCMP (ODFW 2010a); prior WS experience with wolf management issues in other states (USDA 2011a, USDA 2008, and USDA 2006), agency knowledge of wolf damage management issues in Oregon, interagency and tribal reviews of the draft EA.

The July 2012 Pre-Decision EA and public comment form has been made available to the public by posting the notice of their availability on the WS website at http://www.aphis.usda.gov/wildlife_damage/nepa.shtml, and by issuing a legal notice in the Statesman's Journal on August 1, 2012. All substantive comments received according to the instructions provided in the notices will be considered in decision resulting from this EA. All individuals who provide a mailing address will receive a direct notice of the decision.

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The Final EA, Decision and FONSI document, were made available to the public by posting it on the APHIS-Wildlife Services website, http://www.aphis.usda.gov/wildlife_damage/nepa.shtml, publishing a legal notice in the Statesman Journal, issuing notices in Regulation.gov and GovDelivery.com, and mailing notices to those who provided comments on the Pre-Decision EA. The Final EA,

1.8 Relationship of this EA to other Environmental Documents

Final Rule to Delist NRM DPS

On May 5th, 2011, USFWS published a final rule to remove protections of the ESA from most of the concurrently designated NRM gray wolf DPS (74 FR 15123). The population of wolves in the eastern one third of Oregon was included in this delisting, as they were part of the NRM DPS. Background information on the NRM gray wolf population was contained in the USFWS April 2, 2009, Final Rule (74 FR 15123) <http://www.regulations.gov>⁵

2010 Oregon Wolf Conservation and Management Plan and OAR 635-110, as amended

The OWCMP (ODFW 2010a, http://www.dfw.state.or.us/Wolves/management_plan.asp) provides relevant discussions which are summarized herein. The relationship of the OWCMP (ODFW 2010a, as amended) to this EA is that it provides the framework and basis for describing the existing environment and no action alternative, and it sets parameters and limitations on the proposed action. The proposed action and no action alternatives are consistent with ODFW management goals and objectives, as specified in OWCMP (ODFW 2010a) and OAR 635-110.

Final EIS on the Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho

The USFWS (1994) issued a Final EIS and Decision regarding the potential impacts of reintroducing wolves to YNP and central Idaho. Part of the analysis in the EIS assessed potential impacts of a fully-recovered wolf population on livestock. This EIS also assessed the anticipated impact of wolf removals for protection of livestock. Relevant analysis from USFWS (1994) is incorporated by reference in this EA.

⁵ Lawsuits challenging the USFWS April 2, 2009, final rule were filed in U.S. District Court for the District of Montana and U.S. District Court for the District of Wyoming. On August 5, 2010, the U.S. District Court for the District of Montana vacated and set aside our 2009 delisting rule (*Defenders of Wildlife et al. v. Salazar et al.*, (729 F. Supp. 2d1207 (D. Mont.)). On April 15, 2011, President Obama signed Public Law 112-10—The Department of Defense and Full-Year Continuing Appropriations Act, 2011. Section 1713 of Public Law 112-10 which required the Secretary of the Interior to reissue the final rule published on April 2, 2009 (74 FR 15123 *et seq.*), and that the reissuance could not be subject to judicial review.

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1.9 Authority and Compliance

WS cooperates with land and wildlife management agencies to resolve wildlife damage problems in compliance with applicable federal, state and local laws.

1.9.1 Authority of Federal and State Agencies in Wolf Management

APHIS-Wildlife Services

The WS program is authorized to carry out wildlife damage management programs necessary to protect the Nation's agricultural and other resources. The primary statutory authorities are the Act of March 2, 1931 (46 Stat. 1468; 7 U.S.C. 426-426b) as amended, and the Act of December 22, 1987 (101 Stat. 1329-331, 7 U.S.C. 426c). WS recognizes that wildlife is an important public resource greatly valued by the American people. By its very nature, however, wildlife is a highly dynamic and mobile resource that can damage agricultural resources, pose risks to human safety, and affect other natural resources. The WS program provides federal leadership in helping to solve problems that occur when human activity and wildlife are in conflict with one another.

Oregon Department of Fish and Wildlife (ODFW)

The ODFW has the authority to manage all wildlife in Oregon, except federally listed threatened and endangered (T&E) species, regardless of the land class on which the animals are found (ORS 496.012, 496.118). It is the policy of the State of Oregon (ORS 496.012 Wildlife Policy) that wildlife shall be managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the citizens of this state. In part, this policy states that the OFWC shall represent the public interest of the State of Oregon and: maintain all species of wildlife at optimum levels; regulate wildlife populations and the public enjoyment of wildlife in a manner that is compatible with primary uses of the lands and waters of the state; and make decisions that affect wildlife resources of the state for the benefit of the wildlife resources and to make decisions that allow for the best social, economic and recreational utilization of wildlife resources by all user groups.

Oregon State Police – Fish and Wildlife Division (OSP)

The purpose of the Fish and Wildlife Division of the OSP is to ensure compliance with the laws and regulations that protect and enhance the long term health and equitable utilization of Oregon's fish and wildlife resources and the habitats upon which they depend.

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Oregon Department of Agriculture (ODA)

The Oregon Department of Agriculture aids citizens in resolving certain types of conflicts with wildlife. The ODA currently has a Cooperative Agreement, and Annual Work plan with WS. These documents establish a cooperative relationship between WS and ODA, outline responsibilities, and set forth annual objectives and goals of each agency for resolving wildlife damage issues in Oregon.

United States Forest Service (USFS)

The USFS has the responsibility to manage National Forests for multiple uses including livestock grazing, timber production, recreation, and wildlife habitat, while recognizing the state's authority to manage resident wildlife. The USFS recognizes the importance of managing wildlife damage on lands and resources under their jurisdiction, as integrated with their multiple use responsibilities. WS coordinates work activities with USFS through annual work planning processes. In this way, the USFS and WS ensure that proposed wildlife damage management activities are consistent with forest land uses as allowed under its Land and Resource Management Plans, or Forest Plans.

United States Bureau of Land Management (BLM)

The BLM manages lands under its jurisdiction for multiple uses including livestock grazing, recreation, wildlife habitat, and other uses while recognizing the state's authority to manage resident wildlife. The BLM recognizes the importance of managing wildlife damage on lands and resources under its jurisdiction, as integrated with its multiple use responsibilities. WS coordinates work activities with BLM through annual work planning processes. In this way, the BLM and WS ensure that proposed wildlife damage management activities are consistent with BLM Resource Management Plans.

1.9.2 Compliance with Federal and State Laws, Policies and Executive Orders

Several federal and state laws regulate wildlife damage management. WS complies with relevant federal and state laws, and consults and cooperates with other agencies as appropriate.

National Environmental Policy Act (NEPA)

NEPA requires that federal actions be evaluated for environmental impacts, that these impacts be considered by the decision maker(s) prior to implementation, and that the public be informed. This EA has been prepared in compliance with NEPA (42 USC Section 4231, et seq.); the President's Council on Environmental

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Quality (CEQ) Regulations, (40 CFR Section 1500 – 1508), and USDA APHIS NEPA Implementing Regulations (7 CFR Part 372).

One purpose of any EA is to “. . . briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact” (40 CFR 1508.9). If the environmental impacts are found to be significant, the NEPA process would likely be continued and an EIS would be prepared. If the impacts of the proposal are not found to be significant on the human environment, a Finding of No Significant Impact and decision to implement a selected alternative may be issued.

Federal Endangered Species Act

It is federal policy, under the ESA, that all federal agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes of the ESA (Sec.2(c)). Section 7 consultations with the USFWS are conducted to use the expertise of the USFWS to ensure that "any action authorized, funded, or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species. WS conducts Section 7 Consultations with the USFWS when proposed actions may affect federally listed species.

Oregon Endangered Species Act

The Oregon ESA (ORS 496.171 to 496.192 and 498.026) provides protection for all native species listed under the Federal ESA, plus any additional native species determined by the appropriate state agency to be in danger of extinction throughout any significant portion of its range within the state.

The reach of the state ESA is different than that of the federal ESA for the purposes of this proposal in that conservation mechanisms are limited to state-owned or leased lands, and lands over which the state has a recorded easement. In addition, endangered species management planning is limited to state agencies.

ODFW - Wildlife Policy (ORS 496.012)

It is the policy of the State of Oregon that wildlife be managed to prevent serious depletion of any indigenous species and to provide the optimum recreational and aesthetic benefits for present and future generations of the State. Included in this wildlife policy is maintaining all species of wildlife at optimum levels.

Executive Order (EO) 13045 - Protection of Children from Environmental Health and Safety Risks

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Children may suffer disproportionately from environmental health and safety risks for many reasons. Wolf damage management as proposed in this EA would only involve legally available and approved damage management methods in isolated or remote situations and otherwise under circumstances where it is highly unlikely that children would have an opportunity to be exposed and potentially be adversely affected. Therefore, implementation of the proposed action would not increase environmental health or safety risks to children.

U.S. Forest Service

Under the Act of 1932, as amended, (7 U.S.C. 426-426c), the USFS and APHIS-WS, along with the states, cooperate to manage animal damage on National Forest System lands. Under the framework of a 2011 MOU between the USFS and APHIS-WS, WS is designated as the lead agency concerning animal damage management activities involving predators on National Forest System lands. This includes a responsibility to maintain technical expertise in the science of animal damage management, control tools and techniques, conducting management programs, and complying with the NEPA for activities related to predator damage management.

The USFS is responsible for the management of land and resources under its jurisdiction. The MOU directs the USFS to coordinate with APHIS-WS in the development and annual review of wildlife damage management plans governing WS' activities on National Forest System lands and to cooperate in WS' NEPA processes.

Bureau of Land Management

Under the Act of 1931, as amended, (7 U.S.C. 426-426c), BLM and APHIS-WS, along with the states, cooperate to manage animal damage on BLM lands. Similar to the USFS, BLM and WS have entered into a MOU which identifies the roles and responsibilities of each agency in animal damage management operations and coordination, and NEPA compliance. The BLM is responsible for the management of land and resources under its jurisdiction and for conducting non-predator control operations on its' lands, including NEPA compliance on these activities. The MOU directs BLM to coordinate with WS in the development and annual review of animal damage management work plans governing WS' activities on BLM lands and to cooperate in WS NEPA processes.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act provides the USFWS regulatory authority to protect species of birds that migrate outside the United States. All cooperating agencies coordinate with the USFWS on migratory bird issues. Migratory birds

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are not expected to be affected by this proposal for the reasons discussed in Chapter 4, effects on non-target species.

Bald and Golden Eagle Protection Act

This law provides special protection for bald (*Haliaeetus leucocephalus*) and golden (*Aquila chrysaetos*) eagles. Similar to the Migratory Bird Treaty Act, it prohibits any "take" of these species, except as permitted by the USFWS. WS expects to have no effect on bald or golden eagles, for the reasons discussed in Chapter 4, effects on non-target species.

National Historic Preservation Act (NHPA) of 1966, as amended

The NHPA requires federal agencies to: 1) evaluate the effects of any federal undertaking on cultural resources, 2) consult with the State Historic Preservation Office regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian tribes to determine whether they have concerns for traditional cultural resources in areas of these federal undertakings. We have determined that the proposed action is not a federal "undertaking" as defined by NHPA and would not affect cultural resources.

EO 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations

Environmental Justice (EJ) promotes the fair treatment of people of all races, income and culture with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment implies that no person or group of people should endure a disproportionate share of the negative environmental impacts resulting either directly or indirectly from the activities conducted to execute this country's domestic and foreign policies or programs. All WS activities are evaluated for their impact on the human environment and compliance with EO 12898 to ensure EJ. WS personnel use wildlife damage management methods as selectively and environmentally conscientiously as possible. No pesticides are proposed for use. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority or low-income persons or populations.

Fish and Wildlife Act of 1956 (section 742j-1) Airborne Hunting

This Act, approved in 1971, was added to the Fish and Wildlife Act of 1956 and is commonly referred to as the Airborne Hunting Act or Shooting from Aircraft Act. The Act allows shooting animals from aircraft for certain reasons including

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protection of wildlife, livestock and human life as authorized by a federal or state issued license or permit. USFWS regulates the Airborne Hunting Act but has given implementation to the states. ODFW or its agent is authorized to conduct aerial shooting as described under this proposal according to Oregon Statute on Hunting from Aircraft ORS 498.126 (4)(a).

CHAPTER 2. DESCRIPTION OF ALTERNATIVES

Wildlife Services (WS) has been requested by ODFW and CTUIR to assist each of their respective agencies with managing wolves and wolf damage. Without WS assistance, wolf damage management will be implemented by ODFW according to the OWCMP (ODFW 2010a), as clearly expressed in a March 28, 2012 letter from Ron Anglin, Division Administrator, Wildlife Division, Department of Fish and Wildlife (Appendix B). Similarly, wolf damage management will be implemented by CTUIR (Appendix B). Therefore, WS has three viable choices at this time which WS can select in response to the requests from both entities to meet their needs in addressing wolf damage management. WS can provide: a minimum level of assistance already being conducted; a full range of non-lethal only assistance; or assist CTUIR and the State with a range of non-lethal and lethal actions in the manner described in OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) or under sovereign tribal authority. Within the limited decision space afforded WS by the OWCMP (ODFW 2010a), WS has no regulatory authority or latitude to implement other approaches, nor can it require alternative actions of ODFW. The three alternative courses of action, as detailed in the following pages, are: No Action (WS would take no additional action over current depredation investigations and recommendations for non-lethal controls); Nonlethal Methods Only, which would allow WS to implement non-lethal wolf damage management in addition to conducting depredation investigations and making recommendations for non-lethal management; and thirdly, the Proposed Action, an integrated approach in which a combination of nonlethal methods, and when necessary, lethal methods could be used, as prescribed in OWCMP (ODFW 2010a) or under sovereign tribal authority.

2.1 Alternative 1 - No Action

The “No Action” Alternative is the absence of additional actions by WS for wolf management, or no change from the current program. This is the *environmental status quo*, a required NEPA component, a viable alternative that could be selected, and serves as a baseline for comparing the action alternatives (CFR 1502.14[d]). Under this alternative, WS would continue its current activities conducting investigations of livestock conflicts, and provide the public with advice and recommendations on the appropriate use of non-lethal methods to protect livestock from wolf damage.

Wildlife Services conducts routine livestock damage investigations and reports wolf damage to ODFW and or CTUIR. When mortality events are determined to be caused by predation, they are investigated further to determine the species that caused the damage. If wolves may be potentially involved, WS coordinates investigation activities with ODFW and or other appropriate agencies.

Non-lethal methods currently recommended by the WS program include: radio-activated guard (RAG) devices, non-injurious harassment, non-lethal injurious harassment, fladry, range riders, animal husbandry practices, installation of fencing, and livestock guarding

animals. These methods are described in detail in Section 2.2, Alternative 2 – Non-lethal Wolf Damage Management Methods Only.

Based on its investigation of livestock depredation incidents, WS would defer confirmed, probable, and possible wolf conflict to ODFW and tribal wildlife managers but would not provide lethal removal assistance to ODFW, tribes, or livestock producers to alleviate confirmed wolf damages. *ODFW and CTUIR have clearly stated that they would conduct the necessary actions as described in the OWCMP (ODFW 2010a) to remove chronic depredating wolves if the WS program were not available* (Appendices A and B). Therefore, the No Action Alternative must be evaluated as the conditions under which gray wolves are managed by ODFW, CTUIR, or other tribes.

The OWCMP (ODFW 2010a) and OAR 635-110 (Appendix A) describe measures the ODFW would take to conserve and manage wolves (see also Appendix B), including actions that could be taken to protect livestock from wolf depredation. The following summarizes the primary components of OWCMP (ODFW 2010a) but removes WS as an assisting agency to ODFW. While the OWCMP (ODFW 2010a) allows some of the actions to be taken by WS, WS would not participate in any lethal control actions under this “no action” alternative.

- Wolves that naturally disperse into Oregon will be conserved and managed under OWCMP (ODFW 2010a). Wolves will not be captured outside of Oregon and released in the state.
- Wolves may be considered for statewide delisting once the population reaches four breeding pairs for three consecutive years in eastern Oregon (Figure 2). Four breeding pairs are considered the minimum conservation population objective as described in OWCMP (2010a, Phase 1). OWCMP (ODFW 2010a) calls for managing wolves in western Oregon (Figure 2) as if the species remains listed until the western Oregon wolf population reaches four breeding pairs. This means, for example, that a landowner would be required to obtain a permit to use injurious harassment when addressing depredation problems.
- While the wolf remains listed as a state endangered species, OAR 635-110 and OWCMP (ODFW 2010a) allow for the following actions, which may be implemented by ODFW:
 - Wolves may be harassed (*e.g.*, shouting, firing a shot in the air) to disperse a wolf from a livestock operation or area of human activity.
 - Harassment that may cause injury to a wolf (*e.g.*, rubber bullets or bean bag projectiles) may be employed to prevent depredation, but only with an ODFW permit.
 - OAR 635-110-0010 authorizes the relocation of wolves when a wolf or wolves becomes inadvertently involved in a situation or is present in an area that could result in conflict with humans or harm to the wolf, provided that ODFW has no reason to believe that the wolf actually attacked or killed livestock or pets. Livestock producers who witness a wolf ‘in the act’ of

attacking livestock on public or private land must have a permit from ODFW before taking any action that would cause harm to the wolf.

- When and where federally delisted, wolves involved in chronic depredation may be killed by ODFW personnel or ODFW authorized agents. However, before lethal action is taken, ODFW will designate an Area of Depredating Wolves and prepare a conflict deterrence plan for the livestock owner to implement non-lethal methods that are likely to be most effective.
- Once the wolf is delisted by the State of Oregon (as well as federally delisted), more options are available to address wolf-livestock conflict. While there are five to seven breeding pairs, livestock producers may kill a wolf involved in chronic depredation with a permit issued by ODFW. Five to seven breeding pairs is considered Phase II in OWCMP (ODFW 2010a).
- In the unlikely event that a person is attacked by a wolf, OAR 635-110 and OWCMP (ODFW 2010a) describes the circumstances under which Oregon's criminal code and federal ESA would allow harassing, harming or killing of wolves where necessary to avoid imminent, grave injury. Such an incident must be reported to law enforcement officials.
- A strong information and education program is proposed to ensure anyone with an interest in wolves is able to learn more about the species and stay informed about wildlife management activities.
- Several research projects are identified as necessary for future success of long-term wolf conservation and management. Monitoring and radio-collaring wolves are listed as critical components of OWCMP (ODFW 2010a) both for conservation and communication with Oregonians.
- Finally, OWCMP (ODFW 2010a) requires annual reporting to the OFWC on program implementation.

While there are differences in how livestock conflicts are addressed in the three management phases described in OWCMP (ODFW 2010a, Chapter III) from conservation to management, the differences are not great. OWCMP (ODFW 2010a) endeavors to provide as much flexibility to address conflicts as possible while wolves exist in low numbers, while still remaining focused on achieving wolf conservation goals. This incremental approach based on the current population status of wolves is designed to provide options to wolf managers, livestock producers and the public while promoting the goal of conservation for wolves. OWCMP (ODFW 2010a) and OAR 635-110 provide that ODFW can authorize the killing of wolves due to chronic livestock losses when the requester has documented unsuccessful attempts to solve wolf-livestock conflict with non-lethal methods. "Generally, non-lethal techniques should be the first choice when wolf-livestock conflicts are reported, regardless of the wolf population status" (ODFW 2010a, p. 44). Wolf managers and livestock producers are not required to exhaust all non-lethal techniques, but instead, a good faith effort to achieve a non-lethal solution is expected. In order to use the widest array of management tools available in any given management phase, livestock producers will be encouraged to employ management techniques to discourage wolf depredation, and ODFW will advise producers through developing conflict deterrence plans and assist in implementing such techniques.

Wolf managers working with livestock producers are encouraged to employ management techniques that have the highest likelihood of success to resolving the conflicts and that are reasonable for the individual situation. This includes the identification of unreasonable circumstances that may attract wolf-livestock conflict.

Compensation Program for Wolf Damage

OWCMP (ODFW 2010a) described a potential wolf damage compensation program. Since then, the Oregon Department of Agriculture adopted new rules under OAR 603–019 (Appendix D) to implement a wolf depredation compensation and financial assistance grant program. The rules became effective on December 28, 2011. Grant funds will be awarded to qualified county programs for compensation purposes for livestock depredation, and as financial assistance for wolf deterring non-lethal and management techniques. Local boards comprised of a range of interests, would make financial award decisions at the county level. ODFW would provide confirmation and other information about wolf damages. At least 30% of the grant monies are required to go towards wolf deterrent methods. The role of WS in this program would be indirect: WS would provide advice to producers on the use of non-lethal methods; and WS would investigate wolf damage incidents and report results to ODFW. ODFW makes the final determinations. No compensation programs have been established for sovereign tribal wolf damages.

2.2 Alternative 2 – Non-lethal Wolf Damage Management Methods Only

Under Alternative 2, the Non-lethal Wolf Damage Management Alternative, WS would conduct investigations on wolf damage management and provide advice and assistance for non-lethal damage management methods as discussed in OWCMP (ODFW 2010a). WS would not assist ODFW or tribal governments with lethal removals of wolves as discussed in the plan. However, WS would assist ODFW and sovereign tribal governments with providing recommendations on non-lethal methods and may assist ODFW and tribes with distributing available equipment and assisting landowners with the implementation and use of those methods and devices. Non-lethal methods could include techniques that are suggested by ODFW such as radio-activated guard (RAG) devices, non-injurious harassment, non-lethal injurious harassment, fladry, range riders, animal husbandry practices (including shed lambing or bringing vulnerable animals closer to buildings and herding), installation of fencing, and livestock guarding animals. WS would still investigate wolf depredation complaints to determine if the wolves are responsible for losses. ODFW would make the final determinations for investigations under their jurisdiction (ODFW 2010a). On sovereign tribal reservation lands, WS may conduct investigation of possible wolf depredation events and will follow the tribes' protocol for making a determination. WS could assist ODFW or tribes with capturing wolves for radio-collaring for monitoring purposes and/or to enhance effectiveness of non-lethal deterrents such as the RAG devices. As stated previously, ODFW and CTUIR have the authority and intent to conduct lethal wolf damage management similar to Alternative 1 (Appendices A and B).

OWCMP (ODFW 2010a) incorporates several non-lethal strategies and places emphasis on non-lethal control techniques while the wolf is in Phase I. In Phase II, OWCMP (ODFW 2010a) transitions to a more flexible approach to depredation management following delisting. Regardless of the OWCMP (ODFW 2010a) phase, this alternative would include an active education component cooperatively employed by ODFW, tribes, and WS to educate and/or equip landowners, livestock producers and the public with tools to implement non-lethal wolf management techniques, including allowing individuals to use non-lethal but injurious actions to dissuade wolves from habituating to human presence.

Two wolf management specialist positions have been established in ODFW to monitor wolf movements and work directly with individuals who experience conflicts with wolves. OWCMP (ODFW 2010a) also provides for dissemination of wolf monitoring information to landowners, livestock producers and the public as needed to keep them informed of wolf activities and movements. ODFW and WS would promote actions of individuals to instill fear of human activities in wolves through non-injurious and injurious actions to keep them appropriately wild and minimize potential for conflict with humans. As the wolf population increases in Oregon, more options for addressing conflicts will be allowed under OAR 635-110 and OWCMP (ODFW 2010a), but WS would continue to use or recommend only non-lethal methods.

While WS would not implement or recommend any lethal management under this alternative, in situations where chronic losses are occurring, lethal actions would be implemented by ODFW and sovereign tribal authorities in early phases of wolf conservation, and by presumably landowners as well as ODFW and tribes in later stages of wolf conservation and management. While no lethal methods would be used or recommended by WS, the combination of non-lethal with lethal strategies where necessary is consistent with the conservation of wolves, and is expected to promote delisting efforts, public tolerance, management flexibility, and predation conflict resolution OWCMP (ODFW 2010a).

Non-lethal Methods Available to WS or ODFW Personnel, Tribes and the Public

Some wolf damage management methods are available for anyone to use. These consist of non-lethal preventive methods such as cultural practices (*e.g.*, possible changes in livestock management) and localized habitat modification (*e.g.*, clearing brush, improving fencing, etc.) on private property. Cultural practices and other management techniques are implemented by the resource owners/managers. Livestock producers and resource owners/managers are encouraged to use these methods, based on the level of risk, need and professional judgment on their effectiveness and practicality. WS' or ODFW's involvement in the use of these methods is usually limited to providing recommendations or technical assistance.

Livestock Management Practices are implemented to prevent or reduce wolf damage and may include approaches such as: 1) maintaining healthy, well-fed animals, 2) properly disposing of dead livestock carcasses (*i.e.*, removal, burying, liming, or burning), 3) conducting calving or lambing operations in close proximity to the ranch headquarters, when practical, 4) penning vulnerable livestock at night where practical, 5) monitoring livestock on a regular basis to detect any disease, natural mortality, or predation, and 6) incorporating other non-lethal methods. Property owners and land managers could implement these management practices or request the assistance of other agencies or private organizations to implement them, or take no action.

Exclusion with some type of fence or other barrier may be used to prevent or limit access by predators to livestock pastures, calving or lambing areas, or livestock confinement areas. Where practical and cost effective, sheep, calves or other vulnerable livestock may be penned near ranch buildings at night.

Fladry is a form of barrier and wolf deterrent involving red flags measuring approximately 3 x 18 inches, strung about 20 inches apart, hanging from a thin rope or cord suspended about 30 inches above the ground. Fladry is installed around pastures or other areas where livestock are confined to discourage wolf access. Part of the repellency provided by fladry is probably related to the frequent human visitation required to ensure that the flags remain freely suspended and that the line is properly maintained. Like many other frightening devices, wolves eventually habituate to this deterrent, but field trials in Idaho have shown that fladry may provide deterrence for as long as 60 days (Musiani et al. 2003). Davidson-Nelson and Gehring (2010) reported that if maintained, fladry can exclude wolves from livestock for up to 75 days; however Shivik et al. (2003) found that fladry did not effectively protect bait sites from scavengers, including wolves.

Turbo-Fladry is very similar to regular fladry with the exception that the cord is substituted with electrified wire attached to a standard livestock electric fence generator. As wolves habituate to the fladry line and try to cross under it, the negative stimulus they receive after getting shocked by the electrified barrier can increase the amount of time the barrier may remain effective.

Livestock guarding animals such as large, aggressive breeds of guarding dogs (*e.g.*, Great Pyrenees, Akbash, etc.) have been used with some success to protect livestock from wolves, but multiple guard dogs work better than just one or two guard dogs (Bangs et al. 2005, Urbigkit and Urbigkit 2010). Even with 3 or more dogs present, wolves occasionally kill or severely injure livestock guarding dogs. Livestock guarding dogs are generally not killed as prey but because of interspecies aggression (Bangs et al. 2005). Other types of livestock guarding animals, such as llamas, which have been shown in some circumstances to be effective in protecting sheep from coyotes, are not as effective in deterring wolves. Wolves probably view llamas as prey, and multiple instances of wolves killing and feeding on llamas have been documented in the NRM area (USFWS et al. 2002, 2003, 2005, 2007, 2009, and 2010).

Guarding and hazing involves using human presence to guard an area and then using pyrotechnics or other frightening devices to frighten wolves from the site if/when they arrive. Hazing can be used as an aversive technique, but requires that the technique be used consistently whenever the animal attempts to prey on the protected resource so they do not identify conditions when they can obtain prey without receiving a negative experience (Shivik 2004). If there are any radio-collared wolves in a pack which may pose a threat to livestock, non-lethal hazing efforts can be enhanced if the livestock producer or other personnel make use of a radio receiver to determine when wolves are near or approaching the livestock (Bangs et al. 2006). This requires diligent and persistent monitoring, but can make hazing much more effective.

Frightening devices are methods that usually involve lights, sound and/or motion devices designed to deter wolves from a certain area. Strobes and flashing lights, propane exploders, sirens, and various combinations of these devices have all been used in attempts to reduce livestock losses, with wide-ranging degrees of effectiveness (Linhart 1984, Andelt 1987). Animal habituation (becoming accustomed) to the stimulus is one of the primary limiting factors for repellents. Essentially, anything new or different is likely to elicit avoidance behavior by canids, but this effectiveness disappears over time. Moving the devices intermittently and randomly as well as alternating the stimuli (*e.g.*, a different type of noise or light) may extend the effective period of the system (Shivik and Martin 2001). The period of efficacy may also be extended by using systems which are motion-activated or only activated when a wolf wearing a transmitter collar comes into close proximity to the protected site. The RAG box is one such frightening device that employs this approach, and RAG boxes have been field-tested in Idaho with some success (Breck et al. 2002). Use of the RAG box in Idaho has been most effective in protecting livestock in small (≤ 40 -60 acre), fenced-in areas.

Non-lethal Methods Available to WS, Tribes, and ODFW

Some non-lethal methods, research projects and population monitoring efforts involve capture and handling wolves which may not be conducted by the general public. Methods that require capture and handling of wolves under state authority would only be conducted by ODFW personnel or agencies permitted by the ODFW. Sovereign tribal governments would act under their own authority on sovereign tribal lands.

Foot-hold traps can be effectively used to live capture wolves, and are an extremely important tool in wolf management. When wolves are trapped they are ordinarily physically restrained or chemically immobilized, radio-collared, and released on site, or euthanized on site. Effective trap placement, pan-tension devices and the selection and placement of appropriate lures and baits by trained personnel contribute to the foot-hold traps' selectivity. WS policy requires that foot-hold traps used for wolf damage management have offset and laminated jaws or padded jaws to reduce foot injury to captured wolves (WS Directive 2.335). Traps may also be modified with small protrusions or "nubs" on the jaws to reduce the likelihood of the wolf's foot moving back and forth in the jaws, thereby reducing the potential for trap-related injury.

Disadvantages of traps include the difficulty of keeping them operational during rain, snow or freezing weather, and the fact that they cannot be 100% selective. Although pan-tension devices are effective in reducing the likelihood of unintentional capture of non-target species smaller than wolves (*e.g.*, red fox, coyote), they cannot preclude the occasional capture of larger non-target species such as cougars or black bears. They do, however allow for the option of releasing non-target animals which may infrequently be captured. Whenever WS employees deploy traps for wolves (or other species), they post warning signs at access points into the area to alert people to the presence of traps.

Foot snares are devices consisting of a cable loop and a locking device that captures an animal around its foot or lower leg. The cable may be activated around the lower leg with a spring-powered throw-arm (Aldrich-type) or trap-type (Belisle) device. The foot snare can be modified with a stop on the cable to restrict the closure of the loop. Careful snare placement, pan-tension devices and the selection and placement of appropriate lures and baits by trained personnel contribute to the selectivity of this device. As with foot-hold traps, when foot snares are used as a live-capture device, wolves would ordinarily either be radio-collared and released on site, or euthanized. Foot snares are more often used for capture of cougars and black bears than for wolves.

Drug delivery tools are capture tools that utilize a dart or syringe filled with an immobilization drug, dispensed from a specially-designed device. These devices include hand or poll syringes, blow guns, and compressed gas or gun-powder charged systems. They would often be used on wolves when conducting live-capture operations from a helicopter. Once immobilized, the animal may be handled safely and processed for research or monitoring purposes. Use of drug delivery tools would have no effect on non-target species because positive target species identification is made before animals are darted. Thus, WS' use of these tools is expected to continue to be 100% selective for target individuals and species, and would not pose a risk to non-target species and individuals. All WS personnel who would dart wolves or deliver immobilizing drugs undergo training and maintain certification.

Snares can be used to live-capture animals around the neck with the use of a “stop” to prevent full closure of the loop, and improved methods for use are being developed for live-trapping wolves and other carnivores (Olson and Tischaefer 2004). Snares are ordinarily not as affected by rain, snow and freezing weather as foot-hold traps are. These devices offer a degree of selectivity based on the size of the cable loop and the height of the loop above ground level. They also offer a viable live-capture alternative to foot-hold traps during the winter months, when freezing temperatures combined with restricted blood circulation could result in damage to the wolf's foot.

Non-lethal Methods which may Require Special Authorization from ODFW or Tribes

Some animal behavior modification systems involve capturing and fitting wolves with radio-transmitting collars to deliver or trigger repellent stimuli (*i.e.*, aversive conditioning). Other systems sometimes referred to as “less than lethal munitions,”

involve shooting wolves with projectiles such as rubber bullets or bean bag rounds. These techniques involve intentionally using painful stimuli to modify wolf behavior, and ODFW may require permits or other authorizations to use these methods and any other experimental wolf damage management techniques. Methods that require capture and handling of wolves would be conducted only by personnel from ODFW or tribes, and / or personnel authorized by either of these entities.

Aversive Stimuli are stimuli that cause discomfort, pain and/or an otherwise negative experience paired with specific behaviors to achieve conditioning against these behaviors. One example would be using something like a dog training shock collar that is activated when wolves come into close proximity to a protected area such as livestock pens (Shivik et al. 2003, Schultz et al. 2005).

Non-lethal Projectile use involves guarding an area and then using rubber bullets, bean bag rounds or other non-lethal projectiles to prevent a predation event. They can be used as an aversive technique, but require that the projectiles be used consistently whenever the predator attempts to prey on the protected resource, so it is less likely to identify conditions when it can obtain prey without receiving a negative experience (Shivik 2004). Methods which require around-the-clock presence of a person to guard the resource are most efficiently used when there are radio-collared wolves involved and the landowner/resource manager assists with the implementation. ODFW authorizes the use of these methods.

For additional discussion of the advantages and disadvantages of various non-lethal and lethal wolf damage management methods used in the NRM, see Bangs et al. (2006) (http://www.aphis.usda.gov/wildlife_damage/nwrc/publications/06pubs/shivik067.pdf).

2.3 Alternative 3 – Proposed Action – Integrated Wolf Damage Management

This alternative would allow WS to both promote the use of non-lethal methods and respond to requests by ODFW to remove chronically depredating wolves as outlined in the OAR 635-110 and OWCMP (ODFW 2010a). Wolves could be removed after a request from ODFW based on confirmed livestock depredation, and after unsuccessful attempts using non-lethal methods have been documented. WS would target confirmed and chronic livestock depredating wolves during Phases I and II of gray wolf conservation and management (OAR 635-110), or under landowner “caught in the act” permits. *The proposed action encompasses all of the methods discussed in Alternative 1, and all of the non-lethal methods discussed in Section 2.2 for Alternative 2, Non-lethal Methods Only.* This alternative is consistent with actions allowed for Phases I and II under OAR 635-110 and OWCMP (ODFW 2010a), is similar to Alternative 1, No Action, except that WS would be involved with both lethal and non-lethal wolf damage management, instead of ODFW only. This alternative is also consistent with what is specified in OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a).

Under the proposed action, WS may also respond to a request by any Native American Indian tribal government in Oregon where wolves are not federally managed, to manage wolf depredation on tribal lands. WS wolf damage management on tribal lands would mirror procedures and restrictions on non-tribal lands, with the exception that tribal wildlife managers or WS may confirm wolf damages.

Lethal methods *would only be used if ordered and directed by ODFW or as an agent to an ODFW authorized permit holder, and only under those conditions described in detail in OAR 635-110 and OWCMP (ODFW 2010a)*. Additionally, lethal methods would be used on sovereign tribal lands under direction and authority of CTUIR. As per WS policy, it would only provide wolf damage management on properties after *Agreement for Control* or other work authorization documents have been completed. On federal public lands, planned activities must be included in work plans developed in coordination with each National Forest or BLM Resource Area, or in emergency, unplanned situations, in consultation with the respective USFS or BLM office. On tribal reservation lands, WS wolf depredation management would only be conducted at the request of the tribe and under individual agreements with each sovereign tribal government.

Like Alternative 2, the non-lethal only approach, a strong information and education program would be managed by ODFW with assistance from WS. This aspect would help ensure anyone with an interest in wolves is able to learn more about the species and stay informed about wildlife management activities. OWCMP (ODFW 2010a, p 79 – 81) includes examples of education on wolf management issues such as public outreach, public meetings, information on the ODFW website, training, and discussions with individuals.

Several research projects are identified as necessary for future success of long-term wolf conservation and management. Monitoring and radio-collaring wolves would be included in this alternative for conservation and communication with Oregonians. This would be handled by ODFW with assistance from WS in capturing wolves for radio-collaring.

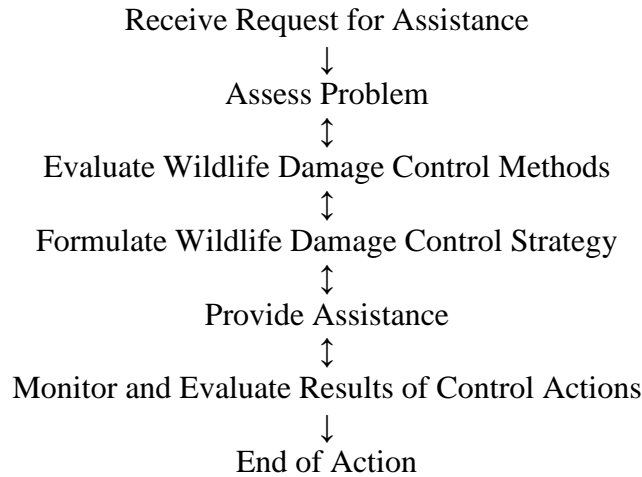
Finally, OWCMP (ODFW 2010a) requires annual reporting to the OFWC on program implementation, thus WS would provide all information on its involvement with wolf captures including capture locations, methods used, and disposition to ODFW. All wolf carcasses would be provided to ODFW for monitoring and/or research purposes.

Adaptive management would be used by ODFW to revise protocol according to changes in the phase of wolf conservation or management in Oregon. Over time, wolves are expected to increase in number and expand their range within Oregon, and therefore management approaches will be slightly modified as numbers increase (OWCMP 2010) (Table 1).

Formulating a strategy for wolf removal

Upon receiving a request to assist ODFW or tribes with capturing confirmed chronic depredating wolves, WS would use its Decision Model (Figure3) (Slate et al. 1992) to determine the appropriate method of capture based on allowable methods (foot-hold traps, foot snares, neck snares, shooting or aerial shooting) and consultation with ODFW.

Figure 3. APHIS-WS Decision Model (Slate et al. 1992)



In selecting appropriate management techniques, consideration is given to: whether or not a collared or breeding wolf could be affected, location and land jurisdiction; land uses (such as proximity to urban or recreation areas); possible presence of humans, pets and non-target wildlife; feasibility of implementation of the various techniques; wolf movement patterns and life cycle; local environmental conditions such as terrain, vegetation, and weather; potential legal restrictions such as availability of tools or management methods; humaneness of the available options; and costs of control options (the cost of control in this proposal may be a secondary concern because of overriding environmental, management, and legal considerations).

It is important to stress that when responding to requests from ODFW or tribes, *lethal removal of any wolf causing chronic livestock depredation would only be done after unsuccessful attempts to use non-lethal methods had been documented. While OAR 635-110 dictates this for ODFW, WS would only agree to lethal removal on tribal lands under similar restrictions.*

Description of Lethal Methods

These methods are specifically designed to lethally remove wolves in certain situations to stabilize, reduce or eliminate damage. The amount of removal necessary to achieve a reduction in wolf damage varies according to the effectiveness of other damage management strategies, the damage situation, and the level and likelihood of continued depredations. The lethal wolf damage management techniques that would be available to

WS under Alternatives 3 would include the use of foothold traps and snares, as described above under Section 2.2, followed by euthanasia, typically by gunshot to the brain, as recommended by the American Veterinary Medical Association (AVMA 2007, Julien et al. 2010). Additional lethal methods used under Alternatives 3 would include shooting, from the ground as well as from fixed-wing aircraft or helicopters.

Shooting from the ground is highly selective for the target species, and may be employed in conjunction with the use of auditory attractants (*e.g.*, sounds of prey animals in distress or imitations of wolf vocalizations). Removal of one or two specific animals by shooting in the problem area can sometimes provide immediate relief from a predation problem. Shooting is often tried as one of the first lethal management options because it offers the potential of solving a problem more quickly and selectively than some other techniques, but it requires visually sighting the wolf within effective shooting distance. Shooting may sometimes be one of the only management options available if other factors preclude the setting of equipment (*i.e.*, traps or snares).

Aerial Shooting typically involves visually locating suspected depredating individuals or packs from either a small single-engine fixed-wing aircraft or a helicopter, and shooting them from the aircraft with a shotgun. Shooting typically results in a relatively quick death. Depredation problems can sometimes be resolved very quickly and effectively through aerial shooting (*e.g.*, by starting the aerial operation in the vicinity of a recent wolf kill, and catching the wolf or wolves when they return to feed on the livestock carcass). Cain et al. (1972) rated aerial shooting as “very good” in effectiveness for problem solving, safety, and lack of adverse environmental impacts. Smith et al. (1986) cited cost-effectiveness and efficacy as benefits of aerial shooting.

Good visibility is required for effective and safe aerial shooting operations, and relatively clear and stable weather conditions are necessary. Summer conditions limit the effectiveness of aerial shooting because the increased vegetative cover makes finding the animals more difficult, and the higher ambient air temperatures reduce air density, which affects low-level flight safety.

Aerial shooting is one of the most effective wolf damage management tools available. In 2009, two wolves were lethally removed by WS in Oregon from aerial shooting.

Neck snares may be used as lethal or live capture devices. Neck snares may be used wherever a wolf moves through a restricted area (*i.e.*, crawl holes under fences, trails through vegetation, etc.). They are easier to keep operational during periods of inclement weather than are foothold traps. To date, WS has not taken any wolves with neck snares in Oregon.

Sodium Pentobarbital (Beuthanasia®-D) is registered for euthanasia of dogs, but may legally be used for other animals if the animal is not intended for human consumption. Barbiturates depress the central nervous system in descending order, beginning with the cerebral cortex, with unconsciousness progressing to death. The primary advantage of

barbiturates is the speed of action on the animal. Barbiturates induce euthanasia smoothly, with minimal discomfort to the animal (AVMA 2007). This method of euthanasia would likely only be used in the rare circumstance where an already sedated wolf was determined to have health or injury issues such that it would be most appropriate to euthanize the animal.

Measures that Minimize Environmental Risk

WS uses many standard operating procedures built into its programs which serve to minimize the potential for negative effects on the environment, including potential harm to humans and non-target wildlife. WS has obtained an Incidental Take Permit for Gray wolves from ODFW and complies with permit conditions for incidental take of wolves. While OWCMP may be updated and permit conditions can change, currently, WS standard operating procedures, OWCMP and ODFW permit conditions include, but are not limited to the following measures:

- Conspicuous, bilingual warning signs alerting people to the presence of traps and snares are placed at major access points when they are set.
- WS personnel are trained in identification of wolves and wolf sign.
- WS will maintain regular contact with appropriate state and federal agencies, reporting any sightings of wolves, wolf sign, or wolf depredations.
- WS will conduct a 24-hour trap check in occupied wolf range/habitat while using foot-hold traps (other than Victor#3 Soft catch, Victor 3N, or traps with an inside jaw spread less than a Victor 3N) or foot snares , as required by ODFW permit.
- Traps shall be equipped with a drag, even if solidly staked, and connections shall be welded or otherwise securely fastened. All traps pose a threat to juvenile wolves and, therefore, shall not be used in proximity to occupied dens and rendezvous sites from June 1 to October 1.
- WS will incorporate pan-tension devices in foot/leg snares and foot-hold traps to prevent the capture of smaller non-target animals. The amount of weight required to trigger the foot-hold trap for a wolf can be increased by the pan-tension device to exclude smaller animals.
- WS will maintain regular contact with the USFWS and ODFW to keep apprised of locations and information on the presence of any T&E animals including gray wolves, wolverines, and Canada lynx in Oregon.
- Non-target animals captured are released at site of capture unless the WS specialists determine that they will not survive.

- AVMA (2007) recommended euthanasia procedures are used when possible to minimize pain and suffering. Normally, this is a gunshot to the brain, but may include chemical immobilization/euthanasia procedures.
- Research continues to improve the selectivity and humaneness of management devices.
- WS has consulted with Native American Indian tribes in Oregon to consider any concerns that tribes may have regarding the proposal. Any wolf damage management conducted on sovereign tribal lands would be subject to additional consultations with both the tribe and ODFW.
- WS work on Native American Indian tribal lands would conform to tribal government plans for wolf damage management. WS work on tribal lands would also closely mirror protocol outlined in OWCMP in regards to lethal and non-lethal management of wolf depredation.
- WS records and monitors all wolf removal through its Management Information System (MIS). Close coordination with and reporting to ODFW would occur for each wolf to be removed. More detail is provided under Monitoring in this section.
- Motorized vehicle access on public lands will be limited to existing roads and/or public land travel policies
- Wolf damage management activities would be conducted only at the request of, and in coordination with the landowner or land management agency, and in the case of lethal control, per ODFW or sovereign tribal government decisions. Coordination provides for the communication necessary to avoid conflicts with land uses such as sensitive areas or public safety zones.
- The WS program is conducted under Cooperative Agreements and MOUs with federal and state agencies. National MOU's with the BLM (1995) and USFS (2010) delineate expectations for wildlife damage management on public lands administered by these agencies.

Monitoring

Wildlife Services role in monitoring would be to provide wolf carcasses and/or data to ODFW from its wolf removals in Oregon. Additionally, WS provides information on wolf sightings, identification of wolf activity (tracks or scat), depredation investigations, telemetry searches, or any other monitoring activities. Wildlife Services monitors its program activities by using MIS which compiles data on take locations, damages, methods used, and other information. Information from MIS can then be provided to

cooperating agencies, used in wildlife management decisions and environmental analyses, and is available to the public.

2.4 Summary of Actions allowed by Alternative

Table 1 identifies and compares the major components allowed under each of the alternatives. Specific criteria or conditions for actions, as required by OWCMP (ODFW 2010a), are summarized under the detailed descriptions of each alternative.

Table 1. Summary of WS activities that would be applied under each alternative (Adapted from OWCMP (ODFW 2010a), Table III-1).				
Activities (Phases I and II and of wolf conservation and management)		Alt. 1, No Action	Alt. 2, Non-lethal Only	Alt. 3, Proposed IWDM
Investigate Wolf Depredation for ODFW and tribes		Yes	Yes	Yes
Non-lethal Technical Assistance (advice and information)		Yes	Yes	Yes
Non-lethal Direct Assistance including non-injurious or injurious harassment		No	Yes	Yes
Lethal Removal of wolves involved in chronic livestock depredation or threats to human safety.	Phase I ⁶	No	No	Yes
	Phase II ⁷	No	No	Yes
Non-lethal capture for relocation, collaring, research, and/or monitoring.		No	Yes	Yes

2.5 Alternatives Considered but Rejected from Detailed Analysis, with Rationale

Integrated Wolf Damage Management Without a Threshold of Loss Requirement

This alternative would differ from the proposed action in that it would have removed the threshold of livestock loss imposed by OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) for agency removals of confirmed chronic depredating wolves. Under

⁶ During Phase I, as defined in OWCMP (ODFW 2010), ODFW and CTUIR would implement lethal actions regardless of WS involvement (Appendix B). Landowners may also take a wolf under ODFW permit if caught “in the act” of attacking livestock. Individuals may kill a wolf that threatens a human. WS may investigate wolf depredations but with the exception of tribal lands, only ODFW may confirm such depredations.

⁷ During Phase II, as defined in OWCMP (ODFW 2010), livestock producers may also lethally take wolves involved in chronic livestock depredation, by ODFW permit, in addition to any wolf caught “in the act” of attacking livestock, also by permit. Individuals may kill a wolf that threatens a human. ODFW and CTUIR would implement lethal actions regardless of WS involvement (Appendices A and B). WS may investigate wolf depredations but with the exception of tribal lands, only ODFW may confirm livestock depredations.

this alternative, WS would be able to remove wolves that simply threatened livestock or had killed fewer than the allowed threshold of loss. This alternative is not a viable alternative and cannot be selected based on the direction outlined in OAR 635-110 and OWCMP (ODFW 2010a). Wolves are not yet sufficiently abundant in Oregon to allow for more liberal removal actions and all actions must conform to the strategies allowed by the State. There is some flexibility in OWCMP (ODFW 2010a) that would allow producers to take wolves under permit which enhances agency actions. This alternative may interfere with ODFW's ability to achieve its wolf conservation and management goals.

Use of Birth Control Strategies to Reduce Wolf Depredation on Livestock.

Under this alternative, wolves would be sterilized or other contraceptive methods would be administered to limit the ability of wolves to produce offspring under the assumption that inability to reproduce would reduce wolf depredation on livestock. This strategy may interfere with ODFW goals for conservation and delisting of gray wolves. In USDA (2011a), WS considered wolf contraception strategies that involve removal of all wolves in a pack that had caused chronic livestock depredation with the exception of the breeding pair, which would be live-captured, surgically sterilized, radio-collared, and released under the assumption that the pair would maintain and defend its territory against other wolves. ODFW has not considered or included any wolf contraception strategies in the OWCMP (ODFW 2010a) nor does WS have the authority to implement or require ODFW to test or implement such strategies.

Eradication

An Eradication Alternative would direct all WS program efforts toward planned, total elimination of wolves. This Alternative will not be considered in detail because:

- Eradication of established wolf populations is contrary to state and federal efforts to protect and conserve wildlife and contrary to federal and state ESA requirements.
- Eradication of wolves is not acceptable to most members of the public.
- WS objective is to reduce damage, not to engage in large-scale eradication or suppression.

Agencies Exhaust All Non-lethal Methods Before Attempting Lethal Methods

Under this Alternative, all non-lethal methods would have to be attempted and proven ineffective prior to using lethal wolf damage management methods even though, in the professional judgment of WS or ODFW personnel, some methods that would have to be attempted would be impractical (*e.g.*, would incur costs in excess of value of resources protected), inappropriate (*e.g.*, use of a light siren device in areas near human residences) or likely to be ineffective for the particular situation (*e.g.*, situations where the predator appears to have habituated). This Alternative will not be addressed in detail for a number of reasons including: 1) time and resources of agencies and individuals experiencing damage may be unnecessarily expended when non-lethal methods are unlikely to be

effective, based on circumstances, experience and professional judgment; 2) the potential that additional losses could be incurred while experimenting with non-lethal methods; and 3) experimenting with non-lethal approaches may not be appropriate in the rare instance of a wolf-related threat to human safety.

Lethal Only Program

Under this Alternative WS would only provide technical and operational assistance with lethal damage management techniques. Prohibiting WS from using or providing technical assistance on effective and practical non-lethal wolf damage management methods is not in the best interest of the continued conservation of the species, is contrary to agency policy and directives (WS Directive 2.101), and will not be analyzed further. In certain situations, non-lethal methods may provide short-term or long-term solution to wolf damage problems.

Sport Hunting and Trapping to Resolve Damages

In Phases I and II (ODFW 2010a), ODFW has determined that sport hunting with firearms and trapping will not be allowed for gray wolves in Oregon. However, the OWMCP (2010) states that controlled take of wolves may be authorized during OWCMP Phase III with special permits. WS cannot authorize regulated take and could not select an alternative that relied on sport harvest.

Live capture and relocation of depredating wolves.

When individual wolves or wolf packs are already established as chronic depredators of livestock, moving them to another location would pose a high risk that the wolves would simply further cause more livestock predation losses in their new area. Wolves can and often do move long distances in relatively short periods of time and cannot be expected to stay in areas to which they are relocated. Thus, even if wolves could be relocated to remote wilderness or sparsely inhabited areas away from livestock, they cannot be relied upon to stay in such areas and avoid further livestock depredation problems. The OWCMP (ODFW 2010a) specifies that depredating wolves or wolves suspected of depredation will not be relocated. Because WS has no authority to require ODFW to choose this alternative, we will not consider this alternative further.

CHAPTER 3 - ISSUES IMPORTANT TO THE ANALYSIS OF IMPACTS

3.1 Issues Driving the Analysis

The following environmental issues or resources, have been evaluated in this EA to help determine the impacts of the proposed action on the environment, and to compare the alternatives in Chapter 4.

- **Impacts on wolf populations** - What might be the impact of removing wolves on the growing Oregon wolf population, locally, in eastern Oregon, and statewide? What would be the cumulative effects of the proposal?
- **Impacts on non-target animals and human safety** - Would there be potential impacts on other species besides wolves? Could the program affect pets or wildlife? Might the program have adverse or beneficial effects on federally protected species? Are there any concerns for human safety?
- **Social and Aesthetic Perspectives** – How acceptable are the alternatives to stakeholders? How is humaneness perceived? What are the implications for the aesthetic value of wolves?
- **Effectiveness** – A discussion on the effectiveness of the alternatives will reveal how well the alternative meets the purpose and need for action. This issue is not an environmental issue, but it is an important management consideration that will be weighed with the environmental findings to make an informed decision.

3.2 Issues Not Analyzed in Detail, with Rationale

Effects of wolf removal on a pack's social structure

Pack resilience to mortality is inherent in wolf behavioral adaptation and reproductive capabilities (Brainerd et al. 2008). Wolf populations have sustained human-caused mortality rates of 30 to 50% without experiencing declines in abundance (Keith 1983, Fuller et al. 2003). In addition, Brainerd et al. (2008) found that 62% of packs in recovering populations retained territories despite breeder loss, and of those who lost territories, one-half became re-established. Furthermore, pup survival was primarily dependent on size of pack and age of pup because multiple pack members feed pups despite loss of a breeder. Pup survival in 84% of packs with breeder loss was similar or higher than packs without breeder loss (Mech and Boitani 2003).

Ecological effects of wolf removals

Wolf damage management, combined with other forms of mortality, would not be likely to result in a net decrease in wolves; rather, it is expected to support eventual

conservation and wolf management as discussed in OWCMP (ODFW 2010a). Based on a review of available literature in USDA (2011a), and Mech (2012), we find no reason to expect that wolf removals would result in significant adverse effects on the quality of the human environment because of possible wolf-related changes in ecosystems.

Appropriateness of preparing an EA (rather than an EIS) for such a large area, rather than preparing multiple EAs for smaller, more site-specific areas

Federal agencies have the discretion to determine the geographic scope of their NEPA analyses [*Kleppe v. Sierra Club*, 427 U.S. 390, 414 (1976)] and WS has determined that preparation of this EA to address wolf damage management in Oregon is appropriate and consistent with wolf management objectives and plans (ODFW 2010a, OAR 635-110). If in fact a determination is made through this EA that the proposed action would have a significant impact on the quality of the human environment, then an EIS may be prepared in compliance with NEPA.

Producers should consider that wolf predation losses are a cost of doing business

Livestock producers recognize that some level of predation losses are likely to occur, in spite of their own and agency efforts to reduce the amount of losses. The OWCMP (ODFW 2010a) is not setting expectations of preventing all losses, nor does it prescribe lethal wolf damage management as a solution to all depredation incidents. OWCMP (ODFW 2010a) and OAR 635-110 established an integrated approach to resolve wolf damage complaints. In some situations the use of non-lethal methods alone may be adequate for resolving wolf depredation complaints, but often there will be situations which require lethal measures. Most instances of wolf predation on sheep, for example, occur in spite of sheep producers' use of herders and livestock guarding dogs to help protect the sheep from predation. Livestock producers incur not only direct losses but also indirect losses including: harassment of livestock by wolves; fence repairs after wolves chase livestock through fences; costs to gather and regroup livestock dispersed by wolves; and extra costs when producers have to pay for feed because livestock are removed from grazing pastures to minimize risks from wolves. These and other indirect effects that wolves have on livestock are discussed under Section 1.2.1.

Native American Indian Lands

Tribal wildlife managers with responsibilities to protect and manage treaty-reserved wildlife resources in Oregon may meet wolf management needs in their areas of interest and influence. Tribal staff trained in wolf identification and handling will take the lead on addressing on-reservation wolf management needs (OWCMP 2010a, Ch. 10).

WS has contacted the Confederated Tribes of the Umatilla Indian Reservation, Burns Paiute Tribe, Confederated Tribes of the Warm Springs Reservation, and the Klamath Tribes during the development of the draft EA to determine if issues of concern to Native American Indians have been adequately addressed in this EA. In January 2013, letters were sent to the federally recognized tribes that did not provide public comment or were

not consulted with during the early development of the draft EA, providing them with the additional opportunity to cooperate, consult or provide input. Because extensive outreach occurred during the preparation of the OWCMP (ODFW 2010a), no new issues have arisen from the outreach and consultation associated with this EA.

As discussed under the proposed action, WS work on tribal lands would conform to similar depredation management protocols as allowed under the OWCMP (ODFW 2010a) and OAR 635-110. Therefore, work on tribal lands in Oregon would not add new issues or change the analysis of effects considered in detail.

Effects on Wilderness, Wilderness Study Areas, National Parks, State Parks and National Monuments

Wolf removals would not occur in National Parks, and National Monuments. Because individual wolves may be removed from surrounding areas, the potential for a slight temporary effect on users of National Parks, and National Monuments may occur by reducing the opportunity to view or hear a wolf that may have otherwise traveled into the protected area, however the effect would be insignificant because wolf populations would be expected to continue to grow for the reasons discussed in OWCMP (ODFW 2010a), and in Chapter 4.

Wolf removal may occur in federally designated wilderness areas or Wilderness Study Areas (WSA). The Wilderness Act (16 U.S.C. §§ 1131-1136) established a national preservation system to protect areas “*where the earth and its community life are untrammeled by man*” for the United States. Wilderness areas are devoted to the public for recreational, scenic, scientific, educational, conservation, and historical use. This includes the grazing of livestock where it was established prior to the enactment of the law (Sept. 3, 1964). The Wilderness Act did leave management authority for fish and wildlife with the States for those species under their jurisdiction. Some portions of wilderness areas in Oregon have historic grazing allotments and WS may conduct limited wolf removal for protecting livestock or human safety as directed by ODFW in accordance with the OWCMP. In accordance with Forest Service Manual 2323.33, the Regional Forester may approve predator damage management on a case-by-case basis to protect livestock and human health and safety in designated wilderness. The Regional Forester will only approve the action when removing the offending animal would not diminish wilderness value.

WS conforms to Revisions and Clarifications to H-8550-1, Interim Management Policy for Lands Under Wilderness Review (March 19, 2004 memorandum (No. 2004-140) from BLM Director to all Washington and Field Office Officials). WS follows BLM's Interim Management Policy for Lands Under Wilderness Review, H-8550-1 (1995), and the MOU between BLM and WS.

WS proposed activities on lands under wilderness review (WSAs) do not conflict with BLM management objectives as set forth in the RMPs. In WSAs, WS work is limited to

actions allowed in BLM's Interim Management Policy for Lands Under Wilderness Review (H-8550-1, III. G. 5., July 5, 1995), as revised (BLM 2004). These documents provide, in part, that wildlife damage management may be permitted in certain circumstances in order to protect domestic livestock and reduce human health or safety risks. Coordination is required in order that wildlife damage management activities planned in WSAs meet the non-impairment criteria. Proposed WS AWP are presented for review by BLM during the work planning process to ensure that areas of conflict do not exist. Therefore, WS actions should have no effect on wilderness characteristics such as size, naturalness, solitude, aesthetics, primitive or unconfined type of recreation, supplemental values, and the possibility of returning the area to a natural condition as stated in BLM's Wilderness Inventory Handbook from 1978 and the Interim Management Policy for Lands under Wilderness Review. (H-8550-1, July 5, 1995)

Similarly, WS follows policies outlined in the USFS Manual, particularly Section 2323, and the national MOU between USFS and WS when conducting PDM in WAs. Proposed WS work plans are reviewed by USFS during the work planning process to ensure that areas of conflict do not exist. Therefore, WS wolf damage management would have almost no effect on wilderness characteristics or management objectives. It would not impair the wilderness designation by Congress.

For the reasons discussed above, it is highly unlikely that WS proposed wolf damage management activities would impact Wilderness or WSAs.

Additional issues not considered because they are outside the scope of this analysis

Issuance of permits to landowners to take wolves

Wolves are currently managed by the ODFW (OWCMP 2010a) and the issuance of permits to landowners and livestock producers by ODFW is a decision of ODFW and outside the scope of any decision that WS would make as a result of this EA. Actions by others to address wolf conflicts have been considered under the cumulative impacts discussions in Chapter 4.

Desire for or opposition to a hunting season for wolves

WS has no authority to authorize or deny hunting or trapping season for wolves, and this issue is outside the scope of any decision that WS could make in conjunction with this EA. OAR 635-110-0030 (7) does state that the Commission will authorize controlled take of wolves by special permit when meeting required circumstances.

Appropriateness of livestock grazing on public lands

Regulating or authorizing livestock grazing on public lands is the responsibility of the respective public land management agencies.

Appropriate population level for wolves in Oregon

USFWS supports the OWCMP (USFWS et al. 2011). The OFWC, has, through its approval of the 2010 OWCMP concurred with ODFW's proposed population level for wolves in Oregon. This issue is outside the scope of any decision that WS could make as a result of this EA.

Other resources

The actions discussed in this EA do not involve ground disturbance, construction or alteration of vegetation. Therefore, the following resource values are not expected to be significantly affected by the alternatives analyzed: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, vegetation, cultural resources or special management areas. There are no significant irreversible or irretrievable commitments of resources other than a minor use of fossil fuels to operate vehicles. These resources will not be analyzed further.

3.3 Evaluation Methodology

Each issue will be evaluated under each alternative and the direct, indirect and cumulative effects will be disclosed as applicable. NEPA describes the elements that determine whether or not an impact is "significant". Significance is dependent upon the context and intensity of the impact. The following factors will be used to evaluate the significance of the impacts in this EA that relate to context and intensity (adapted from USDA (1997, revised) for this proposal):

Magnitude of the Impact (size, number, or relative amount of impact) (intensity) – Quantitative analysis is used where possible as it is more rigorous and is based on all known sources of wolf mortality and actions provided for under the OWCMP (ODFW 2010a) as updated since its publication. Magnitude may be determined either quantitatively or qualitatively;

Duration and Frequency of the Impact (temporary, seasonal impact, year round or ongoing) (intensity);

Likelihood of the Impact (intensity);

Geographic Extent (limited to the local unit area, to the management zone, the State of Oregon, or beyond) (context); and

Legal Status of the species that may be affected; and conformance with regulations and policies that protect the resource in question (context).

The analysis in Chapter 4 uses the OWCMP (ODFW 2010a and OAR 635-110 (Appendix A) as the environmental baseline under which wolves are managed. Confirmed wolf numbers are used to estimate the current wolf population. Using

confirmed numbers likely underestimates the total number of gray wolves in Oregon but is the best information available. The analysis on Oregon's wolf population will identify localized effects as well as overall current and cumulative effects on the population. The cumulative effect on the gray wolf population in Oregon includes past, present and reasonably foreseeable future actions of WS and others.

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Chapter 4 provides information needed for making informed decisions on the wolf damage management objectives identified in Chapter 1. This chapter uses the issues identified in Chapter 3 as the evaluation criteria. Each of the issues will be analyzed for its environmental consequences under each alternative.

Direct, indirect, and cumulative impacts are discussed in relationship to effects on the wolf population and any anticipated non-target impacts, perspectives of human social values and aesthetics. The effectiveness of the alternatives is also discussed as a measure for comparison in meeting the purpose and need for action.

4.1 Alternative 1 – No Action

The No Action Alternative means that WS would not take additional action to assist ODFW or tribes with wolf damage management to protect livestock or human safety in Oregon. Under the current program, or no action alternative, WS would continue to provide ODFW, tribes, or other agencies with information related to wolf damage identification, and provide non-lethal technical assistance to landowners. ODFW would implement measures in the OWCMP (ODFW 2010a and OAR 635-110 (Appendix A), and in the absence of additional WS assistance, would target wolves for lethal control as described in Chapter 3. CTUIR or other tribes with management authority of wolves will implement measures according to their wildlife policies. Thus, the cumulative effects of such actions are the current environment under which wolves exist, and are discussed as the environmental baseline, or the environmental status quo.

4.1.1 Impact on wolf population

Gray Wolf Populations in Oregon

At the end of 2013, there were 8 known wolf packs confirmed in eastern Oregon with 64 confirmed individuals (ODFW 2014). Continued wolf movement into Oregon from adjacent states is likely given the current population of wolves in the state of Idaho which has 107 documented wolf packs and an estimated population of 659 wolves, with additional packs overlapping along bordering states (IDFG and Nez Perce Tribe 2014). The wolf population in Oregon is expected to grow as Oregon wolves continue to reproduce and as wolves from other states enter Oregon through natural dispersal. The Idaho portion of the NRM DPS is expected to continue to supply new dispersing wolves to Oregon, which will diversify the gene pool and fill in home ranges that become vacant due to lethal control, natural mortality, unintended mortalities or westward dispersal. It could

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take 1 to 2 decades for eastern and western Oregon to reach management population objectives (ODFW 2010a).

Wolves could possibly occupy portions of the high desert region of southeastern Oregon if human tolerance is sufficient and prey is adequate. However, the rate of wolf dispersal into and throughout Oregon cannot be predicted. The ability of wolves to reach areas of habitat outside northeast Oregon is assumed. There has been documented wolf activity as far west as the Cascade Mountains as was evidenced by dispersers OR-7 and OR-3 from the Imnaha pack (ODFW 2012b). As of June 4, 2014, ODFW released information that OR-7 produced at least 2 pups with a mate in the southwest Oregon's Cascade Mountains (<http://dfw.state.or.us/news/2014/june/060414.asp>).

As wolf activity is documented through discovery of individual wolves or wolf pack activity, ODFW will continue to radio-collar and monitor individuals. By monitoring and observing wolves regularly, determinations regarding the habitats they select and occupy will be possible. Management decisions will be evaluated for reducing conflicts while promoting conservation (ODFW 2010a).

Wolves can occupy a variety of habitats provided adequate prey is available and they are tolerated by humans (ODFW 2010a). Without conflicts with humans, much of Oregon could support wolves (ODFW 2010a). The specific habitat chosen will be determined by prey availability and human tolerance and probably will include forests and rangeland habitats (ODFW 2010a). Habitat such as wilderness areas or other areas away from livestock use offers the best chance for successful conservation provided prey is sufficient. Habitats in northeastern Oregon with few potential human conflicts include Eagle Cap, Wenaha-Tucannon, North Fork John Day and Strawberry Mountain wilderness areas, Hells Canyon National Recreation Area, designated roadless areas on public lands, and areas characterized by low density of open roads (ODFW 2010a, Figure 3: Forested, Roadless and Wilderness Areas in Oregon). Such areas would be characterized as highly suitable because human densities and activity levels are low and ungulate numbers are considered adequate to support wolves (ODFW 2010a). Wolf presence in these areas will be supported through ODFW management actions (ODFW 2010a).

Direct effect on gray wolf populations

WS would have no effect on individual wolves, or upon wolf conservation and management in Oregon under the No Action alternative, other than as a provider of non-lethal technical assistance and information to ODFW and landowners.

Cumulative effects on gray wolves in Oregon

Causes of wolf mortality

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Wolves die from a variety of causes, whether natural or human-caused. Naturally caused mortalities result from territorial conflicts between packs, injuries while hunting prey, old age, disease, starvation or accidents. In an established Alaskan wolf population largely protected from human-caused mortality, most wolves were killed by other wolves, usually from neighboring packs (Mech et al. 1998). Pletscher et al. (1997) studied survival and mortality patterns of wolves in the Glacier National Park area. Total annual survival for this semi-protected population was a relatively high 80%. The survival rate for resident wolves was even higher (84%), but dispersers had a 64% chance for survival. Despite the high survival rates, humans accounted for the vast majority of wolf deaths. Of the 43 deaths investigated from 1982 to 1995, 88% were human-caused (56% legal, 32% illegal). Three wolves died of natural causes and two died of unknown causes.

USFWS stated that natural mortality probably does not regulate the NRM populations. Human caused wolf mortality, including depredation control, legal and illegal killings, and vehicle accidents, is the only cause that can significantly affect populations at recovery levels (65 FR 43449; July 13, 2000).

Current human-caused mortality data in the NRM DPS are available from the USFWS et al. (2012). In 2011, all known human-caused mortality within the NRM DPS was approximately 23% of the absolute minimum estimated population. Human caused mortality included agency control, legal harvest, and other. Legal harvest was instituted in Montana and Idaho after gray wolves were removed from federal protection. Legal harvest in these two states accounted for approximately 14% of the absolute minimum NRM DPS estimated wolf population. Agency control, which included legal take in defense of property by private citizens, accounted for approximately 7% of the absolute minimum NRM DPS estimated wolf population in 2011. Included in this estimate were Oregon's wolf removals at 6% of its 2011 population.

The ODFW is aware that illegal wolf killing occurs (OWCMP 2010a). The ODFW and WS realize that a small portion of the human population will likely kill wolves no matter what wolf damage management program is in place. However, the agencies also believe that prompt, professional, effective resolution of conflicts with wolves will help maintain public tolerance of wolves and allow for maintenance of a recovered population. Additionally, management directed removals will prevent an increase in untrained individuals attempting lethal wolf management on their own, and should reduce the likelihood of an increase in anti-wolf behaviors by intolerant stakeholders (Niemeyer et al. 1994, USFWS 1994). Illegal killing generally occurs when people feel they have no legal access to resolution of their problems.

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Social studies by Kellert (1999), Schanning et al. (2003), Naughton-Treves et al. (2003), and Naughton et al. (2005) in the Great Lakes area show strong public support for lethal control of problem wolves by government agents. Illegal killings by private individuals are less likely to be specific, and could potentially have more adverse impacts on the wolf population than focused lethal actions by trained agency professionals. Illegal killing by untrained individuals is also less likely to be effective in reducing depredation events, as it would be less likely to target the specific depredating animals.

The Wildlife Society, an international organization of professional wildlife biologists, states that “Control of wolves preying on livestock and pets is imperative and should be prompt and efficient if illegal killing is to be prevented and human tolerance of the presence of wolves is to be maintained (Peek et al. 1991, 73 FR 10514, 74 FR 15123)”. The International Union for Conservation of Nature (IUCN) has established a Manifesto on Wolf Conservation. The Manifesto . In an extensive literature review of strategies for reducing carnivore/livestock conflict by Norwegian biologists, it was concluded that lethal control should be considered on endangered carnivores such as wolves to prevent expansion into areas of high conflict (Linnell et al. 1996).

Since 1999, confirmed gray wolf mortality in Oregon has included legal, illegal and accidental deaths and has numbered twelve individuals, while the population has increased from none to more than 64 individuals with 4 breeding pairs documented in 2013 (ODFW 2014). ODFW believes that there are likely to be more wolves in the state dispersing into new areas, including the Cascade Range.

Known gray wolf removals and mortality in Oregon since 1999:

- 1999 – non-lethal capture and return of collared female wolf to Idaho
- 2000 – illegal shooting of a male wolf in Umatilla County.
- 2000 – male wolf killed in vehicle collision
- 2007 – female wolf illegally killed in Union County
- 2009 – WS lethally removed a nonbreeding male and female wolf in Baker County after chronic confirmed livestock depredation and failed attempts at stopping the damage with non-lethal method. The removal order was issued by ODFW.
- 2010 - male radio-collared wolf illegally killed
- 2011 –One female wolf died of undetermined causes. ODFW lethally removed a male and female non-breeding wolf from the Imnaha pack on private land⁸. The wolves were taken in response to repeated livestock losses caused by the pack, and after non-lethal methods failed to stop the damages.

⁸ On May 10, 2011, ODFW issued the announcement it would lethally remove two wolves, which they did on May 16 and May 18, 2011.

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- 2012 – wolf found dead (as of May 2, 2012, ongoing investigation (ODFW 2013))
- 2013 – 2 died from parvovirus; one wolf was found dead from a gunshot (ongoing OSP investigation (ODFW 2014)).

Based on the level of known mortality to date, Oregon’s wolf population has continued to expand despite accidental, illegal, and legal forms of human –caused mortality. Actual mortality rates and population numbers may be higher or lower; population numbers reported by ODFW only count confirmed individuals and likewise, mortality figures only cover known mortality events. Only a portion of the known or confirmed wolves in Oregon are equipped with radio / tracking collars. New confirmed or reliable sightings indicate additional wolf activity in Oregon.

The OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) also allows ODFW to issue permits to landowners in certain situations. In 2011, ODFW issued 32 “caught in the act” permits to livestock producers that have requested one. For information on permit conditions, see OAR 635-110. No wolves were taken under permit by private landowner as of the date of this EA. Few wolves are expected to be killed under private permit due to the need to witness the wolf in the act of attacking or killing livestock which usually occurs at night. If combined mortality (landowners or agency) results in the targeted wolf kills, ODFW may revoke all permits to see if the depredation stops, before taking any further action.

The potential for WS to incidentally take a state listed wolf while performing either wolf damage management or non-wolf related damage management work has been evaluated. ODFW has concurred with WS’s determination that it is not likely to take a wolf in areas where wolves were not known to occur. In occupied wolf range in Oregon, as defined in the 1994 Northern Rocky Mountain Wolf Recovery EIS, incidental capture of a wolf is possible. However, WS implements precautionary measures to minimize incidental captures of wolves. ODFW has issued WS an incidental take permit outlining conditions to minimize the risk (permit number WD-ITP-12-01) and determined that WS is not likely to adversely impact the long-term conservation of the species in Oregon.

The potential for WS activities to incidentally affect wolves in those areas outside the NRM DPS in Oregon (west of Highway 395, 78 and 95) which are protected by the federal ESA, require consultation with the USFWS, pursuant to the federal ESA.

ODFW may also order controlled take of wolves after a state delisting when and if wolves have been determined to be the primary cause of ungulate population or recruitment decline locally or in a wildlife management unit. No actions are

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proposed at this time. The OAR 635-110 and OWCMP (ODFW 2010a) calls for translocation, relocation or controlled take to reduce wolf numbers to meet ungulate management objectives when wolves are no longer state ESA protected.

The OWCMP (ODFW 2010a) reviewed the current literature regarding wolf – human interactions. Although there are populations of wolves in Europe, Russia, and North America, there are few occasions of wolf attacks on people. The Oregon ESA does not address provisions for taking an endangered species for the protection of human safety but Oregon’s criminal code may provide some defense for someone acting under the threat of grave injury or imminent threat (ORS 161.200). There may be the potential for wolves to be removed for human health and safety concerns; however this human caused mortality is unlikely.

Gray wolf recovery, conservation and management

The Northern Rocky Mountain Wolf Recovery Plan (USFWS 1987) required recovery goals for the northern Rocky Mountain gray wolf population only from Idaho, Montana, and Wyoming. Thus, a population of wolves in Oregon was not necessary to be able to recover wolves and remove the NRM DPS from the federal ESA threatened/endangered list. USFWS et al. (2012) stated: “By every biological measure the NRM DPS wolf population is fully recovered.”

The State of Oregon’s ESA protects gray wolves throughout Oregon but they are only federally protected in Oregon outside of the NRM DPS. As defined in Chapter 1, the NRM DPS in Oregon is defined by that portion of Oregon east of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of Highway 95 south of Burns Junction (74 FR 15123; April 2, 2009). This boundary falls within ODFW’s east wolf management zone (Figure 2).

OAR 635-110 (Appendix A) and OWCMP (ODFW 2010a) discuss three phases for conservation and management of gray wolves in Oregon and applies only to wolves that are not federally listed. The conservation and management phases are summarized in Section 1.4, ODFW Wolf Management Goals and Objectives. More detailed information is contained in OAR 635-110 which is included as Appendix A.

Effects of OWCMP (ODFW 2010a) and OAR 635-110 on wolf populations

One of the main challenges for wolf planners in Oregon has been estimating the number and distribution of wolves sufficient to achieve conservation of wolves in Oregon and satisfy state delisting criteria, while protecting the social and economic interests of all Oregonians. Setting population goals too high could foster unrealistic expectations and result in social and biological conflict, and uncertainty regarding the capacity of Oregon to support wolves. Drafters of the OWCMP (ODFW 2010a) relied on information from other state wolf

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management plans and the scientific literature to develop wolf population objectives.

Uncertainties surrounding the eventual location of dispersing wolves were considered during development of the OWCMP (ODFW 2010a). One concern was that considerable time could pass before wolves would naturally disperse to western Oregon. In the meantime, wolves would be located primarily in eastern Oregon where human tolerance could be affected as the wolf population increased. The decision to divide the state into two State management regions (eastern and western Oregon) (Figure 2) with separate but equal population objectives provides the flexibility needed to manage increasing wolf numbers in eastern Oregon while encouraging conservation in western Oregon. The statewide process to consider delisting could be initiated when four breeding pairs of wolves are present for three consecutive years in eastern Oregon. This approach ensures connectivity to the large meta-population of wolves in Idaho, an important factor in achieving conservation of wolves in Oregon.

Based on studies from several researchers, there appears to be enough habitat connectivity between occupied wolf populations in Canada, northwestern Montana, Greater Yellowstone Area, and Idaho to ensure exchange of sufficient numbers of dispersing wolves to maintain demographic and genetic diversity in the wolf population (Oakleaf et al. 2006, Carroll et al. 2006, vonHoldt et al. 2008, vonHoldt et al. 2010). Because suitable habitat is nearly saturated in the original wolf reintroduction area of greater YNP/Montana, Wyoming, and Idaho, core refugia within these populations will continue to produce a large number of 'surplus' wolves which will either fill in social vacancies within the core refugia, die, or disperse out of the core refugia. Pack resilience to high mortality is inherent in behavioral adaptation and high reproductive capabilities of wolves. Brainerd et al. (2008) found that 62% of packs in recovering populations retained territories despite breeder loss, and of those who lost territories, one-half became reestablished. Brainerd et al. (2008) also found that, following the removal of wolves for livestock depredation in the NRM wolf population, the breeding status of packs was not greatly affected, regardless of the breeding status of individuals or proportion of a pack removed. Population size, proximity of other wolf packs, and the number of dispersing wolves' influence the frequency with which alpha males and females will be replaced (Brainerd et al. 2008). Social vacancies, whether from loss of breeders or non-breeders, are likely to be quickly filled by dispersing wolves or other wolves within the pack.

Because of the proximity of northeastern Oregon to Idaho packs, dispersing wolves initially occupied areas in northeastern Oregon (ODFW 2010a, Figure 4: Wilderness and Roadless Land in Eastern Oregon and central Idaho). Wolf breeding pairs in these areas could be considered more secure and stable because of their proximity and connectivity to the Idaho population of wolves. However,

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other competing factors such as declining ungulate populations, competing carnivore populations and livestock production in those areas will need to be considered. Wolf movement and dispersal between the two populations would allow gene flow between the populations.

Another important factor in maintaining wolf populations is the native ungulate population. In eastern Oregon, mule deer and Rocky Mountain elk represent the most abundant prey species. To a lesser extent, white-tailed deer, pronghorn, Rocky Mountain bighorn sheep, California bighorn sheep and mountain goats could potentially be prey for wolves in eastern Oregon. Mule deer likely would be the preferred wild prey in high desert habitats of southeastern Oregon. Wolves that migrate into areas of western Oregon would find populations of black-tailed deer, Roosevelt elk and, potentially, Columbian white-tailed deer (OWCMP 2010a).

As explained by Edward Bangs, USFWS, secure habitat for gray wolves is limited in Oregon; therefore biologists predict that fewer wolves will occupy Oregon than are found in similar but much more abundant habitat in Idaho. The federal recovery goal for the Idaho wolf population was 10 breeding pairs in what has been described as the best remaining wolf habitat in the lower 48 states. Oregon, on the other hand, was not selected as a recovery state primarily due to lack of large blocks of contiguous public land habitat (as cited in ODFW 2010a). Research published in 2003 suggested that the smallest viable wolf populations might be two to three adjacent packs with four wolves each, located 40-60 kilometers (km) apart (Fuller et al. 2003). Each pack might cover 117 square km if the ungulate density averaged eight deer per square km. The authors also wrote that such small populations could persist anywhere if the prey density was at average population levels and productivity, and where wolf production exceeded mortality.

Several notable examples of small wolf populations can be found in the scientific literature. The Isle Royale wolf population began from a single pair of wolves in about 1949. The population has fluctuated between 12-90 individuals (David Mech, personal communication *in* ODFW 2010a). This population has apparently lost 50% of its original genetic diversity (Wayne et al. 1991), yet it has persisted for more than 60 years despite being isolated on an island. Remnant wolf populations in Europe (*i.e.*, Italy, Spain and Portugal) numbering fewer than 100-200 wolves persisted for decades and have since expanded their numbers and range, and avoided extinction (USFWS 1994).

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When the USFWS identified and delisted the NRM DPS, except for Wyoming⁹, its 2008 estimate indicated the NRM DPS contained approximately 1,639 wolves (491 in Montana; 846 in Idaho; 302 in Wyoming) in 95 breeding pairs (34 in Montana; 39 in Idaho; 22 in Wyoming) (74 FR 15123 April 2, 2009). Those numbers were about 5 times higher than the minimum population recovery goal and 3 times higher than the minimum breeding pair recovery goal, and marked the ninth consecutive year the population had exceeded USFWS distribution and recovery goals. Since then and with states implementing management plans, the 2011 NRM DPS wolf population contained $\geq 1,774$ wolves in ≥ 287 packs with ≥ 109 breeding pairs. Montana and Idaho have (Wyoming is underway) adopted State laws, management plans, and regulations that met the requirements of the federal ESA to conserve the recovered wolf population into the foreseeable future. Oregon's yet to be established wolf populations were not necessary for NRM DPS recovery.

Wolf populations are dynamic and can undergo major fluctuations. Many studies have examined various levels of mortality and harvest of wolves in relation to the impacts these mortality levels have on gray wolf populations. Wolf populations have sustained human-caused annual mortality rates of 30 to 50% without experiencing declines in abundance (Keith 1983, Fuller et al. 2003). Mortality rates in unexploited wolf populations average 45% for yearlings and 10% for adults. Since 1995, 53% of documented wolf mortalities in the GYA have been human-caused (Smith and Guernsey 2002). Wolves' productivity, in terms of recruitment and immigration, is what allows them to persist under human harvest (Fuller et al. 2003). In areas where human-caused mortality is low, disease, starvation, and killing by other wolves are the primary causes of wolf mortality.

Wolf populations and packs within the NRM wolf population are resilient to regulated mortality because adequate food supplies are available and core refugia provide a constant source of dispersers to replenish breeding vacancies in packs. USFWS et al. (2012) reported that the minimum estimated NRM DPS wolf population in 2011 increased slightly (~3%) from 2010 levels, with pack and breeding pair estimates being similar to the previous year. Data from 2011 suggested that the growth rate of the NRM wolf population declined and the population may be starting to stabilize (USFWS et al. 2012).

Wolf populations in the NRM are characterized by robust size, high productivity, closely neighboring packs, and many dispersers (USFWS et al. 2007). The OWCMP allows ODFW and landowners to remove a minimal number of wolves in Oregon to protect livestock and human safety while promoting conservation.

⁹ Wyoming was excluded from the delisting not because it lacked sufficient wolves, but because it lacked adequate protection plans. Wolves in Wyoming will continue to be regulated by USFWS as a non-essential, experimental population.

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Removal of wolves in Oregon from the NRM DPS zone would not have an impact on the overall NRM DPS population. The Oregon wolf population has grown including dispersing individuals from neighboring states, it is anticipated that wolves would continue to expand in number and range in Oregon.

ODFW has made it clear that without the assistance of WS, it would implement lethal control actions which would require that it divert resources from other wolf management actions that are necessary to ensure wolf conservation in Oregon (Appendix B). ODFW's conservation and management resources that may be reduced under the No Action alternative would include non-lethal control supplies; capture, monitoring and research needed to assess population viability and health; and wolf damage management on livestock. ODFW has stated (Appendix B) "that the reduction in these other programs will have a direct impact on actions necessary to ensure recovery of wolves in Oregon". CTUIR has indicated that it too would manage wolf damage without WS (Appendix B). Total agency wolf removal is expected to occur at a low frequency relative to the population because wolves that are not involved in chronic depredation (as defined in OAR 635-110 and ODFW 2011), would not be targeted for removal.

Compensation and Financial Assistance

The compensation and financial assistance program is not expected to notably affect agency wolf removals. Compensation can increase public tolerance but it does not stop depredation. Producers may also be reimbursed for a portion of their expenditures on non-lethal methods and wolf deterring management. It would be speculative to conclude that reimbursement assistance for materials or methods would cause producers to use more or other measures that would be more likely to stop damages. Presumably, producers are now doing everything reasonable to prevent damages and avoid losses. The potential beneficial effect of this option would be to enhance public acceptability of wolves, particularly for those that are bearing the burden of the negative effects of wolves on their livestock and livelihoods. Effects of financial compensation on program effectiveness and public tolerance of wolves is discussed in Sections 4.1.4 and 4.1.3, respectively. To the extent that public acceptance is enhanced, there is the potential illegal killing of wolves may be reduced. Thus increasing public tolerance of wolf conflicts and reducing unauthorized take can lead to an enhanced ability for ODFW to meet conservation and management goals.

Conclusion

Oregon's wolf conservation and management strategies include a cautious and conservative approach to managing wolf depredation. This approach, combined with the abundant source population in Idaho and along with sufficient suitable

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habitat and prey availability in Oregon, indicates that it is reasonable to conclude that wolves will continue to expand in range and in number within the foreseeable future to levels that meet delisting criteria in Oregon's eastern management zone. Even prior to the federal delisting of the NRM DPS in a portion of Oregon's eastern management zone, the USFWS noted that wolves in eastern Oregon were not necessary to meet recovery goals of gray wolves in the NRM DPS. The recovery goals established in 1987 called for 10 breeding pairs and 100 wolves from each of the three recovery areas in Montana, Idaho, and Wyoming. At the time of this writing, any wolves in Oregon that migrate outside of the NRM DPS would be federally protected under the ESA. If wolves outside of the NRM DPS in Oregon were to be delisted by the USFWS, they would be managed by ODFW as a state listed species under the Oregon ESA. Wolves managed under state ESA will remain under conservation status until the delisting criteria is met, and then managed according to the State's plans for its east and west management zones. The OWCMP (ODFW 2010a) indicated that ensuring at least four breeding pairs each in eastern and western Oregon would provide for the long term maintenance of a viable wolf population in Oregon. Based on confirmed sightings in the Cascade region, it is likely that wolf packs will become established in western Oregon in the foreseeable future.

Removing wolves that are involved in chronic depredation is necessary to help achieve conservation and management goals. Wolves that rely on their natural prey, not livestock, are expected to continue to expand their populations according to OWCMP (ODFW 2010a) stated goals and objectives: Based on the expanding wolf population in Oregon and the ability of wolves to tolerate removal levels well above those that would be expected in Oregon, the cumulative effect on the wolf population is not expected to hinder OWCMP (ODFW 2010a) conservation goals, and would be likely to benefit wolves in the long term by facilitating public tolerance and ODFW conservation and management goals. ODFW has clearly stated that it would target problem wolves for lethal control per OWCMP (ODFW 2010a) and OAR 635-110, however this would require reducing other wolf management actions needed for conservation if WS were to select this alternative and be unable to offer additional assistance to manage confirmed livestock depredation.

4.1.2 Impacts on non-target animals and human safety

Non-target animals

WS would have no effect on non-target animals or human safety under the No Action alternative.

Wolf removal actions by ODFW are expected to occur at a low frequency and in very limited and isolated geographic locations. ODFW has demonstrated their

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professionalism, expertise, and their skill in capturing wolves and other target species. Given ODFW's skill and the selectivity of the methods to be used, non-target animals, including threatened and endangered species will not likely be affected or the risk is very low. The potentially harmful non-lethal or lethal methods available to WS (aerial shooting, foot and neck snares and foot-hold traps) are also available to ODFW. Aerial and ground shooting is virtually 100% selective for target species because the target animal or animals are observed and verified as target species by trained and experienced personnel prior to shooting.

Traps and snares may potentially capture non-target animals. The potential to capture smaller animals such as coyotes and red fox in foot-hold traps or foot snares would be reduced substantially by using pan-tension devices set at a high enough triggering tension to prevent it from triggering the trap or foot snare. Coyotes and red fox are smaller than wolves and therefore not likely to enter neck snares set for wolves. Coyotes are abundant and widespread in Oregon and can withstand very high harvest levels. Similarly, fox can withstand recreational and damage management harvest levels (Tom Thorton, ODFW Game Program Manager, Personal communication with 6/1/2012). Any low level capture would be negligible in terms of effects on their populations.

Wolverines and kit fox are both state listed species that could potentially be affected. However, due to their smaller size, capture of these species is not expected for the reasons discussed for coyotes and red fox.

Similarly, effects on raptors including bald and golden eagles would not be expected due to the use of pan-tension devices.

It is possible, though unlikely that a bear or cougar may be captured in a foot-hold trap or foot snare set for wolves. In Idaho, WS has never captured these species while conducting wolf removals despite a comparatively high level of take of wolves (USDA 2011a). Black bear and cougar are both abundant and widespread in Oregon, so in the unlikely event of a capture, there would be no effect on the population level. ODFW and WS personnel are both trained, experienced and equipped to administer chemical immobilization drugs to any cougar or bear incidentally captured, and thus would it would be likely to be released unharmed.

The Canada lynx is a threatened species under both federal (65 FR 16051) and State ESA (ORS 496.171-496.192). It is considered to be an occasional visitor in Oregon (Verts and Carraway 1998, Cooper 2001, McKelvey and Aubry 2001), with no known populations and no indication that a resident population ever occurred in Oregon Vol. 68, No. 128 (USFWS 2003). Canada lynx inhabit montane coniferous forests and are specialized predators that are highly dependent on the snowshoe hare (*Lepus americanus*) for food, although they will eat alternate prey such as squirrels and grouse. Given an extremely low incidence

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of confirmed lynx observations in Oregon, it is extremely unlikely that wolf damage management would result in the capture of a lynx.

Human Safety

The methods to be used by ODFW if WS did not take action would be the same as those used by WS. WS's use of traps and foot snares have not presented any substantial safety risks to people, and this has been verified by a formal risk assessment of WS methods (USDA 1997, Appendix P, pp. 23-34). As discussed in the EA, sections 2.2 and 2.3, WS uses a decision model and methods to reduce environment risks including risks to people. Humans are not likely to be exposed to any management methods due to the minimal use of management tools, the remote locations, and communication and coordination with land owners.

People directly affected by wolf depredations on domestic animals, especially pets that are killed in their yards, express concern for human safety. Wolves that have become habituated to humans are unpredictable and may attack people or pets (Linnell et al. 2002, McNay 2002). In many situations where wolves may pose a risk to health and safety, management of human behavior and non-lethal techniques for wolves may be sufficient to resolve the problem; however, in some situations, removal of the problem individual may be the most appropriate solution (IDFG 2008).

4.1.3 Social and Aesthetic Perspectives

Wildlife generally is regarded as a source of economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people. Under this alternative, WS would not take action to remove wolves and would not directly affect those with strong opinions on this aspect of wolf damage management or on humaneness, nor would WS have any positive or negative effect on the ability of the public to potentially experience wolves in the wild. The No Action alternative would include ODFW and others taking actions to resolve wolf depredation using lethal means where authorized.

Human attitudes towards wolves

The arrival of wolves in Oregon has sparked intense interest throughout the state as Oregonians debated the possibility and acceptability of wolves dispersing into Oregon from Idaho and establishing a permanent population. Views range from concern about the effects of wolves on livestock and native ungulates to support for the return of a native species (ODFW 2010a).

Human attitudes toward wolves in North America have undergone significant changes during the second half of the 20th century. Strong support for wolf conservation has been documented throughout the United States (Mech and

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Boitani 2003). Cultural influences such as popular literature, the work of researchers, and the voice of conservationists such as Aldo Leopold have provided information and support for conservation. A 1999 poll of Oregonians showed a 70% support rate for the return of wolves to the state.¹⁰ These changes in wildlife values are embodied in the federal ESA and the Oregon ESA enacted in 1979. However, values and attitudes in the United States are complex and not homogenous. They depend on area of residence (rural-urban), occupation (agriculture/ natural resource-technical/service), and many other factors (ODFW 2010a).

Maintaining a balance between human and wildlife needs requires sensitivity and consideration of divergent viewpoints. In addressing the conflicts between wildlife and people, wildlife managers must thoughtfully consider not only the needs of those directly affected by wildlife damage and the environmental issues, but also a range of sociocultural and economic factors. Wildlife is a valuable public resource. ODFW is responsible for maintaining healthy, viable resident wildlife populations, which now includes among others, gray wolves. Accordingly, when wildlife causes damage, the ODFW has an obligation to respond to that damage. WS normally provides assistance upon request of state governments or others to manage damage by wildlife.

Considerable information from prominent social theory and research shows that tolerance toward a wildlife species is influenced by the value of losses attributable to that species, the benefits attributable to the species by the affected individual, and by the perception of the risk of losses as controlled or voluntary (Slovic 1987). Risks considered involuntary by an individual are less likely to be viewed as acceptable whereas risks that can be controlled are generally considered to be more acceptable. Risk theory and associated research (*e.g.*, Slovic 1987) suggest that a government which simultaneously imposes the risk of wolf depredation (*i.e.*, supports wolf recovery) and prohibits individuals from effectively reducing those risks (*i.e.*, no chance for removal of problem wolves) is creating an intolerance of the wolf presence. In effect, this situation lowers the social carrying capacity for wolves (tolerance level) and could threaten the wellbeing of the population, both presently and in the future if the situation persists. Livestock producers have the capability to resolve their own depredation problems, either legally or illegally, with or without assistance from the government (Dorrance 1982). If no government-sanctioned relief from the loss of livestock is in sight, intolerant individuals will likely adopt anti-wolf behaviors including illegal killing (Fuller et al. 2003). In this scenario, social carrying capacity effectively will be lowered because individuals erroneously turn their attention to the wolf population at large as the primary cause of wolf problems.

¹⁰ 12 Poll by Davis & Hibbitts, April 1999. Accuracy estimate is +/- 5 percent (OWCMP 2010).

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There has been some question as to whether lethal removal of depredating wolves (*e.g.*, those involved with confirmed cases of livestock depredation) can prevent or minimize the development of negative public attitudes, or even foster greater tolerance toward wolves and therefore enhance the survival and recovery of the species. Although the liberal killing of wolves by humans caused wolves to initially become endangered in the U.S. south of Canada, and across much of Europe (Mech 1970, Lopez 1978, Thiel 1993), highly selective lethal removal of individual wolves or wolf packs by governmental agencies is considered by many professional biologists to be an important part of recovery and conservation programs for wolves (Sillero-Zubiri and Laurenson 2001, Boitani 2003, Breck and Meier 2004). For example, Dr. David Mech, has written that “lethal control will remain the ultimate means of curbing wolf damage to livestock and pets” (Mech 1995). He further states that, “Direct lethal control is still usually the only practical course under most conditions”. Mech (1995) argued that a more flexible system of lethal controls could actually allow wolves to occur over much larger portions of North America, if problem animals can readily be controlled.

The Wildlife Society, an international organization of professional wildlife biologists, especially focused on North America, stated in their technical review on the restoration of wolves in Western North America that “Control of wolves preying on livestock and pets is imperative and should be prompt and efficient if illegal killing is to be prevented and human tolerance of the presence of wolves is to be maintained (Peek et al. 1991).” Musani et al. (2004) noted that in western North America, the rate of expansion of depredation has been less than the rate of wolf population growth, and attributed this trend to elimination of individuals and packs from the population that had learned to kill livestock.

Research indicates that public support for the presence of large carnivores largely depends on confidence that problems caused by individual animals will be resolved effectively. A public attitude survey of residents in Nine Mile Valley, Montana found that 65% of wolf supporters might change their support for the presence of the population if wolves that kill livestock were not controlled quickly or effectively (Wolstenholme 1996). In a study that examined which factors would encourage residents of the Flathead Indian Reservation to support protection of grizzly bear habitat on private lands, Frost (1985) found that rapid assistance to bear-related problems was the most important factor, with 76% of respondents desiring that assurance. By contrast, only 42% of respondents felt that compensation for livestock losses was a valid incentive for supporting protection.

Studies have also shown that local acceptance of wolves is improved if government lethal controls are allowed on problem wolves. In a 1995 survey of American households, 60% of respondents supported removing predators that preyed on livestock (Reiter et al. 1999). Prior to the 1995 reintroduction of

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wolves into Wyoming, a larger proportion of residents surveyed supported wolf recovery than opposed it (44 vs. 34.5%), but the majority of respondents supported killing of wolves (58.5%) that killed livestock (Thompson and Gasson 1991). Similarly, Wisconsin surveys indicate that residents, especially rural people in wolf range accept and expect control of wolves that kill livestock or pets on private land. In a 2001 survey of Wisconsin bear hunters, farmers, and residents in wolf range, 52.5 % expressed support for destroying wolves that had killed livestock or family pets (Naughton-Treves et. al 2003). Support for killing problem wolves was highest for bear hunters (77%), lowest for general residents (32%), and intermediate for farmers (45%) (Naughton-Treves et al. 2003).

In a more recent Wisconsin opinion survey, a stratified random sample of zip codes was used to survey urban areas outside wolf range, rural areas outside of wolf range, urban areas in wolf range, and rural areas in wolf range (Naughton et al. 2005). Respondents were also compared by contributors to endangered resources programs verse non-contributors, as well as livestock producers and non-producers. Non-contributors supported translocation of wolves slightly above lethal control on problem wolves (35% vs. 45%), but among endangered resources contributors there was a much lower preference for lethal control (14%), compared to translocations (53%). However, the survey asked persons if they preferred translocation of problem wolves to wilderness areas, compared to lethal control or other actions, but it was not clear if respondents were aware of feasibility and problems with translocations. When asked about reliability of killing only the problem wolves, only 5% of endangered resource contributors and 11 % of non-contributors said they opposed all lethal controls. Among livestock producers 46 % preferred lethal control. If lethal control of wolves was to be done, about 70% of respondents preferred government agents conducting the controls (Naughton et al. 2005).

A survey of random Wisconsin residents was conducted in 2003 of general attitudes toward wolves (Schanning et al. 2003). A total of 66.4% of respondents to this survey supported the Wisconsin Department of Natural Resources (WDNR) shooting problem wolves, and 54.4% supported translocation of problem wolves. For problem wolves killing livestock, 43.7% of respondents agreed these wolves should be killed, and 19.9% were neutral on WDNR killing of such wolves, but 63.2% of respondents agreed that farmers should have the right to kill wolves that kill or injury livestock. It does appear that with adequate justification, the majority of respondents support or do not oppose the killing of problem wolves.

In Minnesota, 80% of residents had positive attitudes toward wolves, including 60% of the farmers, but farmers (83%), and northern Minnesota residents (71%) expected wolves that killed livestock to be eliminated (Kellert 1999). Thus it

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appears that even where there is strong support for wolf conservation, most people in wolf range expect problem wolves to be removed.

Compensation programs in other states have been designed to assist livestock producers by reimbursing them for losses attributable to wolves, with the intention of increasing overall public acceptance for wolf populations (Fritts et al. 2003). The expectation that compensation will increase tolerance for wolves is based in part on an assumption that livestock producers primarily perceive wolf depredation as an economic problem. Recent research has shown that compensation programs have not substantially improved wolf tolerance by producers and that other, non-economic factors more strongly influence attitudes toward wolves among this group (Naughton-Treves et al. 2003, R. B. Peyton, MSU, personal communication *in* MDNR 2008).

Nevertheless, public support for a compensation program in Oregon was clearly expressed during wolf town hall meetings held by ODFW throughout Oregon during 2002 and 2003. Additionally, a 1999 poll of Oregonians (Davis and Hibbitts 1999, as cited in ODFW 2010a, pg. 187) demonstrated public support for the return of wolves to the state and for compensation to livestock producers for wolf-caused losses.

Many people who support wolf restoration view the payment of compensation as an opportunity to share what they perceive to be a burden they do not wish livestock producers to have to bear alone. Some livestock producers whose parents and grandparents struggled over the last 150 years to eradicate wolves from Oregon strongly object to having to suffer any wolf-caused livestock losses and strongly supported payment for those losses in exchange for allowing the wolf to return (ODFW 2010a).

Humaneness

Under this alternative, wolves would be trapped, captured by cable restraints, or shot by experienced ODFW personnel as humanely as possible using the best methods available. All activities would be conducted in accordance with Oregon Administrative Rules and ODFW guidelines to 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.

Wolves may also be shot by producers, where they are under State and not federal jurisdiction, under ODFW permit, if caught in the act of attacking or killing livestock. The humaneness of private individuals shooting wolves would depend on the skill of the individual and their ability to make a quick and efficient kill.

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Some individuals would consider this alternative inhumane because they oppose all lethal methods of damage management. Others will be opposed to this alternative because they object to specific lethal wolf damage management methods like traps and cable restraints and perceive these methods as being unjustifiably cruel and inhumane. 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 (USDA 2006). Individuals with animals that have been injured, threatened or killed by wolves may see this alternative as being acceptable because it includes necessary lethal actions to help prevent further injuries to their livestock and pets.

Finally, livestock owners feel that they have a right to protect their property, and may consider it unacceptable that their domesticated animals be subjected to harm by wolves. People have bred the defensive capabilities out of many domestic animals and may feel they have an obligation to protect them from wildlife.

Aesthetic Effects

Aesthetics is the philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is truly subjective, dependent on what an observer regards as beautiful. Direct benefits are derived from a user's personal relationship or direct contact with wildlife and may include either consumptive (*e.g.*, using or intending to use the animal such as in hunting or fishing) or non-consumptive use (*e.g.*, observing or photographing animals) (Decker and Goff 1987). Indirect benefits, or indirect exercised values, arise without a human being in direct contact with an animal and are derived from experiences such as looking at pictures or videos of wildlife, reading about wildlife, or benefiting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Two forms of indirect benefits exist according to Decker and Goff (1987): bequest and pure existence. Bequest benefits arise from the belief that wildlife should exist for future generations to enjoy; pure existence benefits accrue from the knowledge that the animals exist in the human environment (Decker and Goff 1987) or that they contribute to the stability of natural ecosystems (Bishop 1987).

Some people directly affected by problems caused by wolves insist on the lethal removal of the problem animal(s) from the area where the conflict occurs. Others have the view that all wildlife involved in conflicts should be captured and relocated to another area to alleviate the problem. Individuals not directly affected by a conflict may be supportive of affected humans, neutral, or totally opposed to any removal of wildlife from specific locations or sites.

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Those who oppose removal of wildlife may do so because of emotional or spiritual ties to the animals, which are similar to the bonds that may exist between a human and a pet. Some may totally oppose wolf damage management, especially if lethal methods are used, and want management agencies to teach tolerance of wolves causing conflicts. These individuals generally believe that individual animals have inherent value and should not be killed to meet the desires of man-kind. They may also feel that individual animals have rights similar to those of humans and that, if it is inappropriate to treat a human in a given manner, then it is also inappropriate to treat an animal in that manner.

Under this alternative WS would not remove wolves. Since ODFW and CTUIR would remove problem wolves in this case (Appendix B), 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 reoccupy the site in the future if suitable habitat exists, 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 objectives of the OWCMP (ODFW 2010a) to conserve and manage wolves, while managing conflicts, and given that wolves are expected to continue to expand in number and range in Oregon (Section 4.1.1), the current program alternative and environmental status quo will not jeopardize the viability of the wolf population, thus opportunities to view, hear, and aesthetically enjoy wolves will likely be available to the public and grow over time as wolves reach conservation and management stages.

4.1.4 Effectiveness

The integrated and adaptive approach employed by ODFW under the OWCMP (ODFW 2010a) incorporates the use of lethal and non-lethal measures to stop or reduce the likelihood of wolf damage. In assessing the effectiveness of various management approaches to dealing with wolf predation on livestock in the NRM area, Bangs et al. (2009) concluded that while non-lethal tools were temporarily helpful in some situations, they were generally ineffective, particularly in areas that simply would have too many livestock conflicts for wolf packs to persist. (Scaring wolves away from one specific location in an area with large numbers of livestock everywhere simply results in the wolf conflicts with livestock in adjacent areas where focused non-lethal efforts are not being employed). Bangs et al. (2009) also concluded that lethal management of problem wolves was usually effective in reducing conflict because it: 1) enhanced effectiveness of non-lethal control measures, 2) interrupted use of livestock as food by surviving wolves, 3) removed offending individuals, 4) reduced wolf density in conflict areas, 5) eliminated packs where chronic livestock depredations had been occurring, 6) helped to keep wolf packs out of unsuitable habitat, 7) made surviving pack members temporarily avoid or be more wary of people and/or

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areas with livestock, 8) reduced the pack's overall need for food, 9) made it more difficult for the fewer remaining pack members to kill larger prey like adult cattle or attack calves protected by cows, 10) increased the detection rate of subsequent depredations because livestock carcasses were consumed more slowly (so additional control could be applied more rapidly), 11) reduced compensation and control costs, and 12) moderated some of the public anger over wolf predation on livestock. Mech (1995) similarly concluded that in most circumstances, lethal removal of wolves was usually the only practical approach to resolving incidents of wolf predation on livestock.

Karlsson and Johansson (2009) reviewed data on livestock predation by brown bears, wolves and lynx on farms in Sweden and concluded that the risk of predation greatly increased during the first several weeks after an initial predation incident. They suggested that control efforts, whether lethal or non-lethal, would be most effective if applied during this period of time following an initial depredation event. Bradley (2004) found that after partial or complete wolf pack removal, depredations usually ceased for the remainder of the given grazing season. However, the majority of packs that were partially removed (68%) depredated again within the year. Where entire packs were removed, the rate of re-colonization was high (70%) and most re-colonization (86%) occurred within a year of removal of the previous pack; most packs (86%) that recolonized the same area were implicated in depredations. Packs in which breeders were removed were no less likely to cause depredations again within the year than packs with non-breeders removed.

Although non-lethal methods are often only temporarily effective, they may sometimes offer protection for a long enough period of time to protect a resource when it may be most vulnerable. An example is the use of the RAG box in small calving pastures. Breck et al. (2002) reported that this frightening device, activated by the radio signal from an approaching radio-collared wolf, was effective in keeping a radio-collared wolf pack away from several small calving pastures in central Idaho for 60 days. However, this device is only useful in those cases where at least one and preferably multiple wolves in the pack are radio-collared, and it is only useful for protecting relatively small areas. Fladry has also been used in to deter wolves for up to 60 days before the wolves habituated to it and began killing livestock again (Musiani et al. 2003). One consideration in the use of these temporarily effective non-lethal methods, is, that if wolves will eventually be lethally removed anyway (after habituating to the frightening stimulus), the investment of time and resources in the non-lethal efforts may not be practical.

One of the most effective non-lethal deterrents to wolf predation may be the on-site presence of humans who remain near the livestock and are vigilant in trying to detect the presence of wolves so they can be consistently frightened away

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(Shivik 2004). These efforts can be more effective if there are radio-collared wolves in the area and the livestock guardian personnel make use of radio-telemetry receivers to detect the nearby presence of wolves. The costs to provide 24/7 human presence around livestock would ordinarily be cost-prohibitive for livestock producers, but in some situations, outside parties with an interest in wolf conservation have provided such assistance at no cost to livestock producers, in order to promote greater tolerance for wolves. The Defenders of Wildlife have paid for such efforts in the Big Wood River drainage of central Idaho during several recent summer grazing seasons, and while these efforts have not been 100% effective in eliminating wolf problems, they appear to have been effective in reducing the number of wolf attacks on sheep and livestock guarding dogs in this area (USDA 2010).

Bangs and Shivik (2001) reported that while some non-lethal methods may be temporarily effective, many are expensive to implement and none available at the time of their report were widely effective. Many non-lethal methods of preventing livestock losses to wolves have been tried and abandoned in the United States and Europe because of lack of effectiveness. Use of guard dogs alone has been tried against wolves in Minnesota with only limited success (Fritts et al. 1992). Coppinger and Coppinger (1996) showed the dominance of wolves over livestock guarding dogs in direct confrontations, and Coppinger and Coppinger (1996) and Bangs et al. (1998) reported that wolves have killed livestock guarding dogs. Wolves have also been translocated to other areas, but many either returned to where they were caught or became a problem elsewhere (Fritts et al. 1984, 1985). Mech et al. (1996) concluded that where wolf populations are large and secure, translocation has little value in wolf management. Aversive conditioning (Gustavson and Nicolaus 1987, Shivik and Martin 2001, Shivik et al. 2003) has not yet proven effective with wild wolves (Fritts et al. 1992). Electric fencing may hold some promise for protecting livestock from wolves, but fences tested for coyotes have been extremely expensive, high maintenance, and better suited for small areas (Dorrance and Bourne 1980, Nass and Theade 1988, Paul and Gipson 1994), rather than range operations.

In looking at the possible role of livestock husbandry practices in reducing wolf predation, Bradley and Pletscher (2005) assessed multiple factors potentially related to wolf depredations on cattle in fenced pastures in Montana and Idaho. They concluded there was no relationship between depredations and carcass disposal methods, calving locations, calving times, breed of cattle, or the distance cattle were grazed from the forest edge. They did find that depredations were more prevalent in pastures where elk were more likely to occur, where the pastures were larger in size, had more cattle, and where cattle were grazed farther from residences than pastures without depredations. Mech et al. (2000) likewise concluded there were essentially no differences in husbandry practices between farms in Minnesota that suffered chronic wolf depredations, as compared to

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similar operations which experienced no depredations, and that farms with cattle farther from human habitation suffered more losses.

Haight et al. (2002) and Cochrane et al. (2003) reported on a model developed to assess three different strategies for reducing wolf predation on livestock, including: 1) reactive management, where wolf removal occurred soon after depredations occurred, 2) delayed reactive management, where wolf removal occurred in the winter months prior to the grazing season in areas with a history of previous depredations, and 3) population-size management, where wolves were removed annually in the winter months from all areas near farms. The authors' concluded that: 1) each of these approaches reduced predation by about half compared with no action, 2) delayed reactive management and population-size management actually removed fewer wolves than reactive management because wolves were removed in winter before pups were born, and 3) population-size management was least expensive because repeated annual removal kept most territories near farms free of wolves. The OWCMP (ODFW 2010a) allows lethal methods to only be used as a reactive approach.

The compensation program may not stop damages from occurring (Klenzendorf, 1997, Wagner et al. 1997). Financial assistance to producers who use non-lethal methods and wolf deterring management techniques may not enhance efficacy since non-lethal measures alone have not always been successful in stopping damages (Section 4.2.4). Therefore, the compensation and financial assistance aspect of this alternative is not expected to add any notable measure of reduction of livestock losses. Kruuk (2002) and Naughton-Treves *et al.* (2003) reported that farmers may continue to kill wildlife illegally even when they have been compensated. There is also a risk that people will be more frustrated at the failure of an inadequate compensation program or cessation of a successful one than if none were in place at all (Wagner et al. 1997).

In conclusion, non-lethal methods are used and recommended but not always successful in stopping or reducing damages, especially over time and must be supplemented with lethal methods. ODFW's approach is to allow for limited lethal removal of wolves after they have been confirmed to have been involved in chronic livestock depredation. ODFW has indicated that it would target wolves for lethal control, similar to the proposed action, however without additional assistance from WS, service to landowners may be reduced or delayed, thus wolf depredation on livestock may increase (Appendix B). Lethal removal is effective as discussed above, but the efficacy of this approach is probably limited by the fact that conservation goals must be balanced with producer needs to protect livestock.

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4.2 - Alternative 2 – Non-lethal Actions Only

The Non-lethal Actions Only Alternative means that WS would assist livestock producers, other members of the public, tribes, and ODFW with technical assistance or non-lethal management actions. WS would not assist ODFW or CTUIR with lethal damage management to protect livestock or human safety in Oregon. ODFW and CTUIR would however, take the same actions as those described under the No Action alternative, thus lethal control would still occur. The cumulative effects of such actions are similar to the current environment under which wolves exist, and are discussed as the environmental baseline, or the environmental status quo in Section 4.1.

4.2.1 Impact on wolf population

Direct effect

WS would have no effect on wolves in terms of removals. WS would assist livestock producers with non-lethal techniques, either through technical or direct assistance.

Cumulative effects on gray wolves in Oregon

The cumulative effects on wolves would be similar to that described under Section 4.1.1. ODFW currently has responsibility for wolf management in the eastern 1/3 of Oregon, Oregon's section of the NRM DPS, outside of sovereign tribal lands. CTUIR has management authority on sovereign tribal lands within their boundary. Ranchers and livestock producers must work directly with ODFW when wolf/livestock conflicts occur in the area of the Oregon under state management or CTUIR on tribal lands. Livestock producers that see wolves on their property or suspect wolves have attacked livestock are instructed to immediately call ODFW, WS, tribal or county officials. WS would respond by providing non-lethal assistance, provide assistance in identification of wolf predation and notify ODFW and or CTUIR of this information. Because ODFW would implement OWCMP (ODFW 2010a and OAR 635-110, and Appendix B) and CTUIR their respective plan, as discussed in Section 2.1, individual wolves are expected to be removed when and where a need exists and in which meets the requirements for removal. In addition, producers in areas where wolves are managed by the state (currently within the NRM DPS boundary), and who have been issued an ODFW permit may kill wolves that have been caught in the act of killing livestock, as discussed in Section 4.1.1.

Because ODFW would implement OWCMP (ODFW 2010a) with or without the assistance of WS and CTUIR has stated that they will implement their response plan (Appendix B), effects on wolf populations, both locally, and statewide, would be similar to the No Action Alternative.

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4.2.2 Impacts on non-target animals and human safety

Non-target animals

WS would have little to no effect on non-target species or humans under the Non-lethal Methods Only alternative.

Foot snares and foot-hold traps are non-lethal capture methods which could capture non-target animals, however as discussed in Section 4.1.2, those risks are low where ODFW or WS would be implementing these measures.

Similar to Section 4.1.1, wolf removal actions by ODFW are expected to occur at a low frequency and in limited and isolated geographic locations because wolves are not yet numerous or widely distributed in Oregon. Given the professionalism and expertise of ODFW biologists, their proven skill in capturing wolves in recent years, both for removals and for the purposes of radio collaring and monitoring, and the selectivity of the management methods, non-target animals, including T&E species will not likely be affected or the risk is very low.

Because non-lethal methods are used and promoted anyway, and because ODFW could and would implement lethal methods under this alternative as indicated in OAR 635-110, the risks to non-target animals is expected to be similar to the No Action Alternative.

Human Safety

Non-lethal methods used by WS are not likely to affect human safety due to standard operating procedures designed to minimize exposure and risk (see Section 2.3 for a list of measures designed to minimize risk).

Lethal methods would be used by ODFW in the absence of any assistance in lethal control by WS, and thus would present no change in human safety risk from that of the current environmental baseline (the No Action alternative).

In the unlikely event that wolves threatened human safety, ODFW would take actions as allowed under OAR 635-110 (Appendix A).

4.2.3 Social and Aesthetic Perspectives

Non-lethal methods are almost always preferred when they are effective. It is WS policy to give preference to non-lethal methods when they are both practical and effective (WS Directive 2.101). Non-lethal actions are also generally preferred by members of the public. However, members of the public who experience wolf

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threats to or losses of livestock, as well as some pet owners, feel that they have a right to protect their property, and may consider it unacceptable that their domesticated animals be subjected to harm by wolves by using non-lethal methods if they are not effective. People have bred the defensive capabilities out of many domestic animals and thus may feel that they have an obligation to protect them from being killed by predators.

As discussed in Section 4.1.3, livestock producers, some rural residents, and hunters would be more likely to approve of the most effective methods that will reduce wolf damages, and some members of the public would prefer if wolves were removed from Oregon.

Because ODFW would take necessary action to lethally remove wolves under this alternative (Appendix B), ultimately, social perspectives would be expected to be similar to the No Action Alternative.

Humaneness

WS supports the most humane, selective, and effective damage management techniques. Under this alternative, WS would continue to incorporate advances of non-lethal measures into program activities and would expand its role in non-lethal management actions. WS field specialists that would use non-lethal methods to harass or capture wolves for radio collaring, are experienced professionals, skilled in the use of management methods and committed to minimizing pain and suffering. However in the case of rubber bullets, some level of discomfort is necessary to achieve the desired results.

The effects of this alternative would be similar to the No Action alternative because of the role of ODFW in implementation of OWCMP (ODFW 2010a) which allows for lethal removal under circumstances discussed in Section 2.1, and detailed in OAR 635-110, and because the No Action alternative already encompasses non-lethal measures.

Impact of wolf removal on public aesthetic enjoyment

Under the non-lethal only alternative, WS would have no effect on the ability of the public to enjoy wolves since it would have no effect on individual wolves or the wolf population. However for the reasons discussed under the No Action alternative, ODFW would take any necessary lethal actions and wolves would be affected similar to the No Action alternative. Thus, the ability of the public to potentially enjoy wolves in their natural habitat would be the same as Alternative 1, No Action.

4.2.4 Effectiveness

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The integrated and adaptive approach employed under the current wolf damage management program in Oregon requires that non-lethal methods be used and that damage occurs before agency implemented lethal management measures may be used to stop or reduce the likelihood of further wolf damage to livestock. In assessing the effectiveness of various management approaches to dealing with wolf predation on livestock in the NRM, Bangs et al. (2009) concluded that while non-lethal tools were temporarily helpful in some situations, they were generally ineffective, particularly in areas that simply would have too many livestock conflicts for wolf packs to persist. (Scaring wolves away from one specific location in an area with large numbers of livestock everywhere simply results in the wolves killing livestock in adjacent areas where focused non-lethal efforts are not being employed).

Non-lethal measures are already an important part of the OWCMP and are used when they are effective. ODFW may authorize its personnel or agents to use lethal force to remove wolves due to livestock losses when non-lethal methods to solve wolf-livestock conflict have been tried, documented by the requester, and deemed ineffective. Therefore, because non-lethal methods are used when they are effective, and because ODFW may use lethal methods under the same circumstances as discussed under the No Action alternative, the effectiveness of this alternative is similar to Alternative 1, No Action. Sections 2.2 and 4.1.4 contain discussions of the efficacy and limitations of non-lethal approaches.

4.3 Alternative 3 – Proposed Action WS IWDM Assistance to ODFW

WS Proposed Action Alternative is to assist livestock producers, tribes, and ODFW with an integrated approach of technical assistance, wolf damage identification, and both non-lethal and lethal damage management approaches as defined by OAR 635-110 and the OWCMP (ODFW 2010a). ODFW would continue to implement aspects of the OWCMP (ODFW 2010a), and the two agencies would cooperate to provide the assistance necessary to respond to wolf complaints and resolve depredation. This alternative is almost identical to the No Action alternative except that WS could respond to ODFW's request to provide assistance to ODFW and landowners to remove problem wolves under conditions outlined in OAR 635-110 (Appendix A). Additionally, WS could provide assistance with lethal control for CTUIR under their authority and response plan. WS assistance with lethal removals would only occur during wolf conservation and management phases I and II, as defined in OWCMP (2010a) and OAR 635-110 and Section 2.3, the Proposed Action alternative.

4.3.1 Impact on wolf population

As of the end of December 2013, ODFW confirmed that there are a minimum number of 64 wolves in Oregon, with four packs in eastern Oregon.

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Direct effect

Effects on wolves, both in terms of non-lethal deterrent effects, harassment, and lethal removals would result in a similar level of mortality as the No Action Alternative. Under this alternative, WS may respond to ODFW, CTUIR, and landowner requests to remove individual problem wolves under the conditions of OAR 635-110 (Appendix A) or sovereign tribal authority as described under Sections 2.1 and 2.3. Because WS has trained wildlife specialist in the field, this alternative may expedite removals and result in enhanced service to landowners experiencing confirmed wolf damages (Appendix B). It would not be likely to result in more wolves removed since ODFW and CTUIR would respond if WS could not (Appendix B).

This alternative would also allow WS to act on the behalf of CTUIR, or as an agent of landowners with ODFW permits to remove wolves caught in the act of biting, wounding or killing livestock. ODFW issues “caught in the act” permits to livestock producers after livestock losses have occurred and non-lethal efforts to resolve the problem were deemed ineffective. Because wolves usually target livestock at night and tend to avoid people, the opportunity to take wolves under permit conditions would be rare. Therefore, WS would likely remove few to no wolves under landowner permits or tribal requests to remove wolves “caught in the act”.

Cumulative effects on gray wolves in Oregon

The cumulative effect on local populations of gray wolves in Oregon is likely to be similar to the No Action alternative since ODFW is already implementing the OWCMP (2010a), per OAR 635-110, and therefore, would, and indeed has responded to wolf damage complaints in the absence of WS assistance (Section 4.1.1 and Appendix B). Similarly, CTUIR has indicated that it would remove confirmed problem wolves if WS were not available to assist (Appendix B). Because ODFW must make all decisions regarding individual wolf removals on non-tribal lands, and because WS would be bound to the measures discussed in the OWCMP (ODFW 2010a), the discussion and findings under of the No Action Alternative (Section 4.1.1), in which ODFW and CTUIR would act if WS did not, would be expected to be similar. WS consulted with the USFWS to address the concern of affecting the federally protected wolf population when implementing removal of non-federally but state protected wolves. On September 9, 2013, the USFWS issued a letter of concurrence with WS’s determination that the proposed action “may affect, but is not likely to adversely affect” the gray wolf in areas where it is federally listed under the Endangered Species Act (USFWS 2013, Appendix D).

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Under this alternative, WS would provide assistance to ODFW with both lethal and non-lethal wolf depredation management. By providing ODFW with lethal depredation management assistance, ODFW would be able to focus its resources on its program to enhance wolf conservation including: funding for non-lethal control supplies; wolf damage management of other packs; and implementation of capture, monitoring and research programs including those needed to assess population viability and health (Appendix B). Therefore, when compared with the No Action (current program) and Non-lethal Only alternatives, the proposed action alternative would result in the greatest overall potential for wolf conservation by allowing ODFW to focus more of its resources on wolf conservation and management efforts.

Ultimately, based on WS assistance to ODFW in implementation of OAR 635-110 and OWCMP (ODFW 2010a), ODFW's public education and outreach, and the cautious and conservative approach to reducing wolf depredation, wolves are expected to continue to expand in Oregon and establish populations in suitable habitat including the Oregon Cascades. Based on habitat connectivity and an abundance of wolves in other regions of the NRM DPS, it is reasonable to expect that wolves will expand within the foreseeable future to meet state delisting criteria in Oregon.

Because Oregon wolf conservation and management is a relatively new issue, WS has limited its proposed role in using lethal depredation management methods to Phases I and II of OWCMP (ODFW 2010a) and OAR 635-110. The wolf population at ODFW's Phase II Management would be five to seven breeding pairs per zone, where each zone may be in a different management phase.

4.3.2 Impacts on non-target animals and human safety

Non-target animals

WS would have little effect on non-target animals for the reasons discussed under Section 4.1.2 since ODFW and WS non-target take would be expected to be similar. While there may be some risk to larger non-target animals such as potentially bear or cougar, the level of use of lethal tools would be so low as to render any non-target take unlikely.

The Canada lynx, an occasional visitor to Oregon, is discussed in Section 4.1.2. Wildlife Services has consulted with the USFWS, pursuant to the federal Endangered Species Act, for potential program effects on the Canada lynx. The USFWS concurred with WS conclusions in a letter dated February 29, 2012, that WS proposed wolf damage management activities would not be likely to adversely affect the Canada lynx (Appendix C). No other T&E species are expected to be taken, for the reasons discussed under Section 4.1.2.

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WS Standard Operating Procedures to minimize the capture of non-target animals is discussed in Section 2.3.

Human Safety

The methods proposed by WS would be the same as those used by ODFW under the No Action alternative. WS is unaware of any impacts to public health or safety associated with agency implementation of wolf damage management methods in other states.

Aerial operations would likely occur in relatively remote areas with no or very low human presence on the ground. A formal risk assessment of methods used in wildlife damage management concluded there was very little, if any, risk to the public from WS aerial shooting activities (USDA 1997, Appendix P, pp. 33-34). Other analyses of aircraft accidents by WS concluded that the accident rate for WS pilots and aircraft is not significantly different from rates reported for general aviation and that the risk of harming any member of the public is exceedingly low (USDA 2005, 2011a, 2011b). We find no reason to believe that aerial operations used in wolf damage management would present any significant risk to public health or safety in Oregon.

WS' traps and snares are strategically placed to reduce the likelihood of exposure to the public. Appropriate warning signs are posted at access points to areas or properties where traps or snares are set to alert the public of their presence (WS Directive 2.450). There have been no direct injuries reported to WS, USFWS or IDFG personnel or the public from WS wolf management activities in Idaho, despite removal efforts that are relatively high compared with those that would be expected in Oregon. There have been no direct injuries reported to ODFW, USFWS or WS from ODFW or WS's wolf management activities in Oregon.

Humans are not likely to be exposed for the reasons discussed under Section 4.1.2. WS's use of traps and foot snares have not presented any substantial safety risks to people, and this has been analyzed in a formal risk assessment of WS methods (USDA 1997, revised, Appendix P, pp. 23-34).

Similar to the No action alternative, this Alternative could provide relief from damage or threats to public health and safety for people who would have no relief from such damage or threats if non-lethal methods were ineffective or impractical.

4.3.3 Social and Aesthetic Perspectives

Humaneness

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People's perspectives on wolf damage management and on the removal of wolves under the proposed action would be expected to be similar to the No Action and Non-lethal only alternatives since wolves would be removed in a similar manner and number, under the same criteria (OAR-635-110), and for the same reasons. While WS may act as an agent to landowners holding caught in the act permits, additional take is unlikely for the reasons discussed under Section 4.3.1.

With regard to the humane treatment of wolves, the proposed action would be similar to the other alternatives as far as lethal methods that WS would use (as discussed in Section 4.1.3). WS would continue to provide non-lethal technical assistance to producers. The overall humaneness of the wolf management program may be enhanced under the proposed action alternative because by assisting ODFW with unplanned lethal depredation response efforts, ODFW would not need to divert resources from other activities including its non-lethal supply program (Appendix B).

With regard to the perspective of livestock producers and others who feel that domestic animals should be protected from predation, this alternative would probably be considered more humane than the other alternatives because WS may be able to respond to ODFW's request for lethal removals faster and more efficiently than ODFW agents could. WS already has agents in the field that have the expertise to identify and resolve wildlife damages. By expediting response times, the potential for continued or additional wolf depredation on livestock can be reduced. Enhancing agency depredation management efficiency is likely to promote social tolerance of wolves in Oregon, as discussed under Section 4.1.3.

Aesthetic effects

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 reoccupy the site in the future if suitable habitat exists, 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. While non-consumptive users could be affected temporarily by localized removals (especially if they recreated in areas where wolf/livestock conflicts were occurring), the overall effect would be beneficial in terms of the potential for people to aesthetically enjoy wolves in the wild. This alternative would provide the highest level of support towards wolf conservation and management in Oregon (Section 4.3.1 and Appendix B). Therefore, non-consumptive users would benefit most from this alternative. Still, there are likely to be groups and individuals who would be opposed to any agency control of wolves, regardless of the beneficial role it plays in the conservation of wolves.

The likelihood of getting to see wolves is probably very low currently due to the limited numbers of wolves in Oregon. The ability to directly enjoy wolves in the

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wild will probably be greatest for people who have knowledge of wolf behavior and habits and make the effort to visit sites with adequate habitat outside of damage management areas.

4.3.4 Effectiveness

The effectiveness of the tools and techniques proposed under this alternative to manage depredation would be similar to the No Action alternative since either way, non-lethal methods are in use when they are effective, and agency lethal control would take place using the same approach as provided by OWCMP (ODFW 2010a) and OAR 635-110 (as discussed in Sections 2.1, 4.1.4, and 4.2.4). However, the proposed action would likely be more efficient in resolving depredation than both the No Action and Non-lethal Methods Only alternatives in alleviating additional livestock damages. WS may be more efficient in responding to ODFW orders to remove depredating wolves as prescribed and needed to prevent further losses because it has agents in the field who already assist landowners with other wildlife damage conflicts. These agents may be more readily available to provide assistance perhaps sooner than if ODFW alone implemented lethal measures on depredating wolves. As ODFW stated in a March 28, 2012 letter to WS (Appendix B), without the assistance of WS as proposed in this EA, its own un-planned lethal depredation management efforts may be delayed due to other commitments and responsibilities, which would have the effect of increasing wolf depredation of livestock.

While it is likely that ultimately the same overall number of wolves would be removed under each of the alternatives, targeting and capture of depredating wolves would be expedited under the proposed action. Because chronically depredating wolves may continue depredating on livestock, fewer livestock losses would probably occur under this alternative.

4.4 Summary and Conclusions

This EA discusses approaches that WS could take to respond to requests by ODFW to assist with implementing portions of the 2010 OWCMP and OAR-635-110 (Appendix A), and to assist tribes acting under their sovereign tribal authority. The essential decision presented to WS, is not how to manage wolf damage to livestock, but whether or not to assist the State and tribes with specific actions dictated by the OWCMP or tribal management plans. This EA also evaluates a non-lethal only alternative which could be a viable alternative if funding and the request were there. The analysis in the EA shows that results of the No Action and Non-lethal only alternatives would be similar to the proposed action because ODFW and CTUIR would take necessary actions to remove chronically depredating wolves if WS did not. The primary difference between the alternatives is the probable increased efficacy of the proposed action in reducing livestock damage as compared with the no action and nonlethal methods only

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alternatives. In addition, the proposed action would enhance ODFW's ability to conserve and manage wolves in Oregon. WS has no decision authority to remove wolves for ODFW or CTUIR, other than to either respond or not respond to their requests directing when, where, and which wolves should be removed. The methods used by ODFW to capture wolves include the same methods described in Chapter 3 which WS would use in providing requested assistance. OAR 635-110 and the OWCMP (ODFW 2010a) are very specific about the criteria which call for any lethal effects on wolves and if WS were to participate, it would be following such direction by ODFW and similar direction from CTUIR under their sovereign tribal authority.

Table 2 presents the major conclusions drawn from the analysis in Chapter 4.

Table 2. Summary and Conclusions

Issue	No Action (Alt. 1)	Non-lethal Only (Alt. 2)	Proposed IWDM (Alt 3)
Wolf population	WS would have no effect on wolves. Tribes under their authority or ODFW would implement its OWCMP (ODFW 2010a) anyway without WS assistance. Agency removal of wolves will be limited to conservation and management criteria in OWCMP (ODFW 2010a). Wolves may continue to be protected outside of the NRM DPS in Oregon under the federal ESA, or they may be conserved and managed by ODFW. Wolf populations are expected to continue to increase in eastern Oregon and eventually statewide.	WS would have no direct effect on wolf populations. Cumulatively, this alternative would have the same effect as the No Action alternative since that alternative already requires the use of non-lethal methods. If non-lethal methods do not stop livestock losses, ODFW or CTUIR would remove chronic problem wolves.	WS would remove individual wolves at the request of ODFW according to the OWCMP (ODFW 2010a) or by CTUIR request and authority. The proposed action would have the same effect on wolves as the No Action alternative. WS would assist ODFW with both lethal and non-lethal aspects of OWCMP (ODFW 2010a) as well as assisting tribes. Removal of wolves would be extremely limited due to OWCMP and OAR 635-110 in terms of numbers and the population is expected to continue to expand from conservation through management phases both locally and statewide, as under the No Action Alternative.
Non-target animals and human safety	WS would have no effect on non-target animals. ODFW or tribes are not expected to have notable effects on non-target animals due to the skill and experience of its personnel. No human safety risks are expected due to the professionalism and expertise of personnel conducting management actions.	WS would likely capture few to no non-target animals in non-lethal capture devices. No T&E species or human risks are expected.	WS would have no notable negative effect on non-target animals. WS has precautionary measures built into the program to minimize risks to non-target animals and humans. No human safety risks are expected. WS would not be likely to adversely affect the federally threatened Canada lynx.

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Social and Aesthetic Perspectives

Some people are opposed to lethal damage management strategies under any circumstances. Only chronic livestock killing wolves would be targeted for agency removal, which may increase acceptability of this alternative for some people. Humaneness is a concern for all and pain and suffering are minimized as much as is practicable. Wolf removals may temporarily affect aesthetic enjoyment opportunities in or near damage sites, but overall wolves are expected to increase in number and range in Oregon. Implementation of the OWCMP (ODFW 2010a) is not likely to negatively affect the public's aesthetic enjoyment of wolves since the population is expected to continue to grow.

This alternative might be preferred by some groups and individuals, but would be opposed by others due to potential lower efficacy. However, since ODFW would remove chronic livestock killing wolves in the absence of WS, the end result would be similar to the No Action Alternative. Because this alternative would not change the status quo of wolf management in Oregon, any humane and aesthetic effects would be the same as the No Action Alternative.

Similar to the No Action Alternative, some people are opposed to lethal damage management strategies. WS would only target confirmed chronic livestock killing wolves. Overall, the effects on humaneness and aesthetics would be the same as the No Action Alternative.

Program Effectiveness

WS would not participate. ODFW and tribes would use IWDM per OWCMP (ODFW 2010a) or tribal management plans. IWDM is the most effective strategy for reducing livestock losses. However, the effectiveness of the program is expected to be moderate (not as high as possible) based on the required threshold of losses that a producer must incur before lethal wolf damage methods can be used.

Non-lethal methods have limited levels of efficacy and ODFW and tribes would use lethal methods similar to the No Action Alternative.

WS may have improved efficacy in minimizing livestock losses as ODFW under the No Action and Non-lethal Only alternatives.

CHAPTER 5.0 LITERATURE CITED

- AFWA. 2006. Best Management Practices for Trapping in the United States: Introduction. Washington DC, Association of Fish and Wildlife Agencies, 13p.
- Andelt, W. F. 1987. Coyote predation. (Pages 128-140) *in* M. Nowack, J. A Baker, M. E. Obbard, and B. Malloch, editors. Wild furbearer management and conservation in North America. Ontario Trappers Association North Bay, Ontario, Canada.
- AVMA. 2007. AVMA guidelines on euthanasia (formerly report of the AVMA panel on euthanasia) June 2007. American Veterinary Medical Association, Schamburg, Illinois, USA.
- AVMA. 2013. AVMA Guidelines for the Euthanasia of Animals: 2013 Edition. American Veterinary Medical Association, Schaumburg, Illinois.
- Bangs, E. E., and J. Shivik. 2001. Managing wolf conflict with livestock in the Northwestern United States. *Carnivore Damage Prevention News* 3: 2-5.
- Bangs, E E., S. H. Fritts, D. R. Harms, J. A. Fontaine, M. D. Jimenez, W. G. Brewster, and C. C. Niemeyer. 1995. Control of endangered gray wolves in Montana. Pp. 127-134 in *Ecology and Conservation of Wolves in a Changing World*. L. N. Carbyn, S. H. Fritts, and D. R. Seip, eds., Alberta Canada: Canadian Circumpolar Institute.
- Bangs, E., M. Jimenez, C. Niemeyer, T. Meier, V. Asher, J. Fontaine, M. Collinge, L. Handegard, R. Krischke, D. Smith, and C. Mack. 2005. Livestock guarding dogs and wolves in the Northern Rocky Mountains of the United States. *Carnivore Damage Prevention News* 8: 32-39.
- Bangs, E. E., M. Jimenez, C. Niemeyer, J. Fontaine, M. Collinge, R. Krischke, L. Handegard, J. Shivik, C. Sime, S. Nadeau, C. Mack, D. Smith, V. Asher, and S. Stone. 2006. Non-lethal and lethal tools to manage wolf-livestock conflict in the northwestern United States. *Proceedings of the Vertebrate Pest Conference* 22: 7-16.
- Bangs, E., M. Jimenez, C. Niemeyer, J. Fontaine, C. Sime, S. Nadeau, and C. Mack. 2009. The art of wolf restoration in the northwestern United States: Where do we go now? (Pages 95-114) *in* M. Musiano, L. Boitani, and P. Paquet, editors. *A new era for wolves and people: wolf recovery, human attitudes, and policy*. University of Calgary Press. Alberta, Canada.
- Bath, A. J. 1987. Attitudes of various interest groups in Wyoming toward wolf reintroduction in Yellowstone National Park. M.S. Thesis, Univ. of Wyoming, Laramie 124 pp.

- Bishop, R. C. 1987. Economic values defined. (Pages 24-33) in D. J. Decker and G. R. Goff, editors. *Valuing wildlife: economic and social perspectives*. Westview Press, Boulder, Colorado, USA.
- Bjorge, R. R., and J. R. Gunson. 1985. Evaluation of wolf control to reduce cattle predation in Alberta. *Journal of Range Management* 38: 483-487.
- Bjerke, T., O. Reitan, S. R. Kellert. 1998. Attitudes toward wolves in southeastern Norway. *Society & Natural Resources, International Journal*, 11:2, 169-178. DOI: 10.1080/08941929809381070.
- Boitani, L. 2003. Wolf conservation and recovery. (Pages 317-340) in L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology, and conservation*. The University of Chicago Press, Chicago, USA and London, England.
- Boyd, D. K., and M. D. Jimenez. 1994. Successful rearing of young by wild wolves without mates. *Journal of Mammalogy* 75: 14-17.
- Bradley, E. H. 2004. An evaluation of wolf-livestock conflicts and management in the northwestern United States. Thesis, University of Montana, Missoula, USA.
- Bradley, E. H., and D. H. Pletscher. 2005. Assessing factors related to wolf depredation of cattle in fenced pastures in Montana and Idaho. *Wildlife Society Bulletin* 33: 1256-1265.
- Brainerd, S. M., H. Andre'n, E. E. Bangs, E. Bradley, J. A. Fontaine, W. Hall, Y. Iliopoulos, M. D. Jimenez, E. A. Jozwiak, O. Liberg, C. M. Mack, T. J. Meier, C. C. Niemeyer, H. C. Pedersen, H. K. Sand, R. N. Schultz, D. W. Smith, P. Wabakken, and A. P. Wydeven. 2008. The effects of breeder loss on wolves. *Journal of Wildlife Management* 72: 89-98.
- Breck, S. W., R. Williamson, C. Niemeyer, and J. A. Shivik. 2002. Non-lethal radio activated guard for deterring wolf predation in Idaho: summary and call for research. *Proceedings of the Vertebrate Pest Conference* 20: 223-226.
- Breck, S.W. and T. Meier. 2004. Managing wolf depredation in United States: past, present and future. *Sheep and Goat Research Journal* 9: 41-46.
- Bruskotter, J. T., Toman, E., Enzler, S. A. and Schmidt, R. H. 2010. Gray wolves not out of the woods yet. *Science*, 327: 30-31.
- Bureau of Land Management (BLM). 2004. EMS TRANSMISSION Instruction Memorandum No. 2004-140 Revisions and Clarifications to H-8550-1, Interim Management Policy for Lands Under Wilderness Review, as it Relates to Wildlife Management.
- Cain, S., A. Kadlec, D. L. Allen, R. A. Cooley, M. C. Hornocker, A. S. Leopold, and F. H. Wagner. 1972. Predator control - 1971 report to the council on environmental quality and the department of the interior by the advisory committee on predator control. Council on

Environmental Quality and United States Department of the Interior, Washington, DC, USA.

Carbyn, L.N. 1983. Management of non-endangered wolf populations in Canada. *Acta. Zool. Fenn.* 174:239-243.

Cariappa C. A., J. K. Oakleaf, W. B. Ballard, S. W. Breck. 2011. A Reappraisal of the Evidence for Regulation of Wolf Populations. *The Journal of Wildlife Management* 75(3): 726-730.

Carroll, C., M. K. Phillips, C. A. Lopez-Gonzalez, and N. H. Schumaker. 2006. Defining recovery goals and strategies for endangered species: the wolf as a case study. *BioScience* 56: 25-37.

Cascadia Wildlands, et al. v. Dept. of Fish and Wildlife, et al., No. 149672 (Or. Ct. App. Nov. 15, 2011) order staying enforcement of rule pending judicial review.

Cochrane, J. F., R. G. Haight, and A. M. Starfield. 2003. Modeling for endangered-species recovery: gray wolves in the Western Great Lakes Region. *in* Dale, Virginia H., editor. *Ecological Modeling for Resource Management*. New York, NY: Springer-Verlag: 23-45
<http://www.ncrs.fs.fed.us/pubs/book/nc_2003_cochrane_001.pdf>

Collinge, M. 2008. Relative risks of predation on livestock posed by individual wolves, black bears, mountain lions, and coyotes in Idaho. *Proceedings of the Vertebrate Pest Conference* 23: 129-133. <<http://www.pinedaleonline.com/wolf/pdf/risksofpredation.pdf>>

Cooper, L. 2001. Letter to the Lynx Steering Committee. Oregon Department of Fish and Wildlife.

Coppinger, R., and L. Coppinger. 1996. Interactions between livestock guarding dogs and wolves. (Pages 523-526) *in* L. N. Carbyn, S. H. Fritts, D. R. Seip, editors. *Ecology and conservation of wolves in a changing world*. Canadian Circumpolar Institute, Occasional Publication No. 35, 642 pp.

Creel, S., and J. J. Rotella. 2010. Meta-analysis of relationships between human offtake, total mortality and population dynamics of gray wolves (*Canis lupus*). *PloS One* 5(9): e12918.

Darrow, P. A. 2006. Habituation and variable captive coyote response to behavior contingent stimuli. M. S. Thesis, Utah State University, Logan, Utah, USA.

Davidson-Nelson, S. J., and T. M. Gehring. 2010. Testing fladry as a non-lethal management tool for wolves and coyotes in Michigan. *Human-Wildlife Interactions* 4: 87-94.

Decker, D. J., and G. R. Goff. 1987. *Valuing wildlife: Economic and social perspectives*. Westview Press. Boulder, USA.

- Dorrance, M. J., and J. Bourne. 1980. An evaluation of anti-coyote electric fencing. *Journal of Range Management* 33: 385-387.
- Dorrance, M. J. 1982. Predation losses of cattle in Alberta. *Journal of Range Management* 35: 690-692.
- Fritts, S. H. 1982. Wolf depredation on livestock in Minnesota. U.S. Fish and Wildlife Service Resource Publ. 145. Washington, D.C. 11 pp.
- Fritts, S. H., W. J. Paul, and L. D. Mech. 1984. Movements of translocated wolves in Minnesota. *Journal of Wildlife Management* 48: 709-721.
- Fritts, S. H. 1993. The downside of wolf recovery. *International Wolf* 3(1): 24-26.
- Fritts, S. H., W. J. Paul, and L. D. Mech. 1984. Movements of translocated wolves in Minnesota. *Journal of Wildlife Management* 48: 709-721.
- Fritts, S. H., W. J. Paul, and L. D. Mech. 1985. Can relocated wolves survive? *Wildlife Society Bulletin* 13: 459-463.
- Fritts, S. H., W. J. Paul, L. D. Mech, and D. P. Scott. 1992. Trends and management of wolf livestock conflicts in Minnesota. Resource Publication 181. United States Fish and Wildlife Service, Washington D.C., USA.
- Fritts, S. H., R. O. Stephenson, R. D. Hayes, and L. Boitani. 2003. Wolves and humans. (Pages 289-316) *in* L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology, and conservation*. The University of Chicago Press, Chicago, USA and London, England.
- Frost, J. R. 1985. Living with the grizzly: perceptions of Mission Valley residents. Environmental Studies. University of Montana, Missoula, MT.
- Fuller, T. K., L. D. Mech, and J. F. Cochrane. 2003. Wolf population dynamics. (Pages 161-191) *in* L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology, and conservation*. University of Chicago Press, Chicago, USA.
- Gustavson, C. R., and L.K. Nicolaus. 1987. Taste aversion conditioning in wolves, coyotes, and other canids: retrospect and prospect. (Pages 169-203) *in* H. Frank, editor. *Man and wolf: advances, issues, and problems in captive wolf research*. W. Junk, Boston, Massachusetts, USA.
- Galle, A., M. Collinge, R. Engeman. 2009. Trends in Summer Coyote and Wolf Predation on Sheep in Idaho During a Period of Wolf Recovery. *Proceeding of the 13th WDM Conference*, 184-190.
- Geist, V. 2006. When do wolves become dangerous to humans? The University of Calgary, Calgary, Alberta, Canada.

- Gosling, S.D. 1998. Personality dimensions in spotted hyenas (*Crocuta crocuta*). *Journal of Comparative Psychology* 112:107-108.
- Haight, R. G., L. E. Travis, K. Nimerfro, and L.D. Mech. 2002. Computer simulation of wolf removal strategies for animal damage control. *Wildlife Society Bulletin* 30: 844-852.
- Harper, E.K., W.J. Paul and L.D. Mech. 2005. Causes of wolf depredations increase in Minnesota from 1979-1998. *Wildlife Society Bulletin* 2005, 33(3):888-896.
- Harper E. K., P. William, L. D. Mech, S. Weisberg. 2008. Effectiveness of Lethal, Directed Wolf-Depredation Control in Minnesota. *Journal of Wildlife Management* 72(3): 778-784.
- Howard, W. E. 1986. *Nature and animal welfare: Both are misunderstood*. Exposition Press of Florida, Incorporated, Pompano Beach, USA.
- Howery, L. D. and T. J. DeLiberto. 2004. Indirect effects of carnivores on livestock foraging behavior and production. *Sheep and Goat Research Journal* Volume 19.
http://www.sheepusa.org/index.phtml?page=site/news_details&nav_id=30836f603c6643459e70ae92e558dd7e&nav_parent_id=601e0a31bbf6a0ef56f1f0591aa0dc78&volume=Volume%2019,%202004%20-Special%20Edition:%20Predation
- Idaho Department of Fish and Game. 2008. Idaho Wolf Population Management Plan 2008-2012. Idaho Department of Fish and Game, Boise, USA.
<http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/PopManagePlan.pdf>
- Idaho Department of Fish and Game and Nez Perce Tribe. 2012. *2011 Idaho wolf monitoring progress report*. Idaho Department of Fish and Game, 600 South Walnut, Boise, Idaho; Nez Perce Tribe Wolf Recovery Project, P.O. Box 365, Lapwai, Idaho. 94 pp.
- ILWOC (Idaho Legislative Wolf Oversight Committee). 2002. Idaho wolf conservation and management plan. Idaho State Capitol Building, Boise, USA.
http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/wolf_plan.pdf
- International Union for Conservation of Nature (IUCN). 1994. Manifesto, Declaration of Principles for Wolf Conservation. *Wolf Magazine* 1994.
http://www1.nina.no/lcie_new/pdf/634991502778171292_IUCN%20Wolf%20Manifesto.pdf
- Julien, T. J., S. M. Vantassel, S. R. Groepper, and S. E. Hyngstrom. 2010. Euthanasia methods in field settings for wildlife damage management. *Human-Wildlife Interactions* 42: 158-164.
- Karlsson, J. and O. Johansson. 2009. Predictability of repeated carnivore attacks on livestock favours reactive use of mitigation measures. *Journal of Applied Ecology* 47: 166-171.

- Keith, L. B. 1983. Population dynamics of wolves. (Pages 66-77) in L. N. Carbyn, editor. Wolves in Canada and Alaska: their status, biology, and management. Canadian Wildlife Service Report Series 45, Ottawa, Canada.
- Kellert, S. R. 1999. The public and the wolf in Minnesota. A report to the International Wolf Center, Minneapolis.
http://www.wolf.org/wolves/learn/intermed/inter_human/survey_shows.asp
- Klenzendorf, S. A. 1997. *Management of Brown Bears (Ursus arctos) in Europe*. Unpublished Thesis, Fisheries and Wildlife Science, Virginia Polytechnic Institute and State University, Blacksburg, VA.
- Kluever, B. M., S. W. Breck, L. D. Howery, P. R. Krausman, and D. L. Bergman. 2008. Vigilance in cattle: the influence of predation, social interactions and environmental factors. *Rangeland Ecology and Management* 61: 321-328.
- Knowlton, F. K., E. M. Gese, M. M. Jaeger. 1999. Coyote depredation control: An interface between biology and management. *Journal of Range Management* 52(5): 398-412.
- Korytin, S. A. 1997. Sex and age structure of people attacked by wolves in different seasons. Proceedings of the scientific conference [Issues of applied ecology, game management and fur farming], 27–28 May 1997, Kirov p-143-146.
- Kruuk, H. 2002 *Hunter and Hunted: Relationship between Carnivores and People*. Cambridge University Press, Cambridge. Leighton, FA (2002)
- Lance, N. J. 2009. Application of electrified fladry to decrease risk of livestock depredation by wolves (*Canis lupus*). M. Sc. Thesis. Utah State University, Logan, UT.
- Lance, N. J., S. W. Breck, C. Sime, P. Callahan, and J. A. Shivik. 2010. Biological, technical, and social aspects of applying electrified fladry for livestock protection from wolves (*Canis lupus*). *Wildlife Research* 37: 708-714.
- Lehmkuhler, J., G. Palmquist, D. Ruid, R. Willging, and A. Wydeven. 2007. Effects of wolves and other predators on farms in Wisconsin: beyond verified losses. Pub-ER-658 2007, Wisconsin Department of Natural Resources, Madison, USA. http://dnr.wi.gov/org/land/er/publications/pdfs/wolf_impact.pdf
- Linhart, S. B. 1984. Managing coyote damage problems with non-lethal techniques: recent advancements in research. Proceedings of the Eastern Wildlife Damage Control Conference 1: 105-118.
- Linnell, J. D. C., M. E. Smith, J. Odden, J. E. Swenson, and P. Kaczensky. 1996. Carnivore and sheep farming in Norway. 4. Strategies for the reduction of carnivore- livestock conflicts: a review. NINA (Norsk Institute for Naturforskning) Oppdragsmelding 443: 1-118.

- Linnell, J. D. C., R. Anderson, Z. Andersone, L. Balciauskas, J. C. Blanco, L. Boitani, S. Brainerd, U. Breitenmoser, I. Kojloa, O. Liberg, J. Loe, H. Okarma, H. C. Pedersen, C. Promberger, H. Sand, E. J. Valdmann, and P. Wabakken. 2002. The fear of wolves: a review of wolf attacks on humans. NINA (Norsk Institute for Naturforskning) Oppdragsmelding 731: 1-65.
- Linnell, J. D. C., E. J. Solberg, S. Brainerd, O. Liberg, H. Sand, P. Wabakken, I. Kojola. 2003. Is the fear of wolves justified? A Fennoscandian perspective. *Acta Zoologica Lituanica* 13: 27-33.
- Lopez, B. H. 1978. *Of wolves and men*. Charles Scribner's and Sons, New York, New York, USA.
- Mack, J. A., W. G. Brewster, and S. H. Fritts. 1992. A review of wolf depredation on livestock and implications for the Yellowstone area. (Pages 3-20) in J. D. Varley and W G. Brewster, editors. *Wolves for Yellowstone? A report to the United States Congress. Volume IV Research and Analysis*. National Park Service, Yellowstone National Park, Mammoth Hot Springs, Wyoming, USA.
- Mack, C., J. Rachael, J. Holyan, J. Husseman, M. Lucid, and B. Thomas. 2010. *Wolf conservation and management in Idaho; progress report 2009*. Idaho Department of Fish and Game, Boise, Idaho, USA.
- McNaught, D. A. 1987. Wolves in Yellowstone? – Park visitors respond. *Wildlife Society Bulletin* 15:518-521.
- McKelvey, K.S., and K. B. Aubrey. 2001. Letter to the Lynx Steering Committee. USDA Forest Service, Rocky Mountain Research Station. 4 pp.
- McNay, M. E. 2002. Wolf-human interactions in Alaska and Canada: a review of the case history. *Wildlife Society Bulletin* 30: 831-843.
- Mech, L. D. 1970. *The wolf: the ecology and behavior of an endangered species*. University of Minnesota Press, Minneapolis, USA.
- Mech, L. D. 1995. The challenge and opportunity of recovering wolf populations. *Conservation Biology* 9: 270-278.
- Mech, L. D. 2001. Management of Minnesota's recovering wolf population. *Wildlife Society Bulletin* 29: 70-77.
- Mech, L. D. 2012. Is science in danger of sanctifying the wolf? *Biological Conservation* 150: 143-149.

- Mech, L. D., and L. Boitani. 2003. Wolf social ecology. (Pages 1–34) in L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology and conservation*. University of Chicago Press, Chicago, Illinois, USA.
- Mech, L. D., L. G. Adams, T. J. Meier, J. W., Burch, and B. W. Dale. 1998. *The wolves of Denali*. University of Minnesota Press. 227pp.
- Mech, L. D., S. H. Fritts, and M. E. Nelson. 1996. Wolf management in the 21st century: from public input to sterilization. *Journal of Wildlife Research* 1: 195-198.
<<http://www.npwrc.usgs.gov/resource/mammals/wolfman/index.htm> (Version 02MAR2000).>
- Mech, L. D., E. K. Harper, T. J. Meier, and W. J. Paul. 2000. Assessing factors that may predispose Minnesota farms to wolf depredations on cattle. *Wildlife Society Bulletin* 28: 630-635.
- Michigan Department of Natural Resources (MDNR). 2008. Michigan Wolf Management Plan. Wildlife Division Report No. 3484. July 10, 2008, Lansing, Michigan. 96 pp.
- Muhly, T.B., 2010. Direct, indirect, and predator-mediated effects of humans on a terrestrial food web: implications for conservation. Ph.D. Dissert. Univ. of Calgary, Alberta.
- Muhly, T. B., and M. Musiani. 2009. Livestock depredation by wolves and the ranching economy in the Northwestern U. S. *Journal of Ecological Economics* 10: 1016.
- Muhly, T. B., M. Alexander, M. S. Boyce, R. Creasey, M. Hebblewhite, D. Paton, J. A. Pitt, and M. Musiani. 2010. Differential risk effects of wolves on wild versus domestic prey have consequences for conservation. *Oikos* 119: 1243-1254.
- Musiani, M., C. Mamo, L. Boitani, C. Callaghan, C. Cormack Gates, L. Mattei, E. Visalberghi, S. Breck, and G. Volpi. 2003. Wolf depredation trends and the use of fladry barriers to protect livestock in western North America. *Conservation Biology* 17: 1538-1547.
- Musiani, M., and E. Visalberghi. 2001. Effectiveness of Fladry on Wolves in Captivity. *Wildlife Society Bulletin* 29: 91-98.
- Nadeau, M. S., C. Mack, J. Holyan, J. Husseman, M. Lucid, and B. Thomas. 2008. Wolf conservation and management in Idaho; progress report 2007. Idaho Department of Fish and Game, Boise, USA.
- Nadeau, M. S., C. Mack, J. Holyan, J. Husseman, M. Lucid, D. Spicer, and B. Thomas. 2009. Wolf conservation and management in Idaho: progress report 2008. Idaho Department of Fish and Game, Boise, USA.
<http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/08report/08report.pdf>

- Nass, R. D., and J. Theade. 1988. Electric fences for reducing sheep losses top predators. *Journal of Range Management* 412: 251-252.
- Naughton-Treves, L., R. A Grossberg, and A. Treves. 2003. Paying for tolerance: rural citizens' attitudes toward wolf depredation and compensation. *Conservation Biology* 17: 1500-1511.
- Naughton, L., A. Treves, R. Grossberg, and D. Wilcove. 2005. Public opinion survey: wolf management in Wisconsin.
<http://www.geography.wisc.edu/livingwithwolves/public_reports.htm>
- Niemeyer, C. C., E. E. Bangs, S. H. Fritts, J. A. Fontaine, M. D. Jimenez, and W. G. Brewster. 1994. Wolf depredation management in relation to wolf recovery. *Proceedings of the Vertebrate Pest Conference* 16: 57-60.
- Oakleaf, J. K., C. Mack, and D. L. Murray. 2003. Effects of wolves on livestock calf survival and movements in central Idaho. *Journal of Wildlife Management* 67: 299-306.
- Oakleaf, J. K., D. L. Murray, J. R. Oakleaf, E. E. Bangs, C. M. Mack, D. W. Smith, J. A. Fontaine, M. D. Jimenez, T. J. Meier, and C. C. Niemeyer. 2006. Habitat selection by recolonizing wolves in the Northern Rocky Mountains of the United States. *Journal of Wildlife Management* 70: 554-565.
- Olson, J. F., and R. Tischafer. 2004. Cable restraints in Wisconsin: a guide to responsible use. Wisconsin Department of Natural Resources, Madison, USA and Wisconsin Trappers Association.
- Oregon Department of Fish and Wildlife (ODFW) 2010a. Oregon Wolf Conservation and Management Plan, 2005 and Updated 2010. Oregon Department of Fish and Wildlife. http://www.dfw.state.or.us/Wolves/docs/Oregon_Wolf_Conservation_and_Management_Plan_2010.pdf
- Oregon Department of Fish and Wildlife (ODFW) 2010b. Oregon Wolf Conservation and Management Plan – 2010 Evaluation, Staff Summary of Policy Issues Raised by Stakeholders. August 6, 2010
<http://library.state.or.us/repository/2010/201008301515121/index.pdf>
- Oregon Department of Fish and Wildlife (ODFW). 2012a. Oregon depredation list for WS. A report provided to WS by Russ Morgan, Wolf Coordinator, ODFW, La Grande, Oregon.
- Oregon Department of Fish and Wildlife (ODFW). 2012b. Oregon Wolf Conservation and Management Plan. 2011 Annual Report. Oregon Department of Fish and Wildlife. La Grande, OR 97850.
http://www.dfw.state.or.us/wolves/docs/oregon_wolf_program/2011_Wolf_Conservation_Management_Plan_Annual_Report.pdf

- Oregon Department of Fish and Wildlife. 2013. Oregon Wolf Conservation and Management 2012 Annual Report. Oregon Department of Fish and Wildlife, 3406 Cherry Ave. Salem, OR, 97303.
- Oregon Department of Fish and Wildlife. 2014. Oregon Wolf Conservation and Management 2013 Annual Report. Oregon Department of Fish and Wildlife, 4034 Fairview Industrial Drive SE. Salem, OR, 97302.
- Packard, J. M. 2003. Wolf behavior: reproductive, social, and intelligent. (Pages 35-65) in L. D. Mech and L. Boitani, editors. *Wolves: behavior, ecology, and conservation*. University of Chicago Press, USA and London, England.
- Pate, J., M. J. Manfredo, A. D. Bright, and G. Tischbein. 1996. Coloradans' attitudes toward reintroducing the gray wolf into Colorado. *Wildlife Society Bulletin* 24: 421-428.
- Paul, W. and P. Gipson. 1994. Wolves. (Pages c-123 to c-129) in S. E. Hygnstrom, R. Timm and G. E. Larson, editors. *Prevention and control of wildlife damage*. University of Nebraska Cooperative Extensive Service, University of Nebraska, Lincoln, USA.
- Peek, J. M., D. E. Brown, S. R. Kellert, L. D. Mech, J. H. Shaw, and V. Van Ballenberghe. 1991. Restoration of wolves in North America. The Wildlife Society, Technical Advisory Committee on Wolf Reintroduction (Ad Hoc), Bethesda, Maryland. Technical Review 91-1.
- Pletscher, D. H., R. R. Ream, D. K. Boyd, M. W. Fairchild, and K. E. Kunkel. 1997. Population Dynamics of a Recolonizing Wolf Population. *The Journal of Wildlife Management* 61: 459-465.
- Ramler, J. P., M. Hebblewhite, D. Kellenberg, C. Sime. 2014. Crying Wolf? A Spatial Analysis of Wolf Location and Depredations on Calf Weight. *American Journal of Agricultural Economics* 96: 1-26.
- Reiter DK, Brunson MW, Schmidt RH. 1999. Public attitudes toward wildlife damage management and policy. *Wildlife Society Bulletin* 27(3):746-758.
- Sahr P., F. F. Knowlton. 2000. Evaluation of Tranquilizer Trap Devices (TTDs) for Foothold Traps Used to Capture Gray Wolves. *Wildlife Society Bulletin* 28: 597-605.
- Schanning, K., M. Demashke, L. Kret, B. Sanford, and J. Vazques. 2003. State of the wolf project: Wisconsin wolf survey 2003. Northland College, Sigurd Olson Environmental Institute, Ashland, Wisconsin, USA.
- Schultz, R. N., K. W. Jonas, L. H. Skuldt, and A. P. Wydeven. 2005. Experimental use of dog-training shock collars to deter depredation by gray wolves. *Wildlife Society Bulletin* 33: 142-148.

- Shelton, M. 2004. Predation and Livestock Production – Perspective and Overview. Sheep and Goat Research Journal Volume 19. http://www.sheepusa.org/index.phtml?page=site/news_details&nav_id=4e92bbbcf5184ed243442d8fa0a7c677&nav_parent_id=601e0a31bbf6a0ef56f1f0591aa0dc78&volume=Volume%2019,%202004%20-Special%20Edition:%20Predation
- Shivik, J. A. 2001. The other tools for wolf management. USDA National Wildlife Research Center, Staff Publications. Paper 570.
- Shivik, J. A. 2004. Non-lethal alternatives for predation management. Sheep and Goat Research Journal 19: 64-71.
- Shivik, J. A. 2006. Tools for the edge: what's new for conserving carnivores. Bioscience 53:253-259.
- Shivik, J. A., and D. J. Martin. 2001. Aversive and disruptive stimulus applications for managing predation. Proceedings of the Wildlife Damage Management Conference 9: 111-119.
- Shivik, J. A., V. Asher, L. Bradley, K. Kunkel, M. Phillips, S. W. Breck, and E. E. Bangs. 2002. Electronic aversive conditioning for managing wolf depredation. Proceedings of the Vertebrate Pest Conference 20: 227-231.
- Shivik, J. A., A. Treves, and P. Callahan. 2003. Non-lethal techniques for managing predation: primary and secondary repellents. Conservation Biology 17: 1531-1538.
- Sillero-Zubiri, C. & Laurenson, M.K. (2001) Interactions between carnivores and local communities: conflict or co-existence? In Carnivore Conservation (Eds J.L. Gittleman, S.M. Funk, D.W. Macdonald & R.K. Wayne), pp. 282–312. Cambridge University Press, Cambridge.
- Slate, D. A., R. Owens, G. Connely, and G. Simmons. 1992. Decision making for wildlife damage management. Transactions of the North American Wildlife and Natural Resource Conference 57: 51-62.
- Slovic, P. 1987. Perception of risk. Science, New Series, 236 (4799): 280-285.
- Smallidge, S. T., H. Halbritter, N. K. Ashcroft, J. C. Boren. 2008. Review of Livestock Management Practices to Minimize Livestock Depredation by Wolves: Applicability to the Southwest. Range Improvement Task Force, Report 78. New Mexico State University.
- Smith, D.W., and D.S. Guernsey. 2002. Yellowstone Wolf Project: Annual Report, 2001. National Park Service, Yellowstone Center for Resources, Yellowstone National Park, Wyoming, YCR-NR-2002-04.

- Smith, R. H., D. J. Neff, and N. G. Woolsey. 1986. Pronghorn response to coyote control - a benefit:cost analysis. *Wildlife Society Bulletin* 14: 226-231.
- Thiel, R. P. 1993. *The timber wolf in Wisconsin : the death and life of a majestic predator.* University of Wisconsin Press, Madison, Wisconsin, USA.
- Thompson, T., and Gasson, W., 1991, Attitudes of Wyoming residents on wolf reintroduction and related issues. Wyoming Game and Gish Department, Cheyenne, 43 pp.
- Treves, A., L. Naughton-Treves. 2005. Evaluating Lethal Control in the Management of Human-Wildlife Conflict. *People and Wildlife: Conflict or Coexistence?* eds. Rosie Woodroffe, Simon Thirgood and Alan Rabinowitz. Cambridge University Press, The Zoological Society of London 2005.
- Treves, A., R. R. Jurewicz, L. Naughton-Treves, R. A. Rose, R. C. Willging, and A. P. Wydeven. 2002. Wolf depredation on domestic animals in Wisconsin 1976-2000. *Wildlife Society Bulletin* 30: 231-241.
- Turnbull, T. T., J. W. Cain, G. W. Roemer. 2011. Evaluating Trapping Techniques to Reduce Potential for Injury to Mexican Wolves. U.S. Geological Survey Open-File Report 2011-1190, 11p.
- Urbigkit, C. and J. Urbigkit. 2010. A review: The use of livestock protection dogs in association with large carnivores in the Rocky Mountains. *Sheep and Goat Research Journal* 25: 1-8.
- USDA. 1997. Appendix P: Risk Assessment of the Wildlife Damage Methods used by the USDA Animal Damage Control Program. 337 pp. In *Animal Damage Control Program Final Environmental Impact Statement. (Revision) USDA-APHIS-WS, Operational Support Staff, 6505 Belcrest Rd., Room 820 Federal Bldg., Hyattsville, MD 20782. 314 pp. + App.*
- USDA. 1998. *Tranquilizer Trap Device Handbook (Training, Use, and Restrictions).* USDA National Wildlife Research Center, February 1998.
- USDA. 2007. *Evaluation of Remote Trap Monitors.* USDA National Wildlife Research Center, Staff Publications, Paper 747.
- USDA, 2008. *Final Environmental Assessment for the Management of Wolf Conflicts and Depredating Wolves in Wisconsin.* United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, Sun Prairie, Wisconsin, USA.
- USDA. 2010. *Idaho Wildlife Services wolf activity report fiscal year 2009.* United States Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services, Boise, Idaho, USA.

- USDA. 2011a. Environmental Assessment, Gray Wolf Damage Management in Idaho for Protection of Livestock and other Domestic Animals, Wild Ungulates, and Human Safety. USDA APHIS-WS, Boise, Idaho.
- USDA. 2011b. Final Environmental Assessment, Predator Damage Management in Nevada. USDA APHIS WS, Reno, Nevada.
- USDA. 2013. Trap Monitors: A Comparison of Commercially Available Systems. USDA National Wildlife Research Center, Staff Publications, August 2013.
- USFWS. 1980. Northern Rocky Mountain wolf recovery plan. Denver, Colorado. 67pp.
- USFWS. 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service, Denver, Colorado, 119pp.
- USFWS. 1988. Interim Wolf Control Plan: Northern Rocky Mountains of Montana and Wyoming. Denver, CO. 29pp.
- USFWS. 1990. Amendment to the Northern Rocky Mountain wolf control plan to include Idaho and eastern Washington. Denver, CO.
- USFWS. 1994. The reintroduction of gray wolves to Yellowstone National Park and central Idaho: Final environmental impact statement. U.S. Fish and Wildlife Service, Denver, Colorado, USA.
- USFWS. 1999. Interim wolf control plan for northwestern Montana and the panhandle of northern Idaho (excluding the experimental population area). Denver, Colorado. 19pp.
- USFWS. 2003. Notice of Remanded Determination of Status for the Contiguous United States Distinct Population Segment of Canada Lynx. *Federal Register*. 68:40076.
- USFWS. 2012. Lower 48–State and Mexico Gray Wolf Listing (*Canis lupus*), as Revised. 5-Year Review: Summary and Evaluation. U. S. Fish and Wildlife Service, Washington Office, Arlington Virginia.
- USFWS, Idaho Department of Fish and Game, Montana Fish, Wildlife & Parks, Nez Perce Tribe, National Park Service, Blackfeet Nation, Confederated Salish and Kootenai Tribes, Wind River Tribes, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Utah Department of Natural Resources, and USDA Wildlife Services. 2012. Northern Rocky Mountain Wolf Recovery Program 2011 Interagency Annual Report. M.D. Jimenez and S.A. Becker, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601.
- USFWS, Nez Perce Tribe, National Park Service, MFWP, IDFG, and USDA WS. 2002. Rocky Mountain wolf recovery 2001 annual report. U.S. Fish and Wildlife Service, Helena, Montana, USA <http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt01/2001report.htm>

- USFWS, Nez Perce Tribe, National Park Service, and USDA WS. 2003. Rocky Mountain wolf recovery 2002 annual report. T. Meier, editor. U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana, USA. <<http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt02/2002report.pdf>>
- USFWS, Nez Perce Tribe, National Park Service, MFWP, IDFG, and USDA WS. 2005. Rocky Mountain wolf recovery 2004 annual report. D. Boyd, editor. U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana, USA. <[http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt04/2004%20Annual%20Report total then acc.pdf](http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt04/2004%20Annual%20Report%20total%20then%20acc.pdf)>
- USFWS, Nez Perce Tribe, National Park Service, MFWP, IDFG, and USDA WS. 2007. Rocky Mountain wolf recovery 2006 annual report. C. A. Sime and E. E. Bangs, editors. USFWS, Ecological Services, Helena, Montana, USA.
- USFWS, Nez Perce Tribe, National Park Service, Montana Fish, Wildlife & Parks, Blackfeet Nation, Confederated Salish and Kootenai Tribes, Idaho Fish and Game, and USDA Wildlife Services. 2008. Rocky Mountain Wolf Recovery 2007 Interagency Annual Report. C.A. Sime and E. E. Bangs, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana. 59601. 275pp.
- USFWS, Nez Perce Tribe, National Park Service, MFWP, IDFG, and USDA WS. 2009. Rocky Mountain wolf recovery 2008 interagency annual report. C. A. Sime and E. E. Bangs, editors. U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana, USA. <http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt08/FINAL_2008_USFWS_Recovery_Program_Update_3-17-09.pdf>
- USFWS, Nez Perce Tribe, National Park Service, MFWP, IDFG, and USDA WS. 2010. Rocky Mountain wolf recovery 2009 annual report. C. A. Sime and E. E. Bangs, editors. U.S. Fish and Wildlife Service, Ecological Services, Helena, Montana, USA. <http://www.fws.gov/mountain-prairie/species/mammals/wolf/annualrpt09/FINAL_AR_FWS_2009_Recovery_Program_Update.pdf>
- USFWS, ODFW, WS. 2011. Federal/State Coordination Strategy for Implementation of Oregon's Wolf Plan. USFWS, Portland, OR, 14pp.
- Verts, B.J. and L.N. Carraway. 1998. Land mammals of Oregon. University of California Press. Berkeley.
- vonHoldt, B. M., D. R. Stahler, D. W. Smith, D. A. Earl, J. P. Pollinger, R. K. Wayne. 2008. The genealogy and genetic viability of reintroduced Yellowstone grey wolves. *Molecular Ecology* 17: 252-274.
- vonHoldt, B. M., D. R. Stahler, E. E. Bangs, D. W. Smith, M. D. Jimenez, C. M. Mack, C. C. Niemeyer, J. P. Pollinger, and R. K. Wayne. 2010. A novel assessment of population

structure and gene flow in grey wolf populations of the Northern Rocky Mountains of the United States. *Molecular Ecology* 19: 4412-4427.

Wagner, K. K., Schmidt, R. H. & Conover, M. R. 1997. Compensation programs for wildlife damage in North America. *Wildlife Society Bulletin* 25: 312-319.

Wallach, A.D., E. G. Ritchie, J. Read, A. J. O'Neill. 2009. More than Mere Numbers: The Impact of Lethal Control on the Social Stability of a Top-Order Predator. *PLoS ONE* 4(9): e6861. doi:10.1371/journal.pone.0006861.

Wayne, R. K., N. Lehman, D. Girman, P. J. P. Gogan, D. A. Gilbert, K. Hansen, R. O. Peterson, U. S. Seal, A. Eisenhawer, L. D. Mech and R. J. Krumenaker. 1991. Conservation Genetics of the Endangered Isle Royale Gray Wolf. *Conservation Biology* 5: 41-51.

Williams, J., D. Johnson, L. Larson, P. Clark, N. Rimbey, S. Hamilton. 2012. Wolf Cattle Interaction Study, 2012 Oregon Beef Council Short Report

Wilson, D. S., K. Coleman, A. B. Clark, and L. Biederman. 1993. Shy bold continuum in pumpkinseed sunfish (*Lepomis gibbosus*) – an ecological study of a psychological trait. *Journal of Comparative Psychology* 107, 250-260.

Wilson, D. S., A. B. Clark, K. Coleman, and T. Dearstyne. 1994. Shyness and boldness in humans and other animals. *Trends in Ecology and Evolution* 9: 442–446.

Wolstenholme, R. C. 1996. Attitudes of residents toward wolves in a rural community in northwestern Montana. *Environmental Studies*. University of Montana, Missoula, MT

Young, S.P., and E.A. Goldman. 1944. The wolves of North America. Parts 1 and 2. Dover Publ. Inc., New York, NY. 636 pp.

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Appendix A: OAR 635-110



OREGON ADMINISTRATIVE RULES OREGON DEPARTMENT OF FISH AND WILDLIFE

DIVISION 110

OREGON WOLF CONSERVATION AND MANAGEMENT PLAN

635-110-0000

Wolf Conservation Management Plan

The document entitled "Oregon Wolf Conservation and Management Plan" dated October 2010 is incorporated here by reference as administrative rule. (This incorporation by reference includes the body of the Plan plus its Appendix A. Other appendices are excluded.) Copies may be obtained at the Salem headquarters office of the Oregon Department of Fish and Wildlife, 4034 Fairview Industrial Drive S.E., Salem, OR 97302. This document includes program direction, objectives and strategies to fulfill management, research, and habitat needs. It is also intended as an informational document to assist resource management agencies with their wildlife program. As of January 10, 2014, those portions of the plan which authorize harassment or take of wolves are pre-empted in a portion of Oregon by the endangered status of the gray wolf under the federal Endangered Species Act. In the portion of Oregon where federal protections are reduced to a level below that of Oregon law, this plan governs harassment and take of wolves in Oregon.

Stat. Auth.: ORS 496.012, 496.138, 496.146, 496.162 & 498.012

Stats. Implemented: ORS 496.171-.496.192, 497.298, 497.308, 498.002, 498.006 & 498.012

635-110-0010

Harassment and Take of Wolves during Phase I (Conservation)

NOTE: As of January 10, 2014, these rules are pre-empted in a portion of Oregon by the endangered status of the gray wolf under the federal Endangered Species Act. In the portion of Oregon where federal protections are reduced to a level below that of Oregon law, these rules govern harassment and take of wolves in Oregon.

(1) This rule describes the types of harassment and take of wolves allowed by persons outside ODFW during Phase I — (Conservation: 0–4 breeding pairs) as called for in chapter III of the Oregon Wolf Conservation and Management Plan. Other chapters of the Plan authorize ODFW to take wolves for other specified wildlife management purposes. For OAR 635-110-0010, 635-110-0020 and 635-110-0030, “livestock” means ratites, horses, mules, jackasses, cattle, llamas, alpacas, sheep, goats, swine, domesticated fowl, any fur-bearing animal bred and maintained (commercially or otherwise) within pens, cages and hutches, bison and working dogs. “Working dogs” means guarding dogs and herding dogs.

(2) Non-injurious harassment.

(a) Subject to the conditions specified in paragraph (c), the following persons may use non-injurious harassment against wolves without a permit:

(A) Livestock producers (or their agents) on land they own or lawfully occupy; or

(B) Grazing permittees legally using public land under valid livestock grazing allotments.

(b) Non-injurious harassment means scaring off a wolf (or wolves) without doing bodily harm, and includes (but is not limited to) firing shots in the air, making loud noises or otherwise confronting the wolf (or wolves).

(c) Non-injurious harassment is allowed without a permit under this rule only if:

(A) The wolf (or wolves) is in the act of testing or chasing livestock, is attempting to test or chase livestock or is in close proximity of livestock;



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- (B) The person encounters the wolf (or wolves) unintentionally (i.e., the person is not stalking or searching for wolves);
- (C) The harassment in fact does not result in injury to the wolf (or wolves); and
- (D) The harassment is reported to ODFW within 48 hours.
- (d) Any non-injurious harassment that does not meet each requirement of this rule requires a permit in advance from ODFW.
- (3) Non-lethal injurious harassment.
- (a) Subject to the conditions specified in paragraph (c), in addition to state or state authorized agents, the following persons may use non-lethal injurious harassment against wolves by permit:
- (A) Livestock producers (or their agents) on land they own or lawfully occupy;
- (B) Grazing permittees legally using public land under valid livestock grazing allotments.
- (b) Non-lethal injurious harassment means scaring off a wolf (or wolves) without killing but with some injury to the wolf. Wolves may be pursued (unintentional encounters are not required).
- (c) Non-lethal injurious harassment is allowed by permit from ODFW only if:
- (A) ODFW confirms wolf depredation on livestock or other wolf-livestock conflict in the area. "Other wolf-livestock conflict" means loitering near, testing, chasing, or otherwise disrupting livestock;
- (B) The applicant confers with ODFW to determine the most effective harassment method;
- (C) ODFW considers the location of known den sites;
- (D) The harassment in fact does not result in the death of a wolf;
- (E) No identified circumstance exists that attracts wolf/livestock conflict; and
- (F) The harassment is reported to ODFW within 48 hours.
- (d) Permits for non-lethal injurious harassment remain valid for the livestock grazing season in which issued, provided the livestock operator complies with all applicable laws, including permit conditions. The agency shall inform harassment permit holders of non-lethal methods for minimizing wolf-livestock conflict and provide assistance upon request. Receiving future lethal control permits is contingent upon documentation of efforts to use non-lethal methods.
- (4) Relocation. ODFW will authorize relocation by state personnel when a wolf (or wolves) becomes inadvertently involved in a situation, or is present in an area, that could result in conflict with humans or harm to the wolf, provided that ODFW has no reason to believe that the wolf actually attacked or killed livestock or pets. The relocation will be designed to prevent conflict with humans or reduce the possibility of harm to the wolf. The wolf (or wolves) would be relocated to suitable habitat at the direction of ODFW.
- (5) Lethal take of wolves in the act of biting, wounding, killing or chasing livestock or working dogs.
- (a) A person, or an agent as described in paragraph (b), may lethally take a wolf on land the person owns or lawfully occupies only if:
- (A) The wolf is caught in the act of
- (a) Biting, wounding or killing livestock or working dogs; or
- (b) Chasing livestock or working dogs, if the person has first undertaken nonlethal actions as specified in 8(b)(C) and 8(c) of this rule, and the taking occurs during a time period in which ODFW has determined a situation of chronic depredation exists; and
- (B) No person has used bait or taken other intentional actions to attract wolves.
- (b) A landowner or lawful occupant of land may authorize an agent to enter the land for the purpose of taking wolves pursuant to 5(a) on the landowner or occupant's behalf. The authorization must be in writing, be carried by the agent when wolves are taken, and must include:
- (A) The date of issuance of the authorization;



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(B) The name, address, telephone number and signature of the person granting authorization;
(C) The name, address, and telephone number of the person to whom authorization is granted; and
(D) The expiration date of the authorization, which may not be later than one year from the issuance date.

(c) Any person who takes a wolf pursuant to 5(a) and 5(b) of these rules must make all reasonable efforts to preserve the scene, not remove or disturb the wolf carcass, and report the take to ODFW within 24 hours.

(6) Lethal take to address chronic livestock depredation. ODFW may authorize its personnel or authorized agents to use lethal force on a wolf or wolves it reasonably believes are responsible for chronic depredation upon livestock where each of the conditions in subsections (7) through (10) of this rule is satisfied. ODFW shall limit lethal force to the wolf or wolves it deems necessary to address the chronic depredation situation

(7) Conditions for Lethal Take by ODFW. ODFW's discretionary authority for use of lethal force pursuant to this rule may be exercised if ODFW:

(a) Designates an Area of Known Wolf Activity, the boundary of which may be adjusted as new data or information become available;

(b) Upon the designation of an Area of Known Wolf Activity, coordinates in a timely manner with potentially affected livestock producers and other relevant interests to provide information on:

(A) The provisions of the Oregon Wolf Conservation & Management Plan and associated rules,

(B) The current state of knowledge of wolf behavior, management, and conservation,

(C) Procedures for documenting and reporting wolf activity to ODFW, including depredations upon livestock, and

(D) Non-lethal measures, incentives and available assistance aimed at minimizing conflicts between wolves and livestock or domestic animals in the area of known wolf activity;

(c) Confirms an incident of depredation of livestock by a wolf or wolves;

(d) Within 14 working days of ODFW's confirmation of the first incident of depredation in an area:

(A) Designates an Area of Depredating Wolves, the boundary of which may be adjusted as new data or information become available;

(B) Concurrent with the designation of an Area of Depredating Wolves, prepares and publicly discloses an area-specific wolf-livestock conflict deterrence plan in coordination with potentially affected landowners, livestock producers and other relevant interests. The plan shall identify appropriate non-lethal measures according to which measures are likely to be most effective in a given circumstance, including the nature of the livestock operations, habitat, and landscape conditions specific to the area, as well as particular times of the year or period of livestock production. The plan shall be based on information compiled by ODFW before and/or during the planning effort on potentially successful conflict deterrence techniques, scientific research, and available financial resources and/or partnerships that may aid in the successful implementation of the plan. ODFW may update an area-specific conflict deterrence plan as new data become available.

(e) Confirms a total of at least 4 qualifying incidents of depredation of livestock within the previous 6 months by the same wolf or wolves.

(f) Issues and makes publicly available, prior to the exercise of lethal force, a written determination by the ODFW Director or director's designee to use lethal force to address a specified situation of chronic depredation, along with supporting findings that:

(A) The conditions of Sections 7, 8, and 9 of this rule have been satisfied;



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(B) Livestock producers in the Area of Depredating Wolves have worked to reduce wolf-livestock conflict and are in compliance with wolf protection laws and the conditions of any harassment or take permits.

(C) The situation of wolf depredation upon livestock in the Area of Depredating Wolves is likely to remain chronic despite the use of additional non-lethal conflict deterrence measures; and

(D) The wolf or wolves identified for removal are those ODFW believes to be associated with the qualifying depredations, the removal of which ODFW believes will decrease the risk of chronic depredation in the Area of Depredating Wolves.

(8) Qualifying Contingencies and Counting Incidents:

(a) An incident of depredation is a single event resulting in the injury or death of one or more lawfully present livestock that is reported to ODFW for investigation, and upon investigation by ODFW or its agent(s), ODFW confirms to have been caused by a wolf or group of wolves.

(b) A qualifying incident of depredation is a confirmed incident of depredation for the purposes of this rule if:

(A) The depredation is outside of an Area of Known Wolf Activity or Area of Depredating Wolves. Only the first confirmed depredation by a wolf or wolves may count as a qualifying depredation,

(B) In an Area of Known Wolf Activity, the landowner or lawful occupant of the land where the depredation occurred had:

- (i) At least seven days prior to the incident of depredation, removed, treated or disposed of all intentionally placed or known and reasonably accessible unnatural attractants of potential wolf-livestock conflict, such as bone or carcass piles or disposal sites, and
- (ii) Prior to and on the day of the incident of depredation, been using at least one measure ODFW deems most appropriate from non-lethal deterrence measures identified pursuant to section (7)(b)(D) to protect calving operations, nursing cattle, sheep operations, or other reasonably protectable situations, not including open range situations. Once a confirmed depredation has occurred in an Area of Known Wolf Activity and while ODFW is in the process of designating an Area of Depredating Wolves and creating an area-specific conflict deterrence plan, only one additional confirmed depredation in an area may count as a qualifying depredation under this subsection.

(C) In an Area of Depredating Wolves, the landowner or lawful occupant of the land where the depredation occurred had:

- (i) Complied with subsection (B) of this section, and
- (ii) Prior to and on the day of the incident of depredation was implementing at least one non-lethal measure identified in the area-specific conflict deterrence plan developed under subsection (7)(d)(B) that is specific to the location, type of livestock operation, time of the year, and/or period of livestock production associated with the depredation. The conflict deterrence plan measure implemented by a landowner or lawful occupant must address wolf-livestock conflict in open range situations when that situation exists.

(c) Human presence, when used as a non-lethal measure under this rule, is presence which could reasonably be expected to deter wolf-livestock conflict under the circumstances and, regardless of the temporal requirements of sections 7(b)(B) and (C) of this rule, may be considered an appropriate non-lethal measure if it:

(A) Occurs at a proximate time prior to and in an area proximate to a confirmed depredation as determined by ODFW, and



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- (B) Indicates a timely response to wolf location information in situations of potential wolf-livestock conflict.
- (9) Transparency and Public Disclosure.
- (a) Except as provided in section (c) below, prior to using lethal force to address chronic wolf depredation, and in a timely fashion, ODFW shall document and make publicly available on at least its website:
- (A) The determinations and supporting findings referenced in section (7)(f) of this rule;
- (B) Information including but not limited to summaries of confirmed incidents of depredation and associated depredation investigation reports, maps of areas of known wolf activity and areas of depredating wolves, including changes and amendments to those maps, and area specific conflict deterrence plans; and
- (C) Documentation of measures implemented pursuant to Section 8 of this rule. In documenting the removal of unnatural attractants and implementation of conflict deterrence measures, the Department may rely upon documented personal observation and/or written statements by the owner or lawful occupant of the land where qualifying incidents of depredation have occurred that confirm the non-lethal deterrence measures being utilized prior to and at the time of the qualifying depredation.
- (b) In any signed statements and other information publicly disclosed pursuant to this section, the Department shall redact from public disclosure the personal information of landowners, lawful occupants, or other relevant individuals consistent with the Oregon public records law, ORS Chapter 192.
- (c) In the case where the conditions in Section 7(f) of this rule have been met but strict compliance with the public disclosure requirements of this section cannot be accomplished without a delay that impedes ODFW's ability to pursue an immediately available opportunity to remove the wolf or wolves it reasonably believes responsible for chronic depredation prior to another depredation event on livestock, this section is deemed satisfied if, prior to the use of lethal force, ODFW:
- (A) Provides email or phone notification from the ODFW Director or designee to a list of interested stakeholders communicating the findings in Section 7(f) of this rule and the Department's intent to pursue immediate lethal action based on those findings,
- (B) Has previously documented and disclosed, on at least the agency's website, the information referenced in subsections (a)(A)-(C) of this section with respect to all but the most recent qualifying depredation that resulted in ODFW's determination to pursue lethal action, and
- (C) Provides the remaining information referenced in subsections (a)(A)-(C) of this rule in a timely manner with respect to the most recent qualifying incident that ODFW pursues with immediate lethal action.
- (10) Duration of chronic depredation lethal take authority. Take authority issued pursuant to subsection (7) expires:
- (a) When the wolf or wolves identified for lethal removal have been removed by ODFW or any other party.
- (b) ODFW may reinstate its take authority if ODFW confirms one additional qualifying incident of depredation within two months after the last confirmed qualifying depredation by what it believes to be a member or members of the same wolf pack and non-lethal efforts specified in Section 8 have continued to be implemented by the owner or lawful occupant of land where the additional depredation occurs;
- (c) 45 days after issuance of the take authority and determination referenced in Section 7(f), unless ODFW confirms, within that time period, another qualifying incident of depredation on livestock by what it believes to be the same wolf or wolves identified for lethal removal and non-lethal efforts



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specified in Section 8 have continued to be implemented by the owner or lawful occupant of land where the additional depredation occurs; or

(d) If ODFW determines the wolf or wolves identified for lethal removal have left the Area of Depredating Wolves. To support this determination, data must show more than just a short-term or seasonal movement outside the area's boundary.

(e) Except as allowed under subsections (b) and (c) of this Section, any subsequent authorization or reinstatement of take authority by the Department must comply with Sections 7 through 9 of this rule, and must be based upon at least one additional qualifying depredation.

(11) Lethal take in the case of extreme circumstances. Notwithstanding sections (7) and (8) of this rule, ODFW may authorize the use of lethal force in extreme circumstances.

(a) Extreme circumstances means:

(A) Four or more confirmed incidents of depredation of livestock by what ODFW reasonably believes to be the same wolf or wolves within seven days;

(B) ODFW determines, based on evidence it makes publicly available, that there were no intentionally placed or known and reasonably accessible unnatural attractants such as bone or carcass piles or disposal sites that contributed to the incidents of depredation, and that non-lethal measures are and will likely remain ineffective; and

(C) ODFW finds that depredation has rapidly escalated beyond the reasonable, available means of ODFW and affected livestock owners to stop additional livestock losses from occurring.

(b) A decision to utilize lethal force authority due to extreme circumstances shall be made by the ODFW director or director's designee, accompanied by the findings and determinations required in section 11(a) made publically available on ODFW's website, and exercised within 14 days of the determination to exercise lethal force authority under this section, or of the last confirmed depredation, whichever comes later.

Stat. Auth.: ORS 496.012, 496.138, 496.146 & 496.162

Stats. Implemented: ORS 496.171 - 496.192, 497.298, 497.308, 498.002, 498.006, 498.012 & 498.026

635-110-0020

Harassment and Take of Wolves During Phase II (Management)

NOTE: as of January 10, 2014, these rules are pre-empted in a portion of Oregon by the endangered status of the gray wolf under the federal Endangered Species Act. In the portion of Oregon where federal protections are reduced to a level below that of Oregon law, these rules govern harassment and take of wolves in Oregon.

(1) This rule describes the types of harassment and take of wolves allowed by persons outside ODFW (or ODFW or Wildlife Services acting as their agent) during Phase II — (Management: 5-7 breeding pairs) as called for in chapter III of the Oregon Wolf Conservation and Management Plan. Other chapters of the Plan authorize ODFW to take wolves for other specified wildlife management purposes.

(2) Non-injurious harassment of wolves is allowed under the same conditions as in Phase I (OAR 635-110-0010(2)).

(3) Non-lethal injurious harassment.

(a) Non-lethal injurious harassment is allowed without a permit on private land by livestock producers or their agents on land they own or lawfully occupy. Livestock producers are encouraged to use non-injurious techniques first. There must be no identified circumstance that attracts wolf-livestock conflict, and the harassment must be reported to ODFW within 48 hours.



OREGON ADMINISTRATIVE RULES OREGON DEPARTMENT OF FISH AND WILDLIFE

(b) Non-lethal injurious harassment is allowed by permit on public land by grazing permittees who are legally using public land under valid livestock grazing allotments and upon the following conditions:

(A) ODFW confirms wolf depredation on livestock or other wolf-livestock conflict in the area. "Other wolf-livestock conflict" means loitering near, testing, chasing, or otherwise disrupting livestock;

(B) ODFW considers the location of known den sites;

(C) There is no identified circumstance at the site which attracts wolf/livestock conflict; and

(D) The harassment is reported to ODFW within 48 hours.

(c) As to non-lethal injurious harassment on either private or public land, pursuing wolves is allowed.

(4) Relocation of wolves will be considered under the same circumstances as in Phase I (OAR 635-110-0010(4)).

(5) Lethal take of wolves in the act of biting, wounding, killing or chasing livestock or working dogs.

(a) A person, or an agent as described in paragraph (b), may lethally take a wolf on land the person owns or lawfully occupies only if:

(A) The wolf is caught in the act of biting, wounding, killing or chasing livestock or working dogs; and

(B) No person has used bait or taken other intentional actions to attract wolves.

(b) A landowner or lawful occupant of land may authorize an agent to enter the land for the purpose of taking wolves pursuant to 5(a) on the landowner or occupant's behalf. The authorization must be in writing, be carried by the agent when wolves are taken, and must include:

(A) The date of issuance of the authorization;

(B) The name, address, telephone number and signature of the person granting authorization;

(C) The name, address, and telephone number of the person to whom authorization is granted; and

(D) The expiration date of the authorization, which may not be later than one year from the issuance date.

(c) Any person who takes a wolf pursuant to 5(a) of these rules must make all reasonable efforts to preserve the scene, not remove or disturb the wolf carcass, and report the take to ODFW within 24 hours.

(6) Lethal take to deal with chronic depredation.

(a) ODFW may authorize its personnel, authorized agents, or Wildlife Services, to use lethal force on wolves at a property owner or permittee's request if:

(A) ODFW confirms either:

(i) Two confirmed depredations by wolves on livestock in the area; or

(ii) One confirmed depredation followed by three attempted depredations (testing or stalking) in the area;

(B) The requester documents unsuccessful attempts to solve the situation through non-lethal means;

(C) No identified circumstance exists that attracts wolf-livestock conflict; and

(D) The requester has complied with applicable laws and the conditions of any harassment or take permit.

(b) Subject to the conditions specified in paragraph (c) and with a limited duration permit from ODFW, the following persons may use lethal force to deal with chronic depredation:

(A) Livestock producers (or their agents) on land they own or lawfully occupy; or

(B) Grazing permittees legally using public land.

(c) ODFW will issue a permit to use lethal force to deal with chronic depredation only if:

(A) ODFW confirms that the area has had at least two depredations by wolves on livestock;

(B) ODFW determines that wolves are routinely present on that property and present a significant risk to livestock;

(C) There is no identified circumstance at the site which attracts wolf/livestock conflict;



OREGON ADMINISTRATIVE RULES OREGON DEPARTMENT OF FISH AND WILDLIFE

- (D) The applicant is in compliance with applicable laws and the terms of any previous wolf permit;
- (E) The applicant documents use of non-lethal methods; and
- (F) Any wolf taken is considered property of the state and reported to ODFW within 48 hours.
- (7) "Identified circumstance" means a condition which:
 - (a) ODFW determines, based upon its investigation of the situation, attracts wolves and fosters conflict between wolves and livestock; and
 - (b) ODFW advises the landowner, livestock producer or grazing permittee to remedy; but
 - (c) The landowner, livestock producer or grazing permittee fails to remedy.
- (8) "In the area" means where ODFW has determined the presence of the depredating wolves.

Stat. Auth.: ORS 496.012, 496.138, 496.146 & 496.162

Stats. Implemented: ORS 496.171 - 496.192, 497.298, 497.308, 498.002, 498.006, 498.012 & 498.026

635-110-0030

Harassment and Take of Wolves during Phase III

NOTE: as of January 10, 2014, these rules are pre-empted in a portion of Oregon by the endangered status of the gray wolf under the federal Endangered Species Act. In the portion of Oregon where federal protections are reduced to a level below that of Oregon law, these rules govern harassment and take of wolves in Oregon.

(1) This rule describes the types of harassment and take of wolves allowed by persons outside ODFW (or ODFW or Wildlife Services acting as their agent) during Phase III (more than 7 packs) as called for in chapter III of the Oregon Wolf Conservation and Management Plan. Other chapters of the Plan authorize ODFW to take wolves for other specified wildlife management purposes.

(2) Non-injurious harassment of wolves is allowed under the same conditions as in Phase I (OAR 635-110-0010(2)).

(3) Non-lethal injurious harassment is allowed under the same conditions as in Phase II (OAR 635-110-0020(3)), except that wolf depredation on livestock or other wolf-livestock conflict may be confirmed by either ODFW or Wildlife Services.

(4) Relocation of wolves will be considered under the same circumstances as in Phase I (OAR 635-110-0010(4)).

(5) Lethal take of wolves in the act of attacking livestock is allowed under the same conditions as for Phase II (OAR 635-110-0020(5)), except that wolf depredation on livestock may be confirmed by either ODFW or Wildlife Services.

(6) Lethal take of wolves to deal with chronic depredation is allowed under the same conditions as for Phase II (OAR 635-110-0020(6)), except that wolf depredation on livestock may be confirmed by either ODFW or Wildlife Services.

(7) The Commission will authorize controlled take of wolves by special permit in specific areas where necessary to address chronic wolf-livestock conflicts or ungulate population declines. "Chronic" means two livestock depredations have been confirmed by ODFW or Wildlife Services, or one depredation followed by three attempted depredations (testing or stalking). The Commission may also choose to authorize such controlled take on private lands where the landowner is willing to provide access.



**OREGON ADMINISTRATIVE RULES
OREGON DEPARTMENT OF FISH AND WILDLIFE**

Stat. Auth.: ORS 496.012, 496.138, 496.146 & 496.162

Stats. Implemented: ORS 496.171 - 496.192, 497.298, 497.308, 498.002, 498.006, 498.012 & 498.026

635-110-0040

Incidental Take of Wolves

Any person may apply for a permit to authorize take of a gray wolf (or wolves) incidental to an otherwise lawful activity, as per OAR 635-100-0170. However, ORS 496.172(4) prohibits the Commission from issuing an incidental take permit for a species that is federally listed.

Statutory authority: ORS 496.012, 496.138, 496.146, 496.162

Statutes implemented: ORS 496.171-496.192, 497.298, 497.308, 498.002, 498.006, 498.012, 498.026

Amended January 2014

**Appendix B: Correspondence from Oregon Department of Fish and
Wildlife and the Confederated Tribes of the Umatilla Indian
Reservation**



Oregon

John A. Kitzhaber, MD, Governor

SEP 16 2011

Department of Fish and Wildlife

Wildlife Division
3406 Cherry Ave NE
Salem, OR 97303-4924
(503) 947-6300
Fax (503) 947-6330
www.dfw.state.or.us

September 15, 2011

Dave Williams
State Director
USDA –Wildlife Services
6135 NE 80th Ave, Suite A-8
Portland, OR 97218



Dear Mr. Williams:

Your July 1, 2011 letter asked for assistance in developing a National Environmental Policy Act Environmental Assessment (EA) analyzing Wildlife Services' potential participation in implementing the Oregon Wolf Conservation and Management Plan (OWCMP). Below are my responses to the questions posed in your letter:

- 1) I request ODFW's assistance in this effort by becoming a cooperating agency in the development of the EA.

ODFW requests cooperator status in developing an EA analyzing Wildlife Services' implementation of the OWCMP. We are particularly interested in your analysis of potential alternatives.

- 2) What wolf management actions, non-lethal and lethal, has ODFW carried out to implement the OWCMP?

Information on ODFW's implementation of the OWCMP can be found at <http://www.dfw.state.or.us/Wolves/index.asp>. The department is currently implementing all aspects of the management plan.

- 3) If Wildlife Service's decides not to participate in the implementation of the OWCMP would ODFW go forth with implementing non-lethal and lethal wolf management actions as called for in the OWCMP?

Yes.

- 4) Related to question #3; who would carry out those actions.

ODFW staff or our designated agent(s) will implement the OWCMP. Our ability to implement the OWCMP may be compromised if Wildlife Services was unable to assist.

Please let me know how we may be of further assistance.

Sincerely,

Ron Anglin
Wildlife Division Administrator





Oregon

John A. Kitzhaber, MD, Governor

Department of Fish and Wildlife

Wildlife Division

3406 Cherry Ave NE

Salem, OR 97303-4924

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www.dfw.state.or.us

RECEIVED
MAR 30 2012

BY:



March 28, 2012

Dave Williams
Oregon State Director, USDA - APHIS
6135 NE 80th Ave
Suite A-8
Portland, OR 97218

Mr. Williams:

We are responding to your recent request for clarification over our concerns about implementing the Oregon Wolf Conservation and Management Plan if Wildlife Services is unable to assist us in any way. The impacts will be felt by ODFW in several ways.

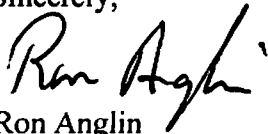
1. Though wolves targeted for lethal control may be taken by ODFW in a similar fashion, ODFW would be required to redirect personnel and funding resources to conduct lethal control actions.
2. Depending on demand for personnel resources in other areas or situations (wolf related or otherwise), ODFW's service level to landowners may be reduced or delayed.
3. Any delay in ODFW lethal control efforts, for any reason, may have the effect of increasing wolf depredation of livestock.
4. Funding necessary to conduct un-planned lethal control will be diverted from other wolf management sources. This would have the effect of reducing other wolf related management efforts (i.e., non-lethal control supplies, wolf damage management of other packs, implementation of capture and monitoring programs). Reduction in these other programs will have a direct impact on actions necessary to ensure recovery of wolves in Oregon.
5. If Wildlife Services does not have the ability to take wolves, this will impact their ability to conduct capture (i.e., trapping) for the purpose of depredation management.
6. If Wildlife Services does not have the ability to take wolves, this will impact their ability to assist the ODFW in trapping wolves for research and monitoring purposes needed to assess population viability and health.



So as you can see, even though depredating wolves will be killed, the impact to other ODFW programs will have a direct effect on our ability fund the monitoring and conservation of wolves in Oregon. This will impact the ODFW's ability to ensure conservation of wolves in Oregon as required by the State Endangered Species Act and by the Wolf Conservation and Management Plan as adopted by the Oregon Fish and Wildlife Commission.

Please let me know if you have any further questions.

Sincerely,

A handwritten signature in black ink that reads "Ron Anglin". The signature is written in a cursive style with a prominent loop at the end of the last name.

Ron Anglin

Wildlife Division Administrator

Oregon Department of Fish and Wildlife

Confederated Tribes
of the
Umatilla Indian Reservation
DNR Wildlife Program



46411 Timine Way
Pendleton, OR 97801

www.ctuir.org email: info@ctuir.org
Phone 541-276-3447

April 27, 2012

Dave Williams
Oregon State Director, USDA-APHIS
6135 NE 80th Ave
Portland, OR 97218

Dear Mr Williams:

I am writing in response to your recent inquiry regarding wolf management and implementation of control measures on the Umatilla Indian Reservation if Wildlife Services is unable to assist. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) would implement the response plan for wolf conflicts with or without the assistance of Wildlife Services. However, the lack of assistance from Wildlife Services would significantly impact the CTUIR's ability to fund other important wildlife and habitat management actions.

The absence of assistance would impact the CTUIR Wildlife Program's ability to provide services to the Tribal public for both wolf and non-wolf related management response. Wolf-related response could be reduced or delayed and non-lethal control supplies and management efforts necessary for the conservation and recovery of wolves could be deemphasized. The CTUIR relies on the technical expertise and equipment of Wildlife Services for current predator control needs and hopes to do so for wolf control actions as well.

Please feel free to contact me if you have any further questions.

Sincerely,

Carl A. Scheeler
Wildlife Program Manager, DNR

Appendix C: OAR 603-019

Permanent Administrative Rule for The Wolf Depredation Compensation and Financial Assistance Grant Program

603-019-0001

Definitions

As used in 603-019-0001 to 603-019-0040, unless the context requires otherwise:

(1) "Livestock" means, ratites, horses, mules, jackasses, cattle, llamas, alpacas, sheep, goats, swine, bison, domesticated fowl and any fur-bearing animal bred and maintained commercially, or otherwise, within pens, cages or hutches.

(2) "Working dog" means any animal of the species *Canis familiaris* used to aid in the herding or guarding of livestock.

(3) "Department" means the State Department of Agriculture.

(4) "Trust Fund" means the Wolf Management Compensation and Proactive Trust Fund

(5) "County Program" means an established county government wolf depredation compensation and financial assistance program meeting all of the requirements established under this rule.

(6) "Attributed to wolf depredation" means a finding by the Oregon Department of Fish and Wildlife (ODF&W) or a designated agent for ODF&W, that wolf depredation was the probable cause of the death or injury.

(7) "Area of known wolf activity" means an area of known wolf activity that is designated as such by the ODF&W.

603-019-0005

Purpose

The purpose of these rules is to provide criteria and procedures for implementation and administration of the Wolf Depredation Compensation and Financial Assistance Grant Program. Grant funds will be awarded to qualified county programs for;

(a) Compensation to persons who suffer death of or injury to livestock or working dogs that is attributed to wolf depredation as well as compensation for certain missing animals that qualify and/or;

(b) Financial assistance to persons who implement livestock management techniques or nonlethal wolf deterrence techniques designed to discourage wolf /livestock interactions and reduce wolf depredations.

(c) Expenses associated with up to 90% of the implementation of a county program as defined in 603-019-0015 (g)

603-019-0010

Eligible Applicants

Eligible applicants are county governments that have established an advisory committee and otherwise met the requirements listed in OAR 603-019-0015 and are prepared to assess applications from persons who are eligible to apply for grant funds from the county.

603-019-0015

Standards to Determine Grant Award Eligibility

(1) The Department will consider applications for funds from the Trust Fund from county programs that meet the stated purpose of this rule and contain the elements specified in this section.

(2) Grants are subject to available funding in the Trust Fund. A county may qualify for a grant if a county has a county program that meets the following requirements:

(a) A county must establish a county advisory committee to oversee the county program.

(A) Advisory committee membership shall include:

(i) One county commissioner;

(ii) Two members who own or manage livestock; and

(iii) Two members who support wolf conservation or coexistence with wolves.

(B) Once established, the county advisory committee shall agree upon two county business representatives to serve as additional county advisory committee members.

(b) A county must establish a procedure by which livestock owners and managers experiencing above expected death or injury to livestock or working dogs attributed to wolf depredation shall be given priority by the committee for grant moneys received under the County Program.

(c) A county program must require that an advisory committee must establish compensation rates for death or injury to livestock or working dogs attributable to wolf depredation, that are based on fair market value. Compensation for death or injury of livestock or working dogs takes priority over compensation for missing livestock.

(d) A county program must require that within an area of known wolf activity, a county advisory committee must establish compensation rates for missing livestock attributable to wolf depredation. To qualify for compensation for missing livestock producers must document that other possible causes for their animals to be missing, not including wolf depredation, have been eliminated for the number of missing animals they are claiming. Compensation for missing livestock may be at a lower value than compensation for death or injury as allowed in 603-019-0015 (2)(c) at the discretion of the county advisory committee. Losses confirmed as due to wolf depredation shall be given priority over

losses for missing livestock.

(e) A county program must establish eligibility requirements for compensation that ensures, contingent upon available funds, that:

(A) In order to consider awarding any compensation for death or injury to livestock or working dogs, or missing livestock and working dogs attributed to wolf depredation, the county advisory committee must determine that the person did not unreasonably or purposefully create circumstances that attract wolves or encourage conflict between wolves and livestock or working dogs, excluding accepted normal husbandry and grazing activities.

(B) Compensation for documented death or injury to livestock or working dogs that is attributed to wolf depredation that occurred outside an area of known wolf activity shall be compensated regardless of the preexistence of wolf deterrence techniques.

(C) Compensation for documented death or injury to livestock or working dogs that is attributed to wolf depredation that occurred within an area of known wolf activity shall be compensated if owners have demonstrated implementation of best management practices to deter wolves including reasonable non-lethal methods when practicable.

(D) Compensation for missing livestock or working dogs that is attributed to wolf depredation that occurred within an area of known wolf activity may be granted if owners document that other possible causes for their animals to be missing, not including wolf depredation, have been eliminated for the number of missing animals they are claiming.

(f) A county program must distribute grant program funds, to the extent possible, in an equal and balanced manner between payments to compensate for death or injury to livestock or working dogs attributed to wolf depredation and payments to implement livestock management techniques or nonlethal wolf deterrence techniques designed to discourage wolf depredation of livestock, with a minimum of 30% of a county's grant funds, as distributed by the Department to that county, distributed for livestock management techniques or nonlethal wolf deterrence techniques designed to discourage wolf depredation of livestock.

(g) The county must contribute an amount of money equal to 10% of the allowable expenditures necessary to implement the county program during the calendar year. Allowable expenditures are:

(i) Establishing a county advisory committee.

(ii) Establishing a procedure by which persons applying for compensation will provide sufficient evidence of actual livestock and/or working dog losses attributed to wolf depredation.

(iii) Establishing a procedure by which persons applying for financial assistance for the cost of livestock management or nonlethal deterrence provides an estimate of the potential cost.

(iv) Establishing compensation rates for livestock or working dog losses from death, injury or missing all of which are attributed to wolf depredation.

(v) Distributing grant program funds.

(vi) Preparation of an annual report to the Department.

603-019-0020

Distribution of Grant Funds by County Advisory Committees

Grant funds received by a county program from the Department may only be used to reimburse the following expenses or losses:

(1) Compensation for documented death or injury to livestock and working dogs determined as attributed to wolf depredation.

(2) Compensation for missing livestock or working dogs only when the animals in question became missing from within an area of known wolf activity and the livestock owner or manager has satisfied the requirements described in 603-019-0015.

(3) Compensation for death, injury or missing livestock or working dogs within a known area of wolf activity requires the livestock owner or manager to demonstrate to the county advisory committee, that they implemented best management practices to deter wolves, including reasonable use of nonlethal methods when practicable.

(4) Compensation for the cost of livestock management techniques or nonlethal wolf deterrence techniques designed to limit wolf/livestock interactions and discourage wolf depredation of livestock. These funds must amount to at least 30% of the total grant funds distributed by the Department to a county program.

(5) A county may submit up to 90% of expenses incurred by implementation of a county program meeting the requirements specified in OAR 603-019-0015. The county must make a money contribution equaling at least 10% of the expenses for one calendar year for implementation of a county program.

603-019- 0025

Application Procedures

(1) Grant application forms will be made available and distributed by the Department.

(2) Each county shall submit its proposal for funding on the Department's application form, including attachments as necessary.

(3) Applications for grant funds may be submitted to the Department by February 15th of each year. Late submissions may be accepted in the discretion of the Department as is consistent with law.

(4) Grant applications may be made for:

- (a) Funds to compensate for the loss or injury of livestock or working dogs due to wolf depredation;
- (b) Funds to compensate for missing livestock consistent with OAR 603-019-0015;
- (c) Funds for financial assistance for the implementation of nonlethal management techniques designed to discourage wolf depredation of livestock; and
- (d) For up to 90% of the expense for one calendar year of implementing a county program as described in 603-019-0015.

603-019- 0030

Application Review

- (1) The Department may process grant applications to evaluate the reasonableness of the amount of money requested. The Department may use formulas it may derive for allocating available funds equitably among grant requests.
- (2) The Department will review each application for completeness, accuracy, and consistency with these rules. Incomplete applications may be returned for correction or completion. Applications not meeting the standards established in these rules may be denied. If an application is denied, the Department may identify standards necessary for approval of a future grant application.

603-019- 0035

Grant Awards

- (1) After reviewing a county application, the Department will make one of the following decisions for each county's grant request.
 - (a) Approval of grant award for the full amount requested;
 - (b) Approval of grant award of partial amount requested. In this instance, the Department may elect to fund a portion of grant request;
 - (c) Deferral of request for further consideration based upon submission of additional information;
 - (d) Denial of request. Applicants whose proposals are denied may reapply the following year.
- (2) Any funds not allocated within the current calendar year by the Department shall be carried forward in the Trust Fund into the following year.

603-019- 0040

Grant Administration

- (1) The Department and the recipient county will enter a grant agreement that includes but is not limited to the following:
- (a) A description of the county program and a description of the work elements for which grant funding is received. ;
 - (b) A payment schedule as determined by the Department.
 - (c) A condition requiring the participating county to prepare an annual report that specifies the actions taken, compensation paid and financial assistance provided under the grant. This report will be due to the Department on June 1st of each year beginning in the year 2012.
 - (d) A condition allowing the Department to withhold the relevant payment pending resolution of the identified deficiencies in grant administration or in the event the Department finds a report unsatisfactory.
 - (e) A condition allowing, termination of the grant agreement if a county is consistently unable to meet performance standards as identified in the grant or as consistent with law.
- (2) A condition requiring each recipient to submit a final report to the Department within six months of the official close of the grant period. The final report must detail the actions taken consistent with the grant agreement, compensation paid and financial assistance provided under the grant.
- (3) A condition requiring counties to maintain any and all records necessary to allow the Department to monitor administration of the grant.
- (4) A condition specifying that grantees and the Department may amend timelines specified in the grant agreement provided such amendments are in writing and are mutually agreed to.
- (5) A condition specifying that unexpended grant funds not used by the grantee must be returned to the Department for reallocation to the Trust Fund.
- (6) A condition specifying that as part of its duty to monitor the county programs, the Department may audit and review county program grant application documents, subsidiary record documentation, and source documents, including but not limited to, invoices, cost computations by the county or by a County Advisory committee and all other instruments and documents upon which expenditure of grant funding was determined and which the Department ascertains is necessary to determine compliance with a county program.
- (7) A condition specifying that any grant moneys disbursed to a county that remain unobligated or unexpended as of the termination date of a grant agreement must be returned to the Department.

Appendix D: USFWS Consultation



United States Department of the Interior



FISH AND WILDLIFE SERVICE

La Grande Fish and Wildlife Office
3502 Highway 30

La Grande, Oregon 97850

Phone: (541) 962-8584 FAX: (541) 962-8581

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MAR 08 2012

Reply To: 8330.10060 (12)
File Name: Wildlife-Services-Wolf Damage Management-LOC.doc
TS Number: 12-394
TAILS: 01EOFW00-2012-I-0060
Doc Type: Final

FEB 29 2012

Dave Williams, State Director
Oregon State Office
USDA-APHIS Wildlife Services
6135 NE 80th Ave, Suite A-8
Portland, OR 97218

Subject: Informal consultation on Wildlife Services' proposed wolf damage management program in eastern Oregon (*FWS reference* 01EOFW00-2012-I-0060)

Dear Mr. Williams:

This document transmits the Fish and Wildlife Service's (Service) concurrence that the U.S. Department of Agriculture - Animal and Plant Health Inspection Service - Wildlife Services' (Wildlife Services) proposed wolf damage management program for the portion of eastern Oregon where gray wolves are currently delisted, *may affect, but is not likely to adversely affect* the federally threatened Canada lynx (*Felis canadensis*). This document was prepared in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Wildlife Service's request for consultation and accompanying Biological Assessment (Assessment), dated January 24, 2012, were received on January 27, 2012.

Based on the information provided in the Assessment, Wildlife Services has determined, and the Service concurs, that the proposed wolf damage management program activities may affect, but are not likely to adversely affect Canada lynx. A description of the proposed action and our rationale for concurrence with the effects determination is provided below.

Description of the Proposed Action

Wildlife Service's proposed action is to assist the Oregon Department of Fish and Wildlife (ODFW) with management of confirmed and chronic wolf depredation on livestock and to a lesser extent, on working dogs (e.g., livestock herding and guarding dogs) in the eastern portion of the State. Although less likely, the potential for wolves to threaten human safety will also be addressed, if necessary. ODFW's 2010 Wolf Conservation and Management Plan (http://www.dfw.state.or.us/Wolves/management_plan.asp) details depredation criteria and actions that would be taken to target individual problem wolves for removal. Only the State of

Oregon can issue an order to remove wolves. Most program actions, such as wolf damage identification, non-lethal education and technical assistance, and monitoring, would be *inconsequential to lynx*. However, *lethal and nonlethal methods used to capture wolves (either for removal or for the purposes of fitting with tracking collars)*, may also potentially affect Canada lynx if those tools are used in occupied lynx habitat. These tools include aerial and ground shooting, foot and neck snares and foot-hold traps.

The proposed program would occur within a boundary in eastern Oregon where gray wolves (*Canis lupus*) which are part of the Northern Rocky Mountain Distinct Population Segment (NRM DPS) are no longer listed under the federal ESA and where they are managed by the State of Oregon under ORS 496.171-192. This geographic boundary is described in the Service's final rule (USFWS 2009a), which established the NRM DPS of gray wolves, and is defined as *that portion of Eastern Oregon, east of the centerline of Highway 395 and Highway 78 north of Burns Junction and that portion of Oregon east of the centerline of Highway 95 south of Burns Junction*.

APHIS-WS reviews planned work activities with land management agencies in its annual work planning process. Therefore, any work that may occur in potential lynx habitat will be identified. APHIS-WS activities only overlap with identified lynx habitat on portions of these forests where cattle grazing and chronic, confirmed, wolf conflicts may occur.

A program review of effects on Canada lynx (APHIS-WS Management Information System in USDA 2000) showed that only one lynx had been captured since 1971 from all APHIS-WS program activities on all land classes in the western United States. The lynx was captured in a foot-hold trap outside of lynx habitat in Idaho in 1991. That animal was released alive. Oregon records since that time show no lynx captures (APHIS-WS Management Information System).

Wolf removal actions by Wildlife Services are expected to occur at a low level. Wolf damage management activities in eastern Oregon will occur in very limited and isolated geographic locations. Given the expertise of Wildlife Services, the proven skill of its staff in capturing target species, and the selectivity of the methods, the potential risk to Canada lynx is very low. Aerial and ground shooting is virtually 100 percent selective for target species because the target animal or animals are observed and verified as target species by trained and experienced personnel prior to shooting. Traps and snares may potentially capture lynx. However, the potential to capture smaller animals such as lynx in foot-hold traps or foot snares would be reduced by using pan-tension devices set at a high enough triggering tension to prevent it from triggering the trap or foot snare. Canada lynx are smaller than wolves and therefore not likely to enter neck snares set for wolves.

Given the extremely low incidence of confirmed lynx observations in Oregon, the Wildlife Services' history of not capturing a lynx, and the selectivity of the methods, Wildlife Services considers it extremely unlikely that its wolf damage management program in eastern Oregon would result in the capture of a lynx. However, Wildlife Services will use the following procedures to minimize the potential to capture Canada lynx.

Wildlife Services specialists that may work in potential lynx habitat are familiar with lynx identification and sign, and with Service recommendations for avoidance of incidental capture of

lynx (USFWS 2003a). If lynx sign is observed by Wildlife Services employees, they will adhere to the following measures to reduce the potential of capturing a lynx:

1. The Service's local field office and the appropriate land management agency shall be notified as soon as possible of the finding of any dead or injured Canada lynx. Cause of death, injury, or illness, if known, also shall be conveyed to those offices.
2. Wildlife Services would only utilize foot-hold traps and foot snares set for wolves that are equipped with pan-tension device sufficient to reduce the likelihood of capturing Canada lynx up to 35 pounds (e.g., 8 to 10 pound trip weight) in potential lynx habitat.
3. Lynx often avoid traps placed in open fields; therefore, to the extent that this is practical and effective, traps will be set in open fields.
4. Wildlife Services is cautious with bait selection for targeting wolves to avoid attracting lynx. For example, the use of tainted rather than fresh meat baits can be used under some circumstances for wolves to avoid attracting lynx.
5. In the unlikely event that neck snares would be used to capture wolves, there would be little risk to lynx since the cable loop size is large enough (greater than 12 inches) to preclude capture of lynx.

Canada Lynx

The Canada lynx was listed as a threatened species in the contiguous United States in March of 2000 (USFWS 2000). A revised designation of critical habitat was published in February 2009 (USFWS 2009b). No critical habitat for Canada lynx was designated in Oregon.

The lynx is a medium-sized cat with long legs; large, well-furred paws; long tufts on the ears; and a short, black-tipped tail (McCord and Cardoza 1982). The winter pelage of the lynx is dense and has a grizzled appearance with grayish-brown mixed with buff or pale brown fur on the back, and grayish-white or buff-white fur on the belly, legs and feet. Summer pelage of the lynx is more reddish to gray-brown (Koehler and Aubry 1994). Adult males average 22 pounds (lbs) in weight and females average 19 lbs (Quinn and Parker 1987). The lynx's long legs and large feet make it highly adapted for hunting in deep snow. Snowshoe hares (*Lepus americanus*) are the primary prey of lynx, comprising 35-97 percent of the diet (Koehler and Aubry 1994).

Lynx populations in the contiguous United States occur at the southern periphery of the species' range, whose core is located in the northern boreal forest of central Canada (McCord and Cardoza 1982). In Canada and Alaska, lynx inhabit the boreal forest ecosystem known as the taiga (Agee 2000). In the western United States, the range of lynx extends south from the classic boreal forest zone into subalpine conifer forests (Agee 2000). Within these forest types, lynx are most likely to persist in areas that receive deep snow, to which the lynx is highly adapted (Ruggiero *et al.* 2000).

Forests with boreal features extend into the northwestern United States at high elevations in the Cascade and Rocky Mountain Ranges. However, these forest patches are small relative to the extensive northern boreal forest of Canada. Most southern boreal forest habitat patches in

Oregon and southern Washington are considered too small to consistently support the prey base of snowshoe hares necessary to support resident populations of lynx (Ruggiero *et al.* 2000).

In the northwestern United States, museum specimens document historic occurrences of lynx in the higher mountains of Washington, Oregon, Montana, and Idaho (McKelvey *et al.* 2000). However, the historic distribution of resident, breeding populations is unknown. Today, resident lynx populations are known to exist in high-elevation conifer forests of western Montana and north-central and northeastern Washington (Ruggiero *et al.* 2000). Resident lynx populations probably also exist in contiguous habitats in northern Idaho.

In Oregon, there is no evidence that a resident lynx population ever occurred in Oregon (USFWS 2003b). Unconfirmed sighting reports of lynx have been received, but in the last 50 years only three specimens have been documented in the State, and all were collected in areas not considered to be lynx habitat: one in bunchgrass-rimrock habitat in Wallowa County in 1964, one in a suburban residential area near Corvallis in Benton County in 1974 (Verts and Carraway 1998), and a third in Harney County in southeastern Oregon in 1993 (McKelvey *et al.* 2000). Given the naturally insular habitat in Oregon and the great distance from core populations in Canada, it is possible that lynx have always occurred intermittently in this State as occasional dispersers from the north that have been unable to establish persistent populations. At the present time, there is no known resident population in Oregon, nor is one expected to develop in the foreseeable future given the distance (over 150 miles) from the nearest existing lynx populations in northern Washington/western Montana and the limited extent of suitable habitat.

Conclusion

Given what we know about the status of lynx in Oregon and surrounding areas, Wildlife Services' wolf damage management activities in this portion of eastern Oregon are extremely unlikely to affect lynx. The best available information indicates there is no resident lynx population in this State. Individual lynx do occasionally disperse into Oregon; however, given their extreme rarity it is highly unlikely that a dispersing lynx will encounter a snare or trap set for wolves, especially given that wolf control work will be very limited in the high-elevation habitats preferred by lynx. In addition, the previously identified precautionary measures being taken by Wildlife Services should further reduce the possibility of lynx being affected by the proposed activities.

Based on the above information, the Service concurs with Wildlife Services' determination that the proposed wolf damage management program activities, within the Oregon portion of the delisted gray wolf NRM DPS, may affect, but are not likely to adversely affect, Canada lynx.

This concludes informal consultation pursuant to section 7(a)(2) and 7(c) of the ESA. If new information reveals effects of the action may affect listed species in a manner or to an extent not considered in this consultation; the action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this consultation; and/or, a new species is listed or critical habitat is designated that may be affected by this action, Wildlife Services would need to reinitiate consultation.

Mr. Dave Williams

5

We appreciate your efforts to minimize effects to listed species. Wildlife Services is encouraged to continue to explore opportunities to promote the conservation of listed species. If you have questions regarding this concurrence, please contact me at 541-962-8509.

Sincerely,



Gary S. Miller
Field Supervisor

cc:

Bruce Eddy, Oregon Department of Fish and Wildlife, La Grande, Oregon
Rollie White, Oregon Fish and Wildlife Office, Portland, Oregon

LITERATURE CITED

- Agee, J.K. 2000. Disturbance ecology of North American boreal forests and associated northern mixed/subalpine forests. In Ruggiero, L.F., K.B. Aubry, S.W. Buskirk, et al., tech. eds. The scientific basis for lynx conservation in the contiguous United States. Gen. Tech. Rpt. RMRS-GTR-30. Ogden, UT: U.S. Dept. Agriculture, Forest Service, Rocky Mountain Research Station.
- Koehler, G.M., and K.B. Aubry. 1994. Pages 74-98 in L.F. Ruggiero et al., tech. eds. The scientific basis for conserving forest carnivores: American marten, fisher, lynx, and wolverine in the western United States. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. General Technical Report RM-254. 184 pp.
- McCord, C.M., and J.E. Cardoza. 1982. Bobcat (*Felis rufus*) and lynx (*F. lynx*). Pages 728-766 in J.A. Chapman and G.A. Feldhamer, eds. Wild mammals of North America. Johns Hopkins University Press, Baltimore, Maryland.
- McKelvey, K.S., K.B. Aubry, and Y.K. Ortega. 2000. History and distribution of lynx in the contiguous United States. Chapter 8 in L.F. Ruggiero, K.B. Aubry, S.W. Buskirk, et al., tech. eds. Ecology and Conservation of Lynx in the United States. General Technical Report RMRS-GTR-30WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.
- ODFW (Oregon Department of Fish and Wildlife). 2010. Oregon Wolf Conservation and Management Plan – December 2005; updated 2010. (http://www.dfw.state.or.us/Wolves/docs/Oregon_Wolf_Conservation_and_Management_Plan_2010.pdf). Oregon Department of Fish and Wildlife, Salem, OR. 105 pp.
- Quinn, N.W.S., and G. Parker. 1987. Lynx. Pages 683-694 in M. Novak, J. Baker, M. Obbard, eds. Wild furbearer management and conservation in North America. Ontario Ministry of Natural Resources, Toronto.
- Ruggiero, L.F., K.B. Aubrey, S.W. Buskirk, et al. 2000. Tech. eds., Ecology and Conservation of Lynx in the United States. General Technical Report RMRS-GTR-30WWW. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. As Published by University Press of Colorado, Boulder. 480 pp.
- USFWS (U.S. Fish and Wildlife Service). 2009a. Endangered and Threatened Wildlife and Plants; Final Rule to Identify the Northern Rocky Mountain Population of Gray Wolf as a Distinct Population Segment and to Revise the List of Endangered and Threatened Wildlife. Federal Register 74(62): 15123-15188.
- USFWS (U.S. Fish and Wildlife Service). 2009b. Final Rule: Endangered and Threatened Wildlife and Plants; Revised Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx. Federal Register 74(36): 8616-8702.

USFWS (U.S. Fish and Wildlife Service). 2003a. How To Avoid Incidental Take of Lynx While Trapping or Hunting Bobcats and Other Furbearers. (<http://www.fws.gov/midwest/endangered/mammals/lynx/pdf/lynx-take-bro.pdf>). September 2003. 20 pp.

USFWS (U.S. Fish and Wildlife Service). 2003b. Final Rule: Endangered and Threatened Wildlife and Plants; Notice of Remanded Determination of Status for the Contiguous United States Distinct Population Segment of the Canada Lynx; Clarification of Findings. Federal Register 68(128): 40076-40101.

USFWS (U.S. Fish and Wildlife Service). 2000. Determination of threatened status for the contiguous U. S. Distinct population segment of the Canada lynx and related rule. Federal Register 65(58): 16052-16086.

Verts, B.J. and L.N. Carraway. 1998. Land Mammals of Oregon. Univ. of California Press.



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Reply To: 8330.10181 (13)
File Name: 2013_WS_Wolf-Damage-Mgmt_LOC.doc
TS Number: 13-814
TAILS: 01EOFW00-2013-I-0181
Doc Type: Final

SEP - 9 2013

Dave Williams, State Director
Oregon State Office
USDA-APHIS Wildlife Services
6135 NE 80th Avenue
Portland, OR 97218

Subject: Informal consultation on APHIS-WS's proposed wolf damage management program in Oregon (*FWS reference* 01EOFW00-2013-I-0181)

Dear Mr. Williams:

This document transmits the Fish and Wildlife Service's (Service) concurrence that the U.S. Department of Agriculture - Animal and Plant Health Inspection Service - Wildlife Services' (APHIS-WS) proposed wolf damage management program, that is limited to areas in Oregon where wolves are not federally listed, *may affect, but is not likely to adversely affect* the gray wolf (*Canis lupus*) in areas where it is federally listed under the Endangered Species Act (ESA). This document was prepared in accordance with section 7 of the ESA of 1973, as amended (16 U.S.C. 1531 *et seq.*). APHIS-WS's request for consultation, dated July 31, 2013, was received on August 2, 2013.

APHIS-WS has determined, and the Service concurs, that the proposed wolf damage management activities may affect, but are not likely to adversely affect federally listed gray wolves. A description of the proposed action and our rationale for concurrence with the effects determination is provided below.

There has been a prior consultation on APHIS-WS's proposed wolf damage management program in Oregon. On February 29, 2012, the Service's La Grande Field Office issued an informal consultation concurring with APHIS-WS's determination that their proposed wolf damage management program in eastern Oregon was not likely to adversely affect Canada lynx (*Felis canadensis*) (FWS Reference: 01EOFW00-2012-I-0060).

Description of the Proposed Action

The action under consideration in this consultation is APHIS-WS's involvement in lethal removal of problem gray wolves in areas of Oregon where wolves are not federally listed as

threatened or endangered, and what effect that may have on wolves in other parts of the State that are protected under the federal ESA. APHIS-WS will be assisting the Oregon Department of Fish and Wildlife (ODFW) with management of confirmed and chronic wolf depredation on livestock and working dogs (e.g., livestock herding and guarding dogs).

The proposed action will only occur where gray wolves are not protected under the federal ESA. Currently, wolves are federally listed as endangered in the western two-thirds of Oregon. The boundary line follows Highway 395 south from the Washington border to Burns, Oregon, continues southeast along Highway 78 to Burns Junction, and from there continues south along Highway 95 to the Nevada border. APHIS-WS's involvement in lethal control of wolves under the direction of ODFW will only occur east of this boundary line, unless and until federal protections for wolves are lifted in other parts of the State.

Gray Wolf

Gray wolves are the largest wild members of the Canidae, or dog family, with adult males typically ranging from 43 to 45 kilograms (kg) (95 to 100 pounds (lbs)) and adult females, ranging from 36 to 39 kg (80 to 85 lbs) (Mech 1970, p. 11). Wolves are typically 1.5 to 1.8 meters (5 to 6 feet) in length from nose to tail tip. Most wolves stand 66 to 81 cm (2 to 2.5 feet) tall at the shoulder. Tracks are normally 11 to 14 cm (4 to 5.5 inches) long (USFWS 1987).

Gray wolves have long legs that are well adapted to running, allowing them to move fast and travel far in search of food, and large skulls and jaws, well suited to catching and feeding on large mammals (Mech 1970, pp. 13-14). Wolves also have keen senses of smell, hearing, and vision, which they use to detect prey and one another. Pelt color varies in wolves more than in almost any other species, from white, to grizzled gray, to coal black (Mech 1970, pp. 15-16).

Wolves die from a variety of natural causes, including starvation, injuries while hunting prey, disease, and intraspecific conflicts (Fuller *et al.* 2003, p. 176). Human-caused sources of mortality include control actions in response to livestock depredations, harvest, illegal killing, and vehicle collisions. Because of their high reproductive potential, wolf populations can withstand a high rate of mortality. Studies of wolf mortality rates in Alaska and Minnesota suggest that human take of wolves can reach 35 percent annually without permanently reducing a wolf population (Fuller 1989, Fuller *et al.* 2003, pp. 184-185).

At the present time, gray wolves are federally listed as endangered in roughly the western two-thirds of Oregon and Washington, but not in the eastern third of those States or in neighboring States further east (i.e., Idaho and Montana). The legal status of an individual wolf is based on where it is physically located. Thus, a gray wolf in Oregon is federally listed as endangered if it occurs west of the Highway 395/78/95 boundary line described above. Wolves occurring east of this boundary line are classified as being part of the Northern Rocky Mountain Distinct Population Segment (NRM DPS), and that wolf population has far exceeded its designated recovery objectives and was removed from the federal endangered species list on May 5, 2011 (76 FR 25590). On June 13, 2013, the Service published a proposed rule that, if finalized, would remove federal ESA protections for wolves throughout Oregon (78 FR 35664). A final decision on that proposal is expected in about a year.

Gray wolves are increasing in eastern Oregon and the population is gradually expanding west. Six established wolf packs were confirmed at the end of 2012, all to the east of the Highway 395/78/95 boundary line, but the westernmost pack was within 40 miles of the boundary (ODFW 2013). A seventh pack was confirmed in eastern Oregon in 2013 in the federally-delisted area. Several lone wolves have been documented well west of the boundary line, including two that were radio-collared dispersers from eastern Oregon packs. In the next three to five years, wolves are expected to successfully recolonize the various mountain ranges in central Oregon and possibly the Oregon Cascades.

Newly established wolf populations in ungulate-rich environments are capable of growing very rapidly. Following wolf reintroduction to central Idaho and Yellowstone National Park in 1995/96, the average annual growth rate of the NRM population was about 25 percent a year, resulting in a 15-fold population increase in the first 15 years (Creel and Rotella 2010, Gude *et al.* 2012). This population growth during the initial 15 years occurred even as more than 1,100 wolves were removed over that period in response to livestock depredation problems (USFWS *et al.* 2012).

In 2012, the documented wolf population in eastern Oregon increased by 60 percent from what it was at the end of 2011 (from 29 to 46 individuals), and over the same period the official wolf population estimate for Washington grew by 89 percent (ODFW 2013, WDFW 2013).

Effects of the Proposed Action

No federally protected wolves will be directly harmed by the proposed action, because the proposed lethal control of wolves will only occur in areas where wolves are not federally protected. The question then is whether the action will indirectly affect the federally protected wolf population by possibly slowing the rate of influx of wolves from the established wolf population in the eastern delisted area to the just developing population in the western federally listed area.

We expect that the number of wolves removed for chronic livestock depredation in the delisted area will be small. The gray wolf is currently State-listed as endangered in Oregon and ODFW authorizes lethal control only in limited circumstances when there have been multiple confirmed depredations and it has been well documented that non-lethal measures have been implemented and given a chance to work beforehand.

The stated objective of the Oregon Wolf Conservation and Management Plan (ODFW 2010) is to re-establish a viable wolf population in appropriate areas throughout the State. Therefore, ODFW's policies regarding lethal control for chronic livestock depredation are designed to facilitate the continued expansion of wolves further west.

We anticipate that the number of wolves removed in ODFW-authorized control actions will never exceed 15 percent, and in most years will be less than 10 percent, of the Statewide wolf population in a given year. That removal rate is expected to have a negligible effect on the establishment and growth of a wolf population in the federally protected part of Oregon. While it is conceivable that control actions will eliminate an animal or two that might ultimately have migrated west of the Highway 395/78/95 boundary line, the rapid growth of the wolf population in this region will generate a steadily increasing number of potential westward migrants that

greatly exceeds the handful of animals removed for livestock depredation. Also, once packs become established in the federally listed area, which is expected in the next year or two, they will contribute offspring that will further support the expansion of this population to the west.

For these reasons, we do not anticipate that the wolf population in eastern Oregon will decline as a result of the lethal control actions that APHIS-WS will be involved with. In fact, given the observed population growth rates described above, we expect the wolf population to grow substantially in the coming years even with the removal of some wolves. As was mentioned earlier, limited lethal control of problem individuals throughout the early 2000s did not appreciably slow the rapid growth of the NRM wolf population (USFWS *et al.* 2012).

Conclusion

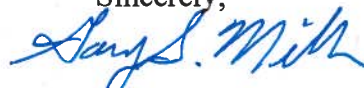
After reviewing the available information summarized above, the Service concurs with APHIS-WS's determination that the proposed wolf damage management activities, may affect, but are not likely to adversely affect, federally protected gray wolves. This conclusion is based on the following considerations:

1. No federally protected wolves will be harmed by the proposed action, because the action will not occur in areas where there are federally protected wolves.
2. Given ODFW's wolf management objectives and policies, we expect only a small number of wolves will be removed annually to address livestock depredation problems in the delisted area. Given what is known about the current growth rate of the wolf population in Oregon and the substantial increase in wolf numbers observed during the initial 15 years after wolf reintroduction in the northern Rocky Mountains under similar management circumstances, we expect the eastern Oregon wolf population to continue to grow rapidly, easily overcoming this small loss of individuals. Given that population growth will be what drives westward expansion, the proposed action will have a negligible and insignificant effect on the growth of the wolf population in the federally listed western two-thirds of Oregon.

This concludes informal consultation pursuant to section 7(a)(2) and 7(c) of the ESA. If new information reveals effects of the action may affect listed species in a manner or to an extent not considered in this consultation; the action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered in this consultation; and/or, a new species is listed or critical habitat is designated that may be affected by this action, APHIS-WS would need to reinitiate consultation.

We appreciate your efforts to minimize effects to listed species. APHIS-WS is encouraged to continue to explore opportunities to promote the conservation of listed species. If you have questions regarding this consultation, please contact John Stephenson at 541-312-6429 or me at 541-962-8584.

Sincerely,



Gary S. Miller
Field Supervisor

cc: Oregon Fish and Wildlife Office, Portland, Oregon (electronic copy)
cc: Bruce Eddy, Oregon Department of Fish and Wildlife, La Grande, Oregon

LITERATURE CITED

- Creel, S. and J.J. Rotella. 2010. Meta-analysis of relationships between human offtake, total mortality and population dynamics of gray wolves (*Canis lupus*). PLoS One 5(9):e12918.
- Fuller, T.K. 1989. Population dynamics of wolves in north-central Minnesota. Wildlife Monographs, no. 105. The Wildlife Society, Bethesda, MD. 41 pp.
- Fuller, T.K., L.D. Mech, and J.F. Cochrane. 2003. Wolf population dynamics. Pages 161-191 in L.D. Mech and L. Boitani (eds.). Wolves: behavior, ecology, and conservation. University of Chicago Press, Chicago, IL.
- Gude, J.A., M.S. Mitchell, R.E. Russell, C.A. Sime, E.E. Bangs, L.D. Mech, R.R. Ream. 2012. Wolf population dynamics in the U.S. northern Rocky Mountains are affected by recruitment and human-caused mortality. Journal of Wildlife Management 76:108-118.
- Mech, L.D. 1970. The Wolf: The Ecology and Behavior of an Endangered Species. Thirteenth Printing (2007). University of Minnesota Press, Minneapolis, MN.
- Mech, L. D. and L. Boitani. 2003. Wolf social ecology. Pages 1-34 in L. D. Mech and L. Boitani (eds.). Wolves: behavior, ecology, and conservation. University of Chicago Press, Chicago, IL.
- ODFW (Oregon Department of Fish and Wildlife). 2004. ODFW Press Release, February 6, 2004: Commission adopts 76-hour trap check period for restraining predatory animals. <http://listsmart.osl.state.or.us/pipermail/odfw-news/2004-February/000213.html>.
- ODFW (Oregon Department of Fish and Wildlife). 2010. Oregon Wolf Conservation and Management Plan. 189 pp.
- ODFW (Oregon Department of Fish and Wildlife). 2011. Oregon Wolf Conservation and Management Plan: 2011 Annual Report. Available Online: http://www.dfw.state.or.us/wolves/docs/oregon_wolf_program/2011_Wolf_Conservation_Management_Plan_Annual_Report.pdf
- ODFW (Oregon Department of Fish and Wildlife). 2013. Oregon's wolf count for 2012. Wolf Program Update, dated January 16, 2013. <http://dfw.state.or.us/Wolves/population.asp>.

USFWS (U.S. Fish and Wildlife Service), Nez Perce Tribe, National Park Service, Montana Fish, Wildlife & Parks, Idaho Fish and Game, and USDA Wildlife Services. 2009. Rocky Mountain Wolf Recovery 2008 Interagency Annual Report. C.A. Sime and E. E. Bangs, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601.

USFWS (U.S. Fish and Wildlife Service), Idaho Department of Fish and Game, Montana Fish, Wildlife & Parks, Nez Perce Tribe, National Park Service, Blackfeet Nation, Confederated Salish and Kootenai Tribes, Wind River Tribes, Washington Department of Fish and Wildlife, Oregon Department of Fish and Wildlife, Utah Department of Natural Resources, and USDA Wildlife Services. 2012. Northern Rocky Mountain Wolf Recovery Program 2011 Interagency Annual Report. M.D. Jimenez and S.A. Becker, eds. USFWS, Ecological Services, 585 Shepard Way, Helena, Montana, 59601.

WDFW (Washington Department of Fish and Wildlife). 2013. Wolf packs in Washington: pack statistics (as of February 2013). http://wdfw.wa.gov/conservation/gray_wolf/packs/.



United States
Department of
Agriculture

July 31, 2013

Animal and
Plant Health
Inspection
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Mr. Paul Henson
State Supervisor
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Dear Mr. Henson:

The U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services (APHIS-WS) program requests an amendment of our informal consultation request dated January 24, 2012, and the USFWS letter of concurrence dated February 29, 2012, reply to #8330.I0060(12). This amendment would change our conclusions for the effects of our proposed state-managed wolf damage management program on federally listed gray wolves in Oregon from "no effect" to "not likely to adversely affect."

The proposed program would occur in Oregon where gray wolves (*Canis lupus*) are no longer listed under the federal ESA and where they are managed by the State of Oregon under ORS 496.171-192. The proposed actions are detailed in our above referenced correspondence.

Please let me know if you concur with this finding or if you require additional information. Thank you for your assistance.

Sincerely,

David Williams
State Director
APHIS-WS Oregon Program

cc: Gary Miller
John Stephenson



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Appendix E: Responses to Comments

Summary of Public Comments and Responses On the July 2012 Pre-decision Environmental Assessment Wildlife Services' Gray Wolf Damage Management in Oregon

A. COMMENTS ON THE SCOPE OF ACTION

1.) Some commenters felt the EA should address wolf damage in those areas managed currently by the federal government (currently western 2/3 of OR), should not be limited to areas where wolves are managed by the State of Oregon (i.e. the eastern 1/3 of Oregon), that wolves should not have been delisted (eastern 1/3 of OR) because they have not fully reestablished in their native environment (livestock producers are reacting as they have in the past), and that it should cover all ODFW management phases and all ESA listings in the state.

As stated in the EA under Section 1.3, the locations included in the analysis are any land jurisdiction where wolves are not federally managed, at or near the depredation incident, and is likely to occur on private lands, state land, CTUIR land, or federal lands including USFS or Bureau of Land Management (BLM) lands where livestock are grazed. If wolves are removed from the federal ESA outside the Northern Rocky Mountain Distinct Population Segment (NRM DPS), they would be managed by ODFW under the OWCMP (ODFW 2010a). Thus any actions allowed by the OWCMP (ODFW 2010a), as amended, would apply to wolves throughout the state. Until that time, wolves outside of the DPS are federally listed and the US Fish and Wildlife Service is the lead agency for any management actions on federally protected gray wolves (currently those that may occur in the western 2/3 of the state) and has sole jurisdiction over the decision to remove wolves from the protections of the federal Endangered Species Act. WS does not have jurisdictional authority to conduct damage management actions on federally endangered wolves without direction and oversight from the USFWS. The USFWS has regulatory responsibility for the management of endangered wolves and for any associated NEPA compliance; WS would not conduct any management actions on federally endangered wolves unless additional environmental review (NEPA) is completed. ODFW's management phase III was not included in our proposed action analysis because we believe wolf conservation and management are in early enough stages that by the time wolf management reaches Phase III, additional information may be available which we may wish to consider in a new or revised EA prior to making a fully informed decision. See the EA section 1.5.

2.) A commenter expressed that WS should delay NEPA until after DPS review and that it was a waste of funds to conduct the NEPA analysis prior to the DPS review.

The actions analyzed in this EA address gray wolf damage management of state managed wolves only. If the US Fish and Wildlife Service issues a ruling that gray wolves in the western two

thirds of Oregon no longer be listed under the federal Endangered Species Act, then those wolves would be managed by the State of Oregon under the Oregon Wolf Conservation and Management Plan (ODFW 2010a, or as amended) and OAR 635-110. The EA accounts for this potential contingency.

B. COMMENTS ON THE PURPOSE AND NEED

3.) In reference to ODFW's letter to WS (EA Appendix B), regarding the impacts to their ability to manage conflicts if WS did not participate, two commenters felt that there was a false claim of ODFW needing to divert resources from other management or conservations needs should WS not help implement the OWCMP. They noted that ODFW must implement OWCMP and has been doing so without WS.

We have no reason to believe the statement from ODFW (Appendix B) is not accurate. The commenters are correct that ODFW has been implementing the OWCMP with limited assistance from WS to date.

4.) The EA does not contain a valid purpose and need. Why should WS help ODFW; the plan is being implemented without WS help.

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program is authorized by Congress to conduct wildlife damage management, as requested, to protect American agricultural, industrial and natural resources, property and human health and safety from damage caused by wildlife (Act of March 2, 1931 as amended 46 Stat. 1486; 7 USC 426-426c). WS is a cooperatively funded, service-oriented program that assists requesting public and private entities and government agencies. ODFW, ODA, Counties, and individuals have requested WS assistance with predation management by wildlife and specifically the reduction of gray wolf conflicts and damage in Oregon. WS has been actively assisting ODFW with implementation of the OWCMP with nonlethal and lethal assistance prior to July 16, 2010. Since July 16, 2010, WS has continued to provide valuable assistance to our cooperators in helping to implement portions of the OWCMP by assisting with wolf depredation investigations, implementing nonlethal methods and providing recommendations and advice sharing to requesting individuals. Section 1.6 of the EA states that one of the decisions to be made was whether to assist ODFW and Tribes with all aspects of their management plans.

5.) How would WS help the agencies be more efficient and effective and how would helping ODFW with lethal wolf damage management enable ODFW to better conserve wolves?

These issues are discussed in the EA under Sections 4.3.1 (cumulative effects on gray wolves) and 4.3.4 (effectiveness). ODFW has requested that WS assist with wolf/livestock conflict management based on WS' expertise and legal authorities with wildlife damage management. ODFW has obligations to conserve and manage wolves, and also to manage wolf conflicts. ODFW has stated that it will be able to focus more of its efforts on the conservation and

management of wolves (e.g. emphasizing education, research and monitoring), if WS assisted with integrated wolf/livestock conflict management. ODFW stated that without WS assistance wolf conservation would be hampered. Another advantage is that WS has agents in the field investigating other wildlife damage conflicts and oftentimes can more quickly respond to wildlife damage calls. ODFW has indicated that as the wolf population expands, it will not have the capacity to respond to all the livestock damage investigation requests and issues (EA Appendix B).

6.) Some commenters felt that WS needs to address why the lethal control of wolves will actually meet the Purpose and Need of reducing overall depredation rates, and they stated that WS needs to conduct an analysis on the impacts this removal has had on depredation rates.

As stated in the EA under Section 1.1, the purpose of the proposal is to respond to ODFW or tribal requests to reduce livestock depredation by gray wolves in Oregon and on sovereign Native American tribal reservation lands, where gray wolves are not managed by the federal government under the federal ESA. Section 1.4 states that any APHIS-WS actions must abide by limitations set forth in OWCMP (ODFW 2010a) and OAR 635-110, and similar guidelines on tribal lands. As such, the purpose is not to reduce overall depredation rates but to assist ODFW or tribes with managing livestock conflicts when requested. See also Comment #52.

7.) WS is an important partner with the State and tribes; we support this draft EA.

Thank you for your comments.

8.) A commenter felt that lethal removal of wolves helps prevent other wolves from learning and preying on livestock, which would reduce the need for additional wolf removals, which helps promote recovery of wolves.

WS agrees that lethal removal in response to a depredation event can and often impacts wolf activity where the depredation occurred and may reduce wolf activity or continued depredation events in the area. Harper et al. 2005 reviewed the correlation in the increasing wolf population in Minnesota with the increase in wolf depredation rates on livestock. The wolf range in Minnesota has expanded from wilderness areas to "...disjunct areas of semi-wilderness and isolated habitats within agricultural land." The authors determined that the increase in wolf depredations on livestock from 1979 through 1998 was attributed to wolves expanding their range into new areas, wolves colonizing new areas already in their existing range, and from wolves learning to prey on livestock more frequently. The authors also suggested that based on the trends observed in Minnesota, that other areas where wolves are expanding may experience increased livestock depredations "At a greater rate than would be predicted by range expansion alone." Additionally, the authors suggested that due to some wolves learning to prey on livestock more often, that all members of the depredating pack should be removed.

9.) Commenters questioned how lethal removal of wolves would help ensure conservation of non-depredating wolves.

We discussed this issue in the EA under Sections 1.4, 2.2, 4.1.1 and 4.3. The Oregon Wolf Conservation and Management Plan (ODFW 2010a) states that providing redress to Oregon citizens negatively affected by the wolf is essential to conservation. Human tolerance has been and remains the primary limiting factor for wolf survival and nonlethal and lethal control activities actually may promote the long-term survival of the wolf by enhancing tolerance. One of the best ways to promote wolf recovery is to encourage education about wolf management issues so that a significant portion of the public support wolf recovery while tolerating some level of control (Mech 1995).

The 1980 and 1987 NRM wolf recovery plans (USFWS 1980, 1987) and wolf control plans (USFW 1988, 1990) recognize that conflict with livestock was the reason that wolves were extirpated, and the reduction of conflicts is a necessary component of wolf recovery. These plans and others also acknowledged that control of problem wolves is important to maintain local public tolerance of wolves and that removal of some wolves did not prevent the wolf population from achieving recovery (Bath 1987, McNaught 1987, Fritts 1993, Pate et al. 1996, Mech 1995, Bangs et al. 1995, Wolstenholmer 1996, Bjerke et al. 1998, Fritts et al. 2003, Bangs et al. 2009, Creel and Rotella 2010, Bruskotter et al. 2010, 74 FR 15123). The USFWS analyzed the effectiveness of those plans in 1999, and revised their guidelines for management of problem wolves (USFWS 1999). The USFWS plans have proven successful, as wolf depredation on livestock and subsequent agency management actions have remained compatible with recovery; the wolf population expanded and its distribution and numbers went far beyond, and more quickly than, earlier predictions (USFWS 1994, USFWS et al. 2007, 2008, 2009, 2010). Despite agency wolf removal, nearly all suitable areas for wolves are being occupied by resident packs (Oakleaf et al. 2006, USFWS et al. 2008). The reduction of gray wolf conflicts is considered important for wolf recovery (or conservation) and is addressed in “The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho” EIS (USFWS 1994, 59 FR 60266), subsequent rules (50 CFR 7.84(i)(3)(vii), 50 CFR 17.84 (n), and management plans (USFWS 1987, 1990).

10.) Wolves killing livestock results in emotional and economic harm to producers and impacts Oregon’s economy. Problem wolves need to be removed to avoid contentious situations that diminish tolerance.

Harm to producers is discussed in the EA in Section 1.2. Removing problem wolves to promote social tolerance is discussed in the EA under Section 1.4, 4.1.1, and 4.1.3. Rapid, effective assistance to human-wolf conflicts is critical to maintain support for wolf populations, not just among affected stakeholder groups but the public in general (Bath 1987, McNaught 1987, Pate et al. 1996, Mech 1995, Wolstenholme 1996, Bjerke et al. 1998, Naughton et al. 2005, Bruskotter et al. 2010, 74 FR 15123).

11.) There is no economic justification for removing wolves. Economic benefits of wolves needs to be discussed.

WS disagrees that there is no economic justification for removing wolves. Section 1.2 of the EA, Need for Action, contains a discussion of the need that individual ranchers have and includes available economic data. In addition, Chapter 4 discusses the beneficial effect that removing chronically depredating wolves would have on public tolerance and wolf population recovery and maintenance (Section 4.1.1). Section 4.1.4 discusses the effectiveness of the lethal removal of problem wolves. The analysis in the EA shows that wolves are likely to continue to expand in Oregon. Chapter 11 of the OWCMP discusses the Economic values for livestock producers, and hunting opportunities. It also states that the impacts of wolves to producers, referencing the direct and indirect costs, “The two main costs associated with livestock include the direct costs of livestock losses to producers, and costs to private individuals, counties, ODFW and Wildlife Services for nonlethal and lethal management actions to avoid depredation. Losses associated with wolves in other regions are small in proportion to the total industry, but with potentially serious consequences for specific areas or individual ranches where chronic problems occur (USFWS 1994).”

The OWCMP on page 2 states that one of the goals of the Wolf Conservation and Management Plan is to “Ensure the conservation of gray wolves as required by Oregon law while protecting the social and economic interests of all Oregonians.” Chapter 11 of the OWCMP provides a long review of the types of economic considerations including the intrinsic value of wildlife species from wildlife watching, existence values. Although the EA does not place an economic figure (dollar amount) on the benefit that wolves provide, WS does not discount the value of having a robust wolf population. In fact, one of the purposes of removing wolves is to promote their conservation and expansion.

12.) WS does not disclose how the proposed action will be funded, WS lacks transparency.

WS is a cooperatively funded program with primary funding sources coming from state, county, and Federal appropriations. Other funding sources include associations and other public and private entities. Funding is established through Cooperative Agreements on an annual and in some cases bi-annual basis. All WS activities are contingent upon receiving sufficient funds to support the requested activities. Further fiscal discussion is outside the scope of the EA. CEQ NEPA regulations (40 CFR 1502.23) state that the weighing of the merits and drawbacks of the various alternatives need not be displayed in a monetary cost-benefit analysis and should not be when there are important qualitative considerations.

13.) A commenter shared that lethal control of wolves is necessary to effectively address chronic depredation and the increased direct/indirect costs to producers such as: physical stress, lower productivity, incremental management, lower fertility, lower body condition, reduced weight gain, cattle disposition.

This issue was addressed in section 1.2, Need for Action, Indirect depredation effects on livestock.

14.) An example of an incident cited in the EA, where a cattle producer estimated \$4,900 in cattle losses to wolf depredation (not including lost profits) but incurred additional management costs of \$19,000, should be stricken from the EA because it is unsubstantiated.

We disagree that this legal testimony should be stricken from the EA. A declaration is a written statement that is sworn to be the truth under penalty of perjury. As discussed in Section 1.2, it provides an example by one affected livestock owner that confirmed livestock depredation likely underestimates total costs to an affected producer and that compensation of confirmed losses does not reimburse producers for the full costs of wolf damage. Other damages can include unconfirmed losses, missing livestock, possible weight loss and lower pregnancy rates, increased herding, and monitoring and reporting costs (Bangs et al. (2006). Ramler et al. (2014) found in their study of livestock producers in Montana that calf weight gain was negatively impacted when predation by wolves occurred in those herds. The average livestock producer lost an average of \$6,679 in revenue associated to decreased weight gain. As acknowledged in their study, decreased weight gain is not solely affected by wolf predation but it does illustrate that there are additional expenses and costs associated with depredation by wolves.

15.) Cattle are the top commodity in the State and are the backbone of rural communities. Increased costs are impacting many operations and wildlife damage control and losses are a major concern.

To our knowledge, we have used the best available information to present the need for action to protect livestock from wolf damage, EA, Section 1 .2.

16.) Commenters noted that relatively few livestock are killed by wolves in comparison to other types of predation or natural death, including pneumonia.

Commenters are concerned that public animosity towards wolves is created when livestock damage reports involving wolves are not put into context with other livestock losses. As referenced in the EA, section 1.2, and 4.1.1, Oakleaf et al. (2003), reported mortality events for 13 of the 211 radio-marked calves; as for their causes, 4 were from pneumonia, 4 from wolf predation, 1 from coyote predation, 2 from unknown causes, and 2 from fire-related mortality. The author also noted an additional 2 wolf related mortalities of un-marked calves. The number of mortality events on radio-marked calves due to pneumonia was the same as from wolf predation. The author concluded that the overall non-predation mortality was higher than that for wolf-caused deaths, similar to other studies.

Section 1.2 in the EA discusses the direct, indirect, and probable effects that wolves have on livestock production. Section 4.1.3 contains a detailed discussion of human attitudes towards wolves, and the factors that influence those attitudes. Clearly, wolf damage to livestock in Oregon is minimal as compared with livestock damages from other more abundant predators or

other sources of mortality. Nevertheless, the ability of wolves to kill cattle, sheep, poultry, game farm animals, and other livestock is well documented (Young and Goldman 1944, Fritts 1982, Carbyn 1983, Fritts et al. 1992, USFWS 1994, Collinge 2008, Mack et al 2010). It is believed that prompt, professional reduction of damage and conflicts with wolves is an important component of wolf management, conservation, and recovery because it facilitates local acceptance and tolerance of wolves (Fritts 1993, Mech 1995, Bangs et al. 1995, 2009, ILWOC 2002, Fritts et al. 2003, IDFG 2008, Creel and Rotella 2010).

Wolf damage to livestock is sufficiently problematic in Oregon to create the need for action, and is expected to grow as wolves continue to become established in Oregon. The economic impact of wolf depredation on livestock can be substantial for individual producers. Further, when wolves come into contact with people or kill or injure their pets, there is both an economic and an emotional loss (Linnell et al. 2002). The scope of this EA is limited to resolving wolf damage only. In its introduction, the EA states “Although livestock losses to wolves are minimal industry-wide, losses to individual operators can be significant (Fritts et al. 1992, Mack et al. 1992).” Finally, it is important to note that under this EA, lethal actions to control wolf damage to livestock are only proposed when ODFW or Tribal authorities determine it meets the requirements established in OWCMP or Tribal management plans. See also response to comment #4.

17.) A commenter cited Oakleaf et al. (2003), in that the authors did not find evidence of calf weight loss despite “almost constant predation harassment” in their study.

Regarding a lack of evidence of calf weight loss, the Oakleaf et al. (2003) study results revealed that “Predatory interactions occurred infrequently” in the Idaho study area, suggesting that “Wolf-livestock predatory interactions were not frequent enough to influence cattle behavior.” The researchers did not report on rates of calf weight gain but recommended that the calf weight gain rates be evaluated against different predation risk intensities.

Ramler et al. (2014) found in their study of livestock producers in Montana that calf weight gain was negatively impacted when predation by wolves occurred in those herds. The average livestock producer lost an average of \$6,679 in revenue associated to decreased weight gain. As acknowledge in their study, decreased weight gain is not solely affected by wolf predation but it does identify that there are additional expenses and costs associated with depredation by wolves. See also responses to Comments #14 and #16.

18.) Some readers questioned the integrity of the analysis, stating that the risk was exaggerated, and that only confirmed livestock losses should be used to assess risk. WS inappropriately applied a study of wolf depredation on livestock in Idaho (Oakleaf et al. 2003) because it generalizes the study of a worst case scenario.

We disagree with these statements. Oakleaf et al. (2003) was cited as an example among others in the EA (Section 1.2, and 4.1.1), to demonstrate: “The importance of recognizing that the numbers of livestock that have been confirmed to be killed by wolves . . . may represent only the

minimum numbers of livestock actually killed and injured by wolves, and that more livestock were probably killed but not confirmed as wolf predation (Bjorge and Gunson 1985, Oakleaf et al. 2003).” Another example (EA Section 1.2) of probable vs. confirmed losses in Oregon was used in the EA and while it was anecdotal, it reported that probable vs. confirmed losses were five to two. (i.e. five reported by the producer vs. two that were confirmed). Oakleaf et al. (2003) estimated that in their study they likely only detected 1 of every 8 livestock killed by wolves. They concluded that although in their study the detection rate was 1 of 8, in less timbered or rugged country this rate may be lower. The authors went on to suggest that the value of compensation programs in the western United States was not sufficient to account for actual or probable losses, in that it “Does indicate a consistent underpayment of ranchers” and should be adjusted upwards for each confirmed wolf-caused mortality. Further, the EA in Section 1.2 gives examples of management schemes that would increase or decrease predation rates and concludes “Where and how livestock are managed and where and how wolves are managed will influence depredation rates (ODFW 2010a).” Finally, Oakleaf et al. (2003) as used in the EA specified the particular Idaho study location. While we did not use this study to generalize conditions in all areas, Oregon does have similar remote grazing allotment conditions with similar terrain and vegetative cover which is occupied by wolves.

19.) A commenter expressed concern for using an unpublished paper, Collinge (2008) to state that individual wolves were more likely to depredate on sheep and cattle than individual coyotes, bears and cougars in Idaho.

The analysis in Collinge (2008) was prepared using both published and unpublished data including reports from the National Agricultural Statistics Service and livestock damage data reported to the Idaho Wildlife Services program. The author suggested that individual wolves were more likely to prey on livestock than individual cougars, bears or coyotes. Utilizing both published and agency reports, the author used the number of cattle and sheep killed by wolves, cougars, bears, and coyotes respectively, in relation to their estimated population levels of each species. The review suggested that wolves killed more sheep and cattle per their estimated population total than did the other 3 predator species. The author concluded, “Although the livestock loss estimates and predator population estimates used in arriving at these relative likelihoods of risk are believed to be the best information available, it is important to recognize that these comparisons should be viewed as generalizations, rather than specific numbers applicable to all situations.”

The risk of predation is likely to increase as the population of wolves increases. In Galle et al. (2009), the authors found a positive relationship between wolf population growth and wolf depredations on sheep. They also found a similar relationship between wolf population size and the value of the sheep losses.

As stated in our response to comment number 18 above, the ability of wolves to kill cattle, sheep, poultry, game farm animals, and other livestock is well documented (Young and Goldman 1944, Fritts 1982, Carbyn 1983, Fritts et al. 1992, USFWS 1994, Mack et al 2010). We believe that total wolf depredation in Oregon is likely to be lower than total depredation from other predators due to the relatively low number of wolves and the limited exposure that livestock in Oregon

may have to wolves in comparison to other predators. However, this does not diminish the harm to an individual producer who experiences wolf damage.

20.) The need for action should include the need to conserve and promote wolf restoration in OR.

The ultimate responsibility for wolf conservation and management is with wolf management agencies, which in this case is the State of Oregon and Sovereign Tribal Authorities. Wildlife Services cooperates with wildlife management agencies as it meets its mission of providing wildlife damage management. WS is supporting wolf conservation and management in Oregon by assisting the State of Oregon with managing wolf conflicts with livestock (EA Section 4.3.1 and Appendix B).

21.) The Oregon Wolf Conservation and Management Plan (ODFW 2010a) is not a recovery plan.

The Oregon Wolf Conservation and Management Plan (OWCMP) outlines the objectives for conservation during Phase I and Management during Phase II and III. No plans were made to recover wolves in Oregon but to conserve and manage wolves under Oregon ESA rules. Parts of the draft EA made incorrect reference to ODFW's Wolf Conservation and Management plan as a recovery plan.

22.) Wolves are endangered in the northwest; wolf damage management in eastern Oregon may affect federally listed wolves outside of the NRM DPS in Oregon; Need for consultation - ESA sec 7 rules.

WS has considered the issue of whether or not state listed wolf damage management may affect federally endangered wolves that are found outside of the project area. WS consulted with the USFWS on this question, pursuant to Section 7 of the federal ESA. In a September 9, 2013 letter to WS, USFWS (2013) concluded that the proposed action is not likely to adversely affect federally endangered wolves; no federally protected wolves would be directly harmed; removal of non-federally protected wolves is expected to be few in number; and the increase and expansion of wolves in the DPS population is expected to continue to increase.

23.) Wolf tapeworm is no more of a threat than other zoonotic diseases.

Wolf tapeworm (*Echinococcus granulosus*) was not discussed in the EA. The OWCMP notes that this parasite does exist in Oregon but the current threat to livestock or humans is very low (ODFW 2010a). The proposed action states that WS could assist ODFW with live capture of wolves for research and monitoring purposes which could include disease testing including screening for wolf tapeworm.

24.) A couple of commenters remarked that wolf threats to humans are not significant.

As provided in Sections 1.1, 2.1, 4.2.2, and Appendix A of the EA, in the unlikely event of an incident involving a wolf threat to human safety, WS would respond to a request from ODFW or sovereign tribal government to assist.

25.) One commenter expressed that they did not want any changes to the Oregon Wolf Management Plan.

No changes to the OWCMP are proposed by WS. Any action that WS would take involving Oregon's state managed wolves would conform to ODFW's 2010 Wolf Conservation and Management Plan (or subsequent revisions).

C. COMMENTS ON ALTERNATIVES

26.) WS should coordinate and comply with ODFW's OWCMP, policies, and processes. ODFW and WS need to work on standardized depredation investigation process and protocols because WS misidentified predation events attributable to wolves.

As outlined in the EA (Section 1.1) "Any actions undertaken on behalf of ODFW must conform with ODFW's conservation and management objectives and goals as defined in detail in OAR 635-110, as amended (EA Appendix A) and OWCMP as amended (ODFW 2010a, Section II)." WS has worked collaboratively with ODFW and the USFWS in developing wolf management strategies, including the Federal/State Coordination Strategy prior to the NRM DPS delisting. Since the NRM DPS delisting, ODFW has taken the lead responsibility for managing wolves in Oregon that occur within the federally delisted DPS portion of the state, and has taken the lead in making all final determinations for wolf conflicts. WS and ODFW have had an ongoing dialog and working relationship to improve depredation investigations and reporting, and are continuing to develop and improve procedures and protocols for implementing these aspects of the OWCMP.

WS' role in a depredation investigation is to assist a livestock producer with determining if predation has occurred and to provide indirect or direct assistance to help manage the predation conflict. When wolves are suspect in a depredation, ODFW will make the determination of whether they want to request further assistance from WS with the investigation process. *The decision to confirm a depredation by wolves is the responsibility of ODFW* during Phase I and II of the OWCMP (ODFW 2010a). As stated in the OWCMP, ODFW requires a standard of conclusive evidence in making a determination. WS acknowledges that ODFW may make a determination based on the need of conclusive evidence that may not coincide with WS's review of the evidence available but as stated in OWCMP and OAR 635-110, ODFW will make the determination in the findings of the depredation investigations. There has been question of investigators having different views of the evidence available. ODFW and WS have worked constructively to review specific cases where there have been differences in opinion to forge a more uniform investigation and communication process. WS continues to work in a collaborative manner at suspected wolf depredation sites. ODFW and WS investigators will discuss the evidence found at the scene in an effort to reach one professional opinion, with the realization

that ODFW has the management responsibility to make the final determination of wolf depredations.

D. COMMENTS ON ALTERNATIVES: PROPOSED ACTION

27.) Some commenters preferred the Proposed Action alternative and support the OWCMP.

Thank you for your comment.

28.) Wildlife Services provides a valuable service in the protection of livestock and wildlife from Wolf damage.

Thank you for your comment.

29.) A commenter agrees with The Wildlife Society's statement that control efforts should be prompt and efficient.

Thank you for comment

30.) The EA is technically accurate and considers a reasonable array of wildlife damage management options.

Thank you for your comment.

E. COMMENTS ON ALTERNATIVES: NONLETHAL METHODS

31.) A commenter was in support of alternative 3, preferred alternative, if WS embraces better standards of using nonlethal.

Under the scope of this EA, WS would only implement lethal control when authorized by the managing agency and according to their standards of authorization as outlined in ORS or other authorities. WS will continue to recommend nonlethal methods and provide assistance with implementing them when appropriate and as we can.

32.) The alternative, *Agencies Exhaust All Non-lethal Methods Before Attempting Lethal Methods Alternative*, which was considered in the EA but eliminated from detailed analysis, should have been treated as an alternative evaluated in detail.

The rationale in the EA (Section 2.5) for dismissing the alternative from detailed analysis briefly described how this approach would have been impractical, inappropriate, and likely ineffective. For the reasons discussed in the EA, the agencies do not believe that this is a reasonable alternative. Chapter 2.2 and 2.3 in the EA discuss the nonlethal options that are available to use. Discussions of the limitations of nonlethal methods are located throughout the EA including

under Sections 2.2, 2.5, 4.1.4, 4.2.4, and 4.3.4. WS already gives preference to using or recommending nonlethal methods when they are deemed practical and effective as part of the Current Program (No Action) and Proposed Action Alternatives (WS Directive 2.101) to the extent that it is allowed by the managing agencies which make decisions about how to resolve wolf conflicts (EA Section 1.1 and 1.4). ODFW is responsible for creating a wolf-livestock conflict deterrence plan for a designated Area of Depredating Wolves, which outlines the available and likely to be most effective non-lethal measures, and for authorizing lethal take (OAR 635-110, http://www.dfw.state.or.us/Wolves/specific_wolf_info.asp#Deterrence_Plans); it does not require the exhaustion of all non-lethal methods first.

Exhausting all non-lethal methods first can be impractical to accomplish and may not be applicable in all situations. Animals can become habituated to nonlethal methods, rendering them ineffective (Musiani et al. 2003), which results in disappearance of an animal's fear towards a novel object (Shivik et al. 2003). Habituation is determined by the intensity of a stimulus and the motivation of individual animals (Shivik et al. 2003). A key motivational factor for many animals is hunger (Wilson et al. 1993, 1994) or personal behavioral traits (Gosling 1998, Darrow 2006) and it has been suggested that hunger in wolves plays an important part in the process of habituation (Lance 2009). Thus, each situation needs to be evaluated before a management strategy can be effectively implemented. The potential for additional losses to occur while experimenting with nonlethal methods would be unacceptable to some which could result in decrease tolerance for wolves. One reason for having effective damage management assistance available is to foster support for and minimize or reduce the amount of opposition to wolf conservation and recovery. As stated in response #16 above and in the EA (Sections 4.1.1 and 4.1.3) prompt, professional management of wolf conflicts is an important component of wolf recovery because it facilitates local public acceptance and tolerance of wolves (Fritts 1993, Mech 1995, Bangs et al. 1995, 2009, ILWOC 2002, Fritts et al. 2003, IDFG 2008, Creel and Rotella 2010, 50 CFR 17.84(n)). Inclusion of a detailed analysis of an alternative that would require exhaustion of all nonlethal methods before using lethal methods would not contribute new information that is not already considered in the EA, nor would it meet the purpose and need for action, or conform to the OWCMP and OAR 635-110.

33.) WS should consider the array of nonlethal methods and techniques such as presented in Smallidge et al. (2008)

Smallidge et al. (2008) reviewed known and available nonlethal methods in light of conditions in the Southwest United States with Mexican gray wolves. The authors reviewed and drew similar conclusions as were noted in the EA, section 2.2, as to the availability, applicability and limitations of those methods. The authors also stated, while citing Fritts et al. 2003, "There is no consistently effective non-lethal method available to reduce livestock depredation by wolves."

34.) Some commenters prefer nonlethal methods, these methods being used first, and or nonlethal methods should be used only to avoid the use of capture and kill equipment; they cite studies showing the effectiveness of nonlethal methods and the benefits in using them for critical periods; lethal methods are not necessary; prevention reduces the necessity for

killing wolves (Musiani et al. 2003); producers should implement nonlethal methods and the importance for WS to educate producers with nonlethal methods.

WS did review Musiani et al. 2003, and Davidson-Nelson 2010, which are cited in the EA in sections 2.2 and 4.1.4. We agree that the most humane methods, including nonlethal methods, should receive first consideration when or where they may be effective and lethal methods may not always be necessary. As discussed in the EA, Sections 2.2 and 2.3, Wildlife Services encourages producers to use nonlethal measures to protect livestock whenever it is practical. Education of nonlethal methods has been addressed by ODFW, WS, other NRM states, and other groups and organizations have contributed too or produced publications to educate ranchers and others, as well as numerous news releases, and other reports with information on “Living with Wolves,” such as: (<http://www.dfw.state.or.us/Wolves/index.asp>, <http://fishandgame.idaho.gov/cms/wildlife/wolves/>, <http://fwp.mt.gov/tmc/vignettes/wolf.html>, <http://gf.state.wy.us/services/education/wolvesindex.asp>). Educating producers and use of these nonlethal measures include but are not limited to night penning, guard animals, fencing, range riders, telemetry monitoring, regular visits/human presences, fladry, turbo fladry, lights/sounds, hazing, carrion removal, other attraction removal, alternate schedules /patterns, delay/modify rotations in fields and or move stock, and active searching for signs and activity.

Education and nonlethal technical assistance are integral to the proposed action. However, education alone is not sufficient to prevent the development of negative public attitudes among stakeholders, especially livestock producers experiencing actual depredation problems. Maintenance of public support demands effective resolution of problems at whatever frequency they occur (Fritts 1993, Mech 1995, Bangs et al. 1995, 2009, ILWOC 2002, Fritts et al. 2003, IDFG 2008, Creel and Rotella 2010, 50 CFR 17.84(n)). Wildlife Services would not respond with lethal control unless ODFW makes the determination that sufficient producer implemented nonlethal measures have been attempted and confirmed and chronic livestock losses have nevertheless occurred (OWCMP 2011a).

The EA notes that various authors have stated that nonlethal methods are only temporarily effective, but that they can often provide protection when resources are most vulnerable. Davidson-Nelson and Gehring (2010) was cited in the EA in Section 2.2. In their study, they did find that fladry may be temporarily effective but labor and equipment costs can be substantial. They suggested that when properly maintained, fladry may exclude wolves from pastures for up to 75 days. They also noted that since fladry works as a frightening (neophobic) mechanism, as found by others (Musiani and Visalberghi 2001; Musiani et al. 2003) wolves may become habituated as their exposure increased.

Musiani et al. (2003) reported on experiments with fladry and wolf behavior in captive settings as well as field trials in Alberta, Canada and in Idaho. In both the field trials in Alberta and in Idaho, they did not detect any wolf incursions of fladry barriers for up to 60 days. Beyond 61 days, wolves did cross the fladry and kill cattle in the Idaho study site. The fladry barriers were inspected every 72 hours. The authors acknowledged that they could not distinguish the difference in the effect of the novelty of the fladry with the reoccurring presence of people every

72 hours to maintain the fladry. They noted that since the fladry in the Idaho study was not deployed under optimal circumstances and some flags were missing on their 72 hour checks, that some wolf incursions of the fladry may have occurred (they recovered wolf hair from the fence). Additionally they stated that “Maintaining fladry lines in optimal conditions likely maximizes the effectiveness of the fladry, but doing so will be logistically difficult over a large area.” The authors also noted that wolves did prey on livestock in neighboring areas without fladry, that the availability of prey outside the fladry is critical for its effectiveness. The authors noted that if prey were scarce or when fladry is applied on several contiguous properties, that fladry may be ineffective. They also recommended further research before applying fladry on a large scale.

Some commenters reference the Defenders of Wildlife Wood River wolf project as an example of using nonlethal methods. As of April 14, 2014, we are unaware of any formal publishing of data to reference and review their findings. Preliminary comments posted on their website suggest a demonstrated success of minimizing sheep losses to wolves for producers in their study. From the information available, constant vigilance in using the combination of nonlethal methods, animal husbandry, and the presence of night guards (people to employ methods as wolves are detected) was necessary to abate wolf depredations on sheep and when not employed (by human error or cessation of the project) some wolf depredation on sheep occurred. The forthcoming information will be beneficial to review for application, timing, and uses of various methods and their cost and benefits for producers.

Of published information that is available, Breck and Meier (2004) noted that nonlethal methods had varied success, and generally worked for short periods of time and only in small areas. They also commented that in many situations, nonlethal methods have been used until they failed to prevent losses, resulting in subsequent lethal control actions. They did recognize the need for additional research in animal husbandry practices that could help reduce depredation patterns.

Some other studies have identified the cost of implementing some nonlethal methods over larger scale operations, such as grazing pastures or allotments. In field trials in Montana, the cost of a complete electrified fladry system (posts, energizer, electrified fladry, clips, gates, battery, etc., many of which have to be purchased from different suppliers) to protect a 16 hectare (ha) square pasture was \$3,685. Electrified fladry fencing supplies cost \$3,252 each additional 1.6 km (i.e., 1 square mile) (Lance 2009). The installation of 14.0 kilometers (km) of electrified fladry cost \$2,303 for the first km and \$2,032 for each additional km (e.g., costing almost \$29,000 for a 14 km installation), and required 31.8 person-hours/km to install (Lance et al. 2010). Lance et al. (2010) also reported 18 failures (i.e., the electrified fladry stopped working) during 81 total days of use and there was little interest by livestock producers to invest in electrified fladry as a tool as the practicality of the methods was questioned (Lance 2009). Thus, in some situations nonlethal methods, in this case fladry, may not be practical for the situation (Shivik 2004, 2006). Bangs et al. (2006) concluded that nonlethal methods were preferred tools choice when wolf numbers and distribution were limited. The authors also noted that the effectiveness of nonlethal tools is enhanced when used in combination with multiple types of methods. Drawing upon the research of others (Breitenmoser et al. 2005, Treves and Naughton 2005), Bangs et al. (2006) emphasized that lethal methods are not a replacement for nonlethal, likewise, nonlethal methods

are not replacements for lethal methods. WS places an emphasis on utilizing nonlethal methods but there may be limitations on their effectiveness given every individual and unique circumstance where they might be applied.

The EA evaluated an array of nonlethal wolf deterrent and livestock protection methods and discussed the applicability and efficacy of those methods. Nonlethal methods are an important part of any damage management program, including the proposed action, but nonlethal methods also have limitations, as explained in the EA. Producers use nonlethal methods and some still experience losses and require additional assistance in some cases. Where nonlethal control is effective in preventing livestock depredation, wolves would not be targeted for lethal removal.

35.) Some commenters felt that WS should change our emphasis on nonlethal tools by: diverting funds to hire specialists who can provide technical assistance and supply or loan equipment to ranchers in high priority wolf conservation areas, as well as share information and stay informed about the efficacy of nonlethal various nonlethal methods.

WS discussed the use of and importance of nonlethal methods in the EA in sections 2.2 and 2.3, in accordance with assisting ODFW with their implementation of OWCMP as outlined by the OWCMP and OAR. The OWCMP outlines the ODFW strategies to address livestock conflicts, including “Actively educating and equipping landowners, livestock producers and the public with tools to implement nonlethal wolf management techniques.”

A nonlethal methods-only alternative was evaluated in the EA. We believe the OWCMP is more effective with the combination of nonlethal and lethal methods when necessary. Section 2.2 in the EA describes nonlethal methods which are not always sufficient to stop damage. It is WS policy to give preference to nonlethal methods when they are practical and effective (WS Directive 2.101). The Oregon Wolf plan (ODFW 2010a) and OAR 635-110 prefer and require the use of nonlethal methods prior to using lethal methods.

WS will continue to cooperate with ODFW, the USFWS, Tribes, universities, and interest groups as appropriate, to investigate ways to reduce conflicts between people and wolves (USFWS et al. 2001-2009, <http://www.aphis.usda.gov/ws/mission.html>, http://www.aphis.usda.gov/wildlife_damage/nwrc/). For example, WS has assisted in depredation investigations and has made recommendations for nonlethal methods, including: the use of fencing; guard animals; extra herders; lights, sirens, and other scare devices, including those activated by wolf radio-collars (i.e., RAG); flagging; harassing wolves; moving livestock and providing alternative pasture. The National Wildlife Research Center (NWRC), which is part of WS, places emphasis on developing nonlethal strategies as well as improving efficiency and effectiveness of other methods. NWRC had conducted research on nonlethal wolf management methods and corresponds with researchers and wildlife managers to learn of potentially better ways to deal with wolf conflicts (Shivik 2001, Bangs and Shivik 2001, Shivik and Martin 2001, Breck et al. 2002, Shivik et al. 2002, 2003, Shivik 2004, Bangs et al. 2005, 2006). In addition to the methods WS recommends, WS does assist producers by doing

telemetry checks, actively search areas for wolf sign, increasing the frequency of visits and or checks to conflict areas, and investigating possible depredations.

Producers are using range riders, removing bone piles or other attractants, fladry, RAG boxes, and increased herd visitations, guard animals, night penning, penning closer to people, sounds, harassment, and utilizing telemetry information received from agencies (J. Williams, OSU Associate Professor and Wallowa County Extension agent, unpublished data). Mr. Williams (Personal communication) remarked that “It has been stated that Wallowa county Ranchers have employed more nonlethal methods against one pack of wolves than anywhere else in the United States.” His statement, along with his report of what producers are doing mentioned above, illustrates the sense or belief that producers are trying all applicable methods they can. He also reported that many ranchers in proximity to wolf den sites or who have had losses or problems with wolves have increased their herd visitation during calving season specifically for an average cost of \$3,300 per ranch per year. Additionally, ranchers spend much of their time in the field on a daily basis with their livestock during the grazing season tending to animals, herding, maintaining fencing and other livestock needs. The increased rancher presence in the field cost an average of \$8,937 per rancher during their grazing period, with at least half of this time directly related to the presence of wolves in or around their livestock.

In August 2011, Oregon Governor signed House Bill 3560, directing the Oregon Department of Agriculture to establish and implement a wolf depredation compensation and financial assistance grant program. This fund was established to assist counties and producers with compensation for losses from confirmed wolf attacks as well as for the implementation of nonlethal efforts. For the 2011-2012 grant year, \$82,970 were awarded to 8 counties; \$66,500 for preventative and nonlethal measures, \$13,230 for compensation, and \$3,240 for implementation expenses. For the 2012-2013 grant period ODA awarded \$43,932 for preventative measures, and \$16,063 for compensations (ODA unpublished report 2012 & 2013). These funds are in addition to funds expended by individual producers and associations that were or are paid out of pocket in excess of what they might be reimbursed by the compensation and assistance fund.

Thus, substantial amounts of money are already used to implement nonlethal methods to reduce or prevent wolf predations. WS will continue to work with ODFW, ODA, tribes and other entities to explore new management methods and alternate funding sources to help promote the conservation of wolves in Oregon. However, at what point lethal wolf management is warranted is a decision that is made by the responsible management agency, currently either ODFW or Sovereign Tribal authorities. While preventative and nonlethal wolf management methods are useful, they have not been consistently reliable, and lethal removal remains an important tool to reduce wolf damage when depredations on livestock or other conflicts occur (Fritts 1993, Mech 1995, Bangs et al. 1995, 2009, ILWOC 2002, Fritts et al. 2003, IDFG 2008, Creel and Rotella 2010).

36.) Commenters expressed specific concerns about WS use of nonlethal methods, and: “while we would welcome OR WS's interest in assisting livestock owners with nonlethal, we have not found evidence that the program has yet assisted ODFW in the past with

nonlethal deterrents.”; that WS provided little detail about the extent in which it will use nonlethal methods; and WS needs to document the use of nonlethal measures in a formal manner.

We disagree that the EA contains little information about the role of nonlethal methods or WS intent to use them. Section 2.2 and 2.3 outline nonlethal methods available for ODFW, WS and others to use to help minimize conflicts with wolves or to live capture for the purposes of monitoring, collaring, or relocating, at the request of ODFW. As discussed in our response to comment # 35 above, WS has cooperated with ODFW, USFWS and other entities in discussing, researching, sharing, and implementing nonlethal methods. Nonlethal efforts have included: daily/frequent radio telemetry searches for wolves; assisting producers with checking herds; personal consultations with producers providing recommendations in using fladry, frequent checks, husbandry options such as moving stock closer, penning, guard dogs, increased presence around livestock (similar to range riders - acts to haze wolves if they are around), increase vigilance in searching for sign and activity; and helping producers learn to identify sign and wolf activities. As a cooperatively funded program, WS has cooperatively worked with participants to maximize resources used with ODFW and other agencies and entities by trying to minimize unnecessary overlap in work assignment.

The EA Section 2.1 states that wolf managers and livestock producers are not required to exhaust all nonlethal techniques, but instead, a good faith effort to achieve a nonlethal solution is expected. ODFW is responsible for creating a wolf-livestock conflict deterrence plan for a designated Area of Depredating Wolves, and the requester (e.g. livestock owner that experiences wolf damage) will report to ODFW their attempts to solve the situation through nonlethal means (OAR 635-110) before lethal assistance can be provided. As noted in the EA, WS must follow protocol authorized by ODFW and as outlined in OAR 635-110 and OWCMP (ODFW 2010a) which is very specific. Before lethal action is taken, nonlethal methods will be employed in appropriate circumstances and unsuccessful attempts documented. WS recognizes the importance of documenting the use of nonlethal methods and will work with ODFW to help identify and facilitate collection of this information.

Appropriate methods cannot be dictated before a damage situation is evaluated based on unique variables encountered in the field. For example, in some instances confinement such as night penning, fencing or fladry would be appropriate, while in others, range riders, guard dogs, or herding may be appropriate. For these reasons, we have included a discussion of all nonlethal methods available to agencies and producers. See also response to Comment #35.

37.) Commenters expressed that they think the Gray wolf should remain under federal protection.

The U.S. Fish and Wildlife Service has regulatory responsibility for species protected under the federal Endangered Species Act. That agency makes all decisions regarding the status of wolves as they may warrant federal protections under the ESA or not.

38.) A few commenters remarked that the EA does not contain a true “no action” alternative and that a no action alternative should include no Oregon Wildlife Services activities.

In accordance with Council on Environmental Quality guidance (46 FR 18026), WS included the No Action alternative in the EA which is defined as "no change" from its current management direction. In light of the limited decision space afforded WS by the OWCMP, as described in the EA (EA Section 1.3), and low level environmental consequences as discussed in the EA, we believe we have adequately identified and evaluated a reasonable range of alternatives.

39.) A commenter suggests that conditioned taste aversion (Gustavson and Nicholas) be used on stable, territorial packs to condition wolves to avoid depredating on livestock.

Section 4.1.4 discusses conditioned taste aversion (CTA), noting it has not yet been proven to be effective for free roaming wolves; the study cited was on captive wolves. Shivik (2004) concluded, “The method was championed as an effective technique by Gustavson et al. (1974), and CTA seemed promising as an effective means of minimizing predation. However, due to a variety of logistical and biological constraints, the technique does not appear to be effective in field situations, and is thus not used widely (Dorrance and Roy, 1978; Conover and Kessler, 1994). For example, CTA is excellent for deterring eating behaviors, but is not especially effective at modifying killing behaviors, and a strong aversion to tainted meat baits does not necessarily translate to a strong aversion to killing live prey. Attack and kill behaviors may continue after an animal is successfully conditioned using CTA. Another significant obstacle in the United States is the lack of a proper odorless, tasteless, environmentally safe poison that will cause violent illness, but not injure the predator or a non-target species.”

40.) Some commenters believed that management agencies desired to eradicate wolves from Oregon.

We disagree with this sentiment. The Oregon Wolf Conservation and Management Plan clearly emphasizes wolf conservation under State ESA rules, and management once they reach the conservation objective in a manner consistent to State ESA rules. Any WS actions would be consistent with ODFW’s or tribal management objectives.

41.) The efficiency of WS in conducting lethal removal must be considered as well as the state’s capability in the absence of WS’s help.

This issue is discussed in the EA under the issue “Effectiveness,” including under Section 4.3.4. ODFW’s letters to WS on September 15, 2011 and March 28, 2012 state that ODFW has and will implement the OWCMP with or without WS assistance. ODFW has demonstrated their ability and access to the same methods to implement both lethal and nonlethal components to the OWCMP. The ODFW letter dated March 28, 2012 does outline indirect impacts to their ability to conserve and manage wolves in Oregon without the assistance of WS. However, they acknowledge that they will implement all aspects of the OWCMP including lethally removing depredating wolves.

F: COMMENTS ON ENVIRONMENT EFFECTS

42.) Several commenters supported alternative 3 because they felt it has the greatest potential for effective wolf conservation, lethal control is necessary because nonlethal control has its limitations, and effective and efficient wolf damage management is vital to social tolerance for wolves.

WS agrees, thank you for your comment. These benefits were discussed in the EA under Sections 1.4, 4.1.1, 4.1.3,4.1.4, 4.2.4, and 4.3.3.

43.) Can't limit the scope of cumulative impacts to 1/3 of state.

The EA does not limit the scope of its cumulative impacts analysis to 1/3 of the state. A detailed discussion of the cumulative effects on wolves in Oregon and the region was evaluated in the EA under Sections 4.1.1 and 4.3.1. In addition, WS has consulted with USFWS for program effects on federally protected wolves and USFWS has indicated that the proposed action is not likely to adversely affect federally listed wolves (USFWS 2013). See response #1.

44.) Some commenters shared concerns about the humane treatment of wolves and the humaneness of the methods used including: preferred shooting over other methods; removing adults which may cause pups to be orphaned; and self-caused injuries to animals captured in traps.

Humaneness is an issue discussed in the EA under Sections 4.1.3, 4.2.3, and 4.3.3. WS treats wolves as humanely as conditions allow and uses euthanasia methods recommended by the AVMA (2013) for free ranging wildlife, and Julien et al. (2010). Wildlife Services Directive 1.301 (8/31/10) requires program personnel to “Utilize the WS Decision Model (EA Section 2.3, Figure 3) to resolve wildlife damage problems and strive to use the most selective and humane methods available, with preference given to nonlethal methods when practical and effective.” WS provides technical assistance to ranchers to reduce losses and our preference is to prevent livestock depredations, if possible, rather than killing wolves after depredations have occurred, <http://www.aphis.usda.gov/ws/mission.html>). WS trains its employees in humane wildlife handling techniques. WS uses traps that are scientifically acceptable and implements many standards that have been identified in The Association of Fish and Wildlife Agencies (AFWA) Best Management Practices (AFWA, 2006).

WS recognizes the potential for capture related injuries; injuries caused by the traps themselves or self-sustain injuries by the animals being restrained in the trap. Research has been devoted to identifying and reducing harm to trapped wolves and other wildlife (Turnbull et. al 2011, AFWA 2006). AFWA has established best management practices (BMP) for trapping in the United States, aimed at providing improvements in animal welfare by reducing trap related injuries. APHIS recognizes the value and use of the trapping BMP guidelines for private fur harvest and other trapping activities being developed and promulgated by state wildlife management

agencies and AFWA. APHIS has voluntarily agreed to abide by the BMPs, which provide trapping options that allow for discretion and decision making in the field. APHIS utilizes these guidelines as a basis for policy formulation while recognizing the guidelines are under development and will continue to be revised for the 23 mammalian furbearer species of North America. The BMPs are updated based on the availability and public use of commercial capture devices. Some devices used in wildlife damage management are not commercially available and not all devices recommended in the BMP guidelines for general public use meet the more stringent performance requirements, particularly for efficiency and durability, for use in Federal or other professional wildlife management activities. To account for these gaps of information, APHIS-WS Directive 2.450 establishes guidelines for APHIS personnel using certain types of animal capture devices in managing wildlife damage.

Several modifications identified in BMP guidelines including trap type, jaw type, as well as trap set up (chain length, center swiveled, solid anchors, shock springs), are utilized by WS to reduce injuries to captured animals. AFWA (2006) and Turnbull (2011) suggest that trap anchoring system needs to be sufficient enough to anchor the trap for the largest possible species which the trap might capture, so larger non-target species may pull free from the trap without the trap becoming unanchored. WS incidental take permit from ODFW outlines that traps should be securely anchored and or drag affixed for this reason. It also requires 24 hour trap checks and site selectivity in certain situations to minimize harm to wolves. The USFWS reports that wolf mortalities resulting from wolf monitoring captures are below 2% of the animals handled (70 FR 1286). In all cases, the use of traps, snares, and other animal capture devices by APHIS employees complies with all applicable Federal, State, and local laws and regulations related to animal capture for managing wildlife damage.

As discussed in the EA, only ODFW would make the final decision of whether wolves are removed. Depending on the circumstances, lethal removal of wolves to address livestock depredation problems may involve removing some or all members of a specific wolf pack. If the decision has been made to remove the entire pack, concerted efforts are made to remove all of the pups as well as the adults, in order to avoid orphaning the pups. It is not always possible to remove all the adult wolves from a pack and in those cases, the remaining wolf or wolves may continue to feed and care for the remaining pups (Boyd and Jimenez 1994, Packard 2003). Despite concerted efforts to humanely remove any pups left after all adult wolves of a pack have been removed, one or more pups may be left on very rare occasions without any adult wolves to feed or care for them. The only way to avoid this circumstance altogether would be to limit wolf removal efforts during this time frame, so as to always ensure that at least one or more adult wolves were left to care for any pups. In some circumstances, this would be inconsistent with the objective of stopping chronic wolf predation on livestock. Unfortunately, there could be occasional instances where dependent young may be orphaned during removal activities. To keep things in perspective, it is important to consider the amount of suffering and death that occurs in the absence of predator removal as well. Predators by definition kill and eat prey, which does not ordinarily represent a problem unless this behavior conflicts with human interests. Regardless of whether predation creates conflicts with human interests, prey species are typically subjected to pain and suffering when preyed upon by predators. Death in nature is

notoriously harsh (Howard 1986), and it would be purely speculative to infer whether the fate of any potentially orphaned wolf pups would be any more or less harsh if their parents had not been killed through wolf management activities. To the extent that wolf management removes animals that would otherwise continue to kill, injure, or orphan livestock, the overall level of pain and suffering may or may not be reduced.

45.) One commenter noted that WS did not mention the use of additional tools to reduce harm, such as TTD's and monitoring devices.

Section 2.2 and 2.3 of the EA discussed the nonlethal methods that WS could use, included drug delivery systems but did not specify or include trap tranquilizer devices (TTD) or trap monitoring devices. TTDs are not currently used by Oregon WS. However, Oregon WS has used the trap monitoring devices and has contributed to their evaluation as cited in USDA (2007). Results with electronic devices have varied as suggested in USDA (2007), and terrain can be a limiting factor because the device's transmit signal travels line of sight to the receiver; the specialist must be able to get a signal to determine if they are active. Additionally, WS has experienced inconsistency in signals from devices which has hindered our confidence in depending on them. WS has continued to review trap monitoring systems that are commercially available, (USDA 2013). Newer technology uses cell phone text messaging and can be expensive and will only work if you are in cell reception areas. Given some of the terrain constraints, we are not in a position to rely on them completely but we will continue to look for opportunities to test current and developing methods.

Sahr and Knowlton (2000) did conclude that TTDs can be an effective tool to reduce the physical harm of trapping through a moderate level of sedation. The authors found that they could not verify if the animals ingested the chemical and the amount of chemical ingested but that their findings show about 50% of animals capture with a TTD attached to a trap displayed some signs of sedation. Their research also discussed the concerns of a wolf's ability to thermoregulate in freezing or hot temperatures. WS' TTD training manual emphasizes this concern by requiring careful consideration when using them below 32 degrees or above 90 degrees. Idaho WS did not widely use TTDs during recovery of the NRM DPS stages under USFWS, due to the USFWS concern for thermal regulation, (G. E. Graves, USDA APHIS WS, personal communication). Similar temperature concerns occur in Oregon. Additionally, consideration must be given when administering immobilization / sedation chemicals to any animal, including the animal's health before, during, and after the application of an immobilization or sedation chemical. Other concerns that have been identified are related to the wellbeing of an animal under sedation. Environment threats such as pooling water from a rain storm or standing water may restrict the use of a TTD if a sedated animal was to have the potential to access such water (USDA 1998). This scenario could occur if a captured wolf pulled the trap loose from its staked anchor, with the trap attached to a grapple hook/ drag per requirements, allowing it to travel a short distance before full or partial sedation effects occurred. Another environmental concern is the ability of a drugged and restrained animal to defend itself from another animal such as another predator. Bears, cougars, and wolves have been known to attack wolves and a sedated wolf may not be able to adequately defend itself. Sahr (D. P. Sahr, USDA APHIS WS, personal communication)

remarked that when they did find animals under heavy sedation, that the animals were more vulnerable to flies and found that flies exploited that vulnerability by laying eggs around their eyes. Oregon is not using TTDs at this time given some of these concerns for animal welfare and other safety and security concerns.

46.) One commenter noted that the USFWS did not consider a non-target lynx kill in Utah when it evaluated the proposed action in Oregon.

An older report document in Utah reported a lynx being taken by WS. When this data was reviewed, this reported take was found to be in error and has been correctly edited to a bobcat (R. P. Myers and M. J. Bodenchuck, USDA APHIS WS, personal communication). Therefore the USFWS did not err. WS did provide accurate non-target take information to the USFWS during the ESA consultation process.

47.) Non-target species and humans may be harmed with the methods proposed for use.

Non-target species effects, including effects on threatened and endangered species and effects on public safety, were discussed in section 4.3.2 in the EA and would be negligible. See also response to Comment #44.

48.) One commenter disagreed that leg-hold traps and snares could be used as nonlethal methods because most animals captured in them are euthanized.

We disagree with this statement. Section 2.2 of the EA discusses the tools that could be used for nonlethal capture. Traps and snares can be used as nonlethal capture devices. The commenter referenced WS take records for FY 2011. Of the animals captured in fiscal year 2011, 37 animals were unintentionally captured in traps and snares, with 24 being euthanized and 13 being released (more than 1/3 of the unintentional captures were released). When compared to all captures by those same methods, unintentional captures account for only 1.61% of all captured. Lethal removal of unintentionally captured animals (24) was 1.04% of all captures with those methods.

As an example of these tools being used as a nonlethal method, on November 2, 2012, WS unintentionally captured a wolf in a leg-hold trap set for another predator in an area not known to have wolves. The capture was reported to ODFW and ODFW was successful in placing a collar on the wolf, further aiding in the identification of wolves and known wolf areas. On February 26, 2013, a private trapper also captured a wolf unintentionally in a trap, likewise reported it to ODFW, resulting in another collar being placed on a new unmarked wolf. On October of 2013, 2 pups of the Umatilla River pack were captured incidentally and were successfully radio collared by ODFW and released. Although the latter 2 examples were not related to WS trapping, it does demonstrate that traps can be used as a nonlethal method. See also Comment #43.

49.) How will trap modifications and plans of using them help reduce non-target capture?

Sections 4.1.2, 4.2.2, and 4.3.2 in the EA discuss impacts to non-target species and determined that the potential impacts would be minimal. Also identified in Chapter 4, wolf removal activities are expected to occur at a low frequency. WS does use BMP principles and adaptive strategies where we can to minimize non-target take risk. WS does incorporate snare stops and pan tension devices where necessary to minimize non-target risk. See also response to Comment #44 and #48.

50.) Several commenters remarked on the limitation or ineffectiveness of nonlethal tools, stating: nonlethal tools aren't helpful, generally ineffective, too many conflicts to persist; preliminary research by OSU et al. shows that night penning of livestock near buildings is not effective because wolf presence is as common near buildings as it is further away; and hazing wolves has been shown to not be effective in Wallowa County, it just moves the problem animals to someone else's property.

The EA discusses the advantages and disadvantages of nonlethal methods. Landowners are encouraged to use a variety of appropriate methods. Lethal control can only be applied after nonlethal methods are used and are not sufficient to stop damages. Section 2.2 of the EA discusses the use of nonlethal methods including tools used to haze wolves. Several commenters remarked that hazing is ineffective because the act of hazing or moving an animal (wolf) from one area of threat or damage simply pushes or moves the problem to your neighbors. Musiani et al. (2003) and Harper et al. (2005) discussed that fladry may not be as effective when used over large areas or in consecutive properties because this in essence reduces the novelty of the fladry. Additionally its effectiveness is reduced when consecutive areas are protected because the reduction to access to available prey may result in the overriding need for food and subsequent habituation or loss of phobic reaction to the fladry.

In a research report, Williams et al. (2012), the authors' review of the collected data of collared wolf interactions in relation to collared livestock locations suggest that wolf depredations on cattle occurred within close proximity to human dwellings. Wolf collar data points also show wolf activity in close proximity to buildings and dwellings at times other than when verified depredations occurred. The data suggests that wolves were not deterred from people or livestock by bring vulnerable livestock within close proximity of homes and dwellings, as is often referenced as an effective nonlethal technique.

Bangs et al. (2006) reviewed the nonlethal and lethal tools used to aid in the successful recovery of the NRM DPS wolf population. The authors remarked the nonlethal tools are enhanced when used in combination with other methods but that both nonlethal and lethal tools are useful to "Enhance the other's effectiveness."

51.) Non problem wolves should not be removed because they teach their offspring not to prey on livestock. Their removal creates a void that may be filled by another pack that may prey on livestock.

As explained in the EA, individuals that are not damaging livestock or threatening human safety will not be targeted for lethal removal (EA Sections 2.3, OAR 635-110).

52.) Some commenters expressed concern related to the efficacy of removing depredating wolves because the removed wolves will be replaced and replacements may depredate on livestock, removal may cause the wolf population to increase, removal won't reduce depredation rates, or it may prevent wolf population growth.

ODFW's authority to authorize the removal of chronic depredating wolves is outlined in the OWCMP and OAR 635-110, and is discussed in previous responses. The goal of the OWCMP is to "Ensure the conservation of gray wolves as required by Oregon law while protecting the social and economic interests of all Oregonians" (ODFW 2010a). Different stakeholders desire different numbers of wolves and management strategies. Prompt, professional active wolf management is an effective tool to broaden tolerance of wolves and is an important component of wolf recovery (Fritts 1993, Mech 1995, Bangs et al. 1995, 2009, ILWOC 2002, Fritts et al. 2003, IDFG 2008, Creel and Rotella 2010, 50 CFR 17.84(n)). The minimum recovery goal of the NRM DPS population has been exceeded since 2002 (USFWS 2012). This goal was met while including lethal removal of chronic depredating wolves. Therefore, removal of chronic depredating wolves under ODFW or tribal authority is not expected to prevent wolf population growth in Oregon.

Authors Treves and Naughton-Treves (2005) identify the complexities of using lethal control in managing wildlife conflicts. They suggest that removing carnivores only achieves a temporary reduction in conflicts as vacancies are quickly filled and that the reoccurring conflicts need to be addressed with more non-lethal management options. Yet they also report that not all predators having access to livestock will prey on them. They discuss the Hopland Sheep Research Station in California where several authors noted that selective removal of problem animals was sufficient to reduce or illuminate further losses. In conclusion, the authors acknowledge the role of lethal control in wildlife management and its role in conservation and the challenge of determining the circumstances when to use it. The commenters also cited Bradley and Pletscher (2005) and Musiani et al. (2005) as providing examples of the value of identifying seasonal patterns in depredation events and promoting proactive non-lethal strategies to minimize predation risk. Bradley and Pletscher remarked that depredation events are very unique events requiring "Consideration on a case-by-case basis to determine the best course of action."

Harper et al. (2008) examined the effectiveness of removing depredating wolves to reduce depredation the following year. The authors noted that trapping wolves did not substantially reduce the following year's depredations at state or local levels however, in some situations, killing wolves was more effective than not doing so. The authors concluded that the depredation reoccurrence rate was higher when no trapping was performed than when trapping with or without success was conducted. Specifically, they found that when looking at reoccurring depredation rates at the same location, removal of an adult male wolf had lower re-depredation rates than not trapping. They also noted that increased depredation events the following year may be explained by an increased number of wolves living in the area or that some wolves may

have learned to prey on livestock as discussed in Harper et al. (2005). When considering depredations on both sheep and cattle, Harper et al. (2008) they found that attempted trapping without capture lead to lower recurrence of depredation than did not trapping. This pointed to the potential benefit of increased visitations to properties experiencing livestock depredations. However, for depredation on sheep, removing wolves was more effective in reducing recurrence of depredations than unsuccessful trapping or not trapping at all. They concluded that lethal management of wolves in Minnesota was effective for reducing depredation on sheep, but for cattle, targeting one or more adult males was more effective than not trapping.

The EA Section 1.1 states that one of WS purposes of the proposed action is to respond to ODFW or tribes to reduce livestock depredation by gray wolves in Oregon and on sovereign Native American tribal reservation lands. Also covered in the EA in Sections 1.3, 1.4, and 2.3, wolves would only be removed after a request from ODFW based on confirmed chronic livestock depredation, and after unsuccessful attempts using nonlethal methods have been deemed ineffective as outlined in the OAR 635-110 and OWCMP (ODFW 2010a) or removed under tribal management authority. Removing wolves under the OWCMP is not intended to reduce depredation rates but to reduce depredation by wolves involved in chronic livestock depredations. The intent of the OWCMP (ODFW 2010a) strategies to address livestock conflict is to resolve wolf-livestock conflicts while ensuring the conservation of wolves.

53.) Some commenters said wolf removal is not necessary because wolf populations are self-regulating (density dependent) and will stabilize (Cariappa et al. 2011).

The commenters remarked that since wolf populations would stabilize, depredation would be stable and could be managed with nonlethal control. We have discussed the limitations of nonlethal control in the EA (Sections 2.2), and responses to Comment #34. The limited removals that are analyzed under this EA (and authorized by OAR 635-110), are intended to stop current season, chronic depredating wolves. In this light, removals are necessary for individual producers who have not been able to stop depredations using nonlethal control.

Stewart Breck, (S. W. Breck, USDA APHIS NWRC, personal communication) co-author of Cariappa et al. (2011), did confirm that wolf population can be self-regulating. A key part in self-regulation is the availability of prey biomass. Wolves in Yellowstone National Park (YNP) did peak in population numbers and there has been evidence of wolves killing wolves and their population has become self-regulating. A point of distinction is that YNP wolves' prey biomass consists nearly or entirely on wild ungulate or other wild prey species. Wolves outside of YNP have additional prey species to select from in the form of livestock, and self regulation would occur if left to prey on all sources of prey biomass.

The USFWS plans have proven successful, as wolf depredation on livestock and subsequent agency management actions have remained compatible with recovery; the wolf population expanded and its distribution and numbers went far beyond, and more quickly than earlier predictions (USFWS 1994, USFWS et al. 2007, 2008, 2009, 2010). Despite agency wolf removal, nearly all suitable areas for wolves are being occupied by resident packs (Oakleaf et al.

2006, USFWS et al. 2008). Wolf populations have exceeded recovery efforts in time and by numbers than what was anticipated. Wolves have been actively managed to minimize their impacts on livestock.

54.) Killing wolves to conserve unfounded; lethal control alone is ineffective; lethal control is expensive.

The EA, Section 4.1.1. discusses the reasons that lethal control is necessary in some circumstances. Lethal control is not proposed to be used alone. The EA, Section 4.1.4, discusses the efficacy of nonlethal and lethal approaches and notes that the limitations on lethal control, as proposed, may be more costly than proactive population scale removals where all wolves are removed in an area to protect livestock. WS proposed to conform to the OWCMP and OAR 635-110, which allows only for reactive management with strict limitations on removals during ODFW's management phases I and II. Also see response to Comment #9.

55.) Lethal control disrupts social structures in the meta-population (Knowlton et al. 1999); may not impact canids abundance after removal (Wallach et al. 2009); there is a mesopredator release when removing wolves, self-cancelling the benefit of removing wolves.

Rationale for why these issues were not discussed in detail was provided in the EA under Section 3.2, under Issues Not Analyzed in Detail. WS concluded that after reviewing much of the information available, that "Wolf damage management, combined with other forms of mortality, would not be likely to result in a net decrease in wolves; rather, it is expected to support eventual conservation and wolf management as discussed in OWCMP" (ODFW 2010a). Targeted lethal wildlife damage management actions are taken with the goal of removing only the offending individual(s), not reducing abundance. Knowlton et al. (1999) discussed the differences in demographics and fluctuations in abundance between various levels of exploited coyote populations. Wallach et al. (2009) discussed the social structure impacts on highly exploited dingo populations. WS would only respond to ODFW's request to remove offending wolves involved in chronic depredation.

While it is true that wolf removal can have a short-term disruptive impact on pack structure, that disruption does not appear to result in adverse impact on the overall wolf population (Nadeau et al. 2008, 2009, Mack et al. 2010, USFWS et al. 2008, 2009, 2010). Pack resilience to mortality is inherent in wolf behavioral adaptation and reproductive capabilities (Brainerd et al. 2008). The data on wolf mortality rates suggests some wolf populations tend to compensate for losses and return to pre-removal levels rapidly, potentially within a year. Wolf populations have sustained human-caused mortality rates of 30 to 50% without experiencing declines in abundance (Keith 1983, Fuller et al. 2003). In addition, Brainerd et al. (2008) found that 62% of packs in recovering populations retained territories despite breeder loss, and of those who lost territories, one-half became re-established. Furthermore, pup survival was primarily dependent on size of pack and age of pup because multiple pack members feed pups despite loss of a breeder. Pup survival in 84% of packs with breeder loss was similar or higher than packs without breeder loss (Mech and Boitani 2003).

In discussing the possible effects of wolves on ecosystems, Mech and Boitani (2003, p. 160 as quoted in Mech 2012) determined “We do not claim to know whether the wolf’s effects are positive or negative, what its net effect is, or whether the effects are of any great consequence ecologically.” In a recent paper by Dr. Mech, who has over 40 years of professional research and emphasis on wolves, (Mech 2012), reviewed many of the current studies and literature with statements or reference to the ecological effects or benefits of wolves. Mech made the point in saying that “Science is self-correcting,” referencing the advantage that subsequent research has in improving on the available information of its predecessors. Much of the early research on the ecological benefits of the wolf recovery in Yellowstone and elsewhere has led to subsequent research correcting or further clarifying the findings. Of the several examples reviewed by Mech, he stated “It should be clear from the above examples that sweeping definitive claims about wolf effects on ecosystems are premature whether made by the public or by scientists.” He went on to say that some of the information may be found to be correct, and may be defined spatially or by time. When such ecological effects are found in national parks, Mech said that they apply to National Parks and not necessarily to other locations.

Mech acknowledges that trophic cascades do exist in the environment but questions whether restored wolves have wrought such changes. Many researchers have reported initial observations of wolves reducing the coyote population in Yellowstone, leading to a mesopredator release. After reviewing more recent research, Mech (2012) reported that “Such a release has not been documented in Yellowstone,” that the current research shows coyote packs returning to pre-wolf numbers. He noted that “Claims about wolf effects on ecosystems are premature” in their findings, but that they might eventually be validated. However, most of the studies on cascading effects of wolves have been conducted in national parks. Muhly (2010) noted that “To whatever extent the findings are valid, they apply to National Parks and not necessarily elsewhere.” Regardless, the proposal is not likely to result in a net decrease in wolves so either way, no associated effect on mesopredators would be likely. After review, we find no reason to expect that wolf removals would result in significant adverse effects on the quality of the human environment because of possible wolf-related changes in ecosystems.

56.) One commenter remarked that the ecological service of wolves outweighs the need to protect livestock.

The EA notes in Section 3.2 that ecological systems would not be affected by wolf removals because wolves would be expected to continue to expand in numbers in Oregon. Wolf conservation and management are the stated goals of ODFW (ODFW 2010a). The EA describes that WS’ proposed action to assist ODFW with resolving livestock depredation would also help ODFW to achieve its conservation and management goals for wolves. In addition, the EA discusses that resolving wolf conflicts is a necessary component of wolf management. Therefore, the current and future ecological services that wolves may offer would not be hindered.

57.) An EIS should be prepared because lethal control is controversial and interagency conflict has been documented, therefore significant impacts to the human environment are likely.

Regarding lethal control being controversial, we disagree. The effects of lethal control actions are not controversial among the researchers and agency experts involved with gray wolf management, see responses to comments #9 and #10, and cited references. Lethal removal has been part of the successful recovery plan for wolves in the U.S. and has been demonstrated by the successful recovery of the NRM DPS. The USFWS plans have proven successful, and supported among the agency experts. Lethal control of depredating wolves has remained compatible with recovery; wolf populations have expanded and its distribution and numbers have exceeded predictions (USFWS 1994, USFWS et al. 2007, 2008, 2009, 2010). Regarding “Interagency conflict” the commenter refers to differences in conclusions between ODFW and WS during depredation investigations. ODFW, not WS, does make final determinations confirming depredations, and would remove wolves under criteria specified in the OWCMP and OAR-635-110 in the absence of WS, thus there would be no potential for conflict about agency wolf removal. Finally, as discussed under response to comment #26, ODFW and WS have worked constructively to review specific cases where there have been differences in opinion to forge a more uniform investigation and determination process.

58.) One commenter stated that under ESA rules, WS needs to consult with the USFWS for wolves that are federally protected and impacts to federally protected wolves when control actions occur outside the federally protected areas.

ESA consultation is discussed in the EA, Section 4.3.2. In addition, the USFWS has concurred that the proposed action would not be likely to adversely affect gray wolves that are protected under the federal ESA (USFWS 2013)

59.) Commenters felt that the EA does not consider the effects on the human environment; that the subject is highly controversial; significant factors to be considered as well as cultural resources; and the need to consider state ESA laws.

CEQ regulations implementing NEPA explains that the term “significantly” requires consideration of both the context and intensity of the actions (40 CFR Sec. 1508.27). The EA provides ample evidence that no significant effects are likely, and the FONSI considered all of the points of potential significance. In considering the context of the action, any actions WS would take to implement the proposed action must fall within the criteria spelled out under state law (OAR 635-110) and the state wolf plan (OWCMP) (EA Sections 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 4.1, 4.2, 4.3). The EA shows that any action taken by WS to manage wolf damage would occur whether or not WS decided to implement the proposed action. The intensity of the actions was also considered in the NEPA process. Specific issues that were determined to be important for analysis in the EA included the beneficial and adverse effects on the wolf population, the degree to which the proposed action may affect public safety, cumulative effects, effects on ESA listed species, and compliance with Federal, state, and local laws, among other issues. Section 3.2 lists

aspects of the human environment that would not be affected and why and that there would be no adverse effects on cultural resources. Sections 1.6 and 6.0 identify the agencies and persons consulted including tribes and an opportunity to provide input during early development of the EA. In January 2013, letters were sent to the remaining tribes that did not provide public comment or were not consulted with during the early development of the draft EA, providing them with the additional opportunity to cooperate, consult or provide input. The EA section 1.3, identifies only one tribe has requested assistance with wolf damage management; no other tribes presented any additional concerns. The FONSI has included all of the significance criteria listed in CEQ NEPA Implementing Regulations (40 CFR 1508.27) and explains why the impacts are not severe, intense or otherwise potentially significant. Regarding significant impacts on the human environment, we have taken a hard look at the issues and the analysis in the EA reveals that the proposed action would not have a significant impact on the human environment.

Relating to cumulative effects, 4.1.1 (pg. 48) of the EA states, “The potential for WS activities to incidentally affect wolves in those areas outside the NRM DPS in Oregon (west of Highway 395, 78 and 95) which are protected by the federal ESA, require consultation with the USFWS, pursuant to the federal ESA. On September 9, 2013, the USFWS issued a letter of concurrence (EA Appendix C) with WS’s determination that the proposed action “may affect, but is not likely to adversely affect” the gray wolf in areas where it is federally listed under the Endangered Species Act. We also did formally consult on our non-Wolf EA activities for wolves that are federally protected, not mentioned or reference in the EA. Additionally, we do go into great detail in the EA sections 4.1.1 talking about natural mortality, legal and illegal human caused wolf mortality, success of the NRM DPS wolves’ recovery, growth, expansion, and that the OWCMP (pg. 53) includes a cautious and conservative approach and the Oregon’s wolf conservation and management could sustain wolf removals.

The commenter states that the proposed action is controversial, and therefore an EIS is required. The term “controversial” has been interpreted as a substantial dispute over the size, nature or effects of a major federal action, not opposition to a proposal (Daniel R. Mandelker, NEPA Law and Litigation §8:47 (2d ed. 2009)). We do not consider that the difference of opinion or opposition by some individuals or groups constitutes a sufficient degree of controversy so as to be significant and require an EIS. A controversy does not exist among federal and state agency experts that manage wolves or wolf damage. WS, ODFW and USFWS do not disagree on the size, nature, or environmental effects of the actions. The EA acknowledges that some people are opposed to lethal wolf damage management. Varying social perspectives on wolf damage management, including discussions of factors that may affect approval and disapproval of lethal wolf damage management, were presented in the EA under Sections 4.1.3, 4.2.3 and 4.3.3. WS believes that because the proposed action balances the perspectives of people that are opposed to wolf damage management with those that request assistance and are in favor of wolf damage management. Please also see responses to Comment #26 and #57 regarding this issue.

As mentioned in the FONSI, the Oregon Fish and Wildlife Commission approved revised OAR 635-110 in July 2013 after a temporary restraining order was filed in the fall of 2011. Collaboration of the parties resulted in the changes in the OAR which would moot the court case

(http://www.dfw.state.or.us/wolves/wolf_program_updates.asp). By following the OAR 635-110, ODFW does have the authority to remove or authorize the removal of State protect wolves.

60.) A commenter felt there was an over emphasis on the threat to human health and safety.

In the unlikely event that a person is attacked by a wolf, OAR 635-110 and OWCMP (ODFW 2010a) describes the circumstances under which Oregon’s criminal code and federal ESA would allow harassing, harming or killing of wolves where necessary to avoid imminent, grave injury. The EA discusses that threats to human safety would be unlikely in the executive summary and sections 1.0, 2.3, 3.1 and 4.1.1. Wolves are generally not dangerous to humans, as long as they are in low numbers, have sufficient food, have little contact with humans and are occasionally hunted (Geist 2006), however “The possibility of wolf attacks does exist” (Korytin 1997, Linnell et al. 2003). It is important to evaluate this potential threat in the EA so that in the unlikely event of a threat to human safety, WS would be able to immediately respond to a request for such assistance without the delay of additional NEPA reviews. See also response to Comment #24.

61.) Oregon does not have an abundance of habitat to allow for the establishment of wolves without conflicts with humans.

ODFW took habitat into consideration when it developed the OWCMP. Chapter II of the OWCMP (ODFW 2010a) states that “Wolves can occupy a variety of habitats provided adequate prey is available and they are tolerated by humans.” It also stated that because wolves have been absent for so long it is difficult to predict where wolves will occupy. Also, Oregon has smaller areas of minimal human activity unlike Idaho and that much of the potential wolf habitat in Oregon is seasonally occupied by livestock. The OWCMP states “The presence of livestock in wolf habitat has and will continue to result in conflict, with wolves choosing livestock as prey...The locations of livestock on the landscape will influence both distribution and public acceptance of wolves.”

62.) Niemyer (2010) was cited to dispute that Wildlife Services is skilled in capturing target species, and that WS needs to change old views and prejudices against wolves.

Niemyer (2010) is a memoir of a former Animal Damage Control (ADC) employee in Montana. (ADC was the former name of the WS program.) Mr. Niemyer’s personal and unsubstantiated claims about his experiences in Montana many years ago have no bearing on the current Oregon WS program.

63.) The EA lacks analysis of what ODFW considers being a sustainable population other than four breeding pairs.

The appropriate population level for wolves in Oregon was discussed briefly as an issue not considered in detail, with rationale, under Section 3.2 in the EA, Section 1.1, 1.3 and 1.4 of the EA outline ODFW or tribes, as the lead agencies responsible for managing wolves and their

authority to manage wolves as outlined in the OWCMP and OARs. The OWCMP establishes the population levels for conservation and management phases 1-3; 4 pairs for the western part of the state and 4 pairs for the eastern part as a minimum. WS does not have any authority regarding establishing population levels. As the lead wildlife management authority for state managed wildlife in Oregon, ODFW has the expertise and legal authority to make management determinations for gray wolves under their jurisdiction. Based on the analysis in Section 4.1.1 (under cumulative impacts, *Effects of OWCMP (ODFW 2010a) and OAR 635-110 on wolf populations*), we believe that ODFW made a sound management decision.

64.) A commenter felt that WS shouldn't limit the scope to 1/3 of state, and that the cumulative impacts should include ID, CA, WA, and Western OR.

The scope of the program is limited to assisting ODFW with managing conflicts from state-managed wolves within Oregon and assisting tribes when requested. The EA contains ample discussion of wolf dispersals and movement beyond Oregon. 4.1.1 Cumulative effects were addressed in the EA under Section 4.3.1. See response to Comment #1.

65.) A few commenters noted that the number of wolves in Oregon should be updated from the December 2011 figure.

We have provided updated information in the Decision and Finding of No Significant Impact and in the Final EA.

G: COMMENTS THAT FALL OUTSIDE THE SCOPE OF THIS EA

66.) Consider cattle damage to range lands including public lands.

Rangeland management is outside of the scope of this EA. Land use issues including grazing on federal public lands are managed by the respective land management agencies.