FINAL
ENVIRONMENTAL ASSESSMENT

Gray Wolf Damage Management in Idaho
for
Protection of Livestock and other Domestic Animals, Wild Ungulates, and Human Safety

Prepared by

United States Department of Agriculture
Animal and Plant Health Inspection Service
Wildlife Services

in Consultation With

Idaho Department of Fish and Game

United States Department of the Interior
US Fish and Wildlife Service
Bureau of Land Management

United States Department of Agriculture
US Forest Service

Idaho State Department of Agriculture

Idaho Department of Lands

Nez Perce Tribe

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Reasons for Revising the Draft Idaho Wolf Damage Management EA

On August 2, 2010, the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program issued an environmental assessment (EA) on "Gray Wolf Damage Management in Idaho" for a 30-day public comment period (http://www.aphis.usda.gov/regulations/pdfs/nepa/idaho_wolf_ea.pdf). Several relevant events have occurred subsequent to WS' issuance of that EA.

1) On August 5, 2010, the U.S. Federal District Court in Missoula, Montana issued an order which vacated the delisting of the Northern Rocky Mountains (NRM) Distinct Population Segment (DPS) of the gray wolf (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM, and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM). In compliance with that court order, wolves are once again considered endangered throughout the NRM DPS, except where they are classified as experimental nonessential populations (southern Montana, Idaho south of Interstate 90, and all of Wyoming). For a summary of relevant delisting and litigation activities, go to http://www.fws.gov/mountain-prairie/species/mammals/wolf/

2) The same Montana District Court is now considering an earlier challenge to the U.S. Fish and Wildlife Service (USFWS) 2008 10j rule (Defenders of Wildlife et al. v. H. Dale Hall et al., CV 08-14-M-DWM). That earlier challenge had essentially been rendered moot by the USFWS' March 2008 delisting of wolves from the provisions of the Endangered Species Act (ESA), but with the delisting decision vacated by the court, the 2008 10j rule is now once again being litigated. The 2008 10j rule essentially provided greater latitude for authorizing States or Tribes to conduct wolf removals for the protection of ungulates, and if the court sets aside the 2008 10j rule, wolf removal to protect ungulates in Idaho would not likely be authorized by the USFWS.

3) On October 18, 2010, the Governor of Idaho sent a letter to the Secretary of Interior, informing the Secretary that the State of Idaho would no longer continue to act as a "designated agent" of the USFWS for conducting wolf management in Idaho (http://fishandgame.idaho.gov/cms/wildlife/wolves/esa/govOtterLetter10_18_10.pdf). This means that the Idaho Department of Fish and Game, for the time being at least, will no longer be involved in the day-to-day decision-making or conducting routine wolf management in Idaho. The USFWS may choose to grant "designated agent" status to some other entity, such as the Nez Perce Tribe, pending the delisting of wolves and their return to State management. On October 20, the USFWS did send a letter to WS, authorizing WS to act as a designated agent for the USFWS to conduct wolf depredation control actions.

4) Idaho officials and Montana Fish, Wildlife and Parks have asked the 9th U.S. Circuit Court of Appeals to reverse the Montana District Court ruling which put gray wolves back onto the endangered species list in the NRM and which blocked Montana and Idaho's wolf management plans and the fall hunting season. A second appeal was filed by the Idaho Farm Bureau Federation and Montana Farm Bureau Federation. In addition, the U. S. Representative from Montana drafted legislation in Congress which advocates state control of wolves and is backing legislation in the U.S. House of Representatives that would remove wolves from consideration under the ESA. Similar legislation has been introduced by U.S. Senators from Montana, Wyoming, Idaho and Utah.

All of these events could potentially affect how wolf management is conducted in Idaho, and this revised version of the August, 2010 Idaho Wolf EA acknowledges and discusses the potential environmental impacts associated with these various scenarios. The revised EA also includes an appendix in which comments received during the August, 2010 public comment period are addressed.

TABLE OF CONTENTS

ACRONYMS 7

BACKGROUND AND SUMMARY 8

CHAPTER 1. PURPOSE AND NEED FOR ACTION 12

1.1 INTRODUCTION 12
1.2 PURPOSE 13
1.3 NEED FOR WOLF DAMAGE MANAGEMENT IN IDAHO 14
1.3.1 Wolf Damage Management to Protect Livestock and other Domestic Animals 14
1.3.2 Potential Role of Wolves in Disease Transmission to Wildlife, Livestock and Humans 19
1.3.3 Wolf Damage Management to Protect Ungulates 20
1.3.4 Wolf Damage Management to Protect Human Safety 23
1.4 RELATIONSHIP OF THIS EA TO OTHER ENVIRONMENTAL AND MANAGEMENT DOCUMENTS 24
1.4.1 WS Programmatic EIS 25
1.4.2 Final EIS on the Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho 25
1.4.3 Environmental Assessment for Proposed Revision of Special Regulation for the Reintroduction of Gray Wolves into the Central Idaho and Yellowstone Areas 25
1.4.4 Wolf Conservation and Management Plan 25
1.4.5 Idaho Wolf Population Management Plan 25
1.4.6 Environmental Assessment for Predator Damage Management in Southern Idaho 25
1.4.7 Environmental Assessment for Predator Damage Management in Northern and Central Idaho 26
1.4.8 Annual Monitoring Reports and 5-Year Summary Reports for WS Predator Damage Management EAs 26
1.4.9 Categorical Exclusion Records for WS Wolf Damage Management in Idaho 26
1.4.10 Substantial Impairment Analyses Prepared by the Sawtooth National Forest to Assess the Potential Impact of Grazing-Related Issues on Wolves in the Sawtooth National Recreation Area (SNRA) 26
1.4.11 Memorandum of Agreement (MOA) between the Secretary of the Interior, through the USFWS, and the State of Idaho 27
1.4.12 Memorandum of Understanding (MOU) Between IDFG and the Idaho State Animal Damage Control Board (ISADCB) 27
1.4.13 National Forest Land and Resource Management Plans (LRMPs) 27
1.4.14 BLM Resource Management Plans (RMPs) 27
1.5 IDFG PLANNED MANAGEMENT DIRECTION AS DESCRIBED IN IDFG (2008*a*) 28
1.5.1 Statewide IDFG Goals and Objectives 28
1.5.2 Livestock Damage Management 29
1.5.3 Regulated Sport Harvest 29
1.5.4 Population Monitoring 29
1.6 DECISION TO BE MADE 30
1.7 SCOPE OF THIS ANALYSIS 30
1.7.1 Actions Analyzed 30
1.7.2 American Indian Lands and Tribes 30
1.7.3 Period for which this EA is Valid 31
1.7.4 Site Specificity 31
1.7.5 Summary of Public Involvement 32

1.8 PREVIEW OF THE REMAINDER OF THIS EA 32

CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT 33

2.1 INTRODUCTION 33
2.2 AFFECTED ENVIRONMENT 33
2.2.1 The Environmental Baseline 35
2.3 ISSUES CONSIDERED IN DETAIL IN CHAPTER 4 36
2.3.1 Effects on the wolf population in Idaho 36
2.3.2 Effectiveness of nonlethal and lethal control efforts in reducing wolf predation on livestock and/or wild ungulates 37
2.3.3 Effects on public safety and pet health and safety 37
2.3.4 Animal welfare and humaneness of the methods to be used 38
2.3.5 Impacts to stakeholders, including aesthetics of wildlife 39
2.3.5.1 Variations in perception of wildlife damage 39
2.3.5.2 Aesthetic and sociological values of wildlife 40
2.4 ISSUES NOT CONSIDERED IN DETAIL AND RATIONALE 41
2.4.1 What is the rationale for suggesting that lethal wolf damage management is needed to help minimize negative attitudes toward wolves and reduce the likelihood of illegal wolf killings? 41
2.4.2 What about the possibility that wolf removal, whether through control actions or hunting, could disrupt a pack's social structure, thereby leading to an increased likelihood of conflicts? 42
2.4.3 What about the possibility that a reduction in Idaho's wolf population, through hunting and/or lethal depredation control measures, might affect other aspects of the environment (*e.g.,* predator-prey relationships, mesopredators, species competition)? 43
2.4.4 Effects on non-target species populations, including State and Federally listed Threatened or Endangered (T&E) species. 47
2.4.5 Lethal removal of wolves during the spring and early summer months could potentially result in litters of wolf pups becoming orphaned. 48
2.4.6 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. 49
2.4.7 Concerns that the Proposed Action may be highly controversial and its effects may be highly uncertain, both of which would require that an EIS be prepared. 50
2.4.8 If lethal control is implemented, effort must be taken to target the individual wolf or wolves responsible for the depredation. 50
2.4.9 Producers should not expect to prevent all predation losses and some losses are a cost of doing business. 50
2.5 ADDITIONAL ISSUES NOT CONSIDERED BECAUSE THEY ARE OUTSIDE THE SCOPE OF THIS ANALYSIS 51
2.5.1 Circumstances under which livestock owners and other private citizens may legally take wolves 51
2.5.2 Issuance of permits to landowners to take wolves. 51
2.5.3 Desire for or opposition to a hunting season for wolves. 51
2.5.4 Appropriateness of trying to limit the impacts of wolf predation on ungulates. 51
2.5.5 Appropriateness of livestock grazing on public lands 52
2.5.6 Appropriate population level for wolves in Idaho 52

CHAPTER 3: ALTERNATIVES 53

3.1 INTRODUCTION 53

3.2 DESCRIPTION OF THE ALTERNATIVES ANALYZED IN DETAIL 53
3.2.1 Alternative 1 - Continue the Current Wolf Damage Management Program (No Action) 54
3.2.2 Alternative 2 – Continue the Current Program, Plus Assist IDFG with Ungulate Protection (Proposed Action/Preferred Alternative) 55
3.2.3 Alternative 3 – Continue the Current Program, Plus Assist IDFG with Ungulate Protection and Include Use of Gas Cartridges and Breeding Wolf Sterilization as Potential Additional Control Methods 55
3.2.4 Alternative 4 – WS Nonlethal Wolf Damage Management Only 56
3.2.5 Alternative 5 – No Wolf Damage Management by WS in Idaho 56
3.3 WOLF DAMAGE MANAGEMENT STRATEGIES AND METHODOLOGIES 56
3.3.1 Integrated Wildlife Damage Management (IWDM) 56
3.3.2 IWDM Strategies 57
3.3.2.1 Technical Assistance Recommendations (implementation is generally the responsibility of the requester) 57
3.3.2.2 Operational Damage Management 58
3.3.3 WS Decision Model used for Decision Making 58
3.3.4 Local Decision Making Process 59
3.4 WOLF DAMAGE MANAGEMENT METHODS 59
3.4.1 NonLethal Methods Available to WS, USFWS or IDFG Personnel and the Public 59
3.4.2 Nonlethal Methods Available to WS, USFWS, IDFG and the Nez Perce Tribe, or Other Management Agency 61
3.4.3 Nonlethal Methods which may Require Special Authorization from USFWS or IDFG or Other Management Agency 62
3.4.4 Lethal Methods 63
3.5 ALTERNATIVES CONSIDERED BUT NOT IN DETAIL, WITH RATIONALE 65
3.5.1 Bounties 65
3.5.2 Eradication and Suppression 65
3.5.3 Agencies Exhaust All Nonlethal Methods Before Attempting Lethal Methods 65
3.5.4 Lethal Only Program 65
3.5.5 Technical Assistance Only 66
3.5.6 Wolf Damage Management Conducted by Licensed/Permitted Hunters and Trappers 66
3.5.7 The Natural Resources Defense Council (NRDC) Alternative 66
3.6 STANDARD OPERATING PROCEDURES FOR WILDLIFE DAMAGE MANAGEMENT TECHNIQUES 68

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES 71

4.1 INTRODUCTION 71
4.1.1 Background Important to the Analysis 72
4.1.1.1 Status of the NRM and Idaho Wolf Population 72
4.1.1.2 Wolf Habitat in the NRM and Idaho 73
4.1.1.3 IDFG Management Direction (IDFG 2008*a*) 75
4.2 EVALUATION OF SIGNIFICANCE OF CUMULATIVE AND UNAVOIDABLE IMPACTS 75
4.2.1 Magnitude of the Impact (size, number, or relative amount of impact) 75
4.2.2 Duration and Frequency of the Impact 76
4.2.3 Geographic Extent 76
4.3 SOCIAL AND RECREATIONAL CONCERNS, RESOURCE USE AND IMPACTS ON HISTORIC AND CULTURAL RESOURCES 77
4.3.1 Social and Recreational Concerns 77
4.3.2 Irreversible and Irretrievable Commitments of Resources 77
4.3.3 Impacts on Cultural, Archaeological and Historic Resources and Tribal Cultural

Properties in Idaho 77
4.4 ISSUES ANALYZED BY ALTERNATIVES 77
4.4.1 Alternative 1 - Continue the Current Wolf Damage Management Program (No Action) 78
4.4.1.1 Effects on the wolf population in Idaho 78
4.4.1.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates 83
4.4.1.3 Effects on public and pet health and safety 85
4.4.1.4 Humaneness and animal welfare aspects of the methods to be used 86
4.4.1.5 Impacts to stakeholders, including aesthetics of wildlife 86
4.4.2 Alternative 2 - Continue the Current Program, Plus Assist IDFG with Ungulate Protection (Proposed Action/Preferred Alternative). 87
4.4.2.1 Effects on the wolf population in Idaho 87
4.4.2.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates 88
4.4.2.3 Effects on public and pet health and safety 88
4.4.2.4 Humaneness and animal welfare aspects of the methods to be used 89
4.4.2.5 Impacts to stakeholders, including aesthetics of wildlife 89
4.4.3 Alternative 3 – Continue the Current Program, Plus Assist IDFG with Ungulate Protection and Include Use of Gas Cartridges and Breeding Wolf Sterilization as Potential Additional Control Methods. 89
4.4.3.1 Effects on the wolf population in Idaho 89
4.4.3.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates 90
4.4.3.3 Effects on public and pet health and safety 91
4.4.3.4 Humaneness and animal welfare aspects of the methods to be used 91
4.4.3.5 Impacts to stakeholders, including aesthetics of wildlife 91
4.4.4 Alternative 4 - WS Nonlethal Wolf Damage Management Only 92
4.4.4.1 Effects on the wolf population in Idaho 92
4.4.4.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates 93
4.4.4.3 Effects on public and pet health and safety 93
4.4.4.4 Humaneness and animal welfare aspects of the methods to be used 94
4.4.4.5 Impacts to stakeholders, including aesthetics of wildlife 94
4.4.5 Alternative 5 - No Wolf Damage Management by WS in Idaho 94
4.4.5.1 Effects on wolf populations 94
4.4.5.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates 95
4.4.5.3 Effects on public and pet health and safety 95
4.4.5.4 Humaneness and animal welfare aspects of the methods to be used 95
4.4.5.5 Impacts to stakeholders, including aesthetics of wildlife 96
4.5 SUMMARY OF IMPACTS 96

APPENDIX A - LIST OF PREPARERS and REVIEWERS/PERSONS CONSULTED 100

APPENDIX B - DEPREDATION INVESTIGATION FORM 102

APPENDIX C - COMMENTS and WS' RESPONSES TO COMMENTS ON THE AUGUST 2010 DRAFT IDAHO WOLF DAMAGE MANAGEMENT EA 104

APPENDIX D - LITERATURE AND REFERENCES CITED 126

ACRONYMS

APHIS	Animal and Plant Health Inspection Service
AVMA	American Veterinary Medical Association
CDFG	California Department of Fish and Game
CE	Categorical Exclusion
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DAU	Data Analysis Unit
DPS	Distinct Population Segment
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FEA	Final Environmental Assessment
FONSI	Finding of No significant Impact
ESA	Endangered Species Act
FR	Federal Register
GYA	Greater Yellowstone Area
IDAPA	Idaho Administrative code
IDFG	Idaho Department of Fish and Game
ILWOC	Idaho Legislative Wolf Oversight Committee
ISADCB	Idaho State Animal Damage Control Board
IWDM	Integrated Wildlife Damage Management
IUCN	International Union for Conservation of Nature
LRMP	Land and Resource Management Plan
LSC	Landowner/sportsmen Coordinator
MOA	Memoranda of Agreement
MOU	Memoranda of Understanding
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NRDC	Natural Resources Defense Council
NRM	Northern Rocky Mountains
NWRC	National Wildlife Research Center
RAG	Radio Activated Guard
REA	Revised Environmental Assessment
RMP	Resource Management Plan
SHPO	State Historic Preservation Office
SNRA	Sawtooth National Recreation Area
SOP	Standard Operating Procedure
T&E	Threatened and Endangered
USC	United States Code
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFWS	U.S. Fish and Wildlife Service
WS	Wildlife Services
XN	Nonessential, Experimental Population
YNP	Yellowstone National Park

BACKGROUND AND SUMMARY

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program revised a draft Environmental Assessment which was prepared in cooperation with the Idaho Department of Fish and Game (IDFG). The Revised Environmental Assessment (REA) analyzes the potential environmental impacts of alternatives for WS involvement in gray wolf damage management for the protection of livestock and other domestic animals, wild ungulates, and human safety under the direction of the responsible wolf management agency (*i.e.*, either the USFWS or IDFG depending on the wolf status, or the decisions of the USFWS and Governor of Idaho).

Following the preparation and issuance of an Environmental Impact Statement (EIS) by the USFWS (USFWS 1994), the USFWS introduced gray wolves as Nonessential Experimental (XN) Populations (50 CFR Part 17.84) in Yellowstone National Park (YNP) and central Idaho in 1995 and 1996 (59 FR 60252-60281)[1]. Following this reintroduction, the wolf population in the Northern Rocky Mountains (NRM) steadily increased, and the established biological recovery criteria (*i.e.,* ≥ 10 breeding pairs per state for at least 3 consecutive years) were reached by 2002 (USFWS et al. 2010). The 1994 10j rules under which wolves were originally reintroduced (59 FR 60266, 50 CFR 17.84(i)) were subsequently revised in 2005 (70 FR 1286) and again in 2008 (73 FR 4720) to provide for increasingly greater management flexibility to deal with human-wolf conflicts caused by the growing number of wolves[2]. In the NRM Distinct Population Segment (DPS), 2009 marked the 8th consecutive year that the minimum recovery goal of at least 30 or more breeding pairs and at least 300 wolves were documented in Montana, Idaho and Wyoming. The current NRM wolf population of at least 1,650 wolves with more than 100 breeding pairs has far exceeded the originally established biological recovery objectives. On April 2, 2009, the USFWS issued a final rule (74 FR 15123) recognizing the NRM DPS and removing wolves from the Idaho and Montana portions of the NRM DPS from the list of Endangered and Threatened Wildlife[3]. The delisting decision became effective on May 4, 2009, but was subsequently challenged in court (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM). On August 5, 2010, the U.S. Federal District Court in Missoula, Montana, issued an order which vacated the delisting of the NRM DPS of the gray wolf. In compliance with this order, wolves are again considered endangered throughout the NRM DPS except where they are classified as experimental populations (*i.e.*, southern Montana, Idaho south of Interstate 90, and all of Wyoming). For a summary of relevant delisting and litigation activities that have transpired, see <http://www.fws.gov/mountain-prairie/species/mammals/wolf/>.

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[1] This rule established regulations allowing management of wolves by government agencies and the public to minimize conflicts with livestock, and to address impacts on ungulate populations. The USFWS authorized WS to investigate reported wolf predation on livestock and to implement corrective measures, including nonlethal and lethal actions, to reduce further predation.

[2] The 1994 10 j rules (50 CFR 17.84(i) provided for the take of wolves by the USFWS or their designated agents under certain circumstances, and provided for additional management flexibility after the wolf population in the XN population area reached 6 breeding pairs. The 2005 10j rule modified the 1994 10j rule by authorizing the responsible wildlife management agency, the IDFG in this case, to handle the day-to-management of wolves within their jurisdiction after a State wolf management plan had been approved by the USFWS and a Memorandum of Agreement (MOA) between the State wildlife agency and the USFWS had been signed. The 2005 10j rule also allowed for the lethal removal of wolves if it could be documented that wolves were the primary cause for an ungulate population decline. Under the 2008 10j rule wolves only needed to be one of the reasons for the ungulate population decline. Under both the 2005 and 2008 10j rules, the state wildlife agency needed to prepare a proposal and submit it to the USFWS for approval before any wolves could be removed to protect the ungulate population.

[3] The USFWS identified a DPS of the gray wolf in the NRM and delisted gray wolves within NRM DPS boundaries, except in Wyoming. The DPS encompasses the eastern one-third of Washington and Oregon, a small part of north-central Utah, and all of Montana, Idaho, and Wyoming. The States of Montana and Idaho have adopted state laws, management plans, and regulations that meet the requirements of the ESA and will conserve a recovered wolf population into the foreseeable future. The USFWS determined that the best scientific and commercial data available demonstrates that the NRM DPS is not threatened or endangered throughout "all" of its range; and the Wyoming portion of the range represents a significant portion of range where the species remains in danger of extinction because of inadequate regulatory mechanisms. Wolves in Wyoming will continue to be regulated as an experimental nonessential (XN) population (74 FR 15123) pending the outcome of current litigation.

The Memorandum of Agreement (MOA) between IDFG and the USFWS, IDFG's Idaho Wolf Conservation and Management Plan (ILWOC 2002) and Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*) were used as the principal guidance documents for managing wolves during the relatively brief period of time that wolves were delisted in Idaho. The USFWS and IDFG have both requested that WS continue its role as a designated agent of the State for managing wolf conflicts. However, the Governor of Idaho has notified Interior Secretary Ken Salazar that Idaho will no longer act as the federal government's "designated agent" to conduct wolf monitoring and management in Idaho (C. L. Otter, Governor of Idaho letter to Ken Salazar, Secretary of Interior, October 18, 2010). Thus, WS currently conducts wolf damage management actions subject to USFWS decisions and authorizations, and applicable Court rulings[4]. However Idaho officials, Montana Fish, Wildlife and Parks, the Idaho Farm Bureau Federation and Montana Farm Bureau Federation have asked the 9th U.S. Circuit Court of Appeals to reverse an August 5, 2010 ruling that put gray wolves back onto the endangered species list in the NRM and blocked Montana and Idaho's wolf management plans and their proposed fall hunting seasons. In addition, the Montana U.S. Representative drafted legislation that advocates state control of wolves and is backing legislation in the House that would remove wolves from consideration under the ESA. In addition, management of gray wolves in Idaho and Montana would be returned to the states under legislation introduced by Senators from Montana, Wyoming, Idaho and Utah. Therefore, management of wolves could change in the foreseeable future and management could once again be under the direction of the IDFG. This Final EA (FEA) recognizes these possible changes and incorporates potential management changes in the analysis. WS is a non-regulatory agency and would conduct wolf damage management activities in Idaho under the authority of either the USFWS or IDFG depending on circumstances beyond WS' control.

Five alternatives for WS involvement in wolf damage management were analyzed in the REA, including the Proposed Action (the Preferred Alternative), which is to continue the current program of wolf damage management, with the addition of WS providing assistance to IDFG at their request when IDFG has determined that wolf predation is causing unacceptable adverse impacts to an ungulate population in a specific management area, consistent with IDFG's Policy for Avian and Mammalian Predation Management (IDFG 2008*a*, Appendix C) and, if applicable, USFWS authorization[5]. Under the Preferred Alternative, WS would use and/or recommend the full range of legal, practical and effective nonlethal and lethal methods for preventing or reducing wolf damage while minimizing any potentially harmful effects of damage management measures on humans, wolves, other species and the environment. Prior to the development of the REA, WS' role in wolf damage management has been limited to responding to complaints of wolf damage to livestock and other domestic animals under the direction of either the USFWS or IDFG.

Wolf damage management strategies are developed for individual situations by applying the WS Decision Model (Slate et al. 1992). When appropriate, ranch management practices (animal husbandry), frightening devices and livestock guarding animals would be recommended and utilized to reduce wolf damage to livestock. In other situations, WS might potentially utilize foothold traps, snares, ground shooting, chemical immobilization and euthanasia, and aerial shooting to remove individual problem wolves when requested and authorized by the USFWS or IDFG, whichever agency is responsible for directing wolf management in Idaho at the time.

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[4] IDFG has independent state authority for conducting wildlife management activities, and the actions of state agencies not involving federal funding or federal agency actions are not subject to the requirements of NEPA. This EA considers the cumulative impacts of independent state actions where appropriate.

[5] The 2005 10j rule allowed the removal of wolves after it was documented that wolves were the primary cause for an ungulate population decline. Under the 2008 10j rule however, wolves only needed to be one of the reasons for the ungulate population decline. Under both the 2005 and 2008 10j rules, the responsible state wildlife agency needed to prepare a proposal and submit it to the USFWS for approval before any wolves could be removed to protect the ungulate population. However, if the NRM wolves are delisted and under the sole management of the IDFG, no USFWS authorization would be required.

In determining the most appropriate damage management strategy, preference would be given to nonlethal methods when they are deemed practical and effective (WS Directive 2.101). Lethal methods would be used to reduce damage after practical and appropriate nonlethal methods have been considered and determined to be ineffective or inappropriate in reducing damage to acceptable levels. However, nonlethal methods may not always be applied as a first response to each damage problem, particularly where experience has shown that nonlethal methods in certain circumstances are not practical. The most appropriate initial response to a wolf damage problem could be a combination of nonlethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy.

Another Alternative (the No Action Alternative) involves simply continuing the current Wolf Damage Management program, which includes limits on wolf damage management activities that were established when wolves were federally classified as either an endangered or threatened species and/or by the special 10j rules (*e.g.*, 1994, 2005 and 2008 10j rules[6]) under which the nonessential, experimental (XN) populations were reintroduced [50 CFR 17.84 (n)] as authorized by the USFWS or IDFG[7] and the Courts. This Alternative would serve as the environmental base line against which the potential impacts of the other Alternatives are compared (CEQ 1981).

The third Alternative is essentially the same as the Proposed Action/Preferred Alternative, with WS providing assistance to IDFG in the control of wolves to protect ungulates, but with the potential addition of 2 methods not currently being used in wolf management. The additional potential management strategies under this Alternative would be: 1) the possible infrequent removal of pups in or near the den, only in those cases where removal of an entire pack of chronic depredating wolves had been authorized, in order to prevent pups from being left defenseless and subject to starvation, and 2) as a nonlethal alternative to total lethal removal of all members of a chronic depredating wolf pack, most or all the wolves *except* the breeding pair would be removed. One (or both if possible) of the breeding pair would concurrently be live-captured, surgically sterilized, radio-collared, and released to maintain and defend their territory against other wolves which might be more likely to prey on livestock. This approach would only be considered on a case-by-case basis, and only after the USFWS or IDFG had authorized the sterilization, and with the approval of the potentially affected livestock producers. This Alternative would continue WS' use and/or recommendation of a full range of legal, practical and effective nonlethal and lethal methods for preventing or reducing wolf damage while minimizing any potentially harmful effects of damage management measures on humans, wolves, other species and the environment.

Under a fourth Alternative, WS would only use and provide advice on nonlethal methods for wolf damage management. Under the fifth Alternative considered, WS would not be involved at all in wolf damage management in Idaho. Limitation of Federal actions under these two Alternatives would not prevent the USFWS or IDFG, as appropriate, or property owners from using lethal methods in accordance with Federal and state laws, policies and plans (*i.e.*, 50 CFR Part 17.84, USFWS 1994, 70 FR 1286, 73 FR 4720, 74 FR 15123, Idaho Wolf Conservation and Management Plan (ILWOC 2002) Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*)), or Court rulings.

Under the first four Alternatives, WS wolf damage management assistance could be provided on private or public property when: 1) authorized or approved by the USFWS or, if/when wolves become delisted

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[6] The NRM wolf l0j rule was revised in 2008 to give states more latitude in managing wolves that were affecting ungulate herds within the XN area. The State may request broader approval for ungulate management and the USFWS must then make a determination that the requested action would continue to provide for the conservation of the wolf.

[7] Upon return of state management for wolves, the Idaho Wolf Conservation and Management Plan (ILWOC 2002) and Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*) would provide guidelines and direction upon which wolves would be managed in Idaho.

again, by IDFG, 2) resource owners/managers request assistance to alleviate wolf damage, 3) wolf damage or threats are verified, and 4) agreements or work plans have been completed specifying the details of the damage management action to be conducted. The types of verified wolf or wolf-dog hybrid conflicts that could be addressed would include: 1) depredation/injury of domestic animals, 2) harassment/threats to domestic animals, 3) property damage, and 4) injury and/or potential threats to human safety (*e.g.*, habituated/bold wolves). The Preferred Alternative (Alternative 2) would allow for the WS program to provide assistance to IDFG to address the impacts of wolf predation on ungulate populations, as authorized by the USFWS, if appropriate. All WS wolf damage management in Idaho would be conducted in compliance with appropriate Federal, State, and local laws and regulations, policies, plans (*i.e.*, 50 CFR Part 17.84, USFWS 1994, 70 FR 1286, 73 FR 4720, 74 FR 15123, Idaho Wolf Conservation and Management Plan (ILWOC 2002) Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*)), and Court rulings.

The issues considered for each Alternative include: impacts on the wolf population; effectiveness of nonlethal and lethal control efforts in reducing wolf predation on livestock, other domestic animals and/or wild ungulates; impacts on public and pet health and safety; humaneness and animal welfare aspects of the methods to be used; and sociological issues, including the aesthetic and sociological values of wildlife.

CHAPTER 1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

Gray wolf (*Canis lupus)* populations in North America, including the wolf population in Idaho, have undergone dramatic recovery in recent years. In the Northern Rocky Mountains (NRM), population growth was hastened by the release of wolves by the U.S. Fish and Wildlife Service (USFWS) into Central Idaho and Yellowstone National Park (YNP) in the mid-1990s. Idaho's wolf population has far surpassed the biological recovery goals set by the USFWS (Nadeau et al. 2009). The expansion of the wolf population from backcountry areas into areas of greater human use and habitation has increased conflicts between wolves and humans in Idaho (USDA 2010). Conflicts with wolves include predation on livestock and pets, and risks to human health and safety from potentially hazardous or threatening wolves. In some parts of Idaho wolf predation has also become a significant factor in the decline or continued suppression of ungulate (such as elk (*Cervus canadensis*)) populations at levels well below IDFG wildlife management goals (IDFG 2010*b*). The effect of wolf predation on certain ungulate populations has created conflict, both in terms of the health of the herd, as well as conflict with people who rely on the hunting of ungulates as a source of food, cultural, and spiritual value (Helm 2008, Mader 2008, IDFG 2009*a*).

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) program Final Environmental Impact Statement (EIS) (USDA 1994) summarized the relationship in North American culture regarding wildlife values and wildlife damage in this way:

> *"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife generally is regarded as providing economic, recreational and aesthetic benefits . . . , and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and values is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural, and economic considerations as well."*

Wildlife damage management, a specialized field within the wildlife management profession, is the science of reducing damage or other problems caused by wildlife, and is recognized as an integral part of wildlife management (Berryman 1991, The Wildlife Society 2004). The USDA-APHIS-WS program is authorized and directed by Congress to conduct wildlife damage management to protect American agricultural, industrial and natural resources, property and human health and safety from damage associated with wildlife (Act of March 2, 1931 as amended 46 Stat. 1486; 7 USC 426-426c). WS is a cooperatively funded, service-oriented program that provides assistance to requesting public and private entities and government agencies. Before WS responds to requests for assistance and conducts any wildlife damage management, a request must be received and an *Agreement for Control* must be signed by the landowner/administrator for private lands or other comparable documents for public lands must be in place. WS responds to requests for assistance when valued resources are damaged or threatened by wildlife. Responses can be in the form of technical assistance or operational damage management depending on the complexity of the wildlife problem and the funding that is available. WS activities are conducted in accordance with applicable Federal, State and local laws, Cooperative Service Agreements, "Agreements for Control", Memoranda of Understanding (MOUs) with other State and Federal management agencies, and other applicable documents (WS Directive 2.210). These documents establish the need for the requested work, legal authorities and regulations allowing the requested work, and the responsibilities of WS and its cooperators.

In Idaho, public attitudes - positive and negative - about wolves have intensified because of the Federal government's active role in bringing wolves from Canada to release into Central Idaho and YNP as an, XN, rather than relying solely upon natural migration for recovery. Prompt, professional management of damage and conflicts with wolves is an important component of wolf recovery because it facilitates local public acceptance and tolerance of wolves (Fritts et al. 1992, Fritts 1993, Mech 1995). These researchers suggest that 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).

Under APHIS procedures for implementing the National Environmental Policy Act (NEPA), individual wildlife damage management actions considered in this analysis could be, and have been, afforded a Categorical Exclusion (CE) [7 CFR 372.5(c), 60 FR 6000, 6003]. The REA was prepared to evaluate and determine if there are likely to be any potentially significant or cumulative adverse impacts on the human environment from current or proposed new wolf damage management activities. All WS activities are undertaken in compliance with relevant laws, regulations, policies, orders, procedures and plans, including the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531-1543). The Idaho WS program cooperates with the USFWS and would cooperate with the IDFG or other agencies and groups to address wolf damage conflicts under the guidance in 50 CFR 17.84 (n), the Idaho Wolf Conservation and Management Plan (ILWOC 2002), the Idaho Wolf Population Management Plan (IDFG 2008*a*) and Court rulings, as appropriate.

1.2 PURPOSE

The purpose of the EA is to evaluate the potential environmental effects of alternatives for federal WS program assistance in reducing human-wolf conflicts in Idaho. Management activities would be intended to conserve wolf populations while protecting livestock and other domestic animals, ungulate populations, and human health and safety in Idaho. The REA evaluated management of conflicts with wolves, both as federally protected under the ESA since the courts have recently vacated the delisting of the NRM DPS of the gray wolves[8] and as managed by the IDFG if/when wolves are again delisted or when appropriate authorities provide for IDFG management.

Wolf damage management activities conducted by the Idaho WS program up to this time have been carried out under NEPA documents previously prepared by the USFWS (USFWS 1994, USFWS 2008) and the WS program (USDA 1996, USDA 2002, USDA 2008*a*, USDA 2009). The EAs prepared for these analyses all resulted in Findings of No Significant Impact (FONSI) for all the proposed activities. One of those documents (USFWS 2008) addressed the potential impacts of lethal removal of wolves to protect ungulates in the three-state (Idaho/Montana/Wyoming) NRM Recovery Area. The Proposed Action in this Final EA (FEA)includes analysis of the potential impacts associated with wolf removal to protect livestock, other domestic animals, human health and safety, and ungulates in selected areas of Idaho when IDFG has determined that wolf predation is contributing to unacceptable adverse impacts on an ungulate population and the USFWS has approved removal of wolves for ungulate protection[9] (C. Groen, IDFG Director letter to M. Collinge, WS January 28, 2009), if applicable. Whether or not federally assisted wolf removal to protect ungulates might ever be implemented would likely depend on a number of

[8] The U.S. Federal District Court in Missoula, Montana issued an order on August 5, 2010, in Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM, which vacated the delisting of the NRM DPS of the gray wolf. In compliance with this order, wolves are again considered endangered throughout the NRM DPS except where they are classified as XN populations (southern Montana, Idaho south of Interstate 90, and all of Wyoming). This litigation returned wolves in Idaho to endangered status north of I-90 and XN status south of I-90. The REA evaluated potential WS wolf damage management actions conducted in accordance with federal protections under the ESA, or as delisted wolves under the management authority of the IDFG (ILWOC 2002, IDFG 2008*a*).

[9] Under both the 2005 and 2008 10j rules, the responsible state wildlife agency needed to prepare a proposal and submit it to the USFWS for approve before any wolves could be removed to protect ungulate wildlife species if wolves are provided protection under the ESA.

factors, including: 1) wolves would need to be delisted and under the management of IDFG or the USFWS would need to approve the wolf removal, and 2) an evaluation of the effectiveness of hunting of wolves by the public as an alternative approach to address wolf impacts on ungulates in such areas.

1.3 NEED FOR WOLF DAMAGE MANAGEMENT IN IDAHO

As wolf populations increase and expand their range, local decision makers must choose management strategies that balance competing needs for wolf protection and the control of wolf-caused damage (Mech 2001).

Understanding the biology, impacts, and benefits of wolves has increased since reintroduction. The original reintroduction EIS (USFWS 1994) analyzed potential impacts expected with a fully recovered population of about 100 wolves in Idaho. At the end of 2009, IDFG and the Nez Perce Tribe estimated there were at least 835 wolves in Idaho, more than 8 times the number analyzed for potential impacts in the EIS (Mack et al 2010). The current population level is of particular concern for sportsmen who depend on surplus elk and deer (*Odocoileus* spp.) for harvest, and livestock producers who graze their stock on private and public rangelands.

IDFG managed wolves in Idaho in accordance with Federal and State laws and approved species management plans (ILWOC 2002, IDFG 2008*a*). Management objectives were established based on conflicts, predator-prey population balance, and maintaining a surplus of game species for harvest. To help with IDFG's implementation of State wolf population management plans (ILWOC 2002, IDFG 2008*a*), IDFG had requested WS to continue its role as a "designated agent" of the State to reduce wolf conflicts where regulated hunting is unable or impractical to respond to conflicts (C. Groen, IDFG Director memorandum to IDFG Regional Supervisors February 10, 2010). However, the Governor of Idaho's recent decision to withdraw Idaho from "designated agent" status for managing wolves means that the USFWS will be in charge of managing wolves until they are delisted once again, or until another "designated agent" agreement is reached with the State or some other appropriate entity. Until such changes occur, WS will now and into the foreseeable future, following a decision pursuant to this EA process, conduct wolf damage management actions subject to USFWS decisions and authorizations (B Kelly, USFWS letter to M. Collinge, WS, October 20, 2010), and Court rulings[10].

1.3.1 Wolf Damage Management to Protect Livestock and other Domestic Animals

One of the primary reasons that wolf damage management continues to be needed in Idaho is to comply with the commitment made by the Federal government when wolves were reintroduced. The clear intent of the rules under which wolves were reintroduced (50 CFR 17.84(i)), and under subsequent modifications of those rules was not only to provide for the recovery and eventual delisting of wolves, but to also concurrently address the damage caused by wolves.

Following the issuance of the 1994 10j rules for management of the XN gray wolf population in the NRM, subsequent 10j rules (issued in 2005 and 2008) allowed increasingly greater flexibility for wolf management and provided for more aggressive control actions to deal with wolf depredations on livestock and other domestic animals (70 FR 1286, 73 FR 4720, 50 CFR 17.84 (n)). At the time of the

[10] IDFG has independent state authority for conducting wildlife management activities, and the actions of state agencies not involving federal funding or federal agency actions are not subject to the requirements of NEPA. This EA considers the cumulative impacts of independent state actions where appropriate. Further, Idaho officials and Montana Fish, Wildlife and Parks asked the 9th U.S. Circuit Court of Appeals to reverse Judge Molloy's ruling that put gray wolves back onto the endangered species list in the NRM and blocked Montana and Idaho's wolf management plans and the fall hunting season. A second appeal was filed by the Idaho Farm Bureau Federation and Montana Farm Bureau Federation. In addition, the U. S. Representative from Montana drafted legislation for the House that advocates state control of wolves and is backing legislation in the House that would remove wolves from consideration under the ESA. Also, management of gray wolves in Idaho and Montana would be returned to the states under legislation introduced by Senators from Montana, Wyoming, Idaho and Utah.

reintroduction of XN wolves to Central Idaho, the USFWS addressed the issue of depredating wolves in their 1994 10j rule [at 50 CFR 17.84(i)(3)(vii)] with this specific language: "*All chronic problem wolves (wolves that depredate on domestic animals after being moved once for previous animal depredations) will be removed from the wild (killed or placed in captivity).*" It is important to note that this language did not specify chronic depredating wolves "*may*" be removed from the wild, but that they "*will*" be removed from the wild.

So as early as 15 years ago, when there were relatively few wolves in Idaho, the rules under which wolf reintroduction took place required mandatory removal of chronic depredating wolves. Technically, the 1994 10j rule definition of a chronic depredating wolf involved relocation of depredating wolves if fewer than six breeding pairs occupied an XN recovery area, but this approach has not been practiced in any areas of the NRM Recovery Area for many years, since relocation is no longer necessary to ensure viable wolf populations, and since all the suitable wolf habitat is essentially already occupied by wolves. [The USFWS, on page 1294, response 12 in their Federal Register notice accompanying the 2005 10j rule (70 FR 1286), provided further rationale for discontinuing relocation of depredating wolves.] Given the increasingly liberal allowances for control of depredating wolves in subsequent modifications of the 1994 10j rule, the intent of these rules is clearly to call for removal of any wolves involved in multiple confirmed depredations on livestock (73 FR 4720).

Whenever WS receives a report of suspected wolf depredation, or of wolves harassing/chasing livestock or livestock guarding animals, WS typically responds by sending a field employee to conduct an on-site investigation. Results of each investigation are documented on WS Form 200, Wildlife Services Depredation Investigation Report (see Appendix B). Specific criteria have been agreed upon by the USFWS, Nez Perce Tribe and WS to classify reported incidents of wolf depredation as either: confirmed, probable, possible/unknown or other (see 2nd page of Appendix B for discussion of these criteria).

The trend in confirmed incidents of wolf depredation on livestock has been a steady increase every year since wolves were reintroduced in Idaho (USDA 2010). As wolf conflicts increase, there is an increasing need for prompt professional wolf damage management assistance to maintain public tolerance and acceptance of wolves (Fritts and Carbyn 1995, Mech 1995, Boitani 2003, Fritts et al. 2003, 73 FR 10514). Table 1 shows the number of cattle, sheep and dogs confirmed as killed and/or injured by wolves during the 7 most recent calendar years in Idaho (IDFG 2010*a*) (Note that the figures in Table 1 are based on calendar year, rather than the Federal fiscal year).

Table 1. Confirmed Wolf Depredations

Year	Cattle	Sheep	Dogs	Total
2003	7	130	3	140
2004	19	176	4	199
2005	29	166	12	207
2006	41	237	4	282
2007	57	211	10	278
2008	104	215	14	333
2009	76	295	14	385
Total	**333**	**1,430**	**61**	**1,824**

It is important to recognize that the numbers in Table 1 represent only the minimum numbers of livestock actually killed and injured by wolves, and that many more livestock were probably killed but not confirmed as wolf predation (Bjorge and Gunson 1985, Oakleaf et al. 2003). Wolf predation is only confirmed in those cases where there is enough evidence remaining to determine that wolves in fact killed the animal. 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 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 evidence of predation, other than the fact that wolves are known to be in the area and some livestock have seemingly just

disappeared. Oakleaf et al. (2003) conducted a study on wolf-caused predation losses to cattle on U.S. Forest Service summer grazing allotments in the Salmon, Idaho area, 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.

During Federal fiscal year 2009, WS conducted 226 depredation investigations related to wolf complaints (as compared to 186 in 2008, an increase of almost 22%) (Figure 1-1). Of those 226 investigations, 160 (~71%) involved confirmed depredations, 43 (~19%) involved probable depredations, 16 (~7%) were possible/unknown wolf depredations and 7 (~3%) of the complaints were due to causes other than wolves (USDA 2010). The number of cattle and sheep killed and injured by wolves in Idaho in Federal fiscal year 2009 was the highest ever recorded. .

Figure 1-1. Minimum number of documented wolf packs in Idaho compared to number of depredation investigations, FY 03-09 (USDA 2010).

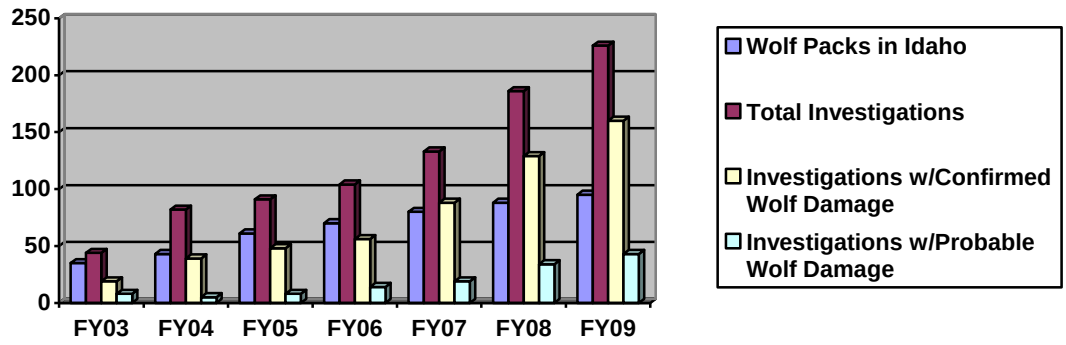
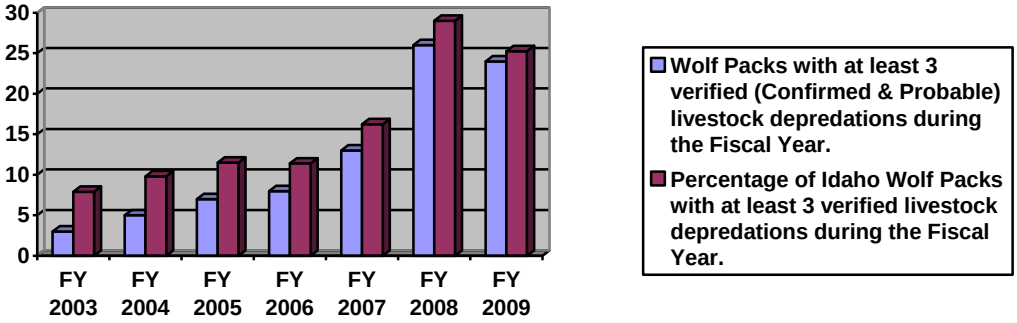


Figure 1-1 shows the increase in the number of wolf packs and the concurrent increase in the number of wolf-related depredation investigations and confirmed and probable incidents of wolf predation on livestock and other domestic animals in Idaho for the 7 most recent Federal fiscal years (USDA 2010).

Figure 1-2 shows the increase in the number of wolf packs involved in 3 or more verified depredations on livestock each year, and the increase in the **proportion** of Idaho's wolf packs that were involved in 3 or more verified depredations for each of the 7 most recent Federal fiscal years (USDA 2010). The data in Figure 1-2 indicate that the proportion of Idaho's wolf packs implicated in "chronic" depredations was increasing each year up until 2009. This was likely related to the fact that as the increasing wolf population continued to spread out from Federal lands onto more private land, wolves were increasingly coming into greater conflict with livestock. The slight decrease in number of chronic depredating packs in 2009 may be related to the fact that WS removed more wolves from chronic depredating packs in the last 2 years than in any previous years.

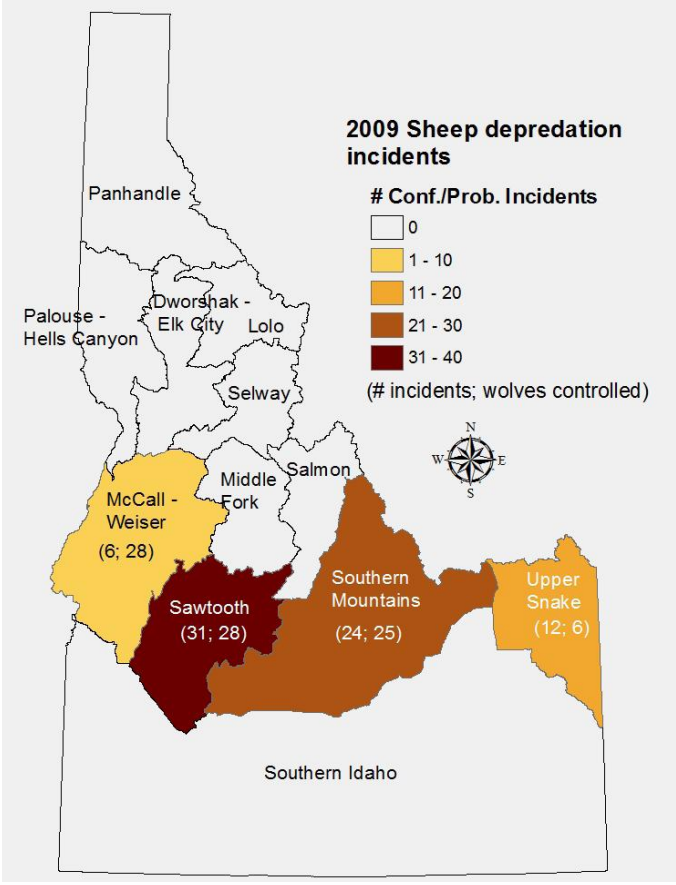
Figures 1-3 and 1-4 indicate which wolf management zones had the highest number of depredations on sheep and cattle in calendar year 2009. (Note that the number of wolves indicated as "controlled" on each map is a combined total in response to depredations on both cattle and sheep).

Figure 1-2. Number of verified "chronic" depredating wolf packs in Idaho from FY 03-09 (USDA 2010).



Many of the confirmed incidents of wolf predation on livestock in Idaho have involved only one or several animals killed or wounded per incident, but there have also been situations where much larger numbers of livestock have been killed in a single incident, particularly in the case of wolf attacks on sheep. In September, 2003, for example, WS personnel confirmed wolf predation on 61 sheep in a single incident near Riggins, Idaho, and an additional 40 sheep were missing and never found after the night of that attack (USDA 2004). 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.

Figure 1-3. Number of Confirmed and Probable Sheep Depredations in Idaho Attributed to Wolves and Number of Wolves Lethally Removed by Wolf Management Zone in 2009 (Mack et al. 2010).

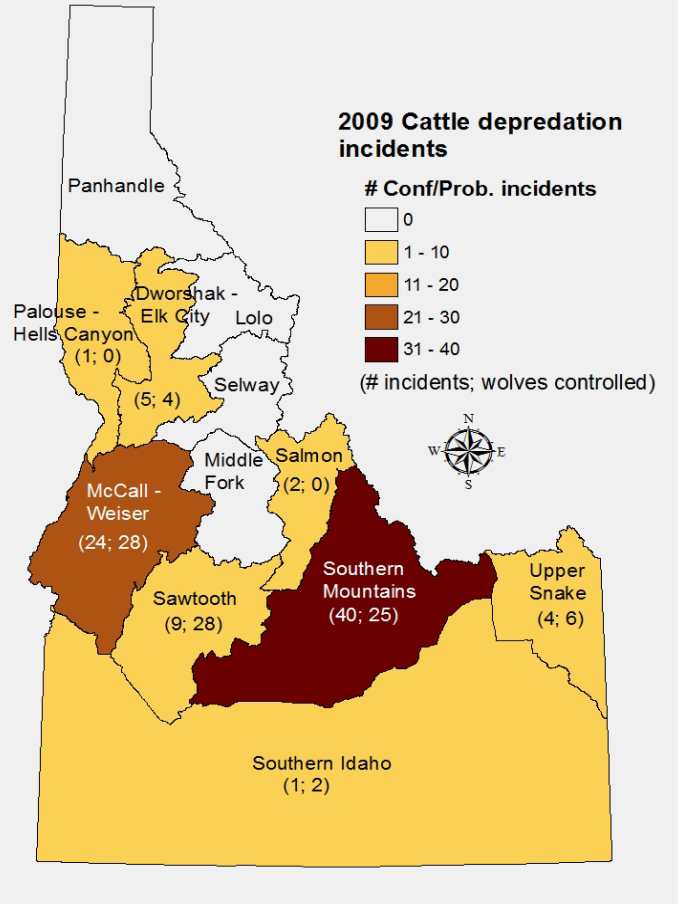


Although direct losses of livestock due to predation are often conspicuous and economically significant, they likely underestimate the total impact on producers because they do not consider indirect effects as a result of livestock being exposed to the threat of predation (Howery and DeLiberto 2004, 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.

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 are actively chasing 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, calf early or give birth to a weak calf.

Figure 1-4. Number of Confirmed and Probable Cattle Depredations in Idaho Attributed to Wolves and Number of Wolves Lethally Removed by Wolf Management Zone in 2009 (Mack et al. 2010).



Some wolf advocacy groups have pointed out that, in relative terms, only a very small proportion of livestock losses (<1% for cattle and <2.5% for sheep) are typically caused by wolves, and that other predators, such as coyotes (*Canis latrans*), are responsible for many more livestock deaths than are wolves (Defenders of Wildlife 2007). However, it is important to recognize that these relatively low overall levels of loss are occurring with established control programs already in place. It is also important to recognize that even though predation losses due to wolves represent a relatively minor portion of total overall death losses nationwide, these losses are never evenly distributed across the industry (Mack et al. 1992). Most livestock producers will experience little or no predation by wolves, while other producers in certain areas may suffer significant losses to wolves. Coyotes, by virtue of the fact that their populations are typically many times greater and more widely distributed than the wolf population, do cause more overall predation losses. But assessing the relative likelihood of predation by individual wolves versus individuals of other more abundant and widespread predators provides insight as to why wolf predation is a bigger concern to some livestock producers and wildlife management agencies than is predation by other species.

Collinge (2008) compared reported numbers of livestock killed by wolves and other predators with the estimated statewide populations of the four species most often implicated in predation on livestock in

Idaho (*i.e.*, coyotes, wolves, mountain lions (*Puma concolor*), and black bears (*Ursus americanus*). By determining the average number of livestock killed per each individual predator on the landscape and comparing these figures among the four species, his results indicate that individual wolves in Idaho are about 170 times more likely to kill cattle than are individual coyotes or black bears. Individual wolves were determined to be about 21 times more likely to kill cattle than were individual mountain lions. These comparisons highlight the importance of being able to implement effective wolf damage management procedures.

Domestic dogs and cats are occasionally killed and eaten by wolves (Fritts and Paul 1989, Treves et al. 2002). The dogs most often attacked by wolves in Idaho are typically either livestock guarding dogs or hunters' hounds which sometimes encounter wolves during the legal sport hunting seasons for black bears and mountain lions. These 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, and individual bear and lion hounds are often valued at several thousands of dollars for well trained and experienced animals. Wolves have also occasionally killed or injured pet dogs near peoples' homes in Idaho and other states, sometimes in the presence of the nearby owners (J. Rachael, IDFG, pers. comm. 2010, http://www.kidk.com/news/local/17441814.html).

1.3.2 Potential Role of Wolves in Disease Transmission to Wildlife, Livestock and Humans

Wolves in Idaho are known to have exposure to a variety of diseases, including those caused by viruses (*e.g.*, canine distemper, canine parvovirus, and canine infectious hepatitis), bacteria, and both internal (*e.g.*, intestinal worms of various species, *Echinococcus sp*) and external parasites (*e.g.*, lice and ticks) (IDFG 2008*a*). A complete list of diseases that wolves in Idaho could encounter would closely mirror diseases present in domestic dogs and coyotes in the State. Wolves that interact with domestic dogs are likely to have higher exposure rates than wolves in remote areas. Wolf populations have the opportunity to develop individual and pack level immunity to some of the common pathogens over time, some of which may be conferred to offspring through maternal antibodies (Gillespie and Timoney 1981). Although diseases can be significant sources of mortality for wolves, they are generally not considered to be limiting at the population level. Despite evidence of ubiquitous exposure, wolves in Idaho demonstrate high recruitment, suggesting long-term stability of the population. Negative effects associated with diseases are unlikely unless the population reaches high density (Kreeger 2003).

The protozoan parasite, *Neospora caninum*, causes abortions in cattle and has been shown to be a large economic loss to the dairy and beef industry with infected animals being 3 to 13 times more likely to abort than non-infected cattle (Hall et al. 2005, Trees et al. 1999). Presently, domestic dogs and coyotes are the only two species that have been determined to be able to host and transmit *N. caninum* (Gondim et al. 2004*a*, *b*). Canids become infected by ingesting tissues (*i.e.*, placenta, fetuses) contaminated with the organism. They then shed the organism in their feces. A cow grazing on a pasture contaminated with these feces can become infected with *N. caninum* (Dubey 2003).

It has been postulated that wolves are likely to be able to host and transmit *N. caninum* because of their phylogenic relationship to dogs and coyotes. Gondim et al. (2004*b*) indicated that 39% (n = 164) of wolves from Minnesota and 11% of coyotes in Utah, Colorado, and Illinois (n = 113) tested positive for exposure to *N. caninum*. Mech (2004, unpubl. data) sampled 11 wolves from five counties in Minnesota from farms with a history of wolf depredation and 8 of 11 (73%) tested positive for exposure to *N. caninum*. Research in Minnesota is currently being conducted to determine if wolves can also transmit viable *N. caninum* in their feces. Although gray wolves may prove to be hosts capable of transmitting *N. caninum*, it is unclear whether the presence of wolves would add to the risk already posed by other canids, and whether or not wolves might play a role in reducing the potential of

disease spread as suggested for other ungulate diseases has not yet been determined (Stronen et al. 2007). Data on the rate of seroprevalence (proportion of animals in the population that show evidence of having been exposed to the disease) of coyotes, dogs, and wolves needs to be defined for a particular geographic region before conclusions can be drawn (Gondim et al. 2004*b*).

During the winter of 2009, 17 wolves were captured near Jackson, Wyoming and tested for 2 strains of Brucellosis (*Brucella canis* and *B. abortus*). All 17 wolves tested negative for *B. canis* and 15 wolves tested negative for *B. abortus,* but two wolves tested positive for *B. abortus.* To put these test results in perspective, the Supervisory Veterinarian for the Wyoming Game and Fish Department (T. J. Kreeger, DVM, PhD) offered the following comments, "A positive serology titer for *B. abortus* in a wolf means that the wolf had been infected with the bacteria sometime in the past (probably in the last 12 months) and developed an immune response reflected in the antibodies measured by the diagnostic tests. A positive test does not mean that the wolf is currently infected with living bacteria, although it could be. How a wolf became infected by *B. abortus* is speculative. Possible ways of becoming infected include: 1) consumption of a fetus aborted by an infected elk or bison (*Bison bison*); 2) consumption of an adult, pregnant, infected elk or bison (particularly consumption of the reproductive tract); 3) consumption of an adult, infected, but not pregnant elk or bison (unlikely source); or 4) contact with the environmental site of an aborted fetus (also unlikely). Wolves can become infected with *B. abortus* and transiently shed the bacteria in the feces, although the amount of shed bacteria is thought to be insufficient to infect cattle, elk, or bison" (USFWS 2009).

Foreyt et al. (2009) documented that the tapeworm *Echinococcus granulosus* occurred in 62% of wolves examined in Idaho, and that it was common to find thousands of these tapeworms in each infected wolf. *E. granulosus* requires two hosts to complete its life cycle. Ungulates (*i.e.*, deer, elk, moose (*Alces alces*), domestic sheep, and domestic cattle) are intermediate hosts for larval tapeworms which form hydatid cysts in the body cavity, often on the liver or lungs. Canids (*i.e.*, dogs, wolves, coyotes, foxes (*Vulpes, Urocyon* and *Alopex* spp.) are definitive hosts where larval tapeworms mature and live in the small intestine. Definitive hosts are exposed to larval tapeworms when ingesting infected ungulates. Adult tapeworms, 3-5 mm long, produce eggs which are expelled from canids in feces. Intermediate hosts ingest the eggs while grazing, where the eggs hatch and develop into larvae. Humans are at risk of becoming infected and developing hydatid cysts, primarily through ingestion of eggs which may be present on the fur of infected dogs, wolves or other canids. In Idaho, at least three reports of human infections with *E. granulosus* are known; the earliest dating back to 1938. Throughout the world, most human cases occur in indigenous people with close contact with infected dogs, but hunters and trappers handling wolves, coyotes or foxes may be at increased risk (<http://fishandgame.idaho.gov/cms/wildlife/manage_issues/echinococcus.cfm>).

Although wolves clearly can and do carry diseases that could adversely affect livestock, other wildlife, or humans, the risk of substantive disease problems from wolves appears to be low or, as of yet, undetermined. Therefore, WS does not expect to receive any requests for wolf damage management to control disease risks in the foreseeable future.

1.3.3 Wolf Damage Management to Protect Ungulates

The 10j rules under which wolves were reintroduced to Idaho in 1995 and 1996 were revised in 2005 and 2008[11] to allow states increased management flexibility to address wolf depredations on livestock

[11] The NRM wolf l0j rule was revised in 2008 to give states more latitude in managing wolves that were affecting ungulate herds within the XN population areas. States may request broader approval for ungulate management. USFWS then determines whether the request would provide for the conservation of the wolf. The 2008 l0j rule is currently being litigated, and the outcome of that litigation may redefine sideboards within which agencies can manage wolves. At this time the 2008 revised 10j rule remains in effect.

and "unacceptable impacts" on wild ungulates (70 FR 1286, 73 FR 4720). If/when wolves are delisted again, the 10j rules will no longer apply, and individual states can conduct wolf management under the provisions of approved state wolf management plans. Under Idaho's Wolf Conservation and Management Plan (ILWOC 2002), IDFG has an obligation to assure that wolves in increasing numbers do not adversely affect big game populations. Predation pressures on elk and deer are natural sources of mortality that are accounted for in natural systems and not necessarily problematic at some level. Predation may be either beneficial or detrimental to the population, depending on time, location, environmental and habitat conditions, point of view, and other factors.

Wolves are effective predators and scavengers that feed primarily on large ungulates throughout their range (Murie 1944, Pimlott 1967, Mech 1970, Van Ballenberghe et al. 1975, Carbyn 1983, Ballard et al. 1987, Gasaway et al. 1992, Boyd et al. 1994). Kill rates of wolves may vary widely by area and from year to year depending upon primary prey species, prey abundance, and weather conditions, among other factors. Most often the effects on prey populations that are attributable to wolf predation are unknown because of the lack of information on population dynamics of the prey populations and the rates of other mortality sources. However, Kunkel and Pletscher (1999) documented that predation by wolves and other predators (*i.e.*, mountain lions, grizzly bears (*Ursus arctos horribilis*), black bears, coyotes, and humans) on ungulate species in northwestern Montana appeared to be mostly additive to the effect of other mortality factors and that predation appeared to be the primary factor limiting the growth of deer and elk populations.

Ungulates comprise nearly all of the winter diet of most wolves. Of ungulates killed during winter by wolves that colonized northwestern Montana since the mid-1980s, 63% were deer (60% white-tailed deer (*O. virginianus*), and 3% mule deer (*O. hemionus*), 30% were elk, and 7% were moose (Boyd et al. 1994, Kunkel et al. 1999). Wolves selected white-tailed deer wintering areas and selected deer over elk and moose (Kunkel et al. 1999). An established population of wolves in northwestern Montana and southeastern British Columbia was responsible for the annual mortality of 6% of female white-tailed deer and 3% of female elk (Kunkel 1997, Kunkel and Pletscher 1999).

In YNP, elk made up 89% of the 449 kills made by wolves during winters 1995-1997 (Phillips and Smith 1997, Smith 1998). In 2000, 281 elk (87%), 10 bison (3%), 4 moose (1%), 5 deer (3%), 4 coyotes (1%), 1 wolf, and 17 unknowns (5%) were determined to be killed by wolves during the mid-winter observation period. Composition of elk kills was 34% calves, 34% cows, 19% bulls, and 13% unknown. Bison kills included 3 calves, 1 cow, 1 bull and 4 adults of unknown sex. Remains of voles (*Microtus* spp.), ground squirrels (*Sciuridae*), snowshoe hare (*Lepus americanus*), coyotes, bears, insects and vegetation were also found in wolf scats (Smith 1998).

Prey selection and frequency of killing by wolves varies greatly depending on many factors including pack size, snow conditions, the diversity, density, and vulnerability of prey, and degree of consumption of the carcasses (Kunkel 1997). Snow depth and wolf density best explained the annual variation in kill rate in northwestern Montana (Kunkel 1997). Based on studies with the most similar species and diversity of prey (Carbyn 1983, Keith 1983, Boyce 1990, Vales and Peek 1990, Mack and Singer 1992), wolves were projected to kill about 16.5 ungulates per wolf per year in Idaho where they are expected to feed primarily on elk and mule deer (USFWS 1994).

During the first 3 years of an intensive predation study in YNP, wolves killed at a rate equivalent to ~ 10.7 kills/wolf/year during early winter (Phillips and Smith 1997, Smith 1998). The rate increased to ~ 23.3 kills/wolf/year by late winter (Phillips and Smith 1997, Smith 1998). Elk made up 90% of the wolf kills examined. In the first year of a winter predation study near Salmon, Idaho, deer made up only 10% of the prey killed by the Moyer Basin and Jureano Mountain wolf packs during winter, significantly less than their proportion of abundance (Husseman and Power 1999, Husseman 2002).

Wolves selected calf elk in excess of their proportion of abundance in the population (Husseman and Power 1999, IDFG 1999).

Carbyn (1987) documented that wolves prey on calf elk in excess of their proportion of abundance in the population. Wolves selected older and younger deer and elk than did hunters in northwestern Montana (Kunkel et al. 1999). Vales and Peek (1990) examined several studies that reported the age structure of deer and elk killed by wolves compared to the estimated age structure of the deer and elk populations. In several studies wolves were documented to take old deer in excess of their proportion of abundance in the population, and wolves tended to take elk calves in excess of their abundance in the population (Kunkel et al. 1999). Husseman and Power (1999) similarly reported wolves taking elk calves in excess of their proportion of abundance in the population. Fifty-eight percent of elk killed by wolves near Salmon, Idaho during winter 1999 were calves (Husseman and Power 1999); whereas, calves comprised approximately 17% of the elk population in the area at that time (IDFG 1999).

Creel et al. (2007) and Christianson and Creel (2010) assessed the impacts associated with risk of wolf predation on the reproductive physiology and demography of elk in the Greater Yellowstone Ecosystem. Their work suggested that elk in areas occupied by wolves spent more time maintaining alertness for the presence of wolves and less time feeding. This change in behavior resulted in negative impacts on body condition and reproductive success of cow elk, with corresponding reductions in calf recruitment into the population. The data from Creel et al. (2007) showed that the reproductive costs of anti-predation behavior can be large, with important consequences for prey dynamics. The authors cautioned that if managers fail to consider these indirect types of effects from wolf predation, decreased elk recruitment could be mistakenly attributed to habitat-related issues.

IDFG has conducted extensive monitoring in elk management zones across the state as part of their ongoing efforts to meet elk population management objectives (IDFG 2009*b*, 2010*b*). In some management zones, there have been indications that predation is one of the primary reasons for declining numbers of elk. Data collected by IDFG in the Lolo and Selway Elk Management Zones indicates that the elk population in these areas is far below historic levels and current population management objectives (IDFG 2010*b*). The data further demonstrate that wolf predation is a primary cause of mortality and is preventing the cow:calf component of the elk population from reaching management objectives. Based on survival data and computer modeling, the Lolo Zone elk population is expected to continue to decline at a rate of 11 to 15% annually unless something can be done to mitigate this decline (IDFG 2009*b*).

In Alaska and various Canadian provinces, wolf populations have been experimentally reduced to improve ungulate population performance (National Research Council 1997). In three instances, wolves were reduced annually in Aishihik, Yukon to 49-85% of pre-control levels for periods of 5 to 7 years (Hayes et al. 2003). Those efforts revealed the potential to dramatically improve ungulate population performance.

IDFG adopted a Predation Management Plan in 2003 for the Lolo and Selway Zones to address predation by black bears and mountain lions and revised this plan in 2010 to address the effects of wolf predation (IDFG 2010*b*). In this Plan, IDFG has proposed an adaptive strategy to reduce excessive predation on elk by reducing the wolf population in the Lolo Zone. Prior to ESA protections being reinstated for wolves, the wolf population in the Lolo Zone would have been reduced through regulated public hunting[12] and/or agency removal efforts, to manage for a minimum of 20 to 30

[12] Since wolves have been provided protection by the U.S. Federal District Court in Missoula, Montana (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM), which vacated the delisting of the NRM DPS gray wolf, public hunting seasons have been suspended.

wolves in three to five packs. The level of removal would be dependent on pre-treatment wolf abundance. Presently, take of wolves may only be authorized in specific instances under the 2008 10j rule in response to wild ungulate impacts (50 CFR 17.84(n)(4)(v)). In response to wolf predation impacts on elk, IDFG has submitted a request to the USFWS to authorize a 5-year wolf removal program in the Lolo Elk Management Zone (IDFG 2010*b*). Using the minimum estimated number of 76 wolves in the Lolo Zone at the end of 2009 (Mack et al. 2010), a minimum of 40 to 50 wolves would be lethally removed during the first year. Removal during subsequent years would be lower, but variable, depending on wolf abundance. However, IDFG would maintain a minimum of 20 to 30 wolves annually in the Lolo Zone for a period of 5 years (IDFG 2010*b*). Similar approaches might be exercised in other zones where IDFG has documented that wolves are one of the primary reasons for declining ungulate populations, contingent on approval from the USFWS (while wolves are still listed).

A review of case studies where wolves were removed to protect ungulates (National Research Council 1997) indicated that such efforts would likely be effective when the number of wolves is reduced by at least 55% of their pre-control population level over a large area for at least 4 years, when wolves are the primary predator of all age classes of the targeted ungulates, and the weather is favorable for ungulate survival.

In the future, if IDFG identifies additional areas of Idaho (besides the Lolo and Selway Zones) where wolf predation is having an adverse impact on elk or other ungulate populations and if removal actions are authorized by the USFWS or at the request of IDFG, as appropriate, the Proposed Action would include WS assistance to IDFG with wolf removal in those areas for protection of ungulates. Those efforts would only be conducted under the provisions of approved IDFG management plans, authorization from the USFWS (if wolves are listed), and at the request of IDFG which, according to IDFG's currently established plans, would ensure maintenance of a viable wolf population in Idaho.

1.3.4 Wolf Damage Management to Protect Human Safety

Wolf attacks on humans have been recorded in Russia, Finland, Scandinavia, Germany, India, Afghanistan, Korea, central Asia, Turkey, Iran, and Greenland, but there have been few reported wolf attacks on people in North America (Geist 2008). However, there are reports from areas of North America where wolves have been viewed as threatening to humans or have stalked and attacked people for unknown reasons (*e.g.*, reasons unrelated to disease or injury) (Linnell et al. 2002, McNay 2002). When wolves approach human residences and threaten or kill people's pets or exhibit bold behavior, people often become concerned for human safety. This is especially true if small children are present at those residences.

Linnell et al. (2002) reported several cases from around the world in which non-diseased wolves attacked people, but no humans were killed during the attacks; the wolves, in most cases, were later killed and examined. The wolves involved in those attacks seemed to have acclimated to the presence of people and had become more aggressive toward humans. Fortunately, in many of these incidents, other people accompanying the victims were able to drive the wolf away. In many cases the person attacked received only minor injuries and made a full recovery in a few days to weeks.

There are no verified instances of wolves having attacked and seriously injured people in the lower 48 United States, but a review by McNay (2002) of known case histories of wolf attacks or aggression toward humans in Alaska and Canada, did include 3 incidents from Minnesota. The author noted that incidents of wolves behaving aggressively towards humans are rare, and that for much of the 20th century there were no documented cases of wolves killing or seriously injuring a person in North America. McNay (2002) provided case histories for 11 instances of what he considered unprovoked

incidents of aggressive behavior of wolves which resulted in no injury (4) or minor injuries (7) over the period of 1969-1993, and evidence of 7 cases of unprovoked wolf aggression over the period of 1994-2000, 5 of which involved wolves inflicting severe bites on humans.

In January 2005, an individual was attacked by a wolf while jogging near the community of Key Lake in northern Saskatchewan, Canada. The man was able to fight off the animal and later was flown to a hospital for non-life threatening injuries (CBC News 2005). In July 2007, a kayaker in a remote area of the North Coast in British Columbia, Canada was attacked by an old female wolf (Pynn 2007). The kayaker was able to stop the attack by repeatedly stabbing the wolf with a knife. The individual called for help on his marine radio and the wolf was shot by the individuals who came to rescue the kayaker. In this instance, there was no indication that the wolf had been fed or otherwise habituated to humans.

There have been 2 documented fatal attacks by wolves on humans in North America in recent years. The first fatal attack occurred in November 2005 near Points North, Saskatchewan (McNay 2007) and the other in March 2010 near the village of Chignik Lake, Alaska. In the first case, evidence suggested several local wolves had become habituated to people, and the victim was attacked while out walking alone in a wooded area. Those wolves had been feeding on the victim's body before searchers found the victim's remains. In the second case, Alaska officials concluded wolves killed a 32-year-old woman as she was jogging along a gravel road near the town of Chignik Lake, on the Alaska Peninsula (http://www.msnbc.msn.com/id/35913715/ns/us_news-life/).

McNay (2002) reported that in most instances where naïve wolves behaved aggressively toward humans, the humans defended themselves by hitting the wolf with a heavy object, firing a rifle into the air or, in two instances, killing the wolf. None of the individuals who were bitten by habituated wolves defended themselves with anything other than their voices, hands or arms. It was difficult to determine if food conditioning (*i.e.*, wolves learning to associate humans with the availability of food) played a role in all cases. However, 6 of the 11 aggressive habituated wolves were known to be food conditioned. It was unlikely that the naïve wolves were food conditioned because all of those incidents occurred at sites well away from human use areas. With a growing wolf population and many people living in occupied wolf range, opportunities for wolves to become habituated to humans and risks of adverse interactions with humans are likely to increase. The data provided by McNay (2002) indicates the importance of human behavior management and public education programs to prevent adverse human-wolf encounters. These efforts coupled with nonlethal techniques designed to reduce or prevent wolf habituation to humans will likely prevent or resolve most situations where wolf behavior causes concern for human safety. However, there may be instances where removal of a bold, habituated wolf may be deemed necessary to reduce a human safety risk.

Wild wolves rarely contract rabies, but it is possible, and there is a serious concern for humans or their pets should they be bitten. McNay (2002) reported that 2 people died as result of bites from wolves with rabies in Alaska in the 1940s. In 2007, a pack of wolves attacked a group of sled dogs and strays in Marshall, Alaska (Pemberton 2007). The one wolf that was killed by villagers during the attack tested positive for rabies. All dogs involved in the incident were euthanized as well as free roaming dogs that may have been involved in the incident. In response, villagers and government officials were working to increase use of rabies vaccine and fenced enclosures for dogs. This type of incident is relatively uncommon, and rabies is rare in wolves south of the arctic in North America.

Although the above information indicates wolves can threaten human safety, we expect that requests for assistance in removing wolves for that reason to be rare.

1.4 RELATIONSHIP OF THIS REA TO OTHER ENVIRONMENTAL AND MANAGEMENT DOCUMENTS

1.4.1 WS Programmatic EIS

WS issued a programmatic EIS which analyzed all wildlife damage management activities conducted by the WS program (USDA 1994) and a Record of Decision for the programmatic EIS was issued in 1995. This FEA incorporated pertinent information by reference from USDA (1994).

1.4.2 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, ungulate populations, and hunter opportunity. 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 FEA.

1.4.3 Environmental Assessment for Proposed Revision of Special Regulation for the Reintroduction of Gray Wolves into the Central Idaho and Yellowstone Areas

The USFWS (2008) issued a FEA and Decision in January 2008 on proposed changes to the 2005 10j rule [50 CFR 17.84(n)] which would allow greater flexibility in managing wolves that had been shown to be having an unacceptable adverse impact on ungulate populations. The USFWS EA assessed the ecological and other impacts related to the potentially increased take of wolves for protection of ungulates and peoples' dogs. The Proposed Action in the REA included some of the same wolf damage management activities which were analyzed in the USFWS EA, and relevant analysis from that document is incorporated by reference in this document.

1.4.4 Wolf Conservation and Management Plan[13]

The Idaho Legislative Wolf Oversight Committee (ILWOC) prepared the Idaho Wolf Conservation and Management Plan (ILWOC 2002) which was approved by the 56th Idaho Legislature, Second Regular Session in March 2002. The goal of this conservation and management plan is to ensure the long-term survival of wolves in Idaho while minimizing wolf-human conflicts that result when wolves and people live in the same vicinity. Wolf control actions included within the Proposed Action /Preferred Alternative in this EA would be consistent with the provisions of the Idaho Wolf Conservation and Management Plan (ILWOC 2002).

1.4.5 Idaho Wolf Population Management Plan

The IDFG involved a wide variety of stakeholder groups in the development of the Idaho Wolf Population Management Plan (IDFG 2008*a*). The plan was developed to provide a management framework for state management of the gray wolf population during the 5-year period following delisting of wolves (See more detailed summary below). The plan provides for the long-term viability of Idaho's wolf population, and wolf damage management as proposed under the Preferred Alternative in this EA would be consistent with the provisions of the Idaho Wolf Population Management Plan (IDFG 2008*a*).

1.4.6 Environmental Assessment for Predator Damage Management in Southern Idaho

[13] Implementation of some provisions of the Idaho Wolf Conservation and Management Plan (ILWOC 2002) and Idaho Wolf Population Management Plan (IDFG 2008*a*) has been temporarily suspended because Governor C. L. Otter has determined that the IDFG will no longer be a designated agent for wolf management in Idaho. This determination could change because of the Governor's reevaluation, Court rulings, pending legislation, or other actions.

USDA (2002) issued an EA and FONSI regarding predator damage management activities conducted by the USDA-APHIS-WS program in southern Idaho. That EA included analysis of actions and methods to address wolf predation on livestock. Some aspects of that analysis remain relevant to current wolf damage management activities as practiced under the No Action Alternative, including the analysis of potential impacts to threatened and endangered species, and the analysis of potential impacts associated with most of the same tools and methods currently used during wolf damage management activities.

1.4.7 Environmental Assessment for Predator Damage Management in Northern and Central Idaho

USDA (1996) issued an EA and FONSI regarding predator damage management activities conducted by the USDA-APHIS-WS program in northern and central Idaho. That EA included analysis of actions and methods to address wolf predation on livestock. Some aspects of that analysis remain relevant to current wolf damage management activities as practiced under the No Action Alternative, including the analysis of potential impacts to threatened and endangered species, and the analysis of potential impacts associated with most of the same tools and methods currently used during wolf damage management activities.

1.4.8 Annual Monitoring Reports and 5-Year Summary Reports for WS Predator Damage Management EAs

Since completion of the above-described WS EAs, the Idaho WS program has prepared annual monitoring reports and 5-year Summary Reports to review relevant data regarding WS predator damage management, including wolf damage management. The 5-Year Summary Reports were provided to the public for a 30-day comment period followed by a new FONSI issued by WS. All of these reviews have continued to show that WS predator damage management is having no significant adverse effects on the quality of the human environment.

1.4.9 Categorical Exclusion Records for WS Wolf Damage Management in Idaho

In addition to the above-described EAs and annual monitoring and summary reports prepared by WS, categorical exclusion records were prepared in 2009 and 2010 for wolf control actions expected to be conducted in the IDFG-established wolf management zones where wolf predation on livestock had previously occurred. These documents analyzed the potential impacts of wolf removals expected to occur in response to depredations on livestock under the current program of wolf damage management. These analyses all indicated that expected wolf control actions would cause no significant impacts on Idaho's overall wolf population, or on the populations of any non-target species.

1.4.10 Substantial Impairment Analyses Prepared by the Sawtooth National Forest to Assess the Potential Impact of Grazing-Related Issues on Wolves in the Sawtooth National Recreation Area (SNRA)

In compliance with the requirements of the SNRA Organic Act and NEPA, the Sawtooth National Forest prepared analyses in 2003 to determine whether administration of livestock grazing on SNRA lands might "substantially impair" wolves or wolf-related recreational opportunities. The 2003 analysis and accompanying 2004 Record of Decision were reviewed in 2010, based on additional new information available since completion of the original analysis. Both the original analysis and the 2010 review determined that grazing related issues, including wolf damage management, were not substantially impairing wolves or wolf-related recreation in the SNRA. The analysis in this FEA has

been reviewed for consistency with the conclusions of the substantial impairment analyses prepared by the U.S. Forest Service for the SNRA.

1.4.11 Memorandum of Agreement (MOA) between the Secretary of the Interior, through the USFWS, and the State of Idaho

This MOA was established in 2006 to facilitate an orderly transition from Federal management to State management and to further enhance the conservation of the gray wolf. Under the 10(j) rule and this agreement, IDFG became the USFWS' "designated agent" to manage wolves in Idaho. This agreement expired in March 2010, and a new agreement has not yet been developed. If wolves remain listed, and a new agreement is developed, it could once again provide for IDFG to act as a "designated agent" for the USFWS in managing Idaho's wolves.

1.4.12 Memorandum of Understanding (MOU) Between IDFG and the Idaho State Animal Damage Control Board (ISADCB)

The most recent version of this MOU was signed in 2006, but this document has been revised several times over the years by mutual agreement to most effectively facilitate responses to wildlife damage problems in Idaho, and the current version of this MOU is expected to be revised in 2011. This document outlines the roles and responsibilities of IDFG and WS in dealing with a variety of wildlife damage problems in Idaho, including wolf damage problems. Any actions conducted under either the Proposed Action, Alternative 2 or the No Action Alternative, would be consistent with the guidance in this MOU or any updated version of the current MOU. Under Alternatives 4 and 5 WS would not be able to fulfill all of its commitments for wolf damage management under the MOU, either providing only advice on possible management methods or not being involved in wolf management at all.

1.4.13 National Forest Land and Resource Management Plans (LRMPs)

Before an Alternative can be considered for implementation on National Forest System lands, it must be consistent with the LRMP or "Forest Plan" for that Forest. If the Alternative is consistent with the LRMP, no additional action would be necessary by the U.S. Forest Service.

If an Alternative that is inconsistent with the LRMP is selected, the U.S. Forest Service could amend the LRMP to be consistent with the FEA, or elements of the selected Alternative could be modified when operating on that Forest. The decision would not be implemented on National Forest System lands until any inconsistency is resolved either through amendment of the LRMP or modification of the Alternative. Any inconsistencies would be identified and resolved before the wolf damage management project is conducted on National Forest System lands. A work plan would be developed by WS with each National Forest before any wolf damage management is conducted, or in rare instances under *emergency control only.* Wolf management on National Forest System lands in Idaho would only be considered after consultation with the U.S. Forest Service, USFWS, IDFG, and/or other responsible management agency, as appropriate.

1.4.14 BLM Resource Management Plans (RMPs)

The BLM currently uses RMPs to guide land use decisions and management actions on lands they administer. Any decision made as a result of this FEA process will be consistent with guidance in these RMPs regarding WS activities. If change in an RMP is deemed appropriate by BLM and WS to better facilitate accomplishment of agency missions, amendment of an RMP may be considered.

1.5 IDFG PLANNED MANAGEMENT DIRECTION AS DESCRIBED IN IDFG (2008*a*)

When wolves are delisted, they will be managed under the guidance in the IDFG Wolf Population Management Plan (IDFG 2008*a*). The objective in that plan is to ensure that populations are maintained at 2005-2007 population levels (518-732 wolves) during the 5-year post-delisting period through adaptive management under the guidelines of the 2002 State Plan. The Idaho Fish and Game Commission has further clarified that the statewide wolf population objective should be to maintain numbers near the lower end of that range, or around 518 wolves (IDFG 2009*a*). Consistent with the vacated delisting rule, the State goal is to ensure the long-term viability of the gray wolf population. In order to ensure the population goal, IDFG has established objectives of maintaining ≥15 breeding pairs (floor threshold), having balanced wolf and prey populations, and ensuring genetic transfer among states through maintaining connectivity and functional metapopulation processes. IDFG will also manage wolves to minimize conflict with humans and domestic animals.

Secondarily, the IDFG goal of maintaining sport harvest opportunity for delisted wolves is an important component[14]. Ideally, population objectives should also reflect ability to monitor packs, breeding pairs, and total wolves, as well as harvest and monitoring objectives in neighboring states. Therefore, the long-term objective is to maintain viable wolf populations in the state, achieve short-term harvest goals to reduce conflicts, provide annual harvest opportunity, and provide for non-consumptive benefits. Based on stakeholder input, the most important objective within the management plan will be conflict resolution, when populations meet or exceed the population goal of the plan (IDFG 2008*a*). Future population goals will reflect knowledge gained each year. However, the Idaho Fish and Game Commission has determined that the statewide wolf population should range between the 2005 and 2007 levels and not be allowed to fall to a level where management of conflicts has to be restricted (<15 breeding pairs). Furthermore, IDFG has determined that optimal hunting opportunity and flexibility in conflict resolution can be achieved by maintaining >20 breeding pairs[15].

1.5.1 Statewide IDFG Goals and Objectives

Under IDFG policy, several objectives identified in the IDFG strategic plan, "The Compass" are incorporated in the IDFG Wolf Population Management Plan. The IDFG (2008*a*) objectives are guided by several overarching objectives:

1. Manage for a self-sustaining, viable wolf population that provides for a diversity of values and uses.
2. Manage wolves as part of the native resident wildlife resource.
3. Provide for resident wolf populations interchange with wolves from adjacent states/provinces as part of a larger metapopulation.
4. Allow wolves to persist where they do not cause excessive conflicts with humans or human activities.
5. Maintain >15 breeding pairs[16].
6. Manage wolf populations so that wolf numbers will not adversely affect big game populations or the economic viability of those who depend on big game animals.

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[14] Since wolves have been provided protection by the U.S. Federal District Court in Missoula, Montana (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM), which vacated the delisting of the NRM DPS gray wolf, public hunting seasons have been suspended.

[15] Twenty breeding pairs is not an objective, nor is it a prejudgment about the population level of wolves necessary to avoid conflict. It is only a management trigger that will require additional protections to ensure the wolf recovery goal is maintained (IDFG 2008*a*).

[16] The recovery goals for delisting and state minimum objectives are based on breeding pairs, not packs. The 2002 State Plan used packs and breeding pairs interchangeably and did not define a pack. The delisting rule requires maintenance of ≥10 breeding pairs, and that all 3 states collectively maintain ≥30 breeding pairs. However, Idaho has committed to maintaining ≥ 15 breeding pairs.

7. Minimize wolf/human conflicts and adverse impacts where they occur.
8. Establish a strong and balanced public education program.

1.5.2 Livestock Damage Management

The damage management program would be authorized by the USFWS and/or IDFG, as appropriate, and governed by the applicable 10j rules [50 CFR 17.84(n)] and/or Idaho Statute [Idaho Code 36-1107(c)] and monitored by the Fish and Game Advisory Committee. IDFG employs a Landowner/Sportsmen Coordinator (LSC) biologist in each region. When wolves are delisted, and/or when IDFG has "designated agent" status from the USFWS, Regional LSC staff will work directly with wolf biologists and US Forest Service, BLM, and WS personnel to reduce impacts on producers, livestock, and wolves. The LSC biologist oversees landowner relations and reviews wildlife complaints and depredations. Typical LSC duties involve handling complaints from landowners and devising nonlethal techniques to reduce impacts from big game. The LSC programs have been effective at reducing impacts from bears on apiaries; reducing impacts from deer and elk on grain and legume fields; and providing fencing materials, noise makers, and a variety of depredation reduction techniques and equipment across the state. Should lethal techniques be required, the Regional Supervisor would coordinate with WS to authorize management activities and/or contact hunters (if hunting were authorized) to assist in lethal removal of wolves (IDFG 2008*a*).

1.5.3 Regulated Sport Harvest[17]

Currently sport harvest is not an option[18] since wolves have been afforded protection under the ESA. Emphasizing sport harvest of wolves in areas with a history of chronic wolf/livestock depredation problems, as was done during Idaho's first wolf hunting season in 2009-2010, would likely reduce wolf/livestock conflicts to some degree, but would probably not replace the need for agency control activities (IDFG 2008*a*). Conflict resolution procedures would follow protocols similar to those that have been in place since 2005 and take into account population objectives within the Data Analysis Unit[19] (DAU) and landowner and producer concerns. When wolves are delisted, IDFG would make efforts to focus hunter harvest of wolves in historic conflict areas. Outside of established seasons, depredation hunts would be used when and where feasible to remove wolves involved in depredations. Intensity and timing of removal would be determined by IDFG based on wolf population status in a DAU or wolf management zone (IDFG 2008*a*).

1.5.4 Population Monitoring

The USFWS developed a post-delisting monitoring plan and delisting rule that requires Idaho, Montana, and Wyoming to maintain ≥30 breeding pairs and ≥300 wolves well distributed among the three states, including ≥10 breeding pairs and ≥100 wolves in each state. During the first 5-years following delisting, intensive monitoring will be conducted annually to ensure the wolf population in Idaho is maintained at ≥15 breeding pairs (ILWOC 2002). If any of these thresholds are not met, the USFWS would initiate a status review to determine if relisting is necessary. Thus, IDFG and/or the

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[17] An agreement between the Governor of Idaho and the Nez Perce Tribe Executive Committee completed in 2005 addresses tribal harvest on the Nez Perce Reservation and within the open and unclaimed lands within the treaty territory as identified under treaty rights (IDFG 2008*a*).

[18] Since wolves have been provided protection by the U.S. Federal District Court in Missoula, Montana (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM), which vacated the delisting of the NRM DPS gray wolf, public hunting seasons have been suspended.

[19] Depending on species, Game Management Units are grouped into larger DAUs or Zones that reflect habitat conditions, populations, land management, and other management considerations. Large carnivore populations are managed by IDFG using DAUs and population objectives revolving around high, moderate, and low harvest regimes that generally reflect inversely-related objectives of low, moderate, and high population levels, respectively.

Nez Perce Tribe will continue annual monitoring to quantify the number of packs, breeding pairs, and total number of wolves in Idaho (IDFG 2008*a*). To assist with monitoring, IDFG will maintain an adequate sample of radio-collared wolves during the 5-year post delisting period to demonstrate that ≥15 breeding pairs are maintained at the end of the year[20].

Currently, wolf population estimates in Idaho are generated by using extensive information derived from radio-collared individuals. Biologists also derive estimates of reproduction, mortality, pack size, pack territories, habits, and other variables. This information, combined with public observation records and intensive field efforts, is used to verify new pack activity and develop a statewide population estimate (Nadeau et al. 2007, 2008, 2009; Mack et al. 2010).

1.6 DECISION TO BE MADE

Based on agency relationships, MOUs and legislative direction, WS is the lead agency for this FEA, and therefore responsible for the scope, content and decisions made. The IDFG, Idaho State Department of Agriculture, USFWS, U.S. Forest Service, BLM, Idaho Department of Lands, and the Nez Perce Tribe all had opportunity for input during preparation of the August 2010 EA to ensure an interdisciplinary approach in compliance with NEPA and agency mandates, policies and regulations.

Based on the scope of this FEA, the decisions to be made were:

- Should the Idaho WS program continue its involvement in wolf damage management activities as currently practiced, or should program activities be expanded or reduced?
- What mitigation measures should be continued or implemented by WS?
- Would the proposed action have significant impacts on the quality of the human environment and therefore require preparation of an EIS?

1.7 SCOPE OF THIS ANALYSIS

1.7.1 Actions Analyzed

The REA evaluated Idaho WS wolf damage management activities to protect agricultural and natural resources, property, and human and animal health and safety as coordinated with and in cooperation with the USFWS, IDFG and other agencies and the public, as appropriate. The scope of the REA was limited to evaluating the potential impacts of Alternatives for WS involvement in wolf damage management in Idaho.

One important point is that WS wolf damage management activities are conducted only at the request of the responsible management agency (*i.e.*, USFWS, IDFG, Nez Perce Tribe or other entity, as appropriate) and/or affected property owners, subject to the responsible management agency's authorization. Wolf management goals are established by the responsible agency to ensure population healthy and viability (USFWS 1994, 74 FR 15123, ILWOC 2002, IDFG 2008*a*)

1.7.2 American Indian Lands and Tribes

Wolves play an important role in some tribal culture and beliefs, but the exact nature of this relationship and role varies among tribes. The USFWS, IDFG, other agencies and WS recognize the

[20] Recent development of a surrogate method for determining breeding pair status based on pack size (Mitchell et al. 2008) may reduce the level of monitoring intensity required to verify minimum breeding pair status. In essence, a historical record now exists that provides a correlation between pack size and the probability of that pack meeting the definition of a breeding pair. As pack size increases, the probability that the pack meets breeding pair status increases.

importance of wolves in tribal culture and will continue to work with individual tribes to address their concerns regarding human-wolf conflict reduction actions in Idaho. WS would only conduct wolf damage management activities on tribal lands at the request of the tribe and only after appropriate authorizing documents were signed. WS has cooperated with the Nez Perce Tribe in their wolf monitoring and management efforts since their initial involvement in these activities beginning with the reintroduction of wolves to central Idaho.

1.7.3 Period for which this REA is Valid

The EA will remain valid until WS and other appropriate agencies determine that new needs for action, changed conditions, or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be supplemented pursuant to NEPA. A review of wolf damage management activities and any associated take of wildlife will be conducted each year to ensure that the impacts of the program are within parameters analyzed in the EA.

The USFWS decision to remove wolves from the Federal list of threatened and endangered species was challenged in court, and the Federal District Court in Missoula, Montana determined that wolves should be returned to their status as endangered (north of I-90) and as an XN population (south of I-90). Any wolf damage management by WS will be conducted in accordance with applicable Federal rules, approved plans and court rulings. This could include the USFWS 2008 10j rule (50 CFR 17.84) for XN wolves (south of I-90) and the USFWS 1999 "Interim Wolf Control Plan for Northwestern Montana and the Panhandle of Northern Idaho" for endangered wolves (north of I-90), or court rulings or management direction prescribed by new legislation or new revised regulations[21]. WS would comply with the court rulings, legislation or USFWS regulations and guidance, as applicable.

1.7.4 Site Specificity

The REA analyzed the potential impacts of WS' wolf damage management on all public and private lands in Idaho where wolf conflicts might potentially occur (see Section 1.3.1 for WS' wolf depredation investigative procedures).

Planning for the reduction of human-wolf conflicts is conceptually similar to Federal or other agency actions whose missions are to stop or prevent adverse consequences from anticipated future events for which the actual sites and locations where they will occur are unknown but could be anywhere in a defined geographic area. Examples of such agencies and programs include fire departments, law enforcement agencies, and emergency response organizations. Although some of the sites where wolf damage will occur can be predicted, all specific locations or times where such damage will occur in any given year cannot be predicted. The REA emphasized major issues as they relate to specific areas whenever possible, however, many issues apply wherever wolf conflicts and resulting management occurs, and are treated as such. The WS Decision Model (Slate et al. 1992) would be the site-specific mechanism for determining individual actions conducted by WS (see Chapter 3 for a description of the Decision Model and its application). The analyses in this FEA are intended to apply to any WS wolf management action that may occur in any locale and at any time within Idaho. In this way, WS believes the EA meets the intent of NEPA with regard to site-specific analysis and that this is the

[21] Idaho officials and Montana Fish, Wildlife and Parks have asked the 9th U.S. Circuit Court of Appeals to reverse Judge Molloy's ruling that put gray wolves back onto the endangered species list in the NRM and blocked Montana and Idaho's wolf management plans and the fall hunting season. A second appeal was filed by the Idaho and Montana Farm Bureau Federation. In addition, the U. S. Representative from Montana drafted legislation for the House that advocates state control of wolves and is backing legislation in the House that would remove wolves from consideration under the ESA. Also, management of gray wolves in Idaho and Montana would be returned to the states under legislation introduced by Senators from Montana, Wyoming, Idaho and Utah.

only practical way for WS to comply with NEPA and still be able to meet needs for assistance with wolf damage management in a timely fashion.

The FEA addresses the impacts of wolf damage management in areas where control activities have already occurred, and in areas where additional control activities might occur in the future. Because the proposed action is to reduce damage and because the program's goals and directives are to provide services when requested, within the constraints of available funding and workforce, it is conceivable that additional wildlife damage management efforts could occur. The FEA anticipates this potential expansion and analyzes the impacts of such efforts as part of the program.

1.7.5 Summary of Public Involvement

Issues related to the proposed action were initially developed by WS, based on an awareness of issues that have previously been raised regarding predator damage management in general, and wolf damage management in particular. An draft EA on "Gray Wolf Damage Management in Idaho' was released for public comment on August 2, 2010. A Notice of Availability (NOA) was e-mailed directly to 89 persons and organizations who had previously expressed interest in WS wolf management, or who were presumed to be interested, and was posted as a legal notice in the Idaho Statesman, the newspaper of state record for public notices (72 FR 13237) for 3 consecutive days (August 2-5, 2010). The NOA and the EA were also posted on the WS website at http://www.aphis.usda.gov/wildlife_damage/nepa.shtml. WS received more than 100,000 e-mailed comments from across the U.S. and a number of foreign countries during the 30-day public comment opportunity, most of which (over 99.9%) were variations of form letters expressing opposition to the killing of wolves, sent as part of an organized campaign by 2 different environmental organizations. Several substantive comment letters were received, and substantive comments have either already been addressed in the EA or have additionally been addressed in Appendix C of this FEA. As part of WS' environmental analysis process, and as required by the Council on Environmental Quality (CEQ 1981) and APHIS-NEPA implementing regulations, this document and its Decision will be made available to the public through "NOA" published in local media, on the APHIS website and through direct mailings of NOA to parties that have specifically requested to be notified. The EA also was available on the APHIS website (http://www.aphis.usda.gov/regulations/ws/ws_environmental_idaho.shtml). Any new issues or alternatives identified during a 30-day public comment period for the REA were fully considered to determine whether the EA should have been revised prior to issuance of a final Decision. Public notification regarding the availability of any Decision associated with the FEA was identical to that used for the REA.

1.8 PREVIEW OF THE REMAINDER OF THIS EA

The remainder of this FEA is composed of 3 more Chapters and 4 Appendices. Chapter 2 discusses the issues, issues not analyzed in detail, and the affected environment. Chapter 3 describes each Alternative, Alternatives not considered in detail and Standard Operating Procedures (SOPs). Chapter 4 analyzes the environmental impacts associated with each Alternative considered in detail. Appendix A is a list of preparers, consultants and reviewers. Appendix B is a copy of the investigative report form used by WS personnel to document wolf depredation investigations, Appendix C contains the substantive public comments and WS' responses from the review of the August 2, 2010 EA, and Appendix D is the literature and references cited for the preparation of the REA and this FEA.

CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

2.1 INTRODUCTION

Chapter 2 contains a discussion of the issues relevant to the analysis, including issues that will receive detailed environmental impact analysis in Chapter 4 (Environmental Consequences) and issues not considered in detail, with rationale. Pertinent portions of the affected environment are included in this chapter in the discussion of issues to be addressed in detail. Additional information on the affected environment is incorporated into the discussion of the environmental impacts in Chapter 4 and the description of the current program.

The identified issues have been or could be concerns of the public and/or professional communities about environmental impacts which might potentially occur as a result of proposed wolf damage management activities. Issues relating to the management of wildlife damage were raised during the scoping process in preparing USDA (1994) and during the interdisciplinary approach used in preparing this EA.

2.2 AFFECTED ENVIRONMENT

Idaho has a diverse landscape containing large expanses of high quality wolf habitat (IDFG 2010a). Central Idaho includes three contiguous Wilderness Areas; the Selway-Bitterroot, Frank Church River-of-No-Return, and Gospel Hump encompassing almost 4 million acres, which represent the largest block of Federally-designated wilderness in the lower 48 states. Outside of Wilderness Areas, land ownership and human use patterns result in varying levels of potential human conflict with wolves. Southern Idaho includes the vast Snake River Plain, which is predominantly private agricultural land and also contains most of Idaho's urban centers. Three major mountain chains and two large river systems help blend these very different landscapes together, many of which are managed for multiple uses. A moisture gradient also influences habitats of both wolves and their prey, with maritime climates in the north supporting western red cedar (*Thuja plicata*)-western hemlock (*Tsuga heterophylla*) vegetation types, transitioning into continental climates of Douglas-fir (*Pseudotsuga menziesii*) and ponderosa pine (*Pinus ponderosa*) to the south. Elevations vary from 1,500 feet (457 meters) to just over 12,000 feet (3,657 meters). Annual precipitation varies from less than 8 inches (20 centimeters) at lower elevations to almost 100 inches (254 centimeters) at upper elevations.

The proposed action would include wolf damage management activities by WS on any private and/or public lands in Idaho where wolf damage is occurring or could occur: 1) where resource owners/managers request assistance to alleviate damage, 2) management is authorized by the USFWS, IDFG or other responsible agency, 3) wolf damage or threats are verified, and 4) agreements or work plans have been completed specifying the details of the damage management action to be conducted.

Wolves historically occurred in all of the NRM DPS, however, much of their historical range has been modified for human uses (*i.e.*, housing, roads, industry, agriculture). Wolves are currently well distributed across Idaho from the Canadian border, south to the Snake River Plain, and from the Washington and Oregon borders east to the Montana and Wyoming borders (Mack et al. 2010). Of the 94 documented packs present at the end of 2009, territories of most were predominantly on Forest Service lands.

Central Idaho is a relatively undeveloped area due to: 1) land-use classifications and management guidelines for species such grizzly bears and Canada lynx; 2) access; and 3) geological characteristics (Serhveen et al. 2003, USFS 2006, USFWS 2007a). IDFG manages resident ungulate populations to maintain them at densities compatible with habitat conditions and to provide for hunter harvest. IDFG ungulate management plans commit them to continue this practice into the future (IDFG 2008a, Mack et

al. 2010). Cattle and sheep are present in western, southern, and eastern Idaho, but are present in relatively low numbers or are absent in central Idaho wilderness areas and the Panhandle.

Human growth and development are expected to continue in the NRM and Idaho, including development and conversion of private low-density rural lands to higher density urban developments, road development, industrial and business facilities, resource extraction, and more recreation on public lands. However, the vast majority of suitable wolf habitat and the current wolf population are secure in mountainous forested public land that will not be legally available for or suitable to intensive human development. Wolves do not necessarily avoid roads, and in fact readily use forest and logging roads for travel corridors, but road density apparently provides a good measure of human contact which can result in illegal wolf mortality. When wolves occur at low densities and large blocks of unoccupied suitable habitat are available, habitat and road density characteristics predict areas where wolves will occur (Mladenoff et al. 1995); however, as wolf densities increase vegetation and habitat characteristics do not predict wolf habitat as well as indices that measure human influence as long as prey is adequately abundant (Potvin et al. 2005, Robbins 2007). Despite efforts to minimize impacts to wildlife (Brown 2006), some of this development will make some of Idaho less suitable for some wildlife species and more suitable for other wildlife species. However, wolf habitat does not appear to be greatly affected by human-land uses such as snowmobiling, off-road vehicle use, or logging activities, except when they result in accidental or intentional killing of wolves or changes to prey density (Fuller et al. 2003). If the wolf population is large enough, even when these factors have an adverse affect on individuals, the activities seem to have little effect on the wolf population as a whole. Wolf populations have a remarkable ability to persist as long as they have an adequate food supply, despite being subject to multiple mortality factors, and even small populations of wolves have persisted and increased in several areas of the world in the last three decades (Fuller et al. 2003).

Although no significant threats to suitable wolf habitat in Idaho are known to exist in the foreseeable future, wolf managers will be required to regulate human harvest and illegal mortality, and manage conflict resolution (73 FR 10514, Smith et al. 2010). None of the human-use developments or increased human presence threatens wolf recovery or meaningfully impact the amount of suitable wolf habitat in Idaho or the NRM in the foreseeable future (Robbins 2007, 73 FR 10514). Wolves are a habitat generalist and one of the most adaptable large predators in the world, and only became extirpated because of deliberate human persecution (Boitani 2003, Fuller et al. 2003). Cultural, economic, social, legal, and other components of the affected environment are given further consideration in Section 2.3.5 of this chapter and in Chapters 3 and 4.

It is important to note that the human environment also includes existing relationships between people and the environment. This is specifically required by CEQ's NEPA Implementing Regulations which define "human environment" as:

> "*Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment*" (40 CFR 1508.14).

Therefore, existing human relationships with the animal species found in the affected environment, as well as all of the direct and indirect effects of those species on other aspects of the environment, are part of the "human environment" to which we must compare the effects of WS's federal actions as described herein. Wolf damage management by IDFG or USFWS (depending on the listed or unlisted status of the wolf) is part of the human environment that exists, or will exist, in the absence of any assistance actions by WS. Wolf damage management methods used by WS can also be used by other agencies such as IDFG or USFWS, or even by members of the public if/when allowed under State and local laws or perhaps as permitted by USFWS under current wolf "listed" status and if allowed under 10j or other

USFWS-established rules. All of these types of human relationships and interactions are established components of the human environment.

2.2.1 The Environmental Baseline

To determine impacts of federal actions on the human environment, an environmental baseline needs to be established with respect to the issues considered in detail so that the impacts of the Alternatives can be compared against the baseline. Based on the existing human environment described above, and the numerous types of human relationships that are established components of that environment, it is quite apparent that the baseline appropriate to use for analysis in this EA is not a "pristine" or "non-human-influenced" environment, but one that is already heavily influenced by human actions and direct management. Another way to evaluate impacts of the federal action in this situation is to compare against the status quo for the human environment that would exist with no federal WS involvement in wolf removals for damage management purposes in Idaho.

There are two possible scenarios that we have to consider when determining the "human environment" as defined by CEQ and to which we must compare the impacts of our federal WS proposed wolf management assistance actions under the various Alternatives analyzed in the EA:

Scenario 1: Wolves remain listed under the ESA - In this scenario, the "human environment" upon which we, as a federal agency, are evaluating our impacts in Idaho, will be one in which the particular relationship of people with wolves in the environment has already been determined by another federal agency – the USFWS – through its 10j rules established under the authority of the ESA. Further facts relevant to this scenario are:

- As authorized by the ESA, the USFWS has established further regulations that have the force of law, to govern wolf management while wolves remain listed. Those regulations are the 10j rules described in 50 CFR 17.84(n)) and Sections 1.3.1, 1.3.3, and 1.5.2 herein.
- WS's proposal as described herein in our Proposed Action (Alternative 1) and Alternatives 2 and 3 is to assist the USFWS in carrying out the decisions for wolf damage management that the USFWS has already made via its 10j rules.
- As we have noted in Section 1.3.1 herein, the USFWS 10j rules governing wolf management require the removal of chronic depredating wolves.

Therefore, the "human environment" and *environmental status quo* to which we must compare the effects of WS proposed Alternatives in this EA includes already-established management decisions, and, with respect to chronic depredating wolves, requirements by the USFWS for wolf management in Idaho.

Scenario 2: Wolves are delisted again – In this scenario, the "human environment" upon which we, as a federal agency, are evaluating our impacts in Idaho, will be one in which the particular relationship of people with wolves in the environment is determined by the State of Idaho through its IDFG. This is based on the following premises:

- State wildlife management actions are not subject to NEPA compliance because NEPA only applies to *federal* actions.

- The States have the authority to manage populations of resident wildlife species, which will include wolves if/when they are delisted, as they see fit without oversight or control by federal agencies with the exception of federally listed T&E species[22].
- Each State, including Idaho, determines how resident wildlife will be managed within its boundaries by passing laws via its representative form of government.
- Each State's representative system of government is the established mechanism for determining the "collective" desires or endorsements of the people of a state. This is how a State determines the environmental condition, or *environmental status quo*, for those aspects of the human environment that are comprised of or are directly or indirectly affected by resident wildlife.
- It is reasonable and proper to rely on the representative form of government within a state as the established mechanism for determining the "collective" desires or endorsements of the people of a state.

Therefore, if/when wolves are delisted again, wolves *as they will be managed by the IDFG* as well as all of the *direct and indirect effects of wolves on other aspects of the environment* will become the established desired condition of the human environment, and therefore part of the environmental baseline, in Idaho. That management is as is currently described in IDFG's established wolf management plans (IDFG 2008a, 2010b).

2.3 ISSUES CONSIDERED IN DETAIL IN CHAPTER 4

Issues were identified based on an awareness of concerns previously expressed by representatives from various environmental and industry organizations, the general public, and other agencies. Some were used to prepare the detailed impact analyses of the Alternatives in Chapter 4. The issues were also used to identify mitigation measures and to develop SOP's for reducing or eliminating the likelihood of adverse environmental effects from implementation of the proposed action. Some issues, however, did not receive detailed analysis because WS' human-wolf conflict management would not have any adverse effect on the legal, social or economic environment. The following issues were determined to be relevant based on public and other agency comments, and are analyzed in detail in Chapter 4:

- Effects on the wolf population in Idaho
- Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates
- Effects on public and pet health and safety
- Animal welfare and humanness of methods to be used
- Impacts to stakeholders, including aesthetics of wildlife

2.3.1 Effects on the wolf population in Idaho

With the relisting of wolves, management responsibility has temporarily shifted from IDFG back to the USFWS. When wolves are eventually delisted once again, they will be managed under the provisions of applicable State plans. In 2002 the Idaho Legislative Wolf Oversight Committee developed the Idaho Wolf Conservation and Management Plan, which was accepted and passed by the Idaho Legislature (ILWOC 2002). The Legislature, in a good faith effort to ensure ESA recovery, increased Idaho's minimum wolf population as directed in the Federal Plan from 100 individuals and 10 breeding pairs to 150 individuals and 15 breeding pairs. In 2008 the Idaho Fish and Game Commission adopted the Idaho Wolf Population Management Plan (IDFG 2008*a*). The purpose of the

[22] A unique situation exists with regard to federally listed T&E species in that a 5-year period of monitoring and oversight by USFWS following delisting is required to assure that the species remains recovered. This is a built-in mitigation for avoiding significant adverse effects on recently delisted species and would apply to wolves in Idaho.

plan is to insure a viable gray wolf population, provide for public harvest, reduce conflict, and provide a flexible, adaptive process for the management of wolf populations during the 5-year period following de-listing. The IDFG (2008*a*) Plan is designed to ensure that wolf populations are maintained at the 2005 population level (about 500 wolves, more than 5 times the minimum Federal recovery level) or higher. With a regulated wolf hunting season and other management actions which occurred in 2009, the minimum statewide wolf population estimate at the end of 2009 was 835, close to the minimum population estimate of 850 wolves at the end of 2008 (Mack et al. 2010). Concerns that wolf damage management activities might result in the reduction of local populations of wolves or have a cumulative adverse effect on the viability of the Idaho wolf population will be addressed in detail in Chapter 4.

2.3.2 Effectiveness of nonlethal and lethal control efforts in reducing wolf predation on livestock and/or wild ungulates

Some critics of wolf damage management and regulated wolf harvest have suggested that lethal control of wolves is unnecessary because they believe nonlethal methods can effectively prevent wolf depredations on livestock, and that lethal removal of wolves may actually exacerbate conflicts between wolves and livestock. Conversely, proponents of wolf damage management and wolf harvest believe both of these activities can be effective in helping to reduce the level of wolf-livestock conflicts and the impact of wolves on big game herds.

Idaho WS, at the direction of the USFWS or IDFG, as applicable, applies an integrated wildlife damage management approach where the integration and application of all approved methods of prevention and management, both nonlethal and lethal, are considered in solving predation problems. The evaluation, selection and eventual application of methods consider the: 1) overall effectiveness of the method and its ability to resolve the problem, 2) specific type and magnitude of damage, 3) geographic extent, 4) duration, frequency and likelihood of recurring damage, 5) non-target species vulnerability, 6) environmental condition and impacts, 7) social and legal factors, and 8) relative costs.

Effective wolf conservation might be enhanced by timely application of prevention techniques that reduce the likelihood of depredations (Ciucci and Boitani 1998, Fourli 1999, Bangs and Shivik 2001). In addition, enhanced understanding of periodic trends, if present, might allow for improved planning, management, and mitigation of conflicts due to wolf depredation. In particular, availability and accessibility to wolves of adult livestock and of calves during calving often follows a seasonal pattern with annual reoccurrence. In fact, some previous studies portrayed increases in wolf depredation during different spring or summer months corresponding to intensive grazing months for various livestock species (Dorrance 1982, Gunson 1983, Fritts et al. 1992, Mack et al. 1992). Analysis regarding effectiveness of both nonlethal and lethal methods in addressing wolf depredations will be discussed in detail in Chapter 4.

2.3.3 Effects on public safety and pet health and safety

One aspect of wolf damage management actions is their ability to reduce risks to public safety and domestic animals from wolf attacks and/or predation. At the same time, it is important to consider potential risks to public safety and domestic animal safety from methods used in conducting wolf damage management activities. In particular, there may be concerns that the mechanical methods used for wolf capture and/or removal (*i.e.*, trapping, snaring, aerial shooting) or certain nonlethal methods such as use of livestock guarding dogs may be hazardous to people and pets. Other individuals may be concerned that continued increases in wolf populations might threaten livestock and public and pet health or safety. Procedures for addressing risks to human health and safety from wolves are outlined in USFWS (1994), 71 FR 43410, 73 FR 10514, and 74 FR 15123, Idaho's Wolf Conservation and

Management Plan (ILWOC 2002) and Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*).

The greatest risks associated with WS wolf damage management methods are incurred by the WS employees who implement those methods. WS aerial operations employed in predation management typically occur in relatively remote areas with no or very low human presence on the ground. USDA (1994-Appendix P) conducted a risk assessment for methods used in wildlife damage management and concluded there was very little, if any, risk to the public from WS aerial gunning activities. Other prior analysis of aircraft accidents by WS has 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). WS is unaware of any impacts to public health or safety associated with implementation of any WS wolf damage management methods in Idaho or in any other state.

Firearm use is a very sensitive issue because of concerns relating to public safety and firearms misuse. To ensure safe use and awareness of firearms issues, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 2 years afterwards (WS Directive 2.615). WS personnel who use firearms as a condition of employment are required to sign a form certifying that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

2.3.4 Animal welfare and humaneness of the methods to be used

The issue of humaneness, as it relates to the killing or capturing of wildlife is an important but very complex concept that can be interpreted in a variety of ways. Kellert and Berry (1980) in a survey of American attitudes toward animals stated that 58% of their respondents, *". . . care more about the suffering of individual animals . . . than they do about species population levels."* Schmidt (1989) indicated that vertebrate pest control for societal benefits could be compatible with animal welfare concerns, if *". . . the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process."* Suffering has been described as a *". . . highly unpleasant emotional response usually associated with pain and distress*." However, suffering *". . . can occur without pain . . .*," and *". . . pain can occur without suffering . . ."* (American Veterinary Medical Association (AVMA) 2001). Because suffering carries with it the implication of a time frame, a case could be made for *". . . little or no suffering where death comes immediately . . ."* (California Department of Fish and Game (CDFG) 2004), as in the case of shooting or drug-induced euthanasia. Humaneness is a person's perception of harm or pain inflicted on an animal, and people may perceive the humaneness of an action differently. The issue of humaneness has at least two aspects in relation to the proposed action.

1. Animal welfare organizations are concerned that some methods used to manage wildlife damage expose animals to unnecessary pain and suffering. Research suggests that with some methods, such as restraint in foothold traps, changes in the blood chemistry of trapped animals indicate "stress." Blood measurements indicated similar changes in foxes that had been chased by dogs for about 5 minutes as those restrained in traps (USDA 1994). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humaneness.

2. Humaneness, as perceived by the livestock industry and pet owners, requires that domestic animals be protected from predators because humans have bred much of the natural defense capabilities out of domestic animals. It has been argued that man has a moral obligation to protect these animals from

predators (USDA 1994). Predators frequently do not kill larger prey animals quickly, and will often begin feeding on them while they are alive and still conscious (Wade and Bowns 1982).

The decision making process involves tradeoffs between the aforementioned aspects of pain from damage management activities and the needs of humans to reduce wildlife damage. An objective analysis of this issue must consider not only the welfare of a wild animal caught in a foothold trap, but also the welfare of the domestic animals and wild prey that may continue to be maimed and killed if the foothold trap or other control tools were not being used. The challenge in coping with this issue is how to achieve the least amount of animal suffering within the constraints imposed by current technology, funding, and a limited workforce.

WS personnel are trained professionals who strive to use the most humane methods available to them, recognizing the constraints of current technology, workforce, funding and social concerns. In determining the most appropriate damage management strategy, preference is given to practical and effective methods, both nonlethal and lethal. However, nonlethal methods may not always be applied as a first response to each damage problem. The most appropriate response could be a combination of nonlethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy.

WS has improved the selectivity and humaneness of many management devices through research and is striving to bring new, more humane tools and methods into use. WS, through the combined efforts of the WS state programs and the USDA, APHIS, WS, National Wildlife Research Center (NWRC), has been involved in the testing and development of a number of nonlethal wolf damage management techniques including fladry, pyrotechnics, livestock guarding animals, radio activated guard (RAG) electronic frightening devices, and other light-siren devices. Whenever possible and practical, WS employs euthanasia methods recommended by the AVMA (2007) and professional wildlife damage managers (Julien et al. 2010), even though the AVMA euthanasia methods were developed principally for companion animals and slaughter of food animals, and not for free-ranging wildlife.

2.3.5 Impacts to stakeholders, including aesthetics of wildlife

2.3.5.1 Variations in perception of wildlife damage

During the last 200 years, broad-scale changes in land-use patterns (*e.g.*, housing developments, agriculture, roads, industrial complexes, etc.) have occurred as the increasing human population settled North America. Notable is the large-scale conversion of natural landscapes to agricultural and urban environments. As humans encroach on wild habitats, they compete with wildlife for space and other resources, which increases the potential for conflicts. Concurrent with this growth and change is a desire by some segments of the public to completely protect all wildlife, which can create localized conflicts with resource managers and owners experiencing problems with some species. USDA (1994) summarizes the American perspective of the relationship between wildlife values and wildlife damage, as follows:

"*Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife is generally regarded as providing economic, recreational and aesthetic benefits . . . and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and value is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural and economic considerations as well*."

Biological carrying capacity is the limit of the land or habitat to support healthy populations of species without long-term degradation of either the health of the species or the associated environment (Decker and Purdy 1988). The wildlife acceptance capacity (also known as cultural carrying capacity) is the limit of human tolerance for wildlife, or the maximum number of a given species that can coexist compatibly with local human populations (Decker and Purdy 1988). These capacities are especially important in areas inhabited by humans because they define the sensitivity of a local community to a specific wildlife species/problem. For any given situation involving a wildlife conflict, individuals directly or indirectly affected by the damage will have varying degrees of tolerance for the damage and the species involved in the damage. This tolerance determines the "wildlife acceptance capacity," which is often lower than the "biological carrying capacity." For example, the biological carrying capacity of gray wolves in Idaho could be higher than their current population; however, for some individuals and groups, the area has as many or more wolves than can be tolerated (*i.e.,* for these individuals, the wildlife acceptance capacity has been reached or exceeded). Once the wildlife acceptance capacity of a species is reached or exceeded, humans will demand implementation of programs, both lethal and nonlethal, to reduce damage or threats of damage.

The human attraction to animals has been well documented throughout history, an idea supported by prehistoric cave paintings and the domestication of wild animals. Today's American public is no exception, as evidenced by the large percentage of households that have pets or observe wildlife. Some people also may consider individual wild mammals and birds as "pets" and exhibit affection toward these animals. They may also want to have more wild animals in their immediate environment. Some people feel a spiritual bond with wild animals. Conversely, some people have no emotional attachment to wildlife; some may even fear the presence of wild animals in their vicinity and demand their immediate removal.

Ideas about how these programs are implemented and conducted are as unique as the almost infinite combinations of philosophies, psyches, aesthetic values, personal attitudes, and opinions found in humans. These differences of opinion result in concerns that the proposed action or the Alternatives would result in the loss of aesthetic or cultural/spiritual benefits to the general public and resource owners.

2.3.5.2 Aesthetic and sociological values of wildlife

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. 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. Wildlife populations also provide a range of direct and indirect social and economic benefits (Decker and Goff 1987). 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.

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 WS and the IDFG 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.

The goal of wolf damage management is to provide relief from damage or threats of damage while minimizing the potential for negative impacts on the environment including aesthetic and social values. WS would only conduct wolf damage management in consultation with IDFG, USFWS and/or the Nez Perce Tribe, as appropriate and after a request has been received from citizens, organizations, and others who are experiencing problems (*i.e.,* where a need exists).

2.4 ISSUES NOT CONSIDERED IN DETAIL AND RATIONALE

2.4.1 What is the rationale for suggesting that lethal wolf damage management is needed to help minimize negative attitudes toward wolves and reduce the likelihood of illegal wolf killings?

The USFWS, IDFG and other agencies are aware that illegal wolf killing occurs in the Idaho wolf population (IDFG 2008*a*). The USFWS, IDFG 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[23]. 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, will prevent an increase in untrained individuals attempting wolf damage 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.

Most people would rather take advantage of an effective legal wolf damage management program than take illegal action and suffer the consequences of legal prosecution. From reintroduction in 1995 until 2007, 68 wolves were known to be unlawfully taken in Idaho (IDFG 2008*a*). Based on estimates calculated using radio-collared wolves, illegal take accounted for approximately 7% of annual wolf mortality in Idaho since reintroduction (IDFG 2008*a*). The agencies believe that an integrated wolf damage management program which includes access to lethal methods would be the most effective in resolving conflicts with wolves. 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

[23] If wolves come under Idaho State management, they are classified as a big game animal under Idaho Administrative Code (IDAPA 13.01.06). Under state law (Idaho Code §36-1101(a)), a violation of wolf harvest regulations or illegal take of a wolf could result in a misdemeanor fine of $25-$1,000. Multiple violations may be considered flagrant and/or felonious and result in higher fines and penalties including jail time, loss of hunting privileges, and forfeiture of equipment used in the crime.

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. Federal and State law enforcement personnel strive to prevent illegal killing of wolves, but the remote nature of much of the areas inhabited by wolves in Idaho makes it difficult to protect wolves from illegal actions. Idaho conservation officers either assisted USFWS or were primary investigators for most illegal wolf killing cases since 2005. Unlawful take of listed wolves is a misdemeanor violation under Section 9 of the ESA and Federal courts have levied a variety of civil and criminal penalties for unlawful take.

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" was published in International Wolf Magazine in 1994 (IUCN 1994). The 7th Principle for wolf conservation stated, "It is recognized that occasionally there may be a scientific established need to reduce non-endangered wolf populations; further it may become scientifically established that in certain endangered wolf populations specific individuals must be removed by appropriate conservation authority for the benefit of the wolf population." 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).

2.4.2 What about the possibility that wolf removal, whether through control actions or hunting, could disrupt a pack's social structure, thereby leading to an increased likelihood of conflicts?

As indicated in Figure 1-1 in Chapter 1, as the number of wolf packs in Idaho has increased, the number of incidents of confirmed predation on livestock has likewise increased. The data in Figure 1-1 would also appear to suggest that if the number of wolf packs in Idaho could be reduced, the result would likely be a reduction in, rather than an increase in wolf predation on livestock (USDA 2010).

From a conflict management perspective, 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 recolonization was high (70%) and most recolonizations (86%) occurred within a year of removal of the previous pack; most packs (86%) that recolonized 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.

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). Based on mean pack size of 8, mean litter size of 5, and 38% pups in packs, Boertje and Stephenson (1992) suggested 42% of juveniles and 36% of adults must be removed annually to achieve population stability. Mech (1970) suggests that more than 50% of wolves older than 5-10 months must be killed to "control" the wolf population; other researchers have indicated declines may occur with human-caused mortality at 40% or less of fall wolf populations (Ballard et al. 1997, Peterson et al. 1984) (See Chapter 4, Section 4.4.1.1 for more discussion of wolf mortality effects). 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

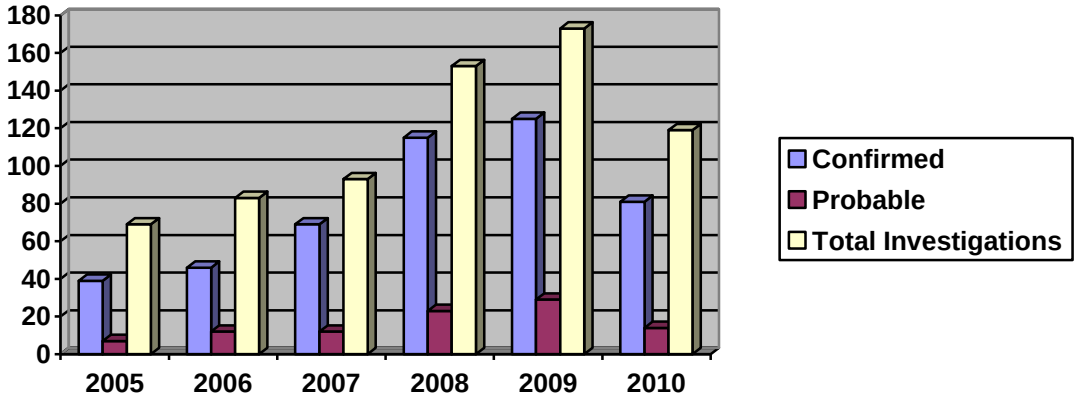
survival in 84% of packs with breeder loss was similar or higher than packs without breeder loss (Mech and Boitani 2003). Brainerd et al. (2008) stated that breeder replacement was highest and fastest in populations with more than 75 wolves, as is the case in Idaho.

MacNulty et al. (2009*a*, 2009*b*) discussed evidence from observations of YNP wolves suggesting that as wolves age, their ability to kill elk declined due to physiological deterioration, similar to the decline in abilities of human athletes as they age. The authors' data suggested that 2-3 year old wolves were in the best physical condition to attack and kill prey, and the higher the proportion of wolves over age 3 in the population, the lower the rate at which they kill elk. Although data are lacking on this subject, it may be possible that if wolves are less able to kill elk or other natural prey as they age, they may be more likely to attack easier prey such as domestic livestock.

MacNulty et al (2009*b*) suggests that net predatory performance decreases with prey size when prey is substantially more difficult to pursue than handle (*i.e.*, wild ungulates vs livestock). And if poor locomotor performance narrows the range of potential prey to slower-moving species, this could conceivably put livestock more at risk from an aging or unharvested wolf population. Final data on the age class of wolves killed during Idaho's first wolf hunting season in 2009-2010 are not yet available, but age class data obtained from Montana's first wolf hunting season in 2009 indicates all age classes were fairly similarly distributed in the harvest (Sime et al. 2010).

Although it is probably too soon to draw any definitive conclusions about whether or not Idaho's first regulated wolf hunting season in 2009-1010 may have helped reduce the number of livestock depredation problems, the data in Figure 2-1 at least appear to suggest that possibility. Early indications are that the number of wolf depredations on livestock was about 38% lower in the 6 months following the close of the wolf hunting season as compared to the same 6 months one year earlier. This is the first year since wolves were reintroduced into Idaho that depredations have decreased, rather than increased during this period.

Figure 2-1. Confirmed and probable wolf depredations from April 1 – Sept. 30, since 2005 (Idaho's first wolf hunting season ended on March 31, 2010)



2.4.3 What about the possibility that a reduction in Idaho's wolf population, through hunting and/or lethal depredation control measures, might affect other aspects of the environment (*e.g.,* predator-prey relationships, mesopredators, species competition)?

Wolves may indirectly affect plant life because of wolf-caused changes to herbivore density and behavior (*e.g.*, elk reduced their use of riparian areas and moved to higher areas because of wolf predation or threats of predation) (Mao et al. 2005, Beyer 2006, Ripple and Beschta 2006). Aspen have not been regenerating well in YNP because elk were eating young aspen and researchers believed that elk would learn to avoid "high-risk areas" where wolves frequent. Thus, plants in those areas, such as aspen, would have a chance to grow large enough so that elk could not kill them and eventually an entire habitat would be restored through "cascading indirect effects" on other species and restore a healthier ecosystem. Fortin et al. (2005) found elk less likely to travel into aspen stands when wolves were present; while wolves were present elk travelled more frequently into conifer forests. Creel and Winnie (2005) showed that in the presence of wolves, elk retreated into forest cover whereas when wolves were absent elk foraged in open grassland. Gude et al. (2006) found that in the Madison River Valley elk responded to wolf presence by moving away from wolves, reducing elk effects on vegetation. As a result of taller vegetation a variety of biota, including songbirds benefitted (Baker and Hill 2003, Hansen et al. 2005). It has been hypothesized that a reduction in herbivore foraging pressure created by wolves would result in an increase in browse, providing for more songbird habitat, riparian stability and restoration and an increase in beaver (*Castor canadensis*).

However, few studies have assessed the existence and strength of behavioral changes of herbivores in systems where predators and prey interact over large geographic areas and prey responses mediated by the predator hunting mode (Schmitz et al. 2004, Schmitz 2005). Active predators, especially those that roam over large landscapes, such as wolves, rarely produce consistent predation risks at any one location or habitat type (Schmitz 2005). Given the high costs of prey anti-predator behavior (*i.e.*, habitat avoidance, foraging reductions), prey of active-hunting predators may be relatively unresponsive to predators and thus unlikely to demonstrate risk-induced changes in foraging or habitat selection necessary to bring about "behaviorally mediated trophic cascade" changes (Lima and Bednekoff 1999, Schmitz 2005). Creel et al. (2008) showed that elk in YNP and in habitats adjacent to YNP responded to "risky times" but not "risky places[24]," a pattern attributed to elk risk allocation strategies.

Recently, YNP researchers had believed that aspen (*Populus tremuloides)* were benefiting from wolves via elk anti-predator behavior, whereby aspen are recovering in areas where elk are at a higher risk of predation (Ripple et al. 2001, Ripple and Beschta 2004, 2007, Fortin et al. 2005). Other researchers claimed similar increases in willow (*Salix* spp.) (Beyer et al. 2007) and cottonwood (*P.* spp.) (Ripple and Beschta 2003) due to wolf-induced changes to elk foraging behavior.

Initially elk responded to the reintroduction of wolves by increasing vigilance (Laundre et al. 2001). However, elk behavioral observations (*i.e.,* patterns of vigilance, anti-predator movement, and risk of death) are consistent with the gradient of predation risk (Kauffman et al. 2010). For example, in response to wolf presence, elk have made short-term shifts away from habitat types that Creel et al. (2005) and Gude et al. (2006) classified as risky. But these anti-predator behaviors have not resulted in detectable shifts in broad scale, habitat use across YNP's Northern Range as observed from analyses of radio-collared elk before and after wolf reintroduction (Mao et al. 2005).

Elk in search of winter foods continued to forage on aspen trees and elk did not respond to a "landscape of fear" (*i.e.,* the fear of wolf predation) (Kauffman et al. 2007, 2010). The elk did respond behaviorally to a predation risk posed by wolves, but the small behavior changes to feeding and movements across the landscape did not translate to long-term benefits for aspen growing in areas risky to elk (Kauffman et al. 2010). Kauffman et al. (2010) did not find that the effects of wolf

[24] Behavioral studies have shown that bulls are less responsive to the presence of wolves (Winnie and Creel 2007), even though they are .6 times more likely to be killed based on their relative abundance in the herd (Creel et al. 2005).

predation risk translate down to the aspen stands foraged by elk and their results are consistent with recent work evaluating elk behavioral responses to wolves (Gude et al. 2006, Liley and Creel 2007, Winnie and Creel 2007, Creel et al. 2008). In contrast, Kauffman et al. (2010) reported that aspen sucker survivorship was actually lower near the cores of wolf territories, likely due to wolves maintaining territories in areas of high elk density (Mao et al. 2005). In an analysis of elk movements, Fortin et al. (2005) found no evidence that elk avoid core wolf-use areas. What emerges from behavioral studies of elk and wolves is that, while elk do respond to the predation risks posed by wolves, their responses are subtle and, over the course of an entire winter, do not result in meaningful cumulative changes in habitat use (Kauffman et al. 2010). Annual variation in other factors such as wolf territory locations and pack sizes, snow levels, and elk distribution may further act to erode the spatial consistency in wolf predation risk and thus limit cascading impacts of predation risk (Fortin et al. 2005).

Kauffman et al. (2010) suggests that aspen are not benefitting from the "landscape of fear" created by wolves, that claims of an ecosystem-wide recovery of aspen are not occurring and that those earlier assumptions were premature. Surveys conducted by Kauffman et al. (2010) of current conditions indicated that study aspen stands exposed to elk browsing were not growing to heights necessary for the trees to be invulnerable to elk. The only places where aspen suckers survived to reach a height sufficient to avoid browsing were in fenced areas (Kauffman et al. 2010). In addition, aspen stands identified as risky for elk were browsed just as often as aspen growing in less risky areas.

Kauffman et al (2010) not only confirmed that elk are responsible for the decline of aspen in YNP beginning in the 1890s, but also that none of the aspen groves studied after wolf restoration appear to be regenerating, even in areas risky to elk. Elk's fear of wolves does not appear to be benefiting aspen and Kauffman et al. (2010) concluded that if the YNP Northern Range elk population does not continue to decline, many of YNP's aspen stands are not likely to recover. Kauffman et al. (2010) suggested that a landscape-level aspen recovery is likely only if the elk population is further reduced.

One example of wolf effects in YNP has been reduction of the coyote population by wolf predation (Crabtree and Sheldon 1999). Most of the reduction was from direct killing at wolf kills when coyotes attempted to scavenge on carcasses (Crabtree and Sheldon 1999, Ballard et al. 2003). Recently, however, coyotes have adapted to wolves through changes in use of the landscape and socially by living in smaller groups (J. Sheldon, unpublished data as cited in Hebblewhite and Smith 2005). The pre-wolf number of coyote packs in Lamar Valley was 11, after wolves were released it declined to 6, but has recently increased to 12 (R. L. Crabtree and J. Sheldon, pers. comm. as cited in Hebblewhite and Smith 2005). Further, there is evidence for competition between wolves and mountain lions where wolves are generally dominant over mountain lions[25] (Ruth 2004). While mountain lions and wolves in YNP use prey and habitat differently, reductions in use of space by mountain lions has occurred since wolves were reintroduced (Ruth 2004). Competition between wolves and mountain lions appears to be minimal as mountain lion prey selection and kill rates have not changed compared with pre-wolf monitoring (Murphy 1998, Ruth 2004). However, in another 10 years post-wolf in YNP, based on studies in Banff National Park (Kortello et al. 2007), Hebblewhite and Smith (2005) predict competition between wolves and mountain lions will increase to a degree that could reduce mountain lion abundance, and should prey continue to decline and become more limiting, future competition for prey cannot be ruled out.

Twelve different scavengers have been recorded using wolf kills in YNP and five visit virtually every kill: coyotes, ravens (*Corvus corax*), magpies (*Pica pica*), and golden (*Aquila chrysaetos*) and bald

[25] Although wolves have clearly been the largest change to the carnivore community in the last 10 years in YNP, both grizzly bear and mountain lion densities have also been higher in the last 10 years.

eagles (*Haliaeetus leucocephalus*) (Wilmers et al. 2003*a*, Wilmers and Getz 2005). Spatially and temporally wolf-killed carrion is more available to scavengers post-wolf recovery[26]. However, if wolves reduce elk numbers, less total carrion might be available, but carrion more evenly distributed might compensate for any negative effect of reduced carrion biomass (Wilmers et al. 2003*a*).

Besides avian scavengers, many mammals also scavenge wolf kills. Black bears are subordinate to wolves at carcasses (Ballard et al. 2003), although lone wolves or young wolves can be at a disadvantage to large black bears. Grizzly bears benefit from wolf-killed prey throughout the year, whereas prior to wolf restoration, carrion was primarily only available in late winter (Wilmers et al. 2003*b*, Wilmers and Getz 2005). Carcasses may also be important to bears during fall when other food sources fail or are scarce (like the availability of whitebark pine nuts; grizzly bear use of wolf-killed ungulate carcasses increased during poor whitebark pine nut years). This illustrates an indirect effect between grizzly bears and whitebark pine as influenced by wolves.

There are other scavengers besides vertebrates, and also indirect effects of wolf predation on flora and soil nutrients. Research is just beginning on this topic, but more species of beetles use carcasses than all vertebrates put together. Sikes (1994) found 23,365 beetles of 445 species in two field seasons examining wolf-killed carrion. Obviously, this underestimates the number of decomposers such as insects, mites, invertebrates, bacteria, and fungi, which likely number in the thousands (Hebblewhite and Smith 2005). In addition, even longer-term effects of carcasses are the localized nutrients they deposit. Bump and Peterson (pers. comm. as cited in Hebblewhite and Smith 2005) found elevated levels of nutrients around elk carcasses. Using soil samples, one at the carcass site and one away from it, they found 20–500% greater nitrogen (ammonium and nitrate), phosphorous, and potassium at the carcass. Bump and Peterson attribute this to direct nutrient leaching from carcasses and indirectly to urine and feces from carnivores and scavengers.

Another area of potential indirect effect includes predation on prey exposed to diseases such as Brucellosis (*Brucella* spp.). While empirical evidence for this is scarce, Hebblewhite and Smith (2005) believe it is reasonable to expect that density-dependent disease prevalence in ungulates may be reduced by wolf predation (Packer et al. 2003), although in some instances, predation may actually increase disease prevalence (Holt and Roy 2007).

In conclusion, there is evidence for direct and indirect effects of wolves in YNP (Hebblewhite and Smith 2005). Direct effects include limitation or regulation of elk by wolves, behavioral avoidance of wolves by elk, and competition with other carnivores. Indirect effects include the influence of wolves on willow and aspen growth, species that rely on these plants such as songbirds and beaver, and apparent competition between elk and alternate prey such as bison, moose, and caribou. It is also clear that the most numerous indirect interactions occur between wolves and scavengers. Between 12 and 20 vertebrate scavengers made use of wolf-killed prey, a small number compared to the 445 species of beetle scavengers. However, regardless of the prevalence of indirect effects, the dominant interaction that exists in YNP is between wolves and elk. Elk reduced group sizes and moved into forested cover in the presence of wolves, changed habitat selection to avoid wolves in summer, and avoided aspen stands with higher predation risk (*i.e.,* anti-predatory behavior).

Wolves have likely been influencing elk behavior in Idaho similar to what has been documented in YNP, and would be expected to continue doing so under all of the Alternatives considered in this FEA, because USFWS intends to ensure that Idaho's wolf population is managed in a sustainable manner (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*).

[26] No other species generates as much carrion over such a consistent temporal scale as wolves (Wilmers et al. 2003*a*).

Based on the above information and analysis, we find no reason to expect that wolf removals under any of the Alternatives would result in significant adverse effects on the quality of the human environment because of possible wolf-related changes in ecosystems. Perhaps more importantly, it is reasonably foreseeable that, in the absence of any assistance by WS in wolf damage management in Idaho, IDFG and/or USFWS could conduct or authorize other entities to perform similar levels of wolf removals. Therefore, the environmental status quo with regard to this issue in the absence of any federal involvement by WS is expected to be similar.

2.4.4 Effects on non-target species populations, including State and Federally listed Threatened or Endangered (T&E) species.

The only species for which an average of more than one individual per year are taken unintentionally during Idaho WS wolf control efforts are coyotes and red fox (Table 2-1). Both of these canid species are abundant in Idaho, and they occur to varying degrees in many of the same areas where wolves occur. They are never unintentionally taken by shooting, but both of these species are attracted to the same types of baits and lures used to attract wolves to trap sets, and most unintentional take of coyotes and red foxes occurs when trapping for wolves. The use of pan-tension devices on foothold traps set for wolves helps reduce the number of unintentional captures, but does not eliminate all unintentional captures. Some of the unintentionally captured coyotes and red foxes taken during wolf trapping efforts are released, but in other cases, they are euthanized because they present potential predation threats to other resources in the area, particularly where sheep and lambs are being grazed.

Table 2-1. Cumulative Impact on Species Unintentionally Taken[1] by Idaho WS During Wolf Damage Control Operations, FY 2007 – FY 2009

SPECIES KILLED WHILE TARGETING WOLVES	ESTIMATED STATEWIDE POPULATION[2]	STATEWIDE POPULATION TREND[2]	3-YEAR AVERAGE WS UNINTENTIONAL TAKE IN TRAPS AND SNARES (WHILE WOLF TRAPPING)	3-YEAR AVERAGE OTHER KNOWN and ESTIMATED TAKE[3]	WS UNINTEN-TIONAL TAKE (Estimated % of Population)	CUM. TAKE[4] (Estimated % of Population)	ALLOWABLE HARVEST LEVEL
Coyote	50,100	Stable	37	9,855	0.07%	19.8%	70%
Red Fox	22,000	Stable to Declining	13	2,262	0.06%	10.3%	70%

[1] Only includes species for which the average yearly take by WS was more than 1 individual.
[2] Based on information provided in USDA (2002) and IDFG (C. White, pers. comm. 2010).
[3] Includes 3-year average number of animals taken by WS through wildlife damage management activities by FY (MIS 2007, 2008 and 2009) (3-year average: coyotes n=4451, red foxes n=102; coyotes and foxes reported statewide harvest by licensed trappers for the 2006-2007 (IDFG 2007*a*), 2007-2008 (IDFG 2008*b*) and 2008-2009 (IDFG 2009*c*) seasons (3-year average: n=2,620 coyotes and n=1080 red foxes); and coyotes reported taken through private aerial shooting activities during calendar year 2007 (ISADCB 2007), 2008 (ISADCB 2008) and 2009 (ISADCB 2009) (3-year average: n=164 coyotes). Additional coyotes and red foxes are undoubtedly taken by licensed hunters and shooters, pest and nuisance control operators, and private citizens who practice their own predator control. To account for these animals, WS will assume that those numbers equal those taken by licensed trappers (3-year average n=2,620 coyotes and n=1,080 red foxes).
[4] Cumulative take impacts are the effects on a species' population from all known causes.

Idaho's coyote population has been conservatively estimated at 50,000 (USDA 1996, 2002), and Connolly (1995) suggests that coyote populations can withstand annual harvest levels of 70% and still maintain a viable population. The total estimated statewide average annual take of coyotes during the 3-year 2007-2009 period has been less than 10,000 individuals, or less than 20 % of the estimated statewide population, and well below the sustainable harvest level. Idaho's red fox population has been conservatively estimated at about 22,000 (USDA 1996, 2002), and similar to coyotes, red fox can compensate for up to a 70% annual harvest level (USDA 1994). The total estimated statewide average

annual take of red fox during the 3-year 2007-2009 period has been about 2,275 individuals, or only about 10% of the estimated statewide population, also well below the sustainable harvest level. There is essentially no measurable impact on Idaho's coyote or red fox populations related to WS wolf damage management efforts, and the cumulative impacts are of a very low magnitude.

Previously prepared Biological Assessments have determined that the grizzly bear and the Canada lynx are the only federally listed T&E species which might potentially be affected by WS wolf damage management activities. The USFWS has concurred that WS" wolf damage management methods are not likely to adversely affect grizzly bears in Idaho, and are not likely to jeopardize the continued existence of Canada lynx (USDI 1992, 1996, 2002). Although the possibility exists that a grizzly bear or Canada lynx could unintentionally be captured in traps or snares set for wolves, WS employees comply with USFWS prescribed reasonable and prudent measures and terms and conditions to reduce the likelihood of any unintentional captures of these species, and no lynx or grizzly bears have been unintentionally captured during wolf damage management efforts in the 15 years that WS has been involved in these efforts. A related issue raised during public review of the August 2, 2010 EA is whether proposed wolf removals might indirectly affect grizzly bears by causing reduced availability of carrion as a food source. WS has entered into a new Section 7 consultation process with the USFWS to reassess and update previous consultations, but will continue to abide by previously established reasonable and prudent measures and terms and conditions pending the conclusion of the current consultation process. At the time the REA was completed, grizzly bears have entered winter hibernation and will remain in hibernation until mid to late March or later, thus eliminating any risk of grizzly bear incidental take prior to expected completion of the reinitiated consultation. Also, sport hunting has been curtailed due to the recent relisting of the wolf, and wolf removals to protect ungulates, if approved by the USFWS, are not expected to occur until after that consultation has been completed. Thus, the only wolf removals that would occur in the meantime are those associated with domestic animal depredation or in the rare event of a human safety incident. The levels of wolf removals for those purposes would not be expected to substantially affect the availability of carrion availability to grizzly bears.

A related issue raised during public review of the August 2, 2010 EA is whether proposed wolf removals might indirectly affect grizzly bears by causing reduced availability of carrion as a food source. WS has initiated further consultation with the USFWS regarding this potential indirect effect and will abide by any reasonable and prudent measures or alternatives that may be established through that consultation to ensure that effects from the Proposed Action or other Alternative adopted under a decision based on this FEA will not result in significant effects on grizzly bears as a species. At the time the REA was being completed, grizzly bears have entered winter hibernation and will remain in hibernation until mid to late March or later, thus eliminating any risk of grizzly bear incidental take prior to expected completion of the reinitiated consultation. Also, sport hunting has been curtailed due to the recent relisting of the wolf, and ungulate protection wolf removals, if approved by the USFWS, are not expected to occur until after that consultation has been completed. Thus, the only wolf removals that would occur in the meantime are those associated with domestic animal depredation or in the rare event of a human safety incident. The levels of wolf removals for those purposes would not be expected to substantially affect the availability of carrion availability to grizzly bears.

2.4.5 Lethal removal of wolves during the spring and early summer months could potentially result in litters of wolf pups becoming orphaned.

Depending on the circumstances, lethal removal of wolves to address livestock depredation problems or to address wolf impacts on ungulate populations may involve removing most or all members of a specific wolf pack, as authorized by the USFWS, IDFG or other responsible management agency. If these types of removals occur during the spring or early summer months, and 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. When not all adult wolves are removed from a pack, a remaining wolf or wolves may continue to feed and care for the remaining pups (Packard 2003, Boyd and Jimenez 1994). There may be occasional circumstances however, where in spite of concerted efforts to humanely remove any pups left after all adult wolves have been removed, one or more pups may be left 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.

In the case of wolf removals to protect ungulates, much of this effort may most logically occur during the spring months, after the wolf population in the treatment area had already been reduced to a seasonal low through public hunting (if that option exists) and/or natural mortality. Agency wolf removal efforts at this time would be expected to have the maximum additive effect in reducing the local wolf population, which may be necessary in order to achieve the desired level of removal. As in the case with wolf removals to protect livestock, concerted efforts would be made to remove pups and ensure that no wolf pups were left to fend for themselves.

Unfortunately, there could be occasional instances where dependent young may be orphaned during wolf damage management 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. But 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 predator control activities. To the extent that predator control removes animals that would otherwise continue to kill or injure prey animals, the overall level of pain and suffering may be reduced.

We expect the orphaning of wolf pups would occur very infrequently, if ever, and find no reason to believe that it would result in a significant adverse effect on the ability to maintain a viable wolf population in Idaho as desired by IDFG and USFWS.

2.4.6 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 FEA to address wolf damage management statewide in Idaho is appropriate and consistent with wolf management objectives and plans (USFWS (1994), 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*). USFWS (2008) prepared a single EA to collectively address specific aspects of wolf damage management in the three NRM wolf states (*i.e*., Idaho, Montana and Wyoming), whereas this FEA only covers one state. If in fact a determination was made through thie REA 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. In terms of considering cumulative impacts, one EA covering the entire state of Idaho may provide a better analysis than multiple EA's covering smaller zones within the state. A more detailed and site-specific level of analysis would not likely contribute to substantial improvement in the decision-making process, and pursuing a more site-specific and more detailed analysis might even be considered inconsistent with NEPA's emphasis on reducing unnecessary paperwork (Eccleston 1995).

2.4.7 Concerns that the Proposed Action may be highly controversial and its effects may be highly uncertain, both of which would require that an EIS be prepared.

The failure of any particular special interest group to agree with every act of a Federal agency does not necessarily create a controversy, and NEPA does not require the courts to resolve disagreements among various scientists as to the methodology used by an agency to carry out its mission [Marsh v. Oregon Natural Resource Council, 490 U.S. 360, 378 (1989)]. As was noted in the FONSI associated with USDA's (2002) predator damage management EA: "The effects on the quality of the human environment are not highly controversial. Although there is some opposition to predator control, this action is not highly controversial in terms of size, nature, or effect." If in fact a determination was made through the REA process that the proposed action would have a significant effect on the quality of the human environment, then an EIS would be prepared.

2.4.8 If lethal control is implemented, effort must be taken to target the individual wolf or wolves responsible for the depredation.

WS personnel are highly trained in methods of identifying wolf depredations, and use sound scientific information for assessing depredation events (Acorn and Dorrance 1990). Agency personnel strive to target the specific wolves involved in depredation to stop the problem as quickly as possible and to reduce control and damage costs, but like any wildlife management action in an uncontrolled situation, cannot guarantee that the wolf taken is always the specific individual involved in the depredation. Identification of depredating individuals is complicated by pack hunting behavior. In instances when a pack is involved in a depredation incident, multiple individuals may have been involved in the depredation event and agency personnel cannot always determine which specific individuals were responsible. Measures used to identify and target depredating wolves include, but are not limited to, careful analysis of wolf sign at the site by trained professionals, review of information on radio-collared wolves in the vicinity of the depredation, and focusing wolf capture efforts in areas near the depredation site. Sign at the depredation site can often be used to determine if the depredation was caused by an individual wolf or multiple wolves. Because wolves are very territorial, the wolf or wolves responsible for the depredation are the ones most likely to return to the depredation site, and traps set near the kill site are most likely to capture the wolf or wolves involved in the depredation. When radio-collared individual wolves or packs are implicated in depredations on livestock (by proximity in time and space to the depredation), telemetry monitoring can be used to help target those wolves either through trapping efforts on the ground or by aerial shooting.

2.4.9 Producers should not expect to prevent all predation losses and some losses are a cost of doing business.

Livestock producers recognize that some level of predation losses are likely to occur, in spite of their efforts and agency efforts to reduce the amount of losses. The agencies involved in wolf damage management do not expect to prevent all losses, nor are they proposing lethal wolf damage management as a solution to all depredation incidents. WS, USFWS and IDFG use an integrated approach to resolve wolf damage complaints. In some situations the use of nonlethal methods alone may be adequate for resolving wolf depredation complaints, but there will likely always be some 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. The Defenders of Wildlife, a private wildlife and habitat conservation organization, in the past has voluntarily compensated Idaho livestock producers 100% of the value of livestock that are confirmed by WS as killed or injured by wolves and 50% of the value of livestock that are designated by WS as "probable" wolf predation, but they have recently discontinued this program. The Idaho Office of Species Conservation offers a pro-rated compensation program to livestock producers who have previously filed for compensation through the Defenders of Wildlife for "probable" wolf

predation designations and for missing livestock that are presumed killed by wolves. Livestock producers are not ordinarily compensated for harassment of livestock by wolves, fence repairs after wolves chase livestock through fences, costs to gather and resort livestock dispersed by wolves or for the extra costs when producers have to pay for feed because livestock are removed from grazing pastures to minimize risks from wolves.

2.5 ADDITIONAL ISSUES NOT CONSIDERED BECAUSE THEY ARE OUTSIDE THE SCOPE OF THIS ANALYSIS

2.5.1 Circumstances under which livestock owners and other private citizens may legally take wolves.

Following the initial issuance of the original (1994) 10j rules for management of the XN gray wolf population in the NRM, subsequent 10j rules (issued in 2005 and 2008[27]) have allowed greater flexibility to deal with gray wolf depredations on livestock and other domestic animals, and wolf depredation on ungulates (USFWS 2008). Wolves are currently managed by the USFWS[28] (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123) and this issue is outside the scope of this EA.

2.5.2 Issuance of permits to landowners to take wolves.

Wolves are currently managed by the USFWS (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, 75 FR 65574) and the issuance of permits to landowners and livestock producers by the USFWS is a decision of the USFWS and outside the scope of any decision that WS would make as a result of this EA. Should wolves be delisted again, IDFG would likely reinstate issuance of permits to landowners to take wolves in depredation situations, and IDFG's issuance of such permits would likewise be outside the scope of this EA.

2.5.3 Desire for or opposition to a hunting season for wolves.

As long as wolves are listed under the ESA, hunting seasons are unlikely to be authorized, but should wolves be delisted again, IDFG would likely reinstate public hunting and possibly trapping of wolves as part of implementing the Idaho Wolf Population Management Plan. WS has no authority to authorize or deny a 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.

2.5.4 Appropriateness of trying to limit the impacts of wolf predation on ungulates.

Ungulates are managed by the IDFG and Idaho State statutes and balancing predator and prey populations is the responsibility of the IDFG. Wolves are currently relisted and the issue of wolf management to address unacceptable adverse impacts on ungulates is under the purview of USFWS and its implementation of 10j rules[26] and related NEPA analysis (USFWS 2008). Should wolves once again become delisted, IDFG would be expected to implement wolf removals for ungulate protection in accordance with approved plans. Whether this type of management is appropriate or not is up to the

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[27] The 2008 NRM wolf l0j rule was revised to give States more latitude in managing wolves affecting ungulate herds within the XN area. The 2008 10j rule is currently being litigated, and the outcome of that litigation may impact states' abilities to reduce wolf predation on ungulates. At this time the 2008 revised 10j rule remains in full effect.

[28] Idaho officials and Montana Fish, Wildlife and Parks asked the 9th U.S. Circuit Court of Appeals to reverse Judge Molloy's ruling that put gray wolves back onto the endangered species list in the NRM and blocked Montana and Idaho's wolf management plans and the fall hunting season. A second appeal was filed by the Idaho Farm Bureau Federation and Montana Farm Bureau Federation. In addition, the U. S. Representative from Montana drafted legislation for the House that advocates state control of wolves and is backing legislation in the House that would remove wolves from consideration under the ESA. Also, management of gray wolves in Idaho and Montana would be returned to the states under legislation introduced by Senators from Montana, Wyoming, Idaho and Utah.

IDFG and/or USFWS. Therefore, this issue is outside the scope of any decision that WS could make as a result of this EA.

2.5.5 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. The authority and regulation of livestock grazing on public lands is outside of WS' authority and therefore outside the scope of this EA.

2.5.6 Appropriate population level for wolves in Idaho.

The USFWS established recovery standards for Idaho and other states in the NRM recovery area (USFWS 1994, 74 FR 15123). The USFWS, through its approval of Idaho's Wolf Management and Conservation Plan (ILWOC 2002)) and its Wolf Population Management Plan (IDFG 2008*a*), has concurred that IDFG's proposed population level for wolves in Idaho is acceptable and appropriate. This issue is outside the scope of any decision that WS could make as a result of this EA.

CHAPTER 3: ALTERNATIVES

3.1 INTRODUCTION

This Chapter consists of six parts: 1) an introduction, 2) a description of alternatives considered and analyzed in detail, 3) a description of wildlife damage management strategies and methodologies, 4) wolf damage management methods that could be used or recommended by WS, 5) a description of alternatives considered, but eliminated from detailed analysis, and 6) a table of mitigation measures and standard operating procedures. Alternatives were developed for consideration using the WS Decision Model (Slate et al. 1992), *"Methods of Control*" (USDA 1994, Appendix J) and the *"Risk Assessment of Wildlife Damage Control Methods Used by the USDA Animal Damage Control Program"* (USDA 1994, Appendix P), and information provided by the public. Five alternatives were recognized, developed and analyzed in detail; and six alternatives were considered but not analyzed in detail, with supporting rationale presented.

Currently, the USFWS has management authority for wolves found within Idaho[29] and policies and procedures for wolf management within the State have been established (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*). WS acts as an agent for USFWS, at their request, in conducting wolf damage management activities (B. Kelly, USFWS letter to M. Collinge, WS, October 20, 2010), but in the absence of WS involvement, USFWS or other responsible management agency would be responsible for conducting wolf damage management. The purpose of the EA is to examine the environmental impacts of various levels of WS involvement in Idaho wolf damage management no matter which Federal or State agency is ultimately responsible for wolf management in Idaho. WS would be a designated agency of the responsible wolf management agency and therefore WS would respond to requests for assistance after the responsible agency had determined a management action. WS' role would be to assist the responsible management agency implement their management decisions.

3.2 DESCRIPTION OF THE ALTERNATIVES ANALYZED IN DETAIL

Under the first 4 alternatives, WS wolf damage management assistance could be provided on private or public property and tribal lands when: 1) resource owners/managers request assistance to alleviate wolf damage and the management is authorized by the USFWS, IDFG or other responsible agency, 2) wolf damage or threats are verified, and 3) agreements or work plans have been completed specifying the details of the damage management action to be conducted. Before WS would conduct wolf damage management on tribal-owned lands, the Tribal Council or other governing board would need to provide specific authorization.

The types of verified wolf or wolf-dog hybrid conflicts that could be addressed include: 1) depredation/injury of domestic animals, 2) harassment/threats to domestic animals, 3) property damage, and 4) injury and/or potential threats to human safety (*e.g.*, habituated/bold/aggressive wolves). The Preferred Alternative would additionally allow for the WS program to provide assistance to IDFG to address the impacts of wolf predation on ungulates as authorized by the USFWS, if appropriate. All wolf damage management would be conducted in compliance with appropriate Federal, State and local laws and regulations and in cooperation with, at the request of, the USFWS and/or IDFG, as appropriate.

[29] Idaho officials and Montana Fish, Wildlife and Parks, as well as the USFWS have asked the 9th U.S. Circuit Court of Appeals to reverse Judge Molloy's ruling that put gray wolves back onto the endangered species list in the NRM and blocked Montana and Idaho's wolf management plans and the fall hunting season. A second appeal was filed by the Idaho Farm Bureau Federation and Montana Farm Bureau Federation. In addition, the U. S. Representative from Montana drafted legislation for the House that advocates state control of wolves and is backing legislation in the House that would remove wolves from consideration under the ESA. Also, management of gray wolves in Idaho and Montana would be returned to the states under legislation introduced by Senators from Montana, Wyoming, Idaho and Utah. Gray wolf status in the NRM could change and this change is outside of the control of WS.

For all alternatives, USFWS, or their designated agent, retains their authority to implement or authorize nonlethal or lethal actions in addition to WS actions consistent with the USFWS 10j rules (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*). For example, USFWS or other responsible agency may issue permits to livestock producers or their agents who have experienced recent confirmed wolf predation on their animals or by authorizing USFWS, IDFG, or WS personnel or volunteers to remove wolves to address livestock depredations. However, these decision-making processes are currently the responsibility of USFWS.

3.2.1 Alternative 1 - Continue the Current Wolf Damage Management Program (No Action)

This Alternative would continue the WS wolf damage management program as currently provided for under applicable agreements and plans (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, ILWOC 2002, IDFG and ISADCB 2006, IDFG 2008*a*). If the legal status and classification of wolves in Idaho changes as a result of current or future litigation, legislation, or other actions outside of WS' control, Alternative 1 would consist of wolf management activities to protect livestock and other domestic animals conducted under the appropriate 10j rules and other procedures and guidance in place as authorized by the USFWS or IDFG, as appropriate. The No Action Alternative serves as the baseline against which the impacts of management alternatives can be compared and can be defined as a continuation of current management practices (CEQ 1981).

Under Alternative 1, wolf damage management would continue to be conducted on private and public lands[30] in Idaho as currently authorized by the USWFS when the resource owners/managers request assistance to alleviate wolf damage, wolf damage is verified by WS, and an *Agreement for Control* or other work authorization documents have been completed. WS would provide technical assistance and operational wolf damage management using and/or recommending nonlethal and lethal management methods after applying the WS Decision Model (Slate et al. 1992). WS would be able to assist with wolf research, wolf monitoring[31] and wolf or wolf-dog hybrid removal when requested and authorized by the USFWS and IDFG, as appropriate. Nonlethal methods used by landowners could include, but would not be limited to, changes in ranch management practices and pet care/supervision, proper carcass disposal, frightening devices, exclusion, guarding animals, habitat modification, and behavior modification of problem wolves. Nonlethal methods used operationally by WS may include foot-hold traps and snares with "stops" (used to live capture wolves for attaching radio-collars), frightening devices (*e.g.,* electronic guard, RAG devices), aversive conditioning (*e.g.,* modified dog training collars) and nonlethal projectiles (*e.g.,* rubber bullets, bean bag rounds). Aversive conditioning and other experimental damage management techniques would only be used by WS after consultation and concurrence with USFWS or IDFG, as appropriate.

In determining the most appropriate damage management strategy, preference would be given to nonlethal methods when they are deemed practical and effective (WS Directive 2.101). Lethal methods would be used to reduce damage after practical and appropriate nonlethal methods have been considered and determined to be ineffective or inappropriate to reduce damage to acceptable levels, or used and failed to reduce or stop the damage. In some instances, however, the most appropriate response to a wolf damage problem could involve concurrent use of a combination of nonlethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy (*e.g.*, some instances of risk to human safety from bold wolves or situations

[30] WS could use lethal wolf damage management methods on public land to reduce depredation when coordinated with the IDFG or USFWS and public land management agency.

[31] Wolf trapping and radio-collaring for wolf population monitoring purposes is usually conducted on public land and coordinated with the IDFG or USFWS and public land management agency.

where the landowner has already implemented practical and effective nonlethal methods prior to contacting WS and is still experiencing damage problems). Lethal methods could include shooting, calling and shooting, aerial shooting, and euthanasia of wolves live-captured in foot-hold traps, snares or other live-capture devices.

3.2.2 Alternative 2 – Continue the Current Program, Plus Assist IDFG with Ungulate Protection (Proposed Action/Preferred Alternative)

Under the Proposed Action/Preferred Alternative, WS would be able to employ all the methods included in the Current Program for protection of domestic animals when authorized by the USFWS or IDFG, as appropriate, and could additionally provide assistance to IDFG to protect ungulates, primarily elk, in situations where IDFG has requested assistance after determining that wolves are impacting ungulate populations in a specific management area(s) (C. Groen, IDFG Director letter to M. Collinge, WS January 28, 2009) and removals are authorized by the USFWS, if applicable.

Before WS would be requested to assist the IDFG protect ungulates, IDFG would review evidence of wolf predation and determine if wolves are a major mortality factor preventing ungulate populations from increasing and reaching IDFG management objectives prior to requesting WS assistance to remove wolves. Ungulate abundance objectives were established in the current elk plan finalized in 1999 which were established to allow growth of populations over time (IDFG 1999). Under current circumstances in which NRM wolves are still listed under the ESA, USFWS would have to approve any ungulate protection wolf management actions as allowed by 10j rules. If wolves are delisted again, then IDFG would utilize its authority under State law to conduct or request WS assistance in conducting wolf removals for ungulate protection.

3.2.3 Alternative 3 - Continue the Current Program, Plus Assist IDFG with Ungulate Protection and Include Use of Gas Cartridges and Breeding Wolf Sterilization as Potential Additional Control Methods

Under this Alternative WS would be able to employ all the methods included under the Current Program for protection of livestock and other domestic animals when authorized by the USFWS or IDFG, as appropriate, and could additionally provide assistance to IDFG to protect ungulates when the USFWS has authorized the removal of wolves to protect ungulates, if applicable.

If USFWS or IDFG, as appropriate, authorize the removal of an entire pack of wolves when a pack has been implicated in repeated depredations on livestock over a period of time, there may be infrequent situations in the spring involving a pack with pups in a den. If the USFWS or IDFG, as appropriate, determines that the entire pack is to be removed, this would include the pups in the den. Excavating the den to reach the pups could involve unnecessary health and safety risks to personnel, and the most practical, humane approach to this infrequent scenario would be to employ the use of an Environmental Protection Agency (EPA)- registered den fumigant to euthanize the pups in the den. The potential use of this method will be discussed in Chapter 4.

An additional management strategy under this Alternative could potentially be the infrequent use of sterilization[32] of one or both breeding wolves from packs implicated in chronic depredations on livestock, or from packs targeted for removal at the request of IDFG to protect ungulates. For protection of livestock, this option would be considered on a case-by-case basis in those instances where USFWS or IDFG, as appropriate, has authorized removal of an entire pack of chronic

[32] IDFG's Policy for Avian and Mammalian Predation Management would ordinarily preclude consideration of birth control or sterilization as a management tool, but the IDFG Director has concurred with exploring this approach on a limited trial basis.

depredating wolves. In these cases, if the responsible management agency and the affected livestock producers concurred, all of the wolves except the breeding pair would be slated for lethal removal, while the breeding pair would concurrently be live-captured, surgically sterilized, radio-collared and released to maintain and defend their territory against other wolves. Comparison of livestock losses prior to and after employing this strategy could provide indications regarding whether or not this experimental approach may be worthwhile. A rigorous scientific study design would be developed and implemented if this approach were to be employed beyond an initial 1-2 breeding pairs. The possible use of this strategy will be discussed further in Chapter 4.

3.2.4 Alternative 4 – WS Nonlethal Wolf Damage Management Only

This Alternative would work in a similar manner as the Current Program Alternative except Idaho WS would only use and provide advice on nonlethal wolf damage management methods. The USFWS or IDFG, as appropriate, and property owners would still be able to use lethal methods in accordance with Federal regulations, state laws, and as authorized by the USFWS or IDFG, whichever of those two agencies has management responsibilities at the time.

Nonlethal methods used or recommended by WS could include animal husbandry practices, installation of fencing, electronic guards, fladry and turbo-fladry, aversive conditioning, nonlethal projectiles, use of livestock guarding animals, and/or other nonlethal methods as appropriate. WS would still investigate wolf depredation complaints to determine if the loss meets criteria for wolf damage compensation, and could assist USFWS or IDFG with radio-collaring wolves for monitoring purposes and/or to enhance effectiveness of nonlethal deterrents such as the RAG. WS could live-capture wolves or wolf-dog hybrids, but the responsible management agency would decide about the disposition of any animals captured.

3.2.5 Alternative 5 – No Wolf Damage Management by WS in Idaho

Under this Alternative, WS would not be involved in wolf damage management in Idaho, but the USFWS or IDFG, as appropriate and property owners would still be able to use lethal and nonlethal methods in accordance with Federal regulations and/or state laws, as authorized by the USFWS or IDFG, whichever of those two agencies has management responsibility at the time.

If this Alternative is selected, WS would not provide any assistance with wolf damage and conflict management in Idaho. All requests for wolf damage management would be referred to the USFWS, IDFG or the Nez Perce Tribe, or other responsible management agency as appropriate.

3.3 WOLF DAMAGE MANAGEMENT STRATEGIES AND METHODOLOGIES

Wildlife damage management is defined as the alleviation of damage or other problems caused by or related to the presence of wildlife (USDA 1994) and is an integral part of wildlife management (The Wildlife Society 1992, 2004). Wildlife damage management approaches and strategies that could be used are described below.

3.3.1 Integrated Wildlife Damage Management (IWDM)

During more than 90 years of resolving human/wildlife conflicts, WS has considered, developed, and used numerous methods for reducing wildlife damage problems (USDA 1994). WS' efforts have involved research and development of new methods, improving existing methods and implementing effective strategies to resolve and prevent wildlife damage. Usually, the most effective approach to resolve wildlife damage is to integrate the use of several methods simultaneously or sequentially.

Adaptive IWDM is the implementation and application of safe and practical methods for the prevention and reduction of damage caused by wildlife based on local problem analyses and the informed judgment of trained personnel. The WS Program applies IWDM to reduce damage after applying the Decision Model discussed in Section 3.3.3 to develop site-specific, adaptive management strategies (Slate et al. 1992). The philosophy behind IWDM is to implement effective management techniques in the most cost-effective[33] manner while minimizing the potentially harmful effects to humans, target and non-target species, and the environment.

IWDM draws from the largest possible array of options to create a combination of techniques for specific situations. IWDM may incorporate cultural practices, habitat modification, animal behavior modification, removal of individual animals, local population reduction, or any combination of these, depending on the characteristics of the specific damage problem. The WS program also works closely with the researchers with the NWRC, the research arm of the WS program. The NWRC Research Station at Utah State University is the leading predator research complex in the world and scientists there are dedicated to developing new methods to reduce predator damage. Research associated with this facility has been critical to the testing and development of nonlethal methods for wolf damage management (Shivik 2001, Shivik and Martin 2001, Bangs and Shivik 2001, Shivik et al. 2002, 2003), and has improved the selectivity, humaneness and efficacy of capture devices. State WS programs assist the NWRC with research projects and, because of the close collaboration between NWRC and the state programs, the latest research findings are available to be incorporated into state operational programs.

3.3.2 IWDM Strategies

3.3.2.1 Technical Assistance Recommendations (implementation is generally the responsibility of the requester)

Technical assistance includes demonstrations and/or recommendations on the proper use of some management devices (*e.g.*, propane exploders, electronic guards, fladry, RAG, etc.) and information on animal husbandry, wildlife habits, habitat management and animal behavior modification. Technical assistance is generally provided following an on-site visit or verbal consultation with the requester. Typically, several management strategies are described to the requester for short and long-term solutions to damage problems. These strategies are based on the level of risk, need and practical application. Technical assistance may require substantial effort by WS personnel to evaluate and discuss potentially practical methods, but the actual implementation of the recommended methods is the responsibility of the requester. Technical assistance also includes site visits and verification of the cause of damage as may be necessary for available compensation and financial assistance.

Education is an important element of program activities because wildlife damage management is about finding "balance" or coexistence between the needs of people and needs of wildlife. This is extremely challenging as nature is not in static balance, but rather is in continual flux. In addition to the routine dissemination of recommendations and information to individuals or organizations sustaining damage, presentations and demonstrations are provided to ranchers, homeowners and other interested groups. WS frequently cooperates with other agencies in education and public information efforts. Education and public outreach information is available from the IDFG (<http://fishandgame. idaho.gov/cms/wildlife/wolves/>), Montana Fish, Wildlife and Parks (<http://fwp.mt.gov/tmc/vignettes/wolf.html>) and Wyoming Department of Game and Fish (<http://gf.state.wy.us/services/education/wolvesindex.asp>), and are also made available through

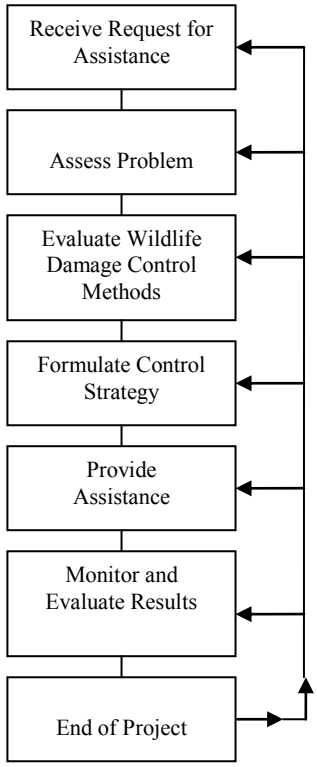
[33] The cost of control may be a secondary concern because of overriding environmental, social, biological, health and legal considerations.

news releases, and presentations to interested groups and organizations by the state agencies and WS. Additionally, technical papers are presented at professional meetings and conferences so that WS personnel, other wildlife professionals, and the public are updated on recent developments in damage management technology, laws and regulations, and agency policies.

3.3.2.2 Operational Damage Management

Situations in which WS personnel conduct wolf damage management activities are referred to as operational damage management or assistance. Operational assistance is sometimes provided when the problem cannot practically be resolved through technical assistance. The initial investigation defines the nature and history of the problem, extent of damage, and verifies whether or not the problem was caused by wolves. Professional assistance is often required to resolve problems effectively, especially if the problem is complex, or the management technique requires the direct supervision by or involvement of an experienced wolf damage management professional. Wolf biology, ecology and behavior and other factors are considered (WS Decision Model, Figure 3-1) when developing site-specific damage management strategies (Slate et al 1992).

Figure 3-1. WS Decision Model



3.3.3 WS Decision Model used for Decision Making

WS personnel use a thought process for evaluating and responding to damage complaints that is depicted by the WS Decision Model (Slate et al. 1992) (Figure 3-1). The Decision Model is a problem-solving process similar to that used by all wildlife management professionals when addressing human/wildlife conflicts. The Decision Model is not intended to require documentation or a written record each time it is used, and it necessarily oversimplifies complex thought processes. Decisions made using the model would be in accordance with SOPs described herein and adopted or established as part of the decision. Trained personnel assess the problem, and evaluate the appropriateness and availability (legal and administrative) of damage management strategies and methods based on biological, economic and social considerations including:

- Species responsible for the damage (*e.g.*, did wolves cause the problem or was it something else?)
- Magnitude, geographic extent, frequency, historical damage and duration of the problem including review of animal husbandry practices and producer efforts at nonlethal wolf damage management
- Status of target and non-target species, including T&E species
- Local environmental conditions
- Potential biological, physical, economic and social impacts
- Potential legal restrictions
- Costs of damage management

Following this evaluation, the methods deemed to be practical and potentially effective for the situation are incorporated into a management strategy. After this strategy has been implemented,

monitoring is conducted and evaluation continues to assess the effectiveness of the strategy. If the strategy is effective, the need for further management is ended. When damage continues intermittently over time, WS and the responsible management agency personnel and the requester monitor and reevaluate the situation. If one method or a combination of methods fails to reduce or stop damage, a different strategy is implemented. In terms of the WS Decision Model (Slate et al. 1992), most damage management efforts consist of a feedback loop between receiving the request and monitoring the results, with the damage management strategy reevaluated and revised, if necessary.

3.3.4 Local Decision Making Process

Wolf damage management in Idaho follows a "co-managerial approach" to address human-wolf conflicts as generally described by Decker and Chase (1997). Within this management model, trained personnel provide technical assistance regarding the biology and ecology of wolves and effective, practical and reasonable methods available, including nonlethal and lethal methods, to requesters of WS assistance to reduce wolf damage. Technical assistance on alleviating damage caused by wolves is also available from IDFG, the USFWS and private organizations. WS, USFWS or IDFG, as appropriate may also facilitate discussions at local community meetings when resources are available, and may make recommendations. Resource owners and others affected by wolf damage or conflicts have opportunity for direct input into the strategies to resolve the problem(s). They may implement management recommendations provided by WS or others, or may request management assistance from WS, USFWS or IDFG, as appropriate. Local resource owners compare the benefits versus the damage when deciding which nonlethal methods they would want implemented. Resource owners must weigh the cost of implementing each methodology or a series of methodologies.

3.4 WOLF DAMAGE MANAGEMENT METHODS

USDA (1994, Appendix J) describes the methods currently available for predator damage management, and includes those that are also available to manage wolf damage. Several of these were considered in this assessment because of their potential use to reduce wolf damage to agricultural and natural resources, property and pets, and human health and safety. For a discussion of the advantages and disadvantages of various nonlethal 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).

3.4.1 NonLethal Methods Available to WS, USFWS or IDFG Personnel and the Public

Some wolf damage management methods are available for anyone to use. These consist of nonlethal 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', USFWS's or IDFG'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 nonlethal 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 (USFWS et al. 2002, 2003, 2005, 2007, 2009, 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, nonlethal 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 effect 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 is one such frightening device that employs this approach, and RAG devices have been field-tested in Idaho with some success (Breck et al. 2002). Use of the RAG in Idaho has been most effective in protecting livestock in small (≤ 40-60 acre), fenced-in areas.

Compensation for wolf damage does not reduce wolf damage, and does not preclude implementation of lethal control actions, but can help offset some of the costs of wolf depredation. In some cases it may also help provide incentive to consider nonlethal methods of wolf control. Several different wolf damage compensation programs are available to livestock producers in Idaho, but the one element common to all of these programs is the requirement that losses be documented as confirmed or probable wolf damage. WS employees are often able to provide this confirmation as part of the initial investigation into complaints of wolf damage, but in some cases, the evidence remaining is insufficient to confirm that a wolf or wolves actually killed the animal. Depending on the circumstances, partial payment may be available for losses that cannot be confirmed, but which are deemed likely, or "probable." Two different wolf damage compensation programs are currently available to Idaho livestock producers, one administered by the Idaho Governor's Office of Species Conservation, and most recently, a new program administered under the USDA's Farm Service Agency. The conservation group Defenders of Wildlife had previously administered a wolf damage compensation program, but discontinued that program in 2010.

3.4.2 Nonlethal Methods Available to WS, USFWS, IDFG and the Nez Perce Tribe, or Other Management Agency

Some nonlethal 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 would only be conducted by USFWS or IDFG personnel, agencies permitted by the USFWS or IDFG, or by WS or the Nez Perce Tribe.

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 either physically restrained, 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 mountain lions 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, 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 mountain lions and black bears than for wolves.

Dart guns are capture tools that utilize a dart filled with tranquilizer drug, fired from a specially designed firearm. They would ordinarily only be used on wolves when conducting live-capture operations from a helicopter. Once tranquilized, the animal may be handled safely and processed for research or monitoring purposes. Use of dart guns would have no effect on non-target species because positive target species identification is made before animals are darted. Thus, WS' use of dart guns 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 attend a minimum 2-day accredited training course and an online distance learning module on immobilizing wildlife, and pass all associated post-course tests. To retain certification, WS employees are required to receive 16 hours of continuing education every 3-years and take and pass an online distance learning module.

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.

3.4.3 Nonlethal Methods which may Require Special Authorization from USFWS or IDFG or Other Management Agency

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 USFWS, IDFG or other management agency 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 USFWS, IDFG, Nez Perce Tribe or WS or personnel authorized by USFWS, IDFG or the Nez Perce Tribe[34].

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).

Nonlethal Projectile use involves guarding an area and then using rubber bullets, bean bag rounds or other nonlethal 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 the there are radio-collared wolves involved and the

[34] American Indian tribes have authority to use these methods on tribal lands without permission from the responsible management agency.

landowner/resource manager assists with the implementation. USFWS or IDFG may agree to allow the use of these methods and WS to train private individuals to use the method.

Surgical Sterilization of one or both breeding wolves from a pack would only be employed as a nonlethal alternative to killing those same wolves, as described in Alternative 3 at Section 3.2.3. (The only wolves potentially subjected to sterilization would be wolves which would otherwise be killed because of their previous involvement in chronic depredations.) Bromley and Gese (2001) reported that surgically sterilized coyotes maintained territories and pair bonds similar to non-sterilized coyotes, and that sterilized coyotes killed fewer sheep, since they did not have to kill prey to feed their pups. They further reported that the amount of predation losses averted just in the first year following the sterilization procedure exceeded the costs associated with sterilizing the coyotes. A number of recognized wolf authorities have suggested a similar approach with wolves might be effective in reducing wolf depredations on livestock (Cluff and Murray 1995, Mech et al. 1996, Haight and Mech 1997). The benefits of sterilizing wolves to protect livestock could potentially be much greater than the benefits achieved with coyotes, since wolf territories can be several hundred square miles, whereas coyote territories are closer to 10 square miles. Also, individual wolves are over 7 times more likely to kill sheep and over 170 times more likely to kill cattle than are individual coyotes (Collinge 2008). The larger territory size for wolves, as compared to coyotes, and the greater proclivity for individual wolves to kill livestock would both be expected to contribute to an even greater cost-benefit ratio from sterilizing wolves than has been suggested for coyote sterilization. Although this approach has never been specifically evaluated to assess its potential benefits in reducing wolf predation on livestock, Idaho's relatively high wolf population and annually-occurring wolf predation on livestock would seem to make Idaho a logical place to explore this idea.

3.4.4 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. Under Alternatives 1, 2 and 3, WS would conduct activities in coordination with USFWS or IDFG, and use the WS Decision Model (Slate et al. 1992) to determine when lethal management would be used. Under any of the Alternatives, livestock and domestic animal owners, their employees or agents, may shoot a wolf in the act of molesting or attacking said animals (71 FR 43410, 73 FR 10514, 74 FR 15123, 75 FR 65574, Idaho Statute Title 36-1107(c)). Livestock and domestic animal owners may also be issued permits by USFWS or IDFG to shoot or trap wolves, in response to wolf damage. The lethal wolf damage management techniques that would be available to WS under Alternatives 1, 2 and 3 would include the use of foothold traps and snares, as described above under Section 3.4.2, 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 1, 2 or 3 would include shooting, from the ground as well as from fixed-wing aircraft or helicopters. An additional lethal method which might potentially be employed in extremely limited circumstances under Alternative 3 would be the use of an EPA-registered den fumigant (carbon monoxide) to euthanize pups in their dens.

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 control 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). During the 5-year period of FY 05 - FY 09, 17% of all wolves lethally removed by WS in Idaho were taken by shooting from the ground (USDA 2010).

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 control tools available, and more wolf damage problems are resolved through aerial shooting than by any other method. In the 5-year period of FY 05 - FY 09, about 50% of all wolves lethally removed by Idaho WS were taken by aerial shooting (USDA 2010).

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. In the 5-year period of FY 05 - FY 09, only 1% of all wolves lethally removed by Idaho WS were taken by neck snares (USDA 2010).

Gas Cartridges are registered by the EPA (registration #56228-21) for euthanizing predators in their dens. Lethal take of wolf pups in a den would be expected to occur infrequently, if ever, and would only be employed under Alternative 3. The use of the gas cartridge would only occur in those cases where an entire wolf pack is to be removed and the control action was occurring during the relatively brief period (4-6 weeks) when pups were staying in the den. When used to euthanize predators in their dens, 1 or 2 gas cartridges are typically placed in the den entrance, the fuse is lit, and the den entrance is sealed with soil. When ignited, the cartridge burns and produces large amounts of carbon monoxide, a colorless, odorless, tasteless poisonous gas. The animals in the den succumb to a combination of excess carbon monoxide and oxygen deprivation. Carbon monoxide is recognized by the AVMA as an approved and humane method to euthanize animals (AVMA 2007). The gas cartridge label does not currently include wolves as a target species, and gas cartridges would not be used for this purpose unless a Special Local Needs registration was obtained through the Idaho State Department of Agriculture.

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.

3.5 ALTERNATIVES CONSIDERED BUT NOT IN DETAIL, WITH RATIONALE

3.5.1 Bounties

Bounties are payment of funds for killing wildlife suspected of causing economic losses but is not considered effective to reduce wolf damage at this time. This Alternative will not be considered in detail because:

- USFWS or IDFG has not authorized a bounty program for wolves
- Bounties are generally not effective in reducing damage because depredating individuals/local populations are not specifically targeted
- No effective process exists to prevent taking of animals from outside the damage management area for compensation purposes
- Fraudulent claims can occur (Waller and Errington 1961)

3.5.2 Eradication and Suppression

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

- The attempted eradication of established wolf populations is contrary to State and Federal efforts to protect and conserve wildlife and contrary to ESA requirements
- Eradication of wolves is not acceptable to most members of the public
- It is also not realistic, practical, or allowable under present WS policy to consider large-scale population suppression.

3.5.3 Agencies Exhaust All Nonlethal Methods Before Attempting Lethal Methods

Under this Alternative, all nonlethal 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, USFWS or IDFG 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 nonlethal 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 nonlethal methods may be unacceptable to some and would likely result in an increase in individuals seeking to solve their own problems instead of working with WS, the USFWS, or IDFG personnel; and 3) experimenting with nonlethal approaches may not be appropriate in the rare instance of a wolf-related threat to human safety.

3.5.4 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 nonlethal wolf damage management methods is not in the best interest of the continued recovery of the species, is contrary to agency policy and directives (WS Directive 2.101), and will not be analyzed further. In certain situations, nonlethal methods may provide a more effective short-term

or long-term solution to wolf damage problems than lethal methods.

3.5.5 Technical Assistance Only

Under this Alternative, WS would not conduct operational wolf damage management in Idaho but could provide information to requesters about methods or techniques they could use to reduce wolf conflicts. WS would also be able to conduct investigations of potential wolf depredation sites as required to administer the wolf damage compensation program. Because USFWS or IDFG could still use and authorize others to use nonlethal and lethal wolf damage management techniques, the environmental impacts of this Alternative were encompassed in the evaluation of Alternatives 1, 2, 3, and 4 of the REA. Detailed analysis of this Alternative would not contribute substantive additional information to the understanding of the environmental impacts of the Alternatives, so this Alternative will not be analyzed in detail.

3.5.6 Wolf Damage Management Conducted by Licensed/Permitted Hunters and Trappers

With wolves currently protected under the ESA[35] and the Idaho governor excluding IDFG participation in wolf management (C. L. Otter, Idaho Governor letter to Kenneth Salazar, Secretary of Interior, October 18, 2010), IDFG cannot address wolf depredation problems by providing for take of depredating wolves primarily by private individuals holding appropriate licenses or permits issued by IDFG. In addition, a problem with this approach is that private hunters and trappers would not always have the time, resources, or training to promptly and effectively respond to site-specific damage problems. Salvage of wolf hides obtained through private depredation control activities could conceivably be authorized by the USFWS or IDFG as an incentive to promote this approach, but the majority of wolf damage problems occur during April through September when pelts would not be in prime condition for salvage and are of little value. Also, as noted in Section 3.4.4, about half of the lethal removal of wolves during wolf damage control operations is typically accomplished through aerial shooting, and the resources and expertise to conduct this activity would not likely be available to private hunters and trappers. If wolves are delisted, IDFG could focus hunter and trapper harvest of wolves in areas of chronic wolf depredation problems through the establishment of targeted harvest seasons and quotas. To the extent IDFG might be able to facilitate this, the cumulative impacts of this approach are already encompassed to a degree within evaluation of the other Alternatives being analyzed. This approach would also be a nonfederal action and outside the scope of NEPA.

3.5.7 The Natural Resources Defense Council (NRDC) Alternative

The NRDC proposed consideration of a "Nonlethal Before Lethal Methods" Alternative specifically requiring that: 1) cooperators show evidence of sustained and ongoing use of nonlethal/husbandry techniques aimed at preventing or reducing predation prior to receiving services from WS, 2) WS would use or recommend, as a priority, nonlethal techniques in response to a confirmed damage situation, and 3) lethal techniques would only be used when the use of nonlethal methods failed to keep damages below an acceptable level.

This Alternative is somewhat similar to the Alternative considered in Section 3.5.3, but would require use of nonlethal methods on a more limited scale in terms of the diversity of nonlethal methods that would need to be deployed prior to receiving WS assistance. It would further restrict WS from

[35] On August 5, 2010, the U.S. Federal District Court in Missoula, Montana, issued an order which vacated the delisting of the NRM DPS of the gray wolf. In compliance with this order, wolves are again considered endangered throughout the NRM DPS except where they are classified as XN (southern Montana, Idaho south of Interstate 90, and all of Wyoming). As a result of this court ruling, sport harvest seasons have been suspended.

implementing lethal methods unless use of nonlethal methods failed to keep wolf damage below a certain level determined to be acceptable. This Alternative is not considered in detail for the following reasons:

In Section 2.4.9 of the REA, we explain how most instances of wolf predation on sheep occur in spite of sheep producers' use of herders and livestock guarding dogs to help protect the sheep from predation. Therefore, the current situation for many wolf-caused livestock depredation problems is that the producers have already implemented one or more nonlethal strategies prior to receiving WS or other agency assistance.

The primary decision-makers for determining how wolf depredation situations are to be resolved (*i.e.,* USFWS or IDFG) have not established any requirement for producers to use prescribed nonlethal methods or strategies prior to receiving wolf damage management assistance. Because WS acts as an agent of either the USFWS or IDFG (depending on whether the wolf remains listed or is again delisted) for wolf damage management in Idaho, we do not consider it appropriate for WS to establish these types of conditions before providing service.

Some methods that would likely need to be attempted under this Alternative would be impractical, inappropriate, or have a low chance of being effective for a variety of reasons. For example, methods such as wolf-proof or resistant fencing could cost more than the value of resources protected; noise-producing scaring devices could disturb recreational users of public land grazing areas or nearby human residents; guard dogs might present human safety risks to recreational users of a public land grazing area; visual or auditory scaring devices may obviously be ineffective in situations where wolves have habituated to such strategies already. The potential for additional losses to occur while having to take the time to experiment with nonlethal methods may be unacceptable to some which would likely result in an increase in individuals seeking to solve their own problems instead of working with WS, the USFWS, or IDFG personnel. In the rare event of a wolf-related threat to human safety, experimenting with nonlethal approaches may present too great a risk of failure to prevent human injury or fatality to be deemed appropriate by local government jurisdictions, or by USFWS or IDFG.

With respect to element two (2) in the NRDC proposed Alternative, WS already gives preference to using or recommending nonlethal methods when practical and effective as part of the Proposed Action Alternative (WS Directive 2.101) to the extent that it is allowed to by the USFWS and/or IDFG when those agencies make decisions about how to resolve wolf damage situations. The practicality of a particular husbandry or other nonlethal method can vary substantially among producers and among depredation situations. Therefore, it is difficult or impractical to determine appropriate and reasonable criteria to dictate ahead of time which particular husbandry or other nonlethal methods should be required in given situations.

With respect to element three (3) in the NRDC proposed Alternative, it is difficult to determine an "acceptable level" of loss for individual livestock producers. In our experience, whether a given rate of loss is "acceptable" or not varies substantially among individual livestock producers. Some producers have lower costs of doing business -- for example, one producer might have no cost of financing for purchasing his ranch property while the next could be carrying a substantial mortgage with considerable interest costs. What might be an economically tolerable or "acceptable" level of loss to one rancher could be economically unacceptable, or even financially devastating, to another. Additionally, if effective wolf damage management methods are delayed until damage has increased to a certain predetermined level, damage may escalate to an excessive level before the problem can be resolved. Therefore, we believe it would be impractical to establish a standard or threshold of "acceptable losses" for providing assistance.

One purpose of having effective damage management assistance available to livestock producers is to foster support for, or to at least minimize or reduce the amount of opposition to, wolf recovery. As stated in Section 1.1, prompt, professional management of conflicts with wolves is an important component of wolf recovery because it facilitates local public acceptance and tolerance of wolves (Fritts et al. 1992, Fritts 1993, Mech 1995). To establish an arbitrary threshold of "acceptable loss" before any wolf removals would occur would, in our view, be counterproductive to promoting acceptance of wolf recovery by the livestock industry. This is because we would expect that some, or perhaps many, producers experiencing losses to wolves would cease to request assistance from WS if we made the conditions for receiving such assistance too burdensome from their perspectives. Greater incidence of illegal wolf killings would be likely result, or increased political efforts to get laws changed by Congress, as evidenced by recent legislation introduced to prevent wolves from being listed under the ESA.

The Alternatives selected for detailed analysis in this EA encompass a reasonable range as required by NEPA and include some of the suggestions in the NRDC proposal. Thus, we believe that inclusion of this Alternative would not contribute new information or options for consideration and analysis that are not already being considered in this EA.

3.6 STANDARD OPERATING PROCEDURES FOR WILDLIFE DAMAGE MANAGEMENT TECHNIQUES

Mitigation measures and SOPs improve the safety, selectivity and efficacy of wildlife damage management techniques. Most of the SOPs used by the WS program are discussed in detail in USDA (1994, Chapter 5). The following measures and SOPs apply to some or all of the Alternatives, as indicated in the columns. These SOPs only describe actions by WS and do not include actions by USFWS or IDFG. In some cases, if an action is not taken by WS, it may be implemented by USFWS or IDFG.

- Alternative 1 - Continue the Current Wolf Damage Management Program (No Action)
- Alternative 2 - Continue the Current Wolf Damage Management Program, Plus Ungulate Protection as Requested by IDFG (Proposed Action)
- Alternative 3 - Continue the Current Program Plus Assist IDFG with Ungulate Protection and Include Use of the Gas Cartridge and Wolf Sterilization as Potential Additional Control Methods
- Alternative 4 – WS Nonlethal Wolf Damage Management Only
- Alternative 5 - No Wolf Damage Management by WS in Idaho

Standard Operating Procedures by Alternative	**1**	**2**	**3**	**4**	5
General Procedures and Conditions for Conducting Wolf Damage Management					
WS wolf damage management would follow guidelines as specified and agreed upon in established guidelines and rules, and as authorized by the USFWS or other management agency.	X	X	X		
WS would conduct wolf damage management only when and where a need exists.	X	X	X	X	
Wolf-dog hybrids could be killed by WS if they appear to be living in the wild and are unmarked, or they would be held in captivity while attempts are made to locate the owner. If no owner could be located, depredating wolf-dog hybrids could be euthanized or provided to local authorities.	X	X	X		

Standard Operating Procedures by Alternative	1	2	3	4	5
Nonlethal methods would be used when practical and effective, but lethal methods could also be applied alone or in combination with nonlethal methods in some cases to most effectively resolve a damage problem.	X	X	X		
WS could use lethal methods to remove wolves in cases of threats to human safety.	X	X	X		
WS would not initiate use of lethal wolf damage management methods for protection of livestock until an authorizing agreement has been signed by the producer.	X	X	X		
Lethal depredation management activities would occur within specific areas as specified and authorized by the USFWS or IDFG.	X	X	X		
All wolf mortalities, while conducting wolf damage management and wolf population monitoring, would be reported to the USFWS or appropriate IDFG Regional and/or State office.	X	X	X	X	
Wolves or wolf parts taken during wolf damage management may be transferred to Native Americans for cultural purposes, educational use, or scientific research purposes when coordinated with and approved by USFWS or IDFG. Specimens not suitable, or not needed, for such use would be disposed of as directed by USFWS or IDFG.	X	X	X		
Animal Welfare and Humaneness of Methods Used by WS					
Nonlethal wolf damage management methods such as guard dogs, scare devices, fladry and other methods, would be recommended and implemented, when appropriate.	X	X	X	X	
WS could provide training to landowners and resource managers in the safe and effective use of nonlethal projectiles when authorized by the USFWS or IDFG, as appropriate.	X	X	X	X	
Wolf capture, handling, and euthanizing (if permitted) would be carried out as humanely as practically possible.	X	X	X		
Traps and snares would be checked consistent with USFWS or IDFG rules and WS policy.	X	X	X	X	
Research would continue to improve the selectivity and humaneness of management devices and these would be implemented into the WS Program.	X	X	X	X	
Foot-hold traps would be equipped with pan-tension devices to reduce the incidence of smaller non-target animal captures.	X	X	X	X	
All WS Specialists dealing with wolf complaints would be trained in the capture, chemical immobilization, and medical handling of wolves to minimize accidental injury and death.	X	X	X	X	
Nonlethal projectiles (*e.g.*, rubber bullets and bean bag projectiles) may be used if authorized by USFWS or IDFG.	X	X	X	X	
Nonlethal projectiles would be used in a manner which would be unlikely to result in any permanent physical damage or death to a wolf.	X	X	X	X	
Personnel would be trained in the safe and appropriate use of wolf damage management techniques and equipment.	X	X	X	X	
Safety Concerns Regarding Use of Capture Devices					
The WS' Decision Model, designed to identify the appropriate wildlife damage management strategies and their impacts, is used.	X	X	X	X	
WS would place traps and snares so that captured animals would not be readily visible from publicly used travel routes.	X	X	X	X	
Warning signs would be posted on main roads and/or trails leading into any areas where traps or snares were being used. These signs would be removed at the end of the damage management activities.	X	X	X	X	

Standard Operating Procedures by Alternative	1	2	3	4	5
No traps or snares would be used by WS within ¼ miles of any residence, community, or developed recreation site, unless granted permission from the owner of a privately-owned property or an official from the appropriate public land management agency.	X	X	X	X	
Concerns About Impacts of Wolf Damage Management Activities on T&E Species, Other Species of Special Concern, and Cumulative Effects.					
WS consulted with the USFWS on the impacts of predator control activities to Federally listed T&E species found in Idaho and will implement reasonable and prudent measures or alternatives established by the USFWS for the protection of T&E species.	X	X	X	X	
WS personnel would attempt to resolve depredation problems by taking action against individual problem animals, or local populations or groups.	X	X	X	X	
WS foot-hold traps or spring activated foot snares set for wolves would incorporate tension devices to reduce the likelihood of capturing smaller non-target species.	X	X	X	X	
WS would not set foot-hold traps or snares for wolves within 30 feet of any exposed bait or animal carcass to reduce the likelihood of capturing non-target species.	X	X	X	X	
The only pesticide product potentially used to euthanize wolves would be the EPA-registered gas cartridge, and only in rare circumstances when pups from a chronic depredating pack of wolves had been authorized for removal and are still in the den.			X		
The USFWS, IDFG, or the appropriate land manager, as appropriate, would be notified as soon as possible, if a State or Federally listed T&E species is caught or killed.	X	X	X	X	
Cultural Resources/Native American Concerns.					
The REA was provided to Native American Tribes for comment to determine if cultural issues have been addressed.	X	X	X	X	X
On private lands within recognized tribal reservation boundaries, WS will ask the affected landowner if the appropriate reservation personnel can co-investigate any complaint with WS. If allowed by the landowner, the tribe may co-investigate the complaint. WS and the tribe will consult regarding a course of action to address or resolve verified wolf complaints on these lands.	X	X	X	X	
WS will comply with requirements for notifying tribes as requested by the tribes.	X	X	X	X	
Public Land Issues					
On public lands, vehicle use would be limited to existing roads unless otherwise authorized by the land management agency.	X	X	X	X	
WS will meet annually with the land management agency to develop Work Plans which include delineation of areas where certain methods may not be used, for all or part of the year.	X	X	X	X	
Public land agencies will review work plans for consistency with land and resource management plans.	X	X	X	X	
If wolf damage management were ever requested to take place in Wilderness Areas or Wilderness Study Areas, it would only be conducted in coordination with the responsible land management agency and under applicable guidelines.	X	X	X	X	

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

NEPA requires Federal agencies to identify and assess reasonable alternatives to a proposed action that will avoid or minimize adverse effects of these actions upon the quality of the human environment (40 CFR 1500.2e). Chapter 4 provides information needed for making informed decisions concerning alternatives for reducing human-wolf conflicts (*i.e.*, conducting wolf damage management) in Idaho outlined in Chapter 1, the issues and affected environment discussed in Chapter 2, and the Alternatives discussed in Chapter 3. This chapter analyzes the environmental consequences of each Alternative and consists of: 1) analysis of environmental consequences, 2) analysis of each Alternative against the issues considered in detail, and 3) summary of impacts. Wolves will be present in Idaho regardless of which Alternative is selected (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*), but the conflicts with humans could vary by Alternative; different management philosophies and tools will lead to different outcomes. The actual outcomes will result from USFWS or IDFG management decisions as provided for in USFWS (1994), 71 FR 43410, 73 FR 10514, 74 FR 15123, or the Idaho Wolf Conservation and Management Plan (ILWOC 2002) and the Idaho Wolf Population Management Plan (IDFG 2008*a*) and court rulings. The impacts are analyzed using the best available information and data.

CEQ (1981) guidance states that the "No Action" Alternative can be defined as being the continuation of current management practices. Data are available on the environmental impacts of the Current Program (the No Action Alternative, or Alternative 1), so the Current Program will be used as the baseline for comparison with the other Alternatives to determine if the real or potential impacts are greater, lesser, or similar. Cumulative environmental impacts result from incremental consequences added to other past, present, and reasonably foreseeable wolf management actions by the USFWS, IDFG, Nez Perce Tribe, other agencies or individuals based on USFWS (1994), 71 FR 43410, 73 FR 10514, 74 FR 15123, or IDFG (2008*a*) management and conservation plans. While impacts can be predicted, it is also possible for USFWS or IDFG to mitigate or lessen impacts, based on how and when specific management strategies described for each Alternative are implemented. USFWS or IDFG intends to lessen the impacts to the Idaho wolf population where possible and maintain a secure and healthy population (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*). Rather than a wolf or no-wolf analysis, the EA analyzes the consequences of a spectrum of wolf conservation and management alternatives. A summary of the consequences associated with each Alternative is presented at the end of this chapter (Table 4-3).

The Idaho Fish and Game Commission has authority to classify wildlife under Idaho Code 36–104(b) and 36–201; the gray wolf was classified as endangered in Idaho until March 2005 when it was reclassified as a big game animal. Idaho statutes (Title 36) have penalties associated with illegal take of big game animals and these rules are consistent with IDFG (2008*a*, Idaho Code 36 - 1402, 36 - 1404, 36 - 202(h)). ILWOC (2002) directs the IDFG as the primary management agency for wolves in Idaho after delisting and to maintain a minimum of 15 packs as a substantial safety margin over the 10 breeding pair minimum (USFWS 1987, 1994), and to manage wolves as a viable self-sustaining population that will never require relisting under the ESA. Wolves are subject to "defense of property" regulations similar to those that were in effect under the ESA.

ILWOC (2002) called for the State to coordinate with WS to reduce depredation by wolves, depending on the number of wolves in Idaho, and for a balanced educational effort. In November 2007, Idaho released a Wolf Population Management Plan for public review and comment (IDFG 2008*a*). That plan is a more detailed step-down management plan compared to the general guidance provided in ILWOC (2002) and discusses how the population will likely be well above 20 breeding pairs and provides for wolf hunting opportunities when their population is above that level (IDFG 2008*a*) when delisted. Human-caused

mortality will be regulated as per ILWOC (2002) and IDFG (2008*a*) to maintain a recovered wolf population.

4.1.1 Background Important to the Analysis

4.1.1.1 Status of the NRM and Idaho Wolf Population

USFWS (1987) initially specified a recovery criterion of a minimum of 10 breeding pairs[36] of wolves for a minimum of 3 successive years in each of 3 core recovery areas. USFWS (1994) subsequently revised wolf recovery parameters in the NRM to stipulate that "Thirty or more breeding pairs comprising some 300+ wolves in a metapopulation, with genetic exchange between subpopulations, should have a high probability of long-term persistence." In addition, the metapopulation configuration and distribution throughout secure suitable habitat (*e.g.*, YNP, NW Montana and central Idaho) would ensure that each core recovery area would provide a recovered population that would be distributed over a large enough area to provide resilience to natural or human-caused events[37] that might temporarily affect one core recovery area. USFWS (1994) further determined that a metapopulation of this size and distributed among the three core recovery areas within the identified NRM DPS would result in a wolf population that would fully achieve recovery objectives.

The USFWS conducted another review of what constitutes a recovered wolf population in 2001 and 2002 (USFWS et al. 2002, 2003) to re-evaluate and update USFWS (1994). A majority (78%) of a panel of wolf experts supported USFWS (1994) conclusions and agreed that wolf population viability was enhanced by higher (500 or more wolves) rather than lower population levels (300) and longer (more than 3 years) rather than shorter demonstrated time frames. The USFWS also determined that an essential part of achieving recovery is an equitable distribution of wolf breeding pairs[38] and individual wolves in Idaho, Montana and Wyoming and the three core recovery areas, and concluded that NRM wolf recovery and long-term wolf population viability is dependent on its distribution as well as maintaining the minimum numbers of breeding pairs and wolves.

Minimum recovery goals (an equitably distributed NRM wolf population that never goes below 100 wolves and 10 breeding pairs in Montana, in Idaho, and in Wyoming) have been exceeded in the NRM DPS every year since 2002 (USFWS et al. 2010), and as listed in the Federal and State recovery plans, all threats in the foreseeable future have been sufficiently reduced or eliminated in Idaho and Montana. Although gray wolves in the Idaho and Montana portions of the NRM recovery area were delisted, a legal challenge on procedural grounds (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM) led to the delisting decision being overturned in August 2010.

The NRM DPS occupies nearly 100% of the core recovery areas recommended in the 1987 recovery plan (*i.e.*, central Idaho, the Greater Yellowstone Area (GYA), and northwestern Montana) (USFWS 1987) and nearly 100% of the areas where suitable habitat was predicted to exist, and the wolf population would live in northern and central Idaho and the GYA (USFWS 1994). This pattern is expected to continue, because management plans for public lands in the

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[36] A breeding pair is defined as two wolves of opposite sex and adequate age, capable of producing offspring.

[37] No wolf population of this size and distribution has gone extinct in recent history unless it was deliberately eradicated by humans (Boitani 2003).

[38] Uniform distribution is not necessary, however a well-distributed population with no one State/recovery area maintaining a disproportionately low number of packs or number of individual wolves is needed to maintain wolf distribution in and adjacent to core recovery areas and other suitable habitat throughout the NRM.

NRM DPS result in forest cover, high ungulate densities, low to moderate road and livestock densities, and other factors critical to maintaining suitable wolf habitat. These goals were designed to provide the NRM gray wolf population with sufficient representation, resilience, and redundancy for its long-term conservation (73 FR 10514).

4.1.1.2 Wolf Habitat in the NRM and Idaho

The USFWS used two models to identify wolf habitat (Oakleaf et al. 2006[39], Carroll et al. 2006[40]) which predicted different amounts of theoretically suitable wolf habitat in the NRM. Habitat quality for wolves is based on adequate prey and security from excessive human-caused mortality. State regulatory mechanisms in Idaho and Federal land management practices/guidelines restrict the location and extent of development on public lands, and these activities are not expected to substantially impact prey or wolf security (USFS 2006).

The area in the NRM DPS currently occupied by persistent wolf packs was determined by circumscribing a line around the outer points of radio-telemetry locations of all known wolf pack territories[41] in 2006 (USFWS et al. 2007). The overall distribution of wolf packs has been similar since 2000, despite a wolf population that has more than doubled (USFWS et al. 2001, 2002, 2003, 2004, 2005, 2006, 2007, Bangs et al. 2009); however, habitat occupied by persistent wolf packs fluctuated from 106,384 mi^2 in 2004 to 100,593 mi^2 in 2005) to 113,949 mi^2 in 2006 (USFWS et al. 2005, 2006, 2007, 2009). At the end of 2006, the estimated persistent wolf packs occupied approximately 44,907 mi^2 in Idaho (72 FR 6106). Landownership in the NRM area occupied by persistent wolf packs is 73,931 mi^2 Federal (65%); 5,225 mi^2 State (4.6%); 2,546 mi^2 Tribal (2.2%); and 31,087 mi^2 private (27%) (USFWS et al. 2007). For a comparison of wolf distribution in Idaho between 2005 and 2009, see the wolf activity and distribution maps at <http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/05_activity_map.pdf> and <http://fishandgame.idaho.gov/cms/wildlife/wolves/manage/09_map.pdf>

The GYA and central Idaho core recovery areas are primarily composed of public lands (USFWS 1994) and are the largest contiguous blocks of suitable habitat within the NRM. Central Idaho and the GYA provide secure wolf habitat and abundant ungulate populations (USFWS 1994) and lands are not available for development due to their land-use classifications, management guidelines for other species (*i.e.*, grizzly bears, Canada lynx), habitat, access, and geological characteristics (USFWS 1993, 1996, 2007*a,* Serhveen et al. 2003, USFS 2006). Thus, these areas will continue to provide suitable habitat for a resident wolf population and will be a dependable source of dispersing wolves to help maintain a viable wolf population in the NRM (USFWS 1994). Wolves also disperse into the Idaho Panhandle and central Idaho from Canada and some packs have trans-boundary territories, helping to maintain the wolf population in Idaho (Boyd et al. 1995, Mack et al. 2010).

There appears to be enough habitat connectivity between occupied wolf habitat in Canada, northwestern Montana, GYA and Idaho to ensure exchange of sufficient numbers of dispersing

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[39] In total, Oakleaf et al. (2006, p. 559) ranked 65,725 mi^2 as suitable habitat in Montana, Idaho, and Wyoming.

[40] Carroll et al. (2006) predicted the potential effect of increased road development and human density expected by 2025 on suitable wolf habitat. Within the NRM DPS, Carroll et al. (2006) ranked 107,096 mi^2 as suitable including 40,924 mi^2 in Montana; 31,856 mi^2 in Idaho; 29,808 mi^2 in Wyoming; 2,556 mi^2 in Oregon; 1,655 mi^2 in Utah; and 297 mi^2 in Washington. Approximately 96% of the suitable habitat 102,588 mi^2 within the NRM DPS occurred in Montana, Idaho, and Wyoming. According to Carroll et al. (2006), approximately 28% of the NRM DPS is ranked as suitable habitat.

[41] The USFWS does not believe that any traditional land-use practices in the NRM DPS need to be modified to maintain a recovered wolf population in the foreseeable future, because about 71% of the occupied habitat is in public ownership that is managed for multiple uses that are complementary with suitable wolf habitat and maintenance of viable wolf populations (Carroll et al. 2003, Oakleaf et al. 2006).

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). Wolf movements between Canada and northwestern Montana have been documented from radio-telemetry monitoring (Pletscher et al. 1991, Boyd and Pletscher 1999, Sime et al. 2007) and wolf movement between Idaho and Montana, and at least five wolves dispersing into the GYA[42] have occurred (71 FR 6634). In addition, the USFWS approved Montana (Montana Wolf Management Advisory Council 2003) and Idaho (ILWOC 2002, IDFG 2008*a*), State wolf management plans commit to maintaining the metapopulation structure and maintaining sufficient genetic diversity, by various methods, including relocation if necessary, to ensure the long-term viability of the wolf population.

Another important factor in maintaining wolf populations is the native ungulate population. The wild ungulate prey base in these three areas is composed mainly of elk, white-tailed deer, mule deer, moose, and bison (only in the GYA). Bighorn sheep, mountain goats, and pronghorn antelope are also common but not important, at least to date, as wolf prey. In total, more than 500,000 wild ungulates, including about 100,000 elk, are estimated to inhabit Idaho (J. Rachael, IDFG, pers. comm. 2010). Idaho has managed resident ungulate populations for decades and maintains them at densities that would easily support a recovered wolf population; State ungulate management plans commit IDFG to do so into the future (IDFG 2007*b*).

Cattle and sheep are at least twice as numerous as wild ungulates, even on public lands (USFWS 1994). Livestock are absent or rare in central Idaho wilderness areas and occur at relatively low densities in the Panhandle. Most wolf packs outside these areas have interacted with livestock, primarily cattle. Livestock and livestock carrion are routinely used by wolves, but wolf damage management seeks to discourage chronic killing of livestock (USFWS 1994, 74 FR 15123, ILWOC 2002, IDFG 2008*a*). Conflicts between wolves and livestock have resulted in the annual removal of wolves, but the NRM wolf population remains well above recovery levels in spite of these removals (Bangs et al. 1995, 2004, 2005; USFWS et al. 2007; Nadeau et al. 2007, 2008; Mack et al. 2010).

Human growth and development will continue in the NRM and Idaho, including development and conversion of private low-density rural lands to higher density suburban and urban developments, road development and transportation facilities, resource extraction, and more recreationists on public lands[43] (Robbins 2007). Despite efforts to minimize impacts to wildlife (Brown 2006), some of this development will make some areas less suitable for wolf occupancy. However, none of these developments and increased human presence will threaten wolf recovery or meaningfully impact the amount of suitable wolf habitat in the NRM in the foreseeable future (Robbins 2007, 73 FR 10514). Wolves are habitat generalists and one of the most adaptable large predators in the world, and only became extirpated because of deliberate human persecution (Boitani 2003, Fuller et al. 2003). Even active wolf dens can be resilient to nonlethal disturbance by humans (Frame et al. 2007). The vast majority of suitable wolf habitat and the current wolf population are secure in mountainous forested Federal public land that will not be legally available for or suitable to intensive human development. As of the end of calendar year 2009, the wolf population in the

[42] Only one individual is known to have dispersed into YNP itself, probably because YNP is saturated with resident packs that would have a low tolerance for dispersing wolves (Boyd et al. 1995, vonHoldt et al. 2008, USFWS et al. 2007, USFWS 2007*b*).

[43] Wolves do not necessarily avoid roads, and in fact readily use forest and logging roads for travel corridors, but road density apparently provides a good measure of human contact which can result in illegal wolf mortality. Other measures of human contact/presence such as human population densities also correspond well to areas occupied by wolf packs (Fuller et al. 1992, Mladenoff et al. 1995). When wolves occur at low densities and large blocks of unoccupied suitable habitat are available, habitat and road density characteristics predict areas where wolves will occur (Mladenoff et al. 1995); however, as wolf densities increase vegetation and habitat characteristics do not predict wolf habitat as well as indices that measure human influence as long as prey is adequately abundant (Potvin et al. 2005).

NRM had increased to more than 1,700 wolves, including at least 115 breeding pairs, and wolf reproduction was additionally confirmed in both eastern Washington and eastern Oregon (USFWS et al. 2010). The core recovery areas in the NRM have long been recognized as the most likely areas for successful metapopulations with dispersal between subpopulations (USFWS 1980, 1987, 1994; 71 FR 6634).

4.1.1.3 IDFG Management Direction (IDFG 2008*a*)

When wolves are once again delisted, the goal of IDFG (2008*a*) is to ensure that populations are maintained at 2005-2007 population levels (about 500-700 wolves) during the 5-year post-delisting period through adaptive management under the guidelines of the Idaho Wolf Conservation and Management Plan (ILWOC 2002); the current management goal is 518 wolves (IDFG 2009*a*). Consistent with the delisting rule, the State goal is to ensure the long-term viability of the gray wolf population. In order to ensure the population goal is achieved, IDFG will maintain ≥15 breeding pairs (floor threshold). The IDFG will also maintain balanced wolf and prey populations, ensure genetic transfer among states through maintaining connectivity and functional metapopulation processes, and manage wolves to minimize conflict with humans and domestic animals.

Ideally, population objectives will reflect the ability to monitor packs, breeding pairs, and total wolves, as well as harvest, and monitoring objectives in neighboring states. Therefore, the long-term objective is to maintain viable wolf populations in Idaho, achieve short-term harvest goals to reduce conflicts, provide annual harvest opportunity, and provide for non-consumptive benefits (*i.e*., aesthetics of wolves in the environment) as well. Based on stakeholder input, the most important objective within IDFG (2008*a*) is conflict resolution, when populations meet or exceed the population goal. Future population goals will reflect knowledge gained each year. However, the statewide population management objective will range between the 2005 and 2007 levels and not be allowed to fall to a level where management of conflicts has to be restricted (<15 breeding pairs). Furthermore, optimal hunting opportunity and flexibility in conflict resolution can be achieved by maintaining >20 breeding pairs (Table 4-1). Twenty breeding pairs is not an objective, nor is it a prejudgment about the population level of wolves necessary to avoid conflict. It is however an IDFG management trigger that would require additional protections to ensure the population goal is maintained and achieved (IDFG 2008*a*).

4.2 EVALUATION OF SIGNIFICANCE OF CUMULATIVE AND UNAVOIDABLE IMPACTS

Each issue analyzed in detail is evaluated under each Alternative and the direct, indirect, and cumulative impacts are analyzed. NEPA regulations describe the elements that determine whether or not an impact is "significant." Significance is dependent upon the context and intensity of the action. The following factors (adapted from USDA 1994) were used to evaluate the significance of impacts in the REA that relate to context and intensity for this proposal:

4.2.1 Magnitude of the Impact (size, number, or relative amount of impact)

Magnitude is defined in USDA (1994) as ". . . a measure of the number of animals killed in relation to their abundance" and may be determined either quantitatively or qualitatively[44]. Cumulative impacts to Idaho's wolf population would include the legal wolf removals conducted by WS and USFWS or IDFG personnel and livestock producers, hunter harvest (when allowed), natural mortalities, illegal

[44] IDFG has determined how many wolves will inhabit Idaho to sustain a healthy wolf population, not adversely impact ungulate populations , livestock producers and to provide for harvest (IDFG 2008*a*)

killing of wolves, and any other known sources of mortality. The cumulative impact on Idaho's wolf population will be considered in the context of the desired population level, as stipulated by IDFG (2008*a*) and the Idaho Fish and Game Commission (IDFG 2009*a*).

Table 4.1. Management Direction for Numbers of Breeding Pairs in Idaho (IDFG 2008*a*).

<10 breeding pairs (USFWS threshold)	**10-14 breeding pairs (2002 State Plan threshold)**	**15-20 breeding pairs (IDFG conflict threshold)**	**>20 breeding pairs (IDFG hunting threshold)**
USFWS status review for relisting	IDFG reviews management policy to determine if changes are needed	IDFG evaluates harvest strategies and need for more conservative harvest	Annual harvest opportunity
Depredations will be addressed with nonlethal control	Control of problem wolves increasingly restrictive	Control of problem wolves incremental and increasingly restrictive	Control of problem wolves allowed under normal circumstances
Monitoring of each pack using radio collars to verify reproduction and survival	Monitoring intensifies to ensure each pack contains some radio-collared wolves to monitor reproduction and survival	Monitoring intensifies to ensure >15 packs contain some radio-collared wolves to monitor reproduction and survival	Use multiple monitoring techniques to document a minimum breeding pair and population estimate

4.2.2 Duration and Frequency of the Impact

Duration and frequency of wolf damage management in Idaho may be highly variable. Biotic and abiotic factors affecting wolf and other wildlife behavior affect the duration and frequency of wolf damage management activities conducted by WS in Idaho. Wolf damage management in specific areas may be longer duration projects, but the frequency of individual actions may be highly variable depending upon any number of factors affecting the behavior of the animals that are causing damage and the location of the potential damage. Wolf damage management would only be conducted by WS when a request for assistance is received, actions are conducted with concurrence from the USFWS or IDFG, and a demonstrated need is present. Under the applicable 10j rules, USFWS or IDFG wolf-take authorizations for livestock depredations are typically issued for a 45-day period following the most recent confirmed depredation.

4.2.3 Geographic Extent

Wolf damage management could occur anywhere in Idaho where wolf damage occurs or potential wolf management has been requested, agreements for such actions are in place, action is warranted as determined by implementing the WS Decision Model (Slate et al. 1992), and control has been authorized by USFWS or IDFG. Actions would be limited to areas receiving damage from wolves (primarily rural sparsely populations areas), areas with historical wolf damage, areas where a threat of damage exists, or areas designated by the USFWS or IDFG to receive wolf management based on their assessments and management objectives. IDFG's mammal predation management plans establish clearly-defined boundaries for activities under the plans.

4.3 SOCIAL AND RECREATIONAL CONCERNS, RESOURCE USE AND IMPACTS ON HISTORIC AND CULTURAL RESOURCES

4.3.1 Social and Recreational Concerns

Social and recreational concerns were discussed throughout the REA, in USFWS (1994), 71 FR 43410, 73 FR 10514, 74 FR 15123, the Idaho Wolf Conservation and Management Plan (ILWOC 2002), the Idaho Wolf Population Management Plan (IDFG 2008*a*), and in USDA (1994), and relevant portions have been incorporated by reference. Social and recreational concerns are also addressed in the analysis of impacts on stakeholders, including aesthetics of wildlife, the possibility of hunting opportunities (when wolves are delisted), and humaneness for each of the Alternatives analyzed in detail (Section 4.4).

4.3.2 Irreversible and Irretrievable Commitments of Resources

The following resource values within Idaho would not be adversely affected by any of the Alternatives analyzed in this EA: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. These will not be analyzed further.

Other than minor uses of fuels for motor vehicles and electrical energy for office maintenance, there are no irreversible or irretrievable commitments of resources. Based on these estimates, the WS/ USFWS/IDFG wolf damage management program as directed by the USFWS or IDFG (2008*a*) produces very negligible impacts on the supply of fossil fuels and electrical energy.

4.3.3 Impacts on Cultural, Archaeological and Historic Resources and Tribal Cultural Properties in Idaho

The activities described under all the Alternatives analyzed in the REA would not cause any significant ground disturbances and would not otherwise have the potential to significantly affect the visual, audible, or atmospheric elements of historic properties and thus are not undertakings as defined by the National Historic Preservation Act (NHPA). WS has determined that wolf damage management actions are not undertakings as defined by the NHPA because such actions do not have potential to result in changes in the character or use of historic properties. The Idaho State Historic Preservation Office (SHPO) has previously concurred with WS' assessment that predator damage management activities are unlikely to have any effect on historic properties. A May, 2010 consultation between Idaho WS and the SHPO resulted in another letter of concurrence from SHPO that WS activities as proposed in this EA would not likely result in any effects on historic properties (SHPO 2010). WS also initiated consultation with the Nez Perce, Coeur d'Alene, Kootenai Tribe of Idaho, Shoshone-Bannock and Shoshone-Paiute tribes to determine if these tribes have concerns regarding possible impacts of WS' wolf damage management activities on tribal cultural properties in Idaho, but no concerns were expressed by any of these tribes.

4.4 ISSUES ANALYZED BY ALTERNATIVES

This section analyzes the expected environmental consequences of each Alternative on each of the issues analyzed in detail. The following issues were determined to be relevant, and are analyzed in detail below:

- Effects on the wolf population in Idaho
- Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

- Effects on public and pet health and safety
- Humaneness and animal welfare aspects of the methods to be used
- Impacts to stakeholders, including aesthetics of wildlife

4.4.1 Alternative 1 - Continue the Current Wolf Damage Management Program (No Action)

Under this and all the other Alternatives, wolf management in Idaho is oriented toward resolving conflicts when and where they occur while maintaining recovery goals (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, IDFG 2008*a*). Wolves molesting or attacking livestock or domestic animals may be killed by livestock or domestic animal owners, their employees, agents and animal damage control personnel and no permit is necessary (USFWS 1994, Idaho Code 36-1107). "Molesting", under either the USFWS or IDFG rules, does not actually require that a wolf be physically attacking livestock, but includes behavior which would indicate to a reasonable person that a wolf was about to attack the livestock. Wolves so taken shall remain the property of the USFWS or State and must be reported to USFWS or IDFG within 72 hours with additional reasonable time allowed if access to the site where the take occurred is limited. Livestock and domestic animal owners may take all nonlethal steps they deem necessary to protect their property. A permit is necessary from USFWS or IDFG to control wolves not molesting or attacking livestock or domestic animals.

Wolf numbers and distribution could fluctuate because of USFWS or IDFG management actions, private citizens' actions, changes in prey abundance and distribution, disease and intraspecific strife (71 FR 43410, 73 FR 10514, 74 FR 15123, ILWOC 2002, IDFG 2008*a*)[45]. In response to the level of depredations on livestock and documented effects on some of Idaho's ungulate populations, the Idaho Fish and Game Commission has directed IDFG to manage wolves (when they are delisted) at the 2005 population level (of about 500 wolves), and this would be the case regardless of WS activities analyzed under this EA. This level is well above recovery standards for population viability established by USFWS. However, wolf occupation of nearly all suitable habitat would continue as wolves disperse from core areas and colonize new habitats with sufficient prey. In the absence of significant conflicts, wolves could also become established in "island" mountain ranges or even in areas not considered optimal wolf habitat (IDFG 2008*a*).

4.4.1.1 Effects on the wolf population in Idaho

Alternative 1 has been used by the USFWS and IDFG either under section 4(d) provisions of the ESA, section 10 permits from the USFWS, or authority granted to IDFG by the USFWS; WS has been an agent of the USFWS or IDFG for purposes of resolving and reducing livestock and domestic animal losses caused by wolves. WS implementation and use of IWDM strategies and methods under this Alternative would continue to be similar to that implemented during the period from 1996-2009 under USFWS management and as directed by IDFG following delisting (IDFG 2008*a*). While wolves were delisted, wolf management in Idaho was guided by the Idaho Wolf Population Management Plan 2008-2012 (IDFG 2008*a*) which provides a framework for gray wolf management in Idaho. Consistent with USFWS management, Idaho's goal is to ensure the long-term viability of the gray wolf population. Adaptive management plays an integral role in learning about wolf population management and helping guide management efforts into the future. IDFG (2008*a*) is patterned after other IDFG big game species plans. Under IDFG policy, all IDFG management plans must follow guidelines set forth in the IDFG strategic plan called "The Compass" (IDFG 2005).

[45] The central Idaho wolf populations may be nearing saturated conditions where territoriality and pack density limit room for additional breeding pairs so that population growth can only be accommodated through range expansion (IDFG 2008*a*).

Under this Alternative, WS would continue to operate as an agent of USFWS or IDFG, as requested, and would provide technical and operational assistance with nonlethal and lethal wolf damage management under the direction of USFWS (as directed by the 1994 and subsequent 10j rules) or IDFG (when wolves are delisted). At the end of 2009, the minimum wolf population in Idaho was estimated at 835 in 94 documented packs, 6 more packs than were reported in 2008. In addition, there were 20 documented border packs counted for Montana, Wyoming and Washington that established territories overlapping the Idaho state boundary and likely spent time in Idaho. Of the 65 packs known to have reproduced, at least 49 packs qualified as breeding pairs[46] and produced a minimum of 204 pups[47] (Mack et al. 2010). Litter sizes ranged from 1 to 6 pups and the average litter size (based on 29 litter counts) was 4.1 pups. The estimated wolf population at the end of 2009 remained near the same level as at the end of 2008 (Mack et al. 2010).

USFWS rules and IDFG wolf management and conservation guidelines address damage problems while maintaining viable and healthy wolf populations throughout Idaho (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, ILWOC 2002, IDFG 2008*a*). The goal of the USFWS and Idaho's wolf management and conservation plan and Idaho Fish and Game Commission direction is to quickly and efficiently resolve localized wolf conflicts while maintaining healthy wolf populations (USFWS 1994, 71 FR 43410, 73 FR 10514, 74 FR 15123, ILWOC 2002, IDFG 2008*a*), and to sustain the wolf population at least near the 2005 population level (where the minimum population estimate was 518 wolves) (IDFG 2009*a*). One of the goals of the USFWS (USFWS 1994) is to resolve specific conflicts at specific sites (*i.e.*, livestock depredations), while the goal of IDFG is to likewise reduce conflicts, but employ public hunting of delisted wolves to the extent possible in attempting to reduce those conflicts. The relationship between the different forms of wolf take for damage management (*e.g.*, take by WS and take by land/property owners under permits) is highly interrelated and coordinated. Take by one of these entities is likely to reduce the number of wolves that will be taken by another entity. For example, if lethal wolf damage management by WS successfully resolves a problem, there may be no need for a landowner to take wolves, so take under permits would decline. Conversely, landowner removal of a wolf caught in the act of depredation may reduce or eliminate the need for additional wolf removal by WS. Similarly, when wolves are delisted, and where regulated harvest can help reduce the number of wolves and incidents of wolf predation on livestock, there would likely be fewer wolves taken by WS and private property owners during control actions.

IDFG biologists documented 272[48] wolf mortalities[49] in 2009 within Idaho (Mack et al. 2010). Of the known wolf mortalities, at least 248 deaths were human-caused[50], 24 deaths were of unknown cause (some of which may have been human-caused), and 2 deaths were of natural causes. Of those 248 mortalities, 135 wolves were harvested legally by hunters[51], 93 wolves were removed by WS or were legally taken by livestock producers to resolve wolf depredation conflicts with

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[46] The reported number of breeding pairs was a minimum count as reproductive status of some surveyed packs was not determined and 28 documented packs were not surveyed for reproductive status.

[47] Wolf pup counts were conservative estimates because not all pups in monitored packs were observed, and some documented packs were not visited.

[48] Three wolves that died in Idaho were members of Montana packs and are reported in Montana Fish, Wildlife and Parks' annual report (Sime et al. 2010). In addition, a radio-collared Idaho wolf was legally harvested in Canada.

[49] This mortality is likely an underestimate of the overall mortality as documenting mortalities of uncollared wolves is difficult.

[50] Wolves that were attacking or harassing livestock or dogs could be legally killed under Idaho Code §36-1107, shoot-on-sight permits issued prior to May 4 while wolves were listed under the ESA, or kill permits issued to livestock operators under IDFG authority after May 4, 2009.

[51] Idaho conducted their first regulated wolf sport harvest season during the 2009-2010 hunting season. Those hunts have been suspended due to the recent U.S. Federal District Court order on August 5, 2010 which vacated the delisting of the NRM DPS of the gray wolf.

livestock, 12 were killed illegally, and 8 died from other human causes[52]. Lethal removals for control purposes occurred in 24 packs, 2 other documented groups, and at least 7 unknown wolf groups, and ranged from 1 to 11 individuals per group. Only 2 wolf deaths due to natural causes were recorded, another indication that mortality was underestimated, as more individuals likely succumbed to non-human-related factors (Mack et al. 2010). Lastly, IDFG was unable to estimate deaths of pups that occurred prior to surveys. Using these mortality data, IDFG estimated the total number of wolves dying during 2009 from various causes at 504 wolves, representing a total estimated overall population mortality rate of 37%. Documented and estimated wolf mortality by cause included harvest (n = 135 wolves [documented]; 10% of total estimated population), agency control and other legal take for control (n = 93 wolves [documented]; 7% of estimated total population), and all other causes (n = 276 wolves [estimated]; 21% of estimated total population) (Table 4-2) (Mack et al. 2010).

Table 4-2. Estimated Idaho wolf population, estimated mortality from all causes, percent mortality from damage management and percent population change from previous year, 2005-2009 (Nadeau et al. 2006, 2007, 2008, 2009; Mack et al. 2010).

Year	Minimum Estimated Year-End Wolf Population[1]	Estimated Mortality from All Causes[2]	% Damage Management Mortality for Population[3]	% Estimated Mortality for Population[2]	% Change in Estimated Wolf Population (from previous year)
2005	518	44	5.0	8.5	+22%
2006	673	68	6.7	10.1	+22%
2007	764	78	6.5	10.2	+9%
2008	856	372	12.6	37	+10%
2009	835	504	11.1	37	-2%
Average	729	213	8.4	20.6	+12.0%

[1] Information obtained from Figure 4 in Mack et al. (2010).

[2] Includes known and estimated mortalities from all causes, including public harvest of wolves in 2009.

[3] Includes only wolves killed by WS employees and livestock producers to address wolf/livestock conflicts.

The wolf population in Idaho during the early years of wolf recovery was characterized by annual increases of more than 20%, but the population growth rate has slowed in recent years as most of the available habitat has become saturated with wolves, and 2009 was the first year since 1995 that the State's wolf population did not increase (Table 4-2). Up until 2009, Idaho's wolf population had continued to increase every year in spite of the increasing number of wolves annually removed by WS and livestock producers to address incidents of wolf predation on livestock. In 2009, the additive mortality of the State's first regulated wolf harvest season contributed to the prevention of further population growth. When wolves are once again delisted, future wolf harvest seasons would presumably be planned to effect further reductions in the statewide wolf population, consistent with Idaho Fish and Game Commission direction (IDFG 2009*a*). IDFG's management goal would be to implement high enough levels of harvest to eventually reduce Idaho's wolf population to the desired 2005 level of around 500 wolves. If this goal is achieved, the adaptive management approach provided for by IDFG (2008*a*) would then call for a reduced harvest level which would be expected to maintain the statewide population at around 500 wolves. Annual population growth at the 2005 population level was ≥ 20%, and IDFG management direction would call for annual removal of a high enough number of wolves to prevent this increase, but maintain the population at around 500 wolves. A year-end estimate of 500 wolves actually equates to a significantly higher number of wolves during the fall of the year, immediately prior to the

[52] Human-caused mortality was greatest from September through November, and corresponded to increased lethal control of wolves due to livestock depredations (Sept) and hunter harvest during concurrent wolf and deer/elk hunting seasons (Oct - Nov).

opening of hunting seasons, and as many as 150 wolves might need to be removed annually (through hunting and damage control actions) to maintain the year-end population at around 500.

Lethal take of wolves in response to depredations might in some cases include removal of up to an entire pack, but there will likely also be cases where no wolves would be taken in response to depredations, similar to the situation that has existed for at least the most recent 5 years in Idaho. The USFWS and/or their designated agent will continue to monitor and evaluate the wolf population annually to determine the wolf population status. If the Idaho wolf population became threatened under USFWS or IDFG management, the responsible management agency would either adjust their management strategies to resolve those issues, or the process to evaluate relisting all or parts of the Idaho or NRM DPS under the ESA would occur. Throughout the range of the wolf generally three factors dominate wolf population dynamics: food, human-caused mortality, and source populations (Fuller et al. 2003). These factors are monitored because they would likely play a role in regulating the Idaho wolf population.

Management Actions to Protect Livestock

Under this Alternative, Idaho WS, as requested by and coordinated with USFWS or IDFG, could continue to recommend nonlethal management methods when deemed practical and appropriate, or could lethally[53] remove wolves to resolve human-wolf conflicts[54]. Additionally, livestock producers and/or their agents could legally shoot wolves to protect their livestock under existing USFWS or IDFG rules and/or under the authority of permits issued by USFWS or IDFG after confirmation of wolf predation. The level of lethal take of wolves by WS and landowners to protect livestock in Idaho from 2005-2009 was 26 (5%), 45 (6.7%), 50 (6.5%), 108 (12.6%), and 93 (11.1%), respectively, of the end-of-year estimated population (Table 4-2). Using an average of about 65 wolves removed for livestock protection, the number of wolves removed in response to depredations on domestic animals averaged about 9% of the annual end-of-year estimated wolf population from 2005 through 2009. If Idaho's wolf population returned to near the 2005 level, the number of wolves taken in response to depredations would likely be similar to the 26 wolves removed for livestock depredations in 2005 (Nadeau et al. 2006).

Management Actions to Protect Ungulates

Under this Alternative (the current program), WS would not assist in wolf removals to protect ungulates if requested by IDFG. However, IDFG has indicated they will undertake wolf removals for this purpose on their own if WS does not assist them, subject to approval from the USFWS as long as wolves remain listed. Therefore, the levels of such removals in the absence of assistance from WS would most likely remain similar. As described in Section 1.3.3, IDFG has an existing proposal submitted to the USFWS to reduce wolves from their currently estimated minimum number of 70 down to a range of 20 to 30 for 5 years in the Lolo Elk Management Zone. We expect IDFG to implement that action if approved by USFWS while wolves remain listed or under their own State authority if wolves are again delisted, with or without assistance from WS. Therefore, the environmental status quo with regard to wolf populations in areas where IDFG plans for and, when necessary, receives approval from USFWS, for wolf removals to protect ungulates would be virtually the same in the absence of federal assistance from WS to carry out those actions. If the 2008 10j rule is vacated as a result of current litigation, IDFG would not likely be authorized to control wolves for the protection of ungulates until wolves were once again delisted.

[53] Lethal methods are not needed at all sites where damage is confirmed nor are wolves always captured or killed at each damage situation.

[54] Includes take by designated agencies for the protection of human safety. Does not include euthanization of sick or injured wolves (injuries that are not related to actions proposed in this EA).

Cumulative Impact on the Idaho Wolf Population

Wolf populations are dynamic and can undergo major fluctuations. Many studies have examined various levels of mortality and harvest and 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). Based on mean pack size of 8, mean litter size of 5, and 38% pups in packs, Boertje and Stephenson (1992) suggested 42% of juveniles and 36% of adults must be removed annually to achieve population stability. Mech (1970) suggests that more than 50% of wolves older than 5-10 months must be killed to "control" the wolf population, but other researchers have indicated declines may occur with human-caused mortality at 40% or less of fall wolf populations (Ballard et al. 1987, Peterson et al. 1984). Gasaway et al. (1983) reported stable wolf populations after early winter harvests of 16 to 24%, and wolf population declines of 20 - 52% after harvests of 42 - 61%. Ballard et al. (1997) suggests that the wolf population remained stable at 53% winter mortality, which included both natural and human-caused mortality. Fuller (1989) observed stable or slight increases in the wolf population at an annual human-caused mortality rate of 29%. It appears that 30 to 35 % human caused mortality of late fall or winter population can be tolerated by most wolf populations without causing population declines (Fuller et al. 2003).

Mech (2001) looked at three scenarios for the management of Minnesota's wolf population when the population was estimated at 2,450 wolves during the winter of 1997-1998: 1) population and range limitation, 2) sustainable harvest, and 3) population reduction. For population and range limitation, an additional number of wolves equal to the annual increase in the wolf population (statewide for population stabilization, in the periphery of occupied range for range limitation) would need to be taken as long as lethal wolf damage management continued at its present or greater level. Using data from other regions of North America, winter harvests of wolves of 28-47% did not permanently reduce wolf populations for sustainable harvest. Wolf populations have been reduced in Canada and Alaska when 38-80% of the populations where removed during the winter. These populations rebounded after population reduction was ceased (Mech 2001).

Haber (1996) reported that wolf populations may not be able to withstand repeated annual reductions of 25-50%. He believes these removals, in the form of hunting, trapping, and government control efforts, may have impacts on wolf population dynamics, social interactions, and the long-term health of the population. Haber also reported that it is difficult to fully understand the impacts of wolf exploitation because detailed comparative information on behavior from both exploited and protected wolf populations is scarce. Haight et al. (2002) modeled the impacts of various wolf removal strategies for wolf damage management including reactive removal (wolves removed after depredation occurs), delayed corrective removal (wolves removed in winter from areas with a history of wolf conflicts); and population size management (wolves removed annually from all territories near depredation sites). None of the strategies threatened wolf populations unless the wolf population was isolated. The model predicted that populations could withstand a sustained harvest of 20-25%. The authors considered this to be a conservative estimate and that the model likely underestimated compensatory factors in wolf population biology. In their analysis of multiple data sets, Adams et al. (2008) found human-caused mortality rates <29% did not cause wolf population declines.

Under this or any of the other Alternatives, it is reasonable to expect that USFWS or IDFG adaptive management approach will ensure that the cumulative impacts on Idaho's wolf population do not result in the population going below 500 (IDFG 2008*a*, 2009*a*). The USFWS, through their

approval of IDFG's Wolf Conservation and Management Plan (73 FR 10514), has concurred that ensuring maintenance of at least 15 breeding pairs (~150 wolves) would provide for the long-term maintenance of a viable wolf population in Idaho.

Because wolves have been returned to their listed status (endangered north of I-90 and XN south of I-90), WS will likely have to increase the number of wolves taken through depredation control actions because it is reasonable to expect that the wolf population and wolf depredations on livestock will increase without the ability to reduce the population through public harvest. As indicated above, even with the inclusion of public wolf hunting and wolf removals to protect ungulates, the cumulative impacts would not be expected to adversely affect Idaho's wolf population to the extent it would result in a significant adverse effect on the quality of the human environment. Without wolf hunting by the public, the cumulative impacts would be even less.

4.4.1.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

The integrated and adaptive approach employed under the current wolf damage management program in Idaho typically involves use or consideration of both nonlethal and lethal measures to stop or reduce the likelihood of further wolf damage. 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 nonlethal 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 nonlethal 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 nonlethal 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 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 nonlethal, would be most effective if applied during this period of time following an initial depredation event.

Although nonlethal 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 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 nonlethal methods, however, is that if wolves will eventually be lethally removed anyway (after habituating to the frightening stimulus), the investment of time and resources in the nonlethal efforts may not be practical.

One of the most effective nonlethal 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 (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 nonlethal methods may be temporarily effective, many are expensive to implement and none available at the time of their report were widely effective. Many nonlethal 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 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 3 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.

Wolf removal to protect wild ungulates is not part of the current wolf damage management program in Idaho, so its effectiveness will not be addressed here, but is addressed in the analysis of Alternatives 2 and 3.

4.4.1.3 Effects on public and pet health and safety

WS conducted a formal risk assessment of methods used under Alternative 1 (USDA 1994, Appendix P). The assessment concluded that when traps, snares, aerial shooting, firearms and frightening devices are used by appropriately trained and authorized personnel, in accordance with applicable laws, regulations and agency policy, the current damage management methods pose minimal or no risk to public and pet health and safety. The greatest risks to public and pet health and safety from the use of wolf damage management techniques are incurred by the individuals who use these methods. WS' traps and snares are strategically placed to reduce the likelihood of exposure to the public and pets. 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. There have been no reported injuries to WS, USFWS or IDFG personnel or the public from WS wolf management activities in Idaho.

Firearm use is a very sensitive issue and a public concern because of fears regarding the potential for misuse of firearms. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program prior to using firearms on the job and a refresher course every 2 years afterwards is required (WS Directive 2.615). All firearm safety precautions are followed by WS when conducting damage management and WS complies with all laws and regulations governing the lawful use of firearms. Shooting with shotguns or rifles would be used to reduce wolf damage when lethal methods are determined to be appropriate and firearms would be used to euthanize captured wolves in a humane manner. WS employees who use firearms as a condition of employment are required to certify that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

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 nonlethal methods were ineffective or impractical. Many people directly affected by wolf depredations on domestic animals, especially pets that are killed in their yards, express concern for human safety and insist upon the removal of wolves from their property when they cause damage. Wolves that have become habituated to humans are unpredictable and may attack people or pets (Section 1.3.4, Linnell et al. 2002, McNay 2002). In many situations where wolves may pose a risk to health and safety, management of human behavior and nonlethal techniques may be sufficient to resolve the problem; however, in some situations, removal of the problem individual may be the most appropriate solution (IDFG 2008*a*). Perceived threats to human safety from wolves would continue to receive a high priority response from IDFG and/or WS under this Alternative.

4.4.1.4 Humaneness and animal welfare aspects of the methods to be used

WS personnel are experienced and professional in their use of wolf damage management methods. Under this Alternative, wolves would be trapped, snared, or shot by experienced WS personnel as humanely as practically possible. 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 wolf damage management methods like traps and snares and perceive these methods as being unjustifiably inhumane. Some individuals may prefer that only non-injurious methods such as cage traps be used to capture wolves and would perceive this method as being more humane than foot-hold traps and snares. Unfortunately, the use of cage traps to capture wolves is both impractical and ineffective because it is extremely difficult to get a cage trap large enough for an adult wolf into remote locations, and because it would be highly unlikely to capture an animal as wary as an adult wolf in a cage trap. Individuals with animals that have been injured, threatened or killed by wolves may see this Alternative as being more humane because it reduces the likelihood of continued killing or injury of their livestock and pets by wolves.

4.4.1.5 Impacts to stakeholders, including aesthetics of wildlife

Public reaction would be variable and mixed because there are numerous philosophical, aesthetic, and personal attitudes, values, and opinions about the best ways to reduce conflicts/problems between humans and wolves. The impacts of this Alternative to stakeholders would primarily depend on their values towards wolves and their relationship to the damage problem. This Alternative would likely be favored by property owners who are experiencing damage because this Alternative has a likelihood of successfully resolving wolf conflicts, but others may be dismayed with this Alternative if wolves were lethally removed to resolve their damage problem. Individuals not directly affected by the threats or damage may be supportive, neutral, or totally opposed to any removal of wolves from specific locations or sites. Some individuals would strongly oppose this Alternative because they believe it is morally wrong to kill or use animals for any reason or they believe the benefits from wolves outweigh the associated damage. Individuals totally opposed to lethal wolf damage management methods want agencies to emphasize tolerance for wolf damage and threats to public and pet health or safety. Hunters and other elk enthusiasts may not be entirely supportive of this Alternative because it does not include the option of wolf removal to benefit ungulates. These people may feel their aesthetic experiences are diminished by not getting to encounter elk as often as if wolves were removed to protect elk.

As discussed in Section 2.3.5, wolves could be considered to have high non-consumptive (*i.e.,* viewing, hearing, photographing) and indirect values (*e.g*., spiritual, and existence values) for many people. The ability to view and aesthetically enjoy wolves at a particular site could be temporarily limited if the wolves are removed. New animals would most likely 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 relatively high number of wolves and wolf packs in Idaho (Mack et al. 2010), and given that this action will not jeopardize the viability of the wolf population, other opportunities to view, hear, and aesthetically enjoy wolves will continue to be available to the public. The likelihood of getting to see wolves 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. People interested in seeing or hearing wolves could continue to contact their local USFWS or IDFG office to inquire about the best opportunities.

The IWDM approach, which includes nonlethal and lethal methods as appropriate, provides relief from threats/attacks on livestock, pets and potentially even people who would have no relief from such damage or threats if nonlethal methods were ineffective or impractical.

4.4.2 Alternative 2 - Continue the Current Program, Plus Assist IDFG with Ungulate Protection (Proposed Action/Preferred Alternative).

Under this Alternative, WS would continue to conduct wolf damage management for livestock and domestic animal protection and could additionally provide assistance to IDFG to protect ungulates when IDFG has determined that wolves are impacting the ungulate population in a specific management area[55], has requested WS assistance, and has been authorized by the USFWS, if applicable (C. Groen, IDFG Director letter to M. Collinge, WS January 28, 2009). The USFWS or their designated agent would continue to conduct monitoring across the state as part of their efforts to determine wolf populations and to meet population management objectives. Under this Alternative, WS could perform wolf management activities to implement IDFG Predation Management Plans after authorization from the USFWS, if applicable.

4.4.2.1 Effects on the wolf population in Idaho

As with Alternative 1, the primary factors influencing the wolf population in Idaho and the NRM are prey density and human-related mortality. Wolf monitoring by USFWS or their designated agent would identify excessively high mortality rates or low birth rates and would trigger timely corrective action (*e.g.*, reductions in allowable take for wolf damage management and/or sport harvest (for delisted wolves), or measures to address the source of the high mortality rates or low birth rates) when necessary.

Under this Alternative WS impacts to Idaho's wolf population would be expected to be only slightly higher but not appreciably different than under Alternative 1, where WS would conduct no wolf removal to protect ungulates[56]. The current inability to allow public hunting of wolves would likely result in continued wolf population growth. With continued wolf population growth, wolf damage to livestock and ungulate populations would be expected to increase, and WS' take of wolves would be expected to increase, but wolf populations would remain healthy and viable. The overall cumulative impact of this increased take, however, would likely be less than the cumulative impact resulting from also allowing public harvest of wolves. As discussed in Section 4.4.1.1, under the adaptive management approach being followed by USFWS or IDFG, if wolf removal by one strategy is reduced, it would likely be compensated for by increasing wolf removal through one or more other approaches. Whether WS is involved in assisting IDFG with wolf removal to protect elk or not, the Idaho Fish and Game Commission's wolf population objective (for delisted wolves) would still remain at around 500 wolves (IDFG 2009*a*).

After any management action ends, the wolf population would be expected to eventually return to pre-removal levels dependent on location, prey base, time of year, dispersal rates/immigration, etc. (National Research Council 1997). For example, in east-central Alaska, wolf abundance returned to pre-management levels in 3-years following 7-years of management removals that reduced the population 55-80% (Gasaway et al. 1983). Wolf population growth rates vary widely which is a

[55] In the Lolo and Selway Zones there are indications that wolf predation is one of the primary reasons for declining numbers of elk at levels well below IDFG wildlife management goals (IDFG 2010*b*).

[56] IDFG has indicated they would like to take advantage of the resources and expertise available through WS to conduct wolf removals for protection of elk, but they have also indicated that if WS is unable to assist in conducting these wolf removals, they would accomplish the desired wolf removal themselves through other available means (Compton 2009).

function of survival rates, immigration, and indirectly, prey abundance (Fuller 1989). Population growth on the order of 50% per year is possible (Hayes 1995, Ballard et al. 1997). Growth rates are typically high following management efforts owing to the increased per capita supply of prey (Fritts and Mech 1981, Keith 1983, Ballard et al. 1987). Consequently, once a wolf population is reduced, it may be necessary to maintain that level during subsequent years and until the desired management objective is reached.

It is reasonably foreseeable that IDFG would take action to meet its management objectives for wolves with or without assistance from WS. Thus the wolf population would be expected to be about the same under this Alternative as under Alternative 1.

4.4.2.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

Effectiveness of the various lethal and nonlethal control strategies employed under Alternative 2 to protect livestock would be similar as under Alternative 1, but Alternative 2 would also provide for use of these same tools and methods to protect localized ungulate populations at the direction of IDFG after authorization from the USFWS, if applicable.

Gasaway et al. (1983) reviewed and evaluated data regarding the interrelationships between wolves, moose, and caribou, and management approaches employed in interior Alaska from the 1950's through the 1970's. The authors concluded that predation by wolves can exert substantial control over ungulate populations, as demonstrated by wolf removal experiments, and that when wolf predation limits a depressed ungulate population, managers can either wait for a natural recovery, which could take decades, or reduce numbers of wolves. Gasaway et al. (1992) reviewed and evaluated data on nutrition, snow levels, human harvest, disease, and predation in limiting moose populations in east-central Alaska. They identified predation by wolves and bears as the most important limiting factor in holding moose populations at low densities during the period of 1976-1988. Moose numbers increased simultaneously with a predator reduction program in their study area.

Hayes et al. (2003) assessed the results of a 5-year effort to reduce wolf populations in southwestern Yukon, where caribou, moose, and Dall sheep populations were declining. Wolf numbers were reduced through aerial shooting, trapping, snaring, and surgical sterilization of live-captured wolves. The authors indicated that wolf control was effective in increasing ungulate populations in their study area. Boertje et al. (1996) likewise concluded that reducing wolf numbers led to substantial increases in moose and caribou populations in southeastern Yukon. Benefits of the wolf removals included the harvest of several thousand more moose and caribou in their study area than predicted if wolf control had not occurred. Boertje et al. (1995) assessed the biological effectiveness of several methods of increasing predation-limited moose populations in Alaska and Yukon, and concluded that aerial shooting of wolves was one of the most effective approaches.

Based on the above information and analysis, wolf removals for ungulate protection as planned and requested by IDFG can be expected to be effective for increasing ungulate populations.

4.4.2.3 Effects on public and pet health and safety

Under this Alternative, WS' effects on public and pet health and safety would not be expected to significantly differ from Alternative 1.

4.4.2.4 Humaneness and animal welfare aspects of the methods to be used

Under Alternative 2, all the same methods would be employed in the same manner as in Alternative 1. Therefore, humaneness and animal welfare perceptions would be about the same as under Alternative 1.

4.4.2.5 Impacts to stakeholders, including aesthetics of wildlife

A similar wide and variable range of public feelings towards wolves and wolf damage management would likely be present under Alternative 2 as with Alternative 1, since both Alternatives are similar. The primary difference between Alternative 2 and Alternative 1 is that under Alternative 2, WS would likely, in some instances, be providing assistance to IDFG to conduct wolf removals to protect elk as authorized by the USFWS, if applicable. Some members of the public, primarily hunters and other individuals concerned about the impacts of wolf predation on ungulates, may prefer this Alternative. Some people may object to wolf control and would rather "let nature take its course," letting the natural predator-prey processes occur without interference from humans. Other people may be concerned that the potential additional wolf removals which might occur would detract from their opportunities to see or hear wolves in the wild. For determined individuals, however, many opportunities to see or hear wolves, or experience other evidence of their presence, would still exist under Alternative 2, particularly if those individuals seek out areas where wolf control efforts to protect elk or livestock have not recently occurred.

4.4.3 Alternative 3 – Continue the Current Program, Plus Assist IDFG with Ungulate Protection and Include Use of Gas Cartridges and Breeding Wolf Sterilization as Potential Additional Control Methods.

Under this Alternative, WS would continue to implement an adaptive IWDM program for livestock and domestic animal protection, and could provide assistance to IDFG to protect ungulates as in Alternative 2, but Alternative 3 would additionally allow the use of 2 methods not currently used in wolf management in Idaho. Neither of these methods would be used unless the responsible management agency (USFWS or their designated agent for listed wolves, IDFG for delisted wolves) had authorized removal of an entire pack of wolves. One of the methods would be the surgical sterilization of breeding wolves as a nonlethal alternative to killing those wolves, as discussed at Sections 3.2.3 and 3.4.3. Sterilization would be employed only on a limited, opportunistic basis, and only with case-by-case approval from the USFWS or IDFG. The other method which might infrequently be used under this Alternative would be the gas cartridge to humanely euthanize wolf pups in dens when the USFWS or IDFG, as appropriate, has authorized and directed that an entire pack of chronic depredating wolves be removed. In the 15 years of wolf damage management so far in Idaho, there has not yet been a circumstance where any wolf pups have needed to be lethally removed from a den. But if Idaho's wolf population continues to grow, it is conceivable there could be occasional need for this tool in the future.

4.4.3.1 Effects on the wolf population in Idaho

As with Alternative 1, the primary factors influencing the wolf population in Idaho and the NRM are prey density and human-related mortality. Wolf monitoring by the USFWS or their designated agent would identify excessively high mortality rates or low birth rates and would trigger timely corrective action (*e.g.*, reductions in allowable take for wolf damage management, and/or sport harvest (for delisted wolves), or measures to address the source of the high mortality rates or low birth rates) when necessary.

Under this Alternative cumulative impacts to Idaho's wolf population would not be expected to be appreciably different than under Alternatives 1 or 2. As discussed in Section 4.4.1.1, under the adaptive management approach being implemented by USFWS or IDFG and WS, if wolf removal by one approach is reduced, it would likely be compensated for by increasing wolf removal through other approaches. Whether WS is involved in assisting IDFG with wolf removal to protect elk or not, the Idaho Fish and Game Commission's wolf population objective for delisted wolves would still remain at around 500 wolves (IDFG 2009*a*). IDFG has indicated they would like to take advantage of the resources and expertise available through WS to conduct wolf removals for protection of elk, but they have also indicated that if WS is unable to assist in conducting these wolf removals, they would accomplish the desired wolf removal themselves through other available means.

Although the limited anticipated use of sterilization under this Alternative would not be expected to appreciably affect the cumulative impacts on the wolf population, sterilization of breeding wolves, as an alternative to killing them, could result in fewer wolves being killed during management actions (Mech et al. 1996, Haight and Mech 1997). To the extent that more breeding wolves were sterilized in chronic depredation areas, fewer wolves would likely have to be killed in future control actions.

If the gas cartridge were ever used under this Alternative, it would not contribute to any additional take of wolves beyond that occurring under Alternatives 1 or 2, since it would only be employed in cases where the decision had already been made to remove an entire chronic depredating pack. The gas cartridge would only be used to facilitate more effective and humane removal of wolves which were already going to be removed anyway.

4.4.3.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

Effectiveness of the various lethal and nonlethal management strategies employed under Alternative 3 to protect livestock would be similar as described in the analysis of this issue for Alternatives 1 and 2 above. Although the surgical sterilization of breeding wolves (as an alternative to killing them) has not been tested as an approach to reducing predation on livestock, it has been successfully employed to reduce predation on big game animals (Hayes et al. 2003). If experience indicates that this approach could be effective in reducing wolf predation on livestock, then to the extent it might eventually be employed under Alternative 3, this Alternative could conceivably be more effective than the integrated approach employed under Alternatives 1 or 2, which do not include sterilization as an option.

Hayes et al. (2003) assessed the results of a 5-year effort to reduce wolf populations in southwestern Yukon, where caribou, moose, and Dall sheep populations were declining. Wolf numbers were reduced through aerial shooting, trapping, snaring, and surgical sterilization of live-captured wolves. The authors indicated that wolf control was effective in increasing ungulate populations in their study area, and that sterilization was effective in reducing the rate of wolf population increase. They also indicated sterilization was more publicly acceptable than killing wolves.

Boertje et al. (1995) assessed the biological effectiveness of several methods of increasing predation-limited moose populations in Alaska and Yukon, and concluded that aerial shooting of wolves was one of the most effective approaches, whereas wolf sterilization was ranked as low to moderate in effectiveness. Part of the rationale for the lower effectiveness ranking for sterilization, however, was that it was logistically challenging to capture and surgically sterilize wolves. The

logistical challenge might not be as big a factor with experimental implementation of sterilization as proposed under Alternative 3, particularly where trapping was being used as a primary management method. Sterilization would only be undertaken in those cases when the USFWS or IDFG, as appropriate, has determined that an entire pack is to be lethally removed, so the capture effort would already be occurring anyway. If the pack removal effort was occurring primarily by trapping, and an animal believed to be a breeding wolf was captured, it could be opportunistically sterilized, radio-collared and released, as an alternative to killing it. Judgments about whether a captured wolf was a breeding animal would be based either on known status of existing radio-collared animals, evidence of nipple development in the case of breeding females, or assumptions based on size and age of the animal in the case of breeding males. If helicopter aerial shooting was being employed in attempts to remove all the members of a chronic depredating pack, there could also be the option of live-capturing suspected or known breeding wolves instead of killing them, through the use of tranquilizer darting instead of shooting.

The very limited use of gas cartridges which might occur under this Alternative would not be expected to appreciably increase effectiveness of control efforts, but in terms of effort required to remove pups from a den, the use of gas cartridges would be more efficient and safer than having to excavate the den.

4.4.3.3 Effects on public and pet health and safety

Under this Alternative WS' effects on public and pet health and safety would not be expected to significantly differ from Alternatives 1 or 2. The only additional methods, tools, or strategies which might potentially be employed under Alternative 3, as compared to Alternative 1, would be the possible protection of ungulates as requested by the IDFG and authorized by the USFWS, if applicable, use of surgical sterilization of breeding wolves, and the possible use of gas cartridges to euthanize pups in a den in those infrequent circumstances where a chronic depredating pack of wolves was slated for removal during the spring of the year when pups might still be in a den. Both of these methods would be used infrequently, if ever, and neither of these methods would be expected to pose increased levels of risk beyond the already low level of risk to public and pets associated with the methods employed under Alternative 1.

4.4.3.4 Humaneness and animal welfare aspects of the methods to be used

Under Alternative 3, all the same methods would be employed in the same manner as in Alternatives 1 and 2, but with the potential addition of sterilization of breeding wolves (as an alternative to killing them) and the use of the gas cartridge to euthanize pups that are found to be in dens after removal of the breeding wolves or wolf pack. To the limited extent sterilization might be used, this approach might improve animal welfare by contributing to reduced numbers of livestock and/or ungulates being maimed and killed during wolf attacks, and by reducing the number of wolves that might potentially have to be killed. Likewise, if gas cartridges were ever used to euthanize pups from chronic depredating packs, that method might be considered more humane than other lethal control methods which might otherwise be employed, or than leaving the pups defenseless and subject to predation or starvation.

4.4.3.5 Impacts to stakeholders, including aesthetics of wildlife

A similar wide and variable range of public feelings towards wolves and wolf damage management would likely be present under Alternative 3 as under Alternatives 1 or 2, since the Alternatives are substantially similar. The primary difference between Alternative 3 and Alternative 1 is that under Alternative 3, WS would likely in some instances be providing assistance to IDFG in conducting

wolf removals to protect elk, and might infrequently use gas cartridges and surgical sterilization of breeding wolves. Some members of the public, primarily hunters and other individuals concerned about the impacts of wolf predation on ungulates, may prefer Alternatives 2 and 3 over Alternative 1. Some people may object to wolf control rather than "letting nature take its course," or for wolf control to support human hunting of ungulates. Other people may be concerned that the potential additional wolf removals which might occur would detract from their opportunities to see or hear wolves in the wild. For determined individuals, however, many opportunities to see or hear wolves, or experience other evidence of their presence, would still exist under Alternative 3, because considerable numbers of wolves and wolf packs will be maintained by USFWS and/or IDFG regardless of WS involvement.

4.4.4 Alternative 4 - WS Nonlethal Wolf Damage Management Only

4.4.4.1 Effects on the wolf population in Idaho

Under this Alternative, WS would not conduct any lethal wolf control and would have no impact on the wolf population in Idaho. However, USFWS and IDFG rules allow all Idaho landowners and livestock producers to haze, harass or kill a wolf that is molesting or attacking livestock or domestic animals on public or private land, with the provision that all such incidents must be reported to USFWS or IDFG, as appropriate, within 24 hours (for listed wolves, 50 CFR 17.84(n)) or 72 hours (for delisted wolves, Idaho Statute 36-1107(c)). Additionally, USFWS or IDFG would most likely continue to issue wolf kill permits to landowners and livestock producers who have experienced confirmed wolf predation on their private property or their Federal or State grazing lease. When wolves are delisted, IDFG could also exercise its own authority to remove wolves in those cases where wolves have been documented to be contributing to a decline in ungulate populations in a specific management area. And, with delisted wolves IDFG could authorize wolf take through regulated public hunting and trapping seasons for wolves. As discussed under Sections 4.4.1.1, 4.4.2.1 and 4.4.3.1, under the adaptive management approach being followed by the USFWS and IDFG, if wolf removal by one approach is reduced, it would likely be compensated for by increasing wolf removal through one or more other approaches. If WS were not taking any wolves through lethal control, USFWS or their designated agent, as appropriate would most likely authorize additional take by other means in an attempt to compensate for this reduction in take by WS. When wolves are once again delisted, wolf hunting opportunities for the public might be expanded by offering opportunities for depredation hunts in areas where wolves have been or are currently killing livestock. This type of approach might not be as effective in targeting individual depredating wolves and packs and addressing damage problems as lethal control efforts conducted by WS under Alternatives 1 or 2, but it might eventually result in just as many wolves being removed from the population.

Under the current listed status of wolves, Alternative 4 would likely result in a lower cumulative impact on Idaho's wolf population than Alternatives 1, 2 or 3. Wolf management is currently conducted under the provisions of the 2008 10j rules and wolves could still be killed by livestock producers when witnessed attacking or harassing livestock, and if authorized by USFWS, IDFG would likely still exercise the option of controlling wolves (without WS assistance) to address impacts on ungulates. USFWS or their designated agent might also conduct wolf removal efforts on their own in response to complaints of predation on livestock. But with listed wolves, IDFG would not have the option of providing for a hunting season to reduce the wolf population or focus harvest in conflict areas. The combination of no wolf removals by WS and no wolf removals through a public hunting season would likely result in an increase in Idaho's wolf population and increased wolf damage, rather than the decrease desired by IDFG (2009*a*). There would likely be frustration on the part of livestock producers and hunters because of increased impacts from a

growing wolf population, and some degree of illegal wolf killing would likely occur, but it would not likely be enough to compensate for the lack of removals by WS and a regulated public harvest.

If/when wolves are delisted again, it is most likely that, even without WS assistance in removing wolves, IDFG would implement its existing plans to allow sport hunting/trapping of wolves, to remove wolves in specific areas to reduce impacts of wolf predation on ungulates, and to meet the Idaho Fish and Game Commission's objective of maintaining about 500 wolves (IDFG 2009*a*). Therefore, if/when wolves are delisted, we would expect the wolf population to be about the same under Alternative 4 as under Alternatives 1, 2, and 3.

4.4.4.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

As discussed in Section 4.4.1.2, while nonlethal methods can be temporarily effective, lethal removal of wolves is usually the only practical approach to resolve incidents of wolf predation on livestock (Mech 1995, Bangs et al. 2009). Under Alternative 4, WS would not use any lethal control, and WS nonlethal efforts would not be nearly as effective in reducing or preventing wolf predation on livestock. Some wolf depredation problems could be temporarily addressed through implementation of nonlethal methods, but livestock producers would probably try to increase their own legally available lethal control in the absence of WS lethal control. Livestock losses to wolves would likely increase under Alternative 4 since it would be difficult for livestock producers and/or the USFWS or IDFG personnel to devote the required time, resources, and expertise to adequately address depredation problems. Nonlethal methods for preventing wolf predation on ungulates would not be practical, but IDFG would most likely conduct their own lethal control efforts to address ungulate impacts, or they would enlist the cooperation of private individuals as designated agents in such efforts once authorized by the USFWS, if applicable,. The overall efficacy of this Alternative might depend largely on whether the USFWS or IDFG, as appropriate, were able to establish an equally prompt and effective wolf damage management program in the absence of WS lethal control.

4.4.4.3 Effects on public and pet health and safety

Under Alternative 4 there would be no lethal wolf damage management activities conducted by WS, so the already low level of potential risk to the public and pets associated with any WS lethal control efforts would be eliminated. However, the risk to the public and domestic animals from wolf predation would likely increase. In the absence of lethal control of depredating wolves by WS, property owners and others affected by wolf depredations would likely begin to exercise their own lethal control efforts. In some cases, frustration with continued depredations might lead some individuals to consider use of illegal toxicants[57] or trapping methods to effect wolf removals, and this could present a greater risk of harm to people's pets. Although illegal toxicant use would present a risk to non-target animals, including pets, the motivation to use toxicants can be great, because a variety of potentially useful agricultural pesticides are readily available at relatively low cost, and would be easy to deploy (Allen et al. 1996).

Although no lethal control would be conducted by WS, the USFWS or IDFG could still authorize its personnel or private individuals to use foot-hold traps and snares to take depredating wolves, and there would be some risk that pets might be unintentionally captured. WS posts warning signs to alert members of the public about deployment of capture devices, but those types of notices would not necessarily be posted by private individuals conducting trapping efforts.

[57] In 2006 a rural resident from central Idaho pled guilty to illegally placing poisoned meatballs on Salmon-Challis National Forest lands in an effort to kill wolves. Three pet dogs were poisoned as a result of his actions.

4.4.4.4 Humaneness and animal welfare aspects of the methods to be used

Because WS would not be conducting any lethal control of wolves under Alternative 4, some people would consider WS' actions under this Alternative more humane than under Alternatives 1, 2 and 3. Although WS would be limited to using only nonlethal methods, a variety of lethal methods would most likely be employed by livestock owners and their agents to address wolf depredations, and the USFWS or IDFG, as appropriate, could implement lethal control methods or authorize members of the public to take wolves to address depredation issues. If the entities conducting the lethal wolf management lack the training, experience and resources of WS personnel, there may be a greater risk of unnecessary injury or pain from less than optimal use of some techniques. It is conceivable, and perhaps even likely, that in some cases, since individuals experiencing wolf damage could not rely on WS to remove wolves, there may be frustrated attempts to remove wolves through the illegal use of a readily available variety of agricultural pesticides or through illegal trapping methods. Depending on the illegal toxicant or trapping methods used, death might occur over a protracted period of time as compared to other methods such as shooting (Allen et al. 1996).

4.4.4.5 Impacts to stakeholders, including aesthetics of wildlife

The impacts of this Alternative to stakeholders would be variable depending on their values regarding wildlife and relationship to the problem. Individuals directly impacted by wolf depredation are likely to be less tolerant of wolves than individuals whose property and pets are not at risk. Under Alternative 4 WS would limit assistance to only nonlethal methods, but the USFWS or IDFG, as appropriate, could conceivably provide assistance with lethal control in response to confirmed wolf depredations. If stakeholders experiencing wolf damage receive quick and effective service from WS and/or USFWS or IDFG, they would likely be more accepting of wolves and the program. However, if depredation complaints are not readily addressed, stakeholders experiencing wolf damage would likely oppose this Alternative.

Even with wolves listed under the ESA, IDFG could still conduct wolf removals to protect ungulates (but without WS assistance) under this Alternative, if authorized by the USFWS, and different members of the public would be opposed to or supportive of this management action, depending on their particular interests. As with Alternatives 1, 2 and 3, there would continue to be opportunities to see and hear wolves, or experience other evidence of their presence, particularly if individuals seek out areas where the USFWS or IDFG, or private property owners have not recently conducted wolf removal efforts. Members of the public could continue to contact their local USFWS or IDFG office to inquire about the best opportunities for wolf viewing.

4.4.5 Alternative 5 - No Wolf Damage Management by WS in Idaho

4.4.5.1 Effects on wolf populations

The impact on Idaho's wolf population as a result of implementing Alternative 5 would likely be similar to the impacts associated with implementation of Alternative 4, since under both of these Alternatives, there would be no wolves removed by WS. All of the non-WS take of wolves discussed under Section 4.4.4.1 would be similarly likely to occur under Alternative 5. As long as wolves remain listed, Alternative 5 would likely have a lower cumulative impact on Idaho's wolf population than Alternatives 1, 2 or 3, for the same reasons as discussed in Section 4.4.4.1. But if/when wolves are delisted again, Alternative 5 would likely result in cumulative impacts on Idaho's wolf population that are similar to what would occur under Alternatives 1, 2, or 3.

4.4.5.2 Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates

Similar to the implementation of Alternative 4, the degree to which implementation of Alternative 5 would likely be effective in addressing wolf predation on livestock and/or wild ungulates would probably depend largely on how effective the USFWS or IDFG, as appropriate, was in carrying out a similar type of wolf damage management role that WS has historically carried out. It is conceivable that the USFWS or IDFG or some other entity designated by the USFWS or IDFG, as appropriate, might eventually attain the resources and expertise to similarly conduct wolf damage management as effectively as or more effectively than WS. But in the mean-time, implementation of both lethal and nonlethal methods by other entities would likely not be as effective as when carried out with the assistance of WS. An example would be the use of the RAG electronic frightening device to deter wolves from livestock pastures. These devices are complex to maintain and operate effectively, and each unit costs several thousand dollars. Aerial shooting would be another example of a control method that is highly effective, but requires specialized training and equipment to be conducted effectively.

Frustration with wolf management and levels of wolf damage may be highest for this Alternative, especially initially, before some other entity besides WS begins effectively providing assistance with wolf damage problems. Control efforts by untrained individuals with a lack of knowledge about control methods and wolf biology and behavior are less likely to target specific depredating wolf packs or individuals, and less likely to be effective in resolving damage problems (Mech 1995).

4.4.5.3 Effects on public and pet health and safety

We anticipate that the USFWS and IDFG, as appropriate, would place the highest staff priority on responding to issues of risk to human health and safety and would not delegate response to these risks to personnel who lack the training and experience to effectively address these concerns. Consequently, risks to human health and safety from wolves would be similar under this Alternative as under the other Alternatives.

It is reasonable to assume that whatever wolf damage management program the USFWS or IDFG implement in the absence of WS, there would be an increase in the number of individuals attempting to resolve wolf damage problems who lack the training and experience of USFWS, IDFG and WS personnel. There would likely be more trapping and shooting permits issued to landowners who had lost livestock to wolf depredation. Less experienced individuals may require more time to resolve a damage problem which would result in an increase in the amount of time traps and snares are in use. The overall result of these changes could be an increase in the number of pets that are captured in equipment placed for wolves. Private individuals who would be authorized to conduct wolf control through shooting and trapping permits are not required to follow all Federal policies that WS personnel are required to follow which may also lead to increases in risks to pets and human safety.

4.4.5.4 Humaneness and animal welfare aspects of the methods to be used

This Alternative might be considered more humane by many people who are opposed to lethal control methods employed by WS since WS would no longer use such methods, but lethal control of wolves would most likely continue regardless of whether WS was involved. USFWS or IDFG, as appropriate, would likely use traps and snares to capture and euthanize depredating wolves and

to radio collar wolves for population monitoring and nonlethal wolf damage management techniques that require a radio-collar on one or more wolves. When capturing wolves for population monitoring, and for nonlethal or lethal management efforts, wolves would be humanely captured by experienced personnel using the best methods available. However there would likely be a greater dependence on private landowners who would be issued trapping and shooting permits. These individuals would likely be less trained and experienced than USFWS, IDFG or WS personnel, and might not employ the most appropriate tools and methods.

Some property owners may take illegal action against localized populations of wolves out of frustration where continued damage occurs in the absence of a quick and effective wolf damage management program. Some illegal methods, like poisons, may be less humane than methods used by experienced agency personnel. Animal welfare aspects in terms of pain and suffering of some livestock and pets would likely be worse under this Alternative because overall efficacy in addressing damage problems would likely be lower than with Alternatives 1, 2, 3 or 4.

4.4.5.5 Impacts to stakeholders, including aesthetics of wildlife

Like Alternative 4, some stakeholders who are opposed to WS use of lethal methods may view this Alternative favorably, while others who are impacted by wolf damage would likely view this Alternative unfavorably, particularly if they felt they would be receiving little or no assistance from any Federal or State agencies to help address wolf damage problems. USFWS or IDFG, as appropriate, would most likely continue to provide assistance with wolf damage problems, but the strain on USFWS and IDFG resources and staff and costs to other programs would be greatest under this Alternative. If USFWS or IDFG had to re-direct resources from other program areas to make more resources available to address wolf damage, that could have a negative impact on members of the public who depend on IDFG to provide abundant fish and wildlife, whether for consumptive or non-consumptive use. In addition to increased issuance of permits for landowners, it is likely that USFWS or IDFG would seek other individuals to use as designated agents who could respond to damage problems. It may be difficult for USFWS or IDFG to obtain and retain individuals with the training and experience of WS. Consequently, damage problems may not be resolved as effectively or efficiently as with Alternatives 1, 2 and 3. Ranchers and pet owners with wolf depredation would likely be more frustrated because of the lack of quick response to losses. Individuals who feel their aesthetic enjoyment is compromised by the knowledge that wolves could be killed for wolf damage management may still be dissatisfied under this Alternative because lethal control would still be conducted, by sources other than WS.

With wolves listed under the ESA, this Alternative is not anticipated to result in a decline in wolf abundance in Idaho or the NRM and any difference in wolf viewing opportunities is likely to be negligible. When wolves are delisted, wolf abundance would be expected to decline in response to public harvest of wolves as provided for by IDFG, but this would be expected to occur with delisted wolves regardless of whether WS was involved in wolf damage management. Opportunities to view, hear and aesthetically enjoy wolves would continue to exist under Alternative 5 as they would under all the other Alternatives, since a minimum of 500 wolves would be maintained in Idaho regardless of which Alternative is implemented (IDFG 2008*a*).

4.5 SUMMARY OF IMPACTS

Table 4-3 briefly summarizes the potential impacts of each Alternative against each of the issues that were analyzed in detail. The anticipated impacts on Idaho's wolf population from the various Alternatives would differ to some degree depending on whether wolves remain listed and under USFWS management, or are returned to State management under their previously delisted status. None of the 5

Alternatives would be expected to adversely affect Idaho's wolf population, regardless of listing status, since the 2005 target population level is considered a viable, sustainable population. People opposed to lethal control of wolves may also be opposed to implementation of Alternatives 1, 2, and 3, but as discussed in the EA, lethal control of wolves is expected to occur regardless of whether WS is involved or not.

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Table 4-3. Summary of Impacts					
	Alternative 1 - Continue the Current Wolf Damage Management program (No Action).	**Alternative 2 - Continue the Current Program, Plus Assist IDFG with Ungulate Protection (Proposed Action/Preferred Alternative).**	**Alternative 3 - Continue the Current Program, Plus Assist IDFG with Ungulate Protection and Include Use of Gas Cartridge and Breeding Wolf Sterilization as Potential Additional Tools.**	**Alternative 4 - WS Nonlethal Wolf Damage Management Only.**	**Alternative 5 - No Wolf Damage Management by WS in Idaho.**
Effects on Idaho's wolf population (*while listed*)	Low, since public harvest seasons would not be an option. Idaho's wolf population would likely continue to increase, rather than be reduced to the Idaho Fish & Game Commission desired 2005 population level.	Similar as under Alternative 1.	Similar as under Alternatives 1 or 2.	Effects on the wolf population would be slightly lower than under Alternatives 1, 2 or 3.	Similar as under Alternative 4.
Effects on Idaho's wolf population (*if delisted*)	Moderate, when considered in the context of the desired human environment, which would be about 500 wolves in Idaho, according to the Idaho Fish & Game Commission. This is considered a viable, sustainable population level.	Similar as to Alternative 1, since additional wolves potentially removed under this Alternative would be compensated for by reducing the number of wolves taken by other approaches to ensure that the population did not go below the 2005 level of around 500 wolves.	Similar as to Alternative 1, since additional wolves potentially removed under this Alternative would be compensated for by reducing the number of wolves taken by other approaches to ensure that the population did not go below the 2005 level of around 500 wolves.	Cumulative impact on the Idaho wolf population would likely be somewhat less than under Alternatives 1, 2, or 3 unless/until IDFG were able to provide for other forms of lethal corrective wolf removal to replace WS wolf removals.	Cumulative impact on Idaho's wolf population would likely be similar as under Alternative 4.
Effectiveness of lethal and nonlethal control efforts in reducing wolf predation on livestock and/or wild ungulates	The current integrated, adaptive program's effectiveness is good for protection of livestock, but the current program does not include efforts to protect ungulates.	Better effectiveness under this Alternative for protection of wild ungulates.	Potentially better effectiveness under this Alternative for protection of both livestock and wild ungulates, if it turns out that sterilization, as proposed, would be another effective tool to address wolf damage.	Much lower effectiveness for WS efforts than under the integrated approach of either Alternatives 1 2 or 3, but effectiveness could eventually increase as other non-WS entities became proficient in conducting lethal control to address wolf damage problems.	Similar as under Alternative 4.
Effects on public and pet health and safety	Low risks to the public and peoples' pets.	Similar risk as under Alternative 1.	Similar risk as under Alternative 1.	Probably greater risks than under Alternatives 1 2, and 3.	Similar as under Alternative 4.

Humaneness and animal welfare aspects of the methods to be used	Control methods are employed as humanely as practical. There would continue to be trade-offs between the welfare of wolves and the welfare of domestic animals attacked by wolves.	Similar as under Alternative 1.	Similar as under Alternative 1.	Possible increased likelihood that frustrated private individuals would employ less humane methods, such as illegal toxicants or trapping methods.	Similar as under Alternative 4.
Impact to stakeholders, including aesthetics of wildlife	Impacts would be variable and mixed because of differing philosophical, aesthetic, and personal attitudes, values, and opinions.	Similar impacts as under Alternative 1.	Similar impacts as under Alternative 1.	Variable and mixed, as under Alternatives 1 and 2, but impacts to livestock producers and those concerned for certain ungulate populations would likely be worse than under Alternatives 3, at least until IDFG or some other entity were able to become proficient in conducting lethal control to address wolf damage problems.	Similar as under Alternative 4.

APPENDIX A

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   Les Dobson, Ecosystem Staff Officer, Clearwater National Forest, Orofino, ID
   Ana Egnew, Forest Biologist, Payette National Forest, McCall, ID
   Mike Foster, Wildlife Biologist, Salmon-Challis National Forest, Mackay, ID
   Heidi Heyrend, Wildlife Biologist, Caribou-Targhee National Forest, Idaho Falls, ID
   Lisa Nutt, Wildlife Biologist, Boise National Forest, Boise, ID

U. S. Department of the Interior

a. U. S. Bureau of Land Management (BLM)
   Jenifer Arnold, Wildlife Biologist, Twin Falls (South Central) BLM District Office, Twin Falls, ID
   Jeff Foss, Resources Services, BLM Idaho State Office, Boise, ID
   Joe Lowe, Wildlife Biologist, Idaho Falls BLM District Office, Idaho Falls, ID
   Paul Makela, Wildlife Biologist, Boise BLM District Office, Boise, ID
   Eric Thanson, Field Manager, Coeur d'Alene BLM District Office, Coeur d'Alene, ID
   Lori West, Environmental Coordinator, Cottonwood and Coeur d'Alene BLM Districts, Coeur d'Alene, ID
b. U. S. Fish and Wildlife Service
   Brian Kelly, State Supervisor, Ecological Services, Boise, ID
   Gary Burton, Acting State Supervisor, Ecological Services, Boise, ID

State of Idaho

a. Idaho State Department of Agriculture
   Brian Oakey, Deputy Director, State Office, Boise, ID
b. Idaho Department of Fish and Game
   Jon Rachael, Big Game Manager, State Office, Boise, ID
   Kathleen Trever, Deputy Attorney General, Boise, ID
   Craig White, Furbearer Biologist, State Office, Boise, ID
c. Idaho Department of Lands
   Gretchen Lech, Wildlife Biologist, State Office, Boise, ID
d. Idaho Governor's Office of Species Conservation
   Dustin Miller, Environmental Liaison, Boise, ID
e. Idaho State Historical Preservation Office
   Susan Pengilly, Deputy State Historical Preservation Officer, Boise, ID

Coeur d' Alene Tribe
Chief James Allen, Tribal Chairman, Plummer, ID

Kootenai Tribe of Idaho
Jennifer Porter, Tribal Chair, Bonners Ferry, ID

Nez Perce Tribe
McCoy Oatman, Tribal Chairman, Lapwai, ID
Keith Lawrence, Director, Wildlife Program, Lapwai, ID

Shoshone-Bannock Tribes
Alonzo A. Coby, Tribal Chairman, Fort Hall, ID

Shoshone-Paiute Tribes
Robert Bear, Tribal Chairman, Owhyee, NV

APPENDIX B

DEPREDATION INVESTIGATION FORM

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
WILDLIFE SERVICES

WILDLIFE SERVICES DEPREDATION INVESTIGATION REPORT

		REPORT NUMBER
		DATE COMPLAINT RECEIVED
SPECIES	NAME OF INVESTIGATOR(S)	DATE INVESTIGATED
NAME AND ADDRESS OF LIVESTOCK OWNER/LEASEE		TELEPHONE NUMBER
		COUNTY

LAND OWNERSHIP ☐ STATE ☐ BLM ☐ TRIBAL ☐ PRIVATE ☐ FS ☐ OTHER (Specify)	TYPE OF LIVESTOCK/PROPERTY ☐ HORSE ☐ BEES ☐ SHEEP ☐ CATTLE ☐ OTHER (Specify)

LOSSES AND/OR PROPERTY DAMAGE (See criteria on reverse side of form)

No. Confirmed	No. Probable	No. Possible/Unknown	No. Other (Specify)

SITE DESCRIPTION/PHYSICAL EVIDENCE PRESENT (i.e., tracks, scat, hair, blood, signs of struggle, scrapes, etc.)

CARCASSES/PROPERTY DAMAGE CHARACTERISTICS (i.e., puncture marks, feeding patterns, measurements between canines, signs of hemorrhage, etc.)	ESTIMATED TIME SINCE PREDATION/DAMAGE OCCURRED (Days/hours)

ACTIONS TAKEN	DATE STARTED	DATE ENDED

NAME OF WS INVESTIGATOR	SIGNATURE	DATE
NAME OF DISTRICT SUPERVISOR	SIGNATURE	DATE
NAME OF STATE REPRESENTATIVE	SIGNATURE	DATE

DISPOSITION OF CARCASS/PARTS

WS FORM 200 (OCT 99) COPY DISTRIBUTION: WHITE - State Office YELLOW - District Supervisor PINK- State GOLDENROD- Investigator

CRITERIA FOR CLASSIFICATION OF REPORTED DEPREDATION INCIDENTS

Reported wolf, bear, or lion depredation incidents should be classified as either **confirmed, probable, possible/unknown**, or **other**, based on the following criteria. *For MIS reporting purposes, "reported" damage may often include incidents described as **probable, possible/unknown,** and/or **other**, if the cooperator first reported these incidents as predation.*

CONFIRMED – Depredation is **confirmed** in those cases where there is reasonable physical evidence that an animal was actually attacked and/or killed by a predator. The primary confirmation factor would ordinarily be the presence of bite marks and associated subcutaneous hemorrhaging and tissue damage, indicating that the attack occurred while the victim was alive, as opposed to simply feeding on an already dead animal. Spacing between canine tooth punctures, feeding pattern on the carcass, fresh tracks, scat, hairs rubbed off on fences or brush, and/or eye witness accounts of the attack may help identify the specific species or individual responsible for the depredation. Predation might also be confirmed in the absence of bite marks and associated hemorrhaging (*i.e.,* if much of the carcass has already been consumed by the predator or scavengers) **if** there is other physical evidence to confirm predation on the live animal. This might include blood spilled or sprayed at a nearby attack site or other evidence of an attack or struggle. There may also be nearby remains of other victims for which there is still sufficient evidence to confirm predation, allowing reasonable inference of confirmed predation on the animal that has been largely consumed.

PROBABLE – Having some evidence to suggest possible predation, but lacking sufficient evidence to clearly confirm predation by a particular species, a kill may be classified as **probable** depending on a number of other factors such as: (1) Has there been any recently confirmed predation by the suspected depredating species in the same or nearby area? (2) How recently had the livestock owner or his employees observed the livestock? (3) Is there evidence (telemetry monitoring data, sightings, howling, fresh tracks, etc.) to suggest that the suspected depredating species may have been in the area when the depredation occurred? All of these factors, and possibly others, should be considered in the investigator's best professional judgment.

POSSIBLE/UNKNOWN – Lacking sufficient evidence to classify an incident as either confirmed or probable predation, the **possible/unknown** classification is appropriate if it is unclear what the cause of death may have been. The investigator may or may not have much of a carcass remaining for inspection, or the carcass may have deteriorated so as to be of no use. The investigator would want to consider if the area has been frequented by a predator, or if the habitat is one which the predator is likely to use. Possible predation may include cases where counts show that abnormal numbers of livestock are missing or have disappeared above and beyond past experience, and where other known cases of predation have occurred previously in the area.

OTHER – Cause of livestock deaths should be classified as **other** when it is discovered that the cause of death was not likely caused by the animal originally reported to Wildlife Services during a request for assistance. Examples of **other** may include cases where the cause of death is confirmed or is likely due to predation by some other animal or cause determined at the time of the investigation such as red fox instead of coyote or other causes such as, bloat, poisonous plants, stillborn, disease, lightening strike, vehicle collision, etc. If the specific other cause of death can be determined, it should be written in the space provided for Other.

WS FORM 200 (Reverse)

APPENDIX C

COMMENTS and WS' RESPONSES TO COMMENTS ON THE AUGUST 2010 DRAFT IDAHO WOLF DAMAGE MANAGEMENT EA

Comment: WS failed to provide for adequate public participation under NEPA.

Response: NEPA and CEQ implementing regulations [40 CFR 1501.4(d)] do not require scoping in the preparation of an EA but only require "scoping" in the preparation of an EIS. Regulations that guide WS in completing an EA include: *II.A.3.b. - Scope and Scoping. Scoping is a critical step in EIS development because it helps to define the direction of the analysis process. (Scoping can be useful in the preparation of an EA and a finding of no significant impact (FONSI), but is not required).* Idaho WS did publish a legal notice of availability of the draft EA as required by APHIS NEPA implementing procedures, and additionally e-mailed the notice of availability to known persons and/or organizations believed to have an interest in the EA, including several individuals who promptly provided further internet distribution of the announcement. Two national organizations, Defenders of Wildlife and the Natural Resources Defense Council, both apparently sent out "action alerts" to a broad distribution of their membership, and provided a link to facilitate commenting on the EA. During the 30-day public comment opportunity, more than 100,000 e-mailed comments, mostly some variation of one or two "form" letters, were received from across the U.S. and from multiple foreign countries. This response suggests that the notification which occurred provided for an adequate public comment opportunity. Further, as noted at Section 1.7.5 of the EA, even though WS did not conduct a formal scoping process, any new issues or alternatives identified during the 30-day public comment period for the EA were fully evaluated to determine whether the EA should be revised prior to issuance of a final Decision.

Comment: WS failed to extend the public comment period by 30 days upon request.

Response: During the 30-day public comment period for the draft EA, two commenters requested an extension of time allowed for commenting. WS denied these requests because 30 days was deemed an adequate response opportunity and both commenters did provide comments within the 30-day period. The fact that over 100,000 comments were received from across the U.S. and around the world suggests the 30-day comment opportunity was sufficient.

Comment: The EA inappropriately regards the current program as the "No Action" Alternative.

Response: CEQ has made two distinct interpretations of what constitutes a "No Action" Alternative (http://ceq.hss.doe.gov/nepa/regs/40/1-10.HTM#3). One interpretation involves the situation where an ongoing program initiated under existing legislation and regulations will continue, even as a new plan is being developed. In these cases, "no action" is interpreted by CEQ to mean "no change" from the current management direction or level of intensity. The "No Action" Alternative is considered a continuation with the present course of action until the action is changed. Additionally, however, the August 2010 draft EA did examine a "No Federal WS Wolf Damage Management" Alternative.

Comment: The EA does not take into account the current status of wolves.

Response: The EA was released for public comment just prior to the Montana Federal District Court overturning the delisting decision on August 5, 2010. The court's decision to overturn the delisting rule was based on procedural grounds, and did not address the issue of whether or not the wolf population in the NRM DPS was biologically recovered, and the judge did not dispute the USFWS's determination that the population was biologically recovered. However, the possibility of the delisting decision being

overturned by court action was considered and discussed multiple times in the draft EA (*e.g.*, at sections 1.7.3, 3.2.1, 4.1.1.1, 4.4.2.1, 4.4.3.1,4.4.3.3, 4.4.4.1 and 4.5). Given the uncertainty about how the court would rule, it was appropriate for the EA to consider the impacts under both a delisted and a listed status. WS only conducts wolf damage management when authorized by the responsible management agency (either IDFG or USFWS). Neither IDFG nor the USFWS have expressed any concern about WS actions having a negative impact on genetic connectivity, cross-boundary wolf packs or the recovery of wolves. WS will comply with wolf management decisions and direction of the USFWS, IDFG and the District Court, as appropriate.

Comment: The Draft EA appears biased toward lethal control methods, and WS' failure to withdraw and revise the EA following the August 5 relisting decision strongly suggests that a decision has already been reached.

Response: A final decision regarding the draft EA has not yet been made, and no decision will be made until after fully considering all the input received during the public comment opportunity on the revised EA. Identifying an agency's preferred alternative during the NEPA process does not concurrently equate to selecting that alternative. The EA discussed the available literature on lethal and nonlethal wolf control methods, and referred readers specifically to one paper in particular which provided an objective look at the advantages and disadvantages of all the available lethal and nonlethal control methods. (See link at bottom of p. 51 of the draft EA and p. 57 of the revised EA.) We recognize the commenter's opposition to the use of lethal control measures, but pointing out that recognized agency wolf experts believe lethal removal of wolves is in most cases the only practical approach to resolving incidents of wolf predation on livestock (*e.g.*, EA at Sections 4.4.1.2, 4.4.2.2 and 4.4.3.2) does not equate to a biased position.

Comment: The EA is based on a Section 10(j) rule that is itself illegal.

Response: The determination as to whether the 2008 10j rule is in fact legal or illegal will be up to the courts, and the court has not yet rendered an opinion. In the mean time, absent a court order to the contrary, the 2008 10j rule is considered lawful and wolf management can be conducted under the provisions allowed by that rule. If the court determines the 2008 10j rule is in fact unlawful, then wolf management in the NRM would simply revert back to the provisions of the 2005 10j rule, which has not been challenged and which still provides significant management flexibility and would continue to authorize the killing of wolves to address wolf predation on livestock. Wolf control to protect ungulates would be unlikely to occur under the 2005 10j rule, because the required criteria to allow for this under the 2005 rule are so restrictive. Because the analysis in the draft EA was based on an assumption of operating under the more liberal 2008 version of the 10j rule and/or similar state rules, the analysis would still be relevant and applicable under the slightly less flexible 2005 10j rule. If anything, the analysis of impacts would be overstated, rather than understated, since the 2008 rule allows greater latitude in taking wolves than does the 2005 rule. As indicated at Section 2.5.4 of the EA, the appropriateness of trying to limit the impacts of wolf predation on ungulates is outside the scope of analysis for this EA and is solely a decision of IDFG or USFWS.

Comment: The EA does not adequately account for the impact on the environment. If an EIS was prepared by the USFWS to reintroduce wolves, WS should prepare an EIS regarding control of wolf damage, and that EIS should cover the entire NRM area, not just Idaho.

Response: There are clear differences between assessing the potential environmental impacts of reintroducing wolves to the NRM, where wolf populations had not been present in more than half a century, versus assessing whether, or how, to continue a program that has already been in place for 15 years to reduce conflicts between wolves and the affected interests of the human population in Idaho. As discussed at Sections 1.2, 1.4.6, 1.4.7, 1.4.8, 1.4.9 and 1.4.10, all of the previous environmental analysis

conducted during this time has continued to indicate that wolf damage management in Idaho has not had any significant adverse effects on the quality of the human environment. As indicated at Section 1.6 of the EA, one of the decisions to be made during this EA process is whether the proposed action would be expected to have significant impacts on the quality of the human environment, and therefore require preparation of an EIS. A decision on whether to prepare an EIS will be made after considering all public comments and determining whether it is appropriate to issue a Finding of No Significant Impact for the EA.

WS believes it is appropriate to limit the scope of the EA to the State of Idaho. As indicated at Section 2.4.6 of the EA, federal agencies have the discretion to determine the scope of their analyses, and WS determined that preparation of this EA to address wolf damage management in the State of Idaho was appropriate and consistent with USFWS approved IDFG wolf management objectives and State management plans (ILWOC 2002, IDFG 2008*a*). Each of the three states in the NRM DPS has different state laws, land status, etc. and each state has developed their own wolf management plan. The USFWS has approved Montana and Idaho's plans, and has agreed that wolves are well past the point of being biologically recovered. (And the Montana District Court decision did not dispute this assertion.) The other wildlife management agencies consulted in the preparation of the draft EA (IDFG and USFWS) concurred with the appropriateness of the scope and impacts analysis in the draft EA.

Comment: The EA fails to adequately address the cumulative impacts to wolves from hunting seasons and control actions for other species. If hunting reduces wolf depredations as implied in the discussion on page 38 of the EA, why would wolf control by WS even be necessary?

Response: The potential impacts to wolves from control efforts for other species, such as coyotes, were not specifically addressed in the draft EA, but those potential impacts have been addressed in previously prepared NEPA documents and through previously conducted Section 7 consultations with the USFWS. Cumulative impacts on Idaho's wolf population, including the effects of wolf removals which occurred during Idaho's first wolf hunting season, were discussed in Sections 4.4.1.1 and 4.4.2.1 of the EA. Although early indications are that the wolf hunting season may have helped reduce the number of wolf depredations on livestock (as discussed at Section 2.4.2 of the draft EA), WS and the other agencies involved in wolf management in Idaho do not believe hunting alone would likely be effective in addressing all wolf damage problems. During the summer months, for example, when many wolf depredations occur on Forest Service grazing allotments, the hair on a wolf's pelt is patchy, thin, and of little or no economic or esthetic value, which reduces any incentive for private hunters or trappers to pursue wolves at that time. It is also possible that the degree to which hunting is effective in removing wolves and addressing damage problems may be reduced as wolves become more wary in response to hunting pressure from the public.

Comment: The EA fails to acknowledge the serious negative ecological effects of killing large numbers of wolves or the positive ecological effects associated with wolf recovery in its analysis of the environmental effects of the alternatives.

Response: The ecological effects associated with the presence of wolves in an ecosystem are discussed at Section 2.4.3 of the EA, and the potential ecological effects of killing wolves are discussed at Sections 2.4.2, 4.4.1.1, and 4.4.2.2. As discussed at Section 2.4.3, the ecological processes that have been documented to occur in other areas with wolves would be expected to continue occurring in Idaho, since IDFG or the USFWS intend to continue managing Idaho's wolf population in a sustainable manner (*i.e.,* maintaining at least 500 wolves in the state) under any of the Alternatives considered or selected. It is reasonably foreseeable that wolf removals as a result of a sport hunting season (if wolves are delisted again), or for ungulate protection (if wolves are delisted or as allowed under 10j rules) will be done by IDFG even with no assistance by WS (see Sections 4.4.1.1, 4.4.2.1). Therefore, any indirect ecological

effects associated with the removal of wolves by IDFG for those purposes will be part of the existing human environment in the absence of federal action by WS.

Comment: WS failed to mitigate its adverse environmental impacts.

Response: Section 3.6 identifies standard operating procedures used by Ws to reduce the potential for impacts, and meet the Reasonable and Prudent Alternatives and Measures, and Terms and Conditions in Biological Opinions issued by USFWS on T&E species that could potentially be affected by WS wolf damage management. The EA analyzes environmental impacts in Chapters 2 and 4.

Comment: The WS Decision Model is flawed in that it has not been peer reviewed or subject to public review under NEPA.

Response: The WS Decision Model was originally described by Slate et al. (1992) and was published in the Transactions of the North American Wildlife and Natural Resource Conference. It was subjected to public review under NEPA in the WS Programmatic Environmental Impact Statement (USDA 1994) which has been incorporated by reference in this EA.

Comment: W**S' actions fail to live up to its purpose, mission, and vision**. **The EA fails to acknowledge that wolves and other wildlife have positive as well as potentially negative values, and the development and use of socially acceptable strategies has been disregarded in the Preferred Alternative.**

Response: Contrary to this comment, the discussion at Section 1.1 of the EA notes, *"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife generally is regarded as providing economic, recreational and aesthetic benefits . . . , and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and values is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural, and economic considerations as well."* The current program and the proposed action include the use and/or recommendation of strategies identified by the commenter as "socially acceptable" such as livestock guarding animals, improved livestock husbandry practices, and the use of fladry and other frightening devices, as discussed at Section 3.4.1 of the EA.

Comment: The Proposed Action oversteps WS' authority and conflicts with the North American Model for Wildlife Conservation.

Response: As stated in section 1.1 of the EA, WS has clear authority under federal law to assist in resolving damage caused by injurious animals, including damage caused by wolves to, among other things, other wildlife resources. The North American Model for Wildlife Conservation clearly allows for taking of wildlife for food, fur, and defense of humans and property. State and federal wildlife agencies are not necessarily bound to follow the model in all respects and can logically extend management decisions beyond it within the discretion allowed under their legal authorities. WS's proposed action here is to only assist in wolf removal to protect ungulates when specifically requested by the IDFG and only under the authorization and direction of IDFG or USFWS, whichever of those two agencies is responsible at the time based on their legal authorities and Court rulings. Thus, IDFG and USFWS are the controlling decision-makers over WS' involvement in wolf damage management in Idaho. We believe that wolf damage management as proposed herein is consistent with the aims of the North American Model cited

by the commenter.

Comment: The EA fails to consider an adequate range of alternatives. Specifically, the EA should have considered an alternative that required exhaustion of reasonable nonlethal methods prior to authorizing lethal control of wolves.

Response: WS did consider and provided rationale (at Section 3.5.3) for not including a detailed analysis of an alternative which would have involved exhausting nonlethal methods before attempting lethal methods. Also, as discussed at Sections 3.2.1 and 3.2.2 of the EA, the Current Program (No Action Alternative) and the Proposed Action (Preferred Alternative) both involve consideration of practical nonlethal methods prior to implementation of lethal methods (as per WS Directive 2.101), so the "nonlethal before lethal" element is actually incorporated into the Current Program and the Proposed Alternative. The "practical" qualifier is an important distinction. As noted in the discussion at Section 4.4.1.2, for example, scaring wolves away from one specific location in an area with large numbers of livestock may often result in the wolves just killing livestock in adjacent areas. Another variation of a "Nonlethal Before Lethal" Alternative is also discussed at Section 3.5.7 of the REA.

Comment: The EA lacks specificity in terms of what lethal methods will and will not be allowed. The EA does not indicate, for example, whether WS will pursue use of M-44s or Compound 1080 for use in wolf control.

Response: The potential use of M-44s or Compound 1080 on wolves was not included as part of the Proposed Action, and there are no plans at the current time to pursue the use of M-44s or Compound 1080 for use on wolves. If that were to change at some point in the future, new NEPA documentation would be undertaken.

The EA lists the methods that WS would recommend and consider using during wolf damage management actions under each Alternative (Sections 3.4.1, 3.4.2, 3.4.3). As described earlier, most wolf agency management experts recognize that nonlethal methods are not always effective, that animals habituate to methods and that lethal methods may need to be implemented. Usually, the most effective approach to resolve wildlife damage is to integrate the use of several methods simultaneously or sequentially. WS' adaptive integrated control is based on local problem analyses and the informed judgment of trained personnel. Integrated control may incorporate cultural practices, habitat modification, animal behavior modification, removal of individual animals, local population reduction, or any combination of these, depending on the characteristics of the specific damage problem. The WS program also works closely with the researchers at the NWRC. Research at the NWRC has been critical to the testing and development of nonlethal methods for wolf damage management (Shivik 2001, Shivik and Martin 2001, Bangs and Shivik 2001, Shivik et al. 2002, 2003), and has improved the selectivity, humaneness and efficacy of capture devices.

The EA also addresses how WS would evaluate method use and implementation (Sections 1.7.4, 3.3.3 and 3.3.4). Planning for the reduction of human-wolf conflicts is conceptually similar to other agency actions whose missions are to prevent adverse consequences from anticipated future events for which the actual sites and locations where they will occur are unknown but could be anywhere in a defined geographic area. Because the proposed action is to reduce damage and because the program's goals and directives are to provide services when requested, this is the only practical way for WS to comply with NEPA and meet the need for assistance with wolf damage management in a timely fashion.

Comment: Lethal control isn't effective because depredation problems continue to occur in subsequent years in areas where wolves have been removed. WS should provide equal consideration to nonlethal control methods, and not rely so heavily on lethal control.

Response: As stated above, the EA lists the nonlethal and lethal methods that WS would recommend and consider using during wolf damage management actions (Sections 3.4.1, 3.4.2, and 3.4.3). The commenter may be suggesting that lethal removal of wolves is not effective since the effects are only temporary, with other wolves eventually moving into areas where removals have taken place and the cycle of predation on livestock reoccurring. But a requirement for recurrent effort is normal for a variety of wildlife management approaches besides predator control (*e.g.*, conducting aerial big game surveys, stocking fish or pheasants, planting food plots, etc). Just because a wildlife management technique requires recurrent effort doesn't mean it is not effective, and the EA does in fact cite a number of scientific papers which document the effectiveness of both lethal and nonlethal methods. As with lethal methods, most if not all, of the nonlethal methods require recurrent effort, and many nonlethal methods are not practical or economically feasible to implement. For a method to be useful, it needs to be practical (which includes cost considerations), as well as effective. The characterization of nonlethal approaches as "economical" may seem reasonable from some publics' perspectives, but may not be considered economically feasible or practical from the livestock producers' perspectives.

In addition, as pointed out in Section 1.3.1 of the EA the inferred intent of the USFWS wolf reintroduction rules is that all chronic depredating wolves would be lethally removed. Thus, the decision to implement lethal removal in such chronic situations has already been made by the primary agency responsible for wolf management as long as wolves remain listed under the ESA.

Comment: The EA failed to acknowledge literature which demonstrates the importance of good husbandry practices in preventing wolf depredation on livestock. The EA did not, for example, cite a paper by Musiani et al. (2005), which states, "...*we see the greatest promise for reducing wolf depredation by improving animal husbandry, especially in high-risk seasons.*"

Response: The EA cites a number of references (including Breck et al. 2002 and Shivik 2001 cited by the commenter) in discussing the fact that the effectiveness of nonlethal methods depends on the circumstances. Section 4.4.1.2 of the EA also cites a number of studies which discuss the relationship of animal husbandry practices to risks of predation. When commenter uses the quote from Musiani et al. (2005) *"...we see the greatest promise for reducing wolf depredation by improving animal husbandry, especially in high-risk seasons",* the commenter did not include the sentence from that reference which immediately follows that quote: "*However, this could increase labor and operational cost inputs for livestock production.*" There are no doubt some nonlethal preventive measures and husbandry practices which could effectively reduce the likelihood of wolf depredation on livestock (*e.g.*, full time range riders hired specifically to watch over livestock, erecting predator proof fences around pastures, penning livestock near buildings at night, etc.), but in many cases such methods would not be economically feasible or practical.

Comment: WS should take a more active role in recommending and carrying out effective nonlethal approaches to preventing wolf depredations on livestock, such as the project promoted by Defenders of Wildlife in the Wood River Valley.

Response: In the discussion about the relative effectiveness of lethal and nonlethal control methods in Section 4.4.1.2, the EA acknowledged the effectiveness of nonlethal efforts provided by Defenders of Wildlife in the Wood River Valley area of Idaho, but also pointed out that such efforts would ordinarily be cost-prohibitive for livestock producers to implement on their own. Commenter's characterization of the nonlethal approach advocated by Defenders in the Wood River Valley area over the last several years as "economical" may seem reasonable from their perspective, but it is not considered economical from the livestock producers' perspective.

Comment: The use of aerial gunning to protect game populations that are not endangered or threatened is illegal and is inappropriate for a listed species.

Response: Although the commenter provided selected evidence to argue that the Airborne Hunting Act was not intended to allow aerial hunting of predators to protect game populations, we agree with IDFG and many other State wildlife management agencies across the western U.S. that the Airborne Hunting Act does in fact allow for legal aerial hunting of predators to protect wildlife. Commenter's organization (Defenders of Wildlife) has been very active for several years in trying to promote new legislation which would, in Defenders of Wildlife's words "Bar states from using aerial hunting to artificially boost game species populations" (http://www.defendersofwildlife.org/programs_and_policy/policy_and_legislation/aerial_hunting.php). Commenter's efforts in this regard suggest a recognition that the current version of the Airborne Hunting Act does in fact allow for legal aerial hunting of predators to protect wildlife.

Comment: The removal of animals from dens (denning) and the use of sterilization as control methods are not appropriate.

Response: These methods were removed from the Proposed Action/Preferred Alternative in the REA, but are now included in Alternative 3 in the REA. The August 2010 draft EA did provide rationale, however, (at Sections 3.4.3, 3.4.4, 4.4.2.1, 4.4.2.2, and 4.4.2.4) for why these methods would be appropriate to consider for wolf damage management. Additional rationale for use of the gas cartridge to euthanize pups in the den, rather than excavating the den to remove the pups, is expressed in WS Directive 2.425, which states that "*To avoid exposure to disease and the potential for a den to cave in when excavating, registered fumigants will be used for denning unless circumstances render their use ineffective.*" In response to the commenter who suggested one shortcoming of the proposal to sterilize breeding wolves would be the difficulty in identifying the breeding wolves in a pack, Section 4.4.2.2 of the draft EA noted: "*Judgments about whether a captured wolf was a breeding animal would be based either on known status of existing radio-collared alpha animals, evidence of nipple development in the case of breeding females, or assumptions based on size and age of the animal in the case of breeding males."*

Comment: WS States that whenever they receive a report of suspected wolf damage, they respond by sending a field employee to conduct an on-site investigation. We have concerns regarding inconsistent reporting on these incidents by WS employees, and about instances of failure to adhere to proper procedures in conducting depredation investigations. This commenter then cited 2 wolf depredation incidents which the commenter claimed demonstrated inadequate investigation and inaccurate conclusions by WS - one in Montana in March 2008, and one in Idaho in the summer of 2009.

Response: In the Montana depredation situation cited by the commenter, Montana WS officials acknowledge that one, and only one time, a determination of "probable" wolf predation was assigned without an on-site investigation, and provided an explanation of the circumstances. The circumstances were that the predation occurred in the middle of a pack territory where the pack had caused significant livestock depredations. The adjacent landowner also had wolf depredations that had been confirmed on-the-ground by WS. This landowner had reported numerous times that his cattle had been chased by wolves and WS had confirmed this earlier but had not filled out an investigative report since there was no damage. This landowner called WS then emailed photographs of the damage and wolf tracks in the cattle tracks. Two days later WS flew a surveillance flight and tracked the wolves from the pasture where the cattle had been stampeded. Based on the criteria on the WS investigative form and the best judgment of Montana WS officials, this was determined to be a probable wolf-related death.

An on-site investigation is ordinarily conducted in response to every report of wolf damage in Idaho, but in the Idaho situation cited by the commenter, the WS employee receiving the report of wolf damage obtained information from the sheep herder by phone, instead of conducting an on-site investigation, because of particular circumstances at the time. The commenter's concerns that a significant proportion of wolf depredation investigations are inadequate are unfounded. In the Idaho situation referenced, WS provided this commenter a detailed, written explanation of the specific circumstances regarding the several investigative reports that were compiled for livestock losses that occurred in this situation, and a representative of the commenter organization responded with a written reply thanking WS for our understanding and willingness to overcome any disputes regarding producers' claims for compensation. The commenter additionally expressed a concern that the herder likely was not fluent in English, implying that a language barrier between the herder and the WS employee who took the information from him over the telephone may have resulted in inaccurate information and conclusions. However, the WS employee who filled out the depredation investigation reports is fluent in Spanish, and there was no language barrier in the communication between the WS employee and the sheepherder.

Comment: WS is under pressure to confirm dead livestock as a wolf kill even though the physical evidence is inconclusive.

Response: Some members of the public and some environmental groups accuse WS employees of succumbing to pressure from livestock producers to confirm wolf kills. At the same time, some livestock producers have conversely accused WS employees of failing to confirm kills that the producer believes are supported by sufficient evidence. Regardless of these criticisms, WS employees strive to evaluate each reported incident of predation objectively using their best judgment and the criteria established for making determinations (printed on the reverse side of the depredation investigation form - see Appendix B in the EA).

Comment: WS has inappropriately engaged in killing wolves as a preventive measure, rather than in response to recent confirmed depredations on livestock. As an example, WS killed wolves from the Blue Bunch pack in 2010, months after the most recent confirmed depredation.

Response: What the commenter considers preventive control is more appropriately considered delayed corrective control. At times, corrective control actions may be delayed for a number of reasons. Whether a given control action occurs immediately following a confirmed depredation or some period of time later, the actions are taken correctively to prevent future losses. The Blue Bunch pack had a history of chronic depredations on livestock, and IDFG made the decision that the pack should be removed prior to the onset of the next grazing season.

Comment: The EA overstates the impacts of wolf predation on livestock and mischaracterizes or inappropriately summarizes key research and cites flawed or outdated research. As an example, the EA at Section 1.3.1 cites research to suggest that only a fraction of wolf-killed cattle are typically ever discovered. This is inappropriate since these studies were conducted in remote, heavily timbered areas where carcasses would be more difficult to find than in most livestock grazing areas. The EA also inappropriately infers that wolf-killed sheep carcasses are similarly difficult to detect.

Response: We agree that the likelihood of finding wolf-killed livestock is greater in less timbered, less rugged landscapes, but many, if not most of the U.S. Forest Service grazing allotments used by livestock producers in Idaho, including the Oakleaf et al. (2003) study area, are in fact rugged, timbered, brushy terrain. Many of the wolf complaints addressed by WS employees during the summer months are in rugged, remote Forest Service grazing allotments accessible only on foot or on horseback. The EA cited two studies which suggest a low likelihood of finding all wolf-killed cattle, but since similar studies have

not been undertaken with sheep, no such inferences were suggested. We agree that sheep producers' use of full-time herders helps increase the likelihood of finding wolf-killed sheep (as compared to cattle), but experience suggests that in at least some cases, by the time herders discover some of these dead sheep, particularly when the sheep become widely scattered as a result of a wolf attack, the evidence needed to confirm predation will have already degraded or disappeared.

Comment: The Collinge (2008) paper cited in the EA to illustrate the relative risks of predation posed by individual wolves versus the risk posed by other species of predators inappropriately relies on NASS data. It should have instead relied only on WS confirmed loss figures, which provide a more realistic assessment of the magnitude of wolf losses, as the NASS data relies on producers' own estimates, which are likely overestimates.

Response: The commenter (Defenders of Wildlife) has apparently deemed the NASS data a credible source of information when it suits their own purposes. They have used NASS data for years to make the point that coyotes kill many more head of livestock annually than do wolves. The Collinge (2008) paper simply made use of the same NASS data relied upon by Defenders of Wildlife for their own purposes, but looked at it from a different perspective. As pointed out in the Collinge (2008) paper, data collected by researchers during field trials in Idaho may actually suggest that if anything, Idaho sheep producers could be under-reporting, rather than over-reporting their predation losses. As a point of information, however, regarding Commenter's suggestion that WS' own data on livestock losses be used in this type of comparison instead of relying on NASS data, that approach was exercised in the Idaho Wildlife Services Annual Wolf Activity Report for Fiscal Year 2007 (USDA 2008*b*). The Collinge (2008) paper, relying on NASS data, suggested individual wolves were about 170 times more likely to kill cattle than were individual black bears. The USDA (2008*b*) report, relying instead on WS data, suggested individual wolves were about 167 times more likely to kill livestock than were individual black bears.

Regarding commenter's suggestion that confirmed losses provide a better indication of the magnitude of losses than NASS data, the EA clearly stated in Section 1.3.1, next to Table 1, "*It is important to recognize that the numbers in Table 1 represent only the minimum numbers of livestock actually killed and injured by wolves, and that many more livestock were probably killed but not confirmed as wolf predation."* Confirmed losses represent only a subset of the actual losses, and it would be inappropriate to infer that this data represents an accurate magnitude of the total wolf-caused losses occurring.

Comment: Another problem with the Collinge (2008) paper is that the NASS data used in the analysis suggested wolf-caused cattle losses were actually higher than wolf-caused sheep losses. This obviously casts doubt on the credibility of the NASS data, since WS typically confirms more wolf-caused sheep losses every year than wolf-caused cattle losses.

Response: As acknowledged by this commenter, a higher proportion of wolf-killed sheep are likely to be discovered than are wolf-killed cattle, so it would not seem unreasonable that rancher-reported losses for cattle would be higher than for sheep. Livestock producers are aware of this likelihood, and cattle producers' estimates of wolf-killed animals likely take this factor into account, particularly in those cases where a producer has had confirmed wolf predation, but also has additional animals unaccounted for in the area where wolf predation has been confirmed. Also, according to the most recently available NASS data on livestock inventories in Idaho, there are about 10 times as many cattle in Idaho as there are sheep, so there are likely a much greater number of cattle potentially exposed to wolf predation than there are sheep.

Comment: WS should improve livestock management.

Response: The current program and the proposed action include making recommendations to improve

animal husbandry strategies (*e.g.*, Section 3.4.1 of the EA) such as the use and/or recommendation of livestock guarding animals, improved livestock husbandry practices, and the use of fladry and other frightening devices. Wolf predation still sometimes occurs in spite of good livestock husbandry practices and use of nonlethal preventive measures, and as pointed out in Section 1.3.1 of the EA, the inferred intent of the USFWS wolf reintroduction rules was that all chronic depredating wolves would be lethally removed.

Comment: The relatively low amount of wolf predation occurring needs to be considered in the context of the entire livestock industry statewide.

Response: The EA acknowledges in Section 1.3.1 that "*Most livestock producers will experience no predation by wolves…"* but also points out that "…*even though predation losses due to wolves represent a relatively minor portion of total overall death losses nationwide, these losses are never evenly distributed across the industry."* Most livestock producers will experience no predation by wolves, while some producers in certain areas may suffer significant losses to wolves. A review of the over 1,200 Wolf Depredation Investigation Reports compiled in Idaho since reintroduction shows 396 individuals have reported wolf depredations in the State. Most of these have only reported one or two incidents of wolf depredation, but many have reported wolf depredation multiple times. One particular producer has reported 85 different incidents.

Suggesting that wolf predation losses should be considered in the context of the entire livestock industry statewide would be analogous to suggesting that home burglaries should be considered in the context of all the homes that are never burglarized. Most home-owners will never be the victims of a burglary, but if or when it happens, that homeowner, and our society, reasonably expects something to be done about it.

Comment: The EA overstates the potential role of wolves in disease transmission to wildlife, livestock and humans, particularly with regard to *N. caninum*.

Response: As noted in the discussion at Section 1.3.2 of the EA "*Although gray wolves may prove to be hosts capable of transmitting N. caninum, it is unclear whether the presence of wolves would add to the risk already posed by other canids, and whether or not wolves might play a role in reducing the potential of disease spread as suggested for other ungulate diseases is unproven*." This language does not overstate the potential role of wolves in transmission of *N. caninum* or other diseases. In addition, it is reasonable to include discussion about the potential role of wolves in transmission of diseases or parasites to humans since, at the time the EA was released for public review, a regulated public wolf hunting season was scheduled and wolf carcasses could provide a potential pathway for humans to be exposed to parasites or diseases when they are handling or skinning wolves. IDFG even included precautionary information for wolf hunters on their website at http://fishandgame.idaho.gov/cms/wildlife/manage_issues/echinococcus.cfm.

Comment: Because wolf predation on sick deer and/or elk might control the spread of chronic wasting disease, removal of wolves for depredation control might result in the spread of this disease.

Response: This commenter cited news articles at http://www.cwd-info.org/ in which wolf and disease experts speculated that wolf predation might play a role in stopping or reducing the rate of spread of chronic wasting disease, a debilitating and fatal disease that affects deer and elk. One of the articles stated that David Mech, a biologist with the United States Geologic Survey who is considered the world's top wolf expert, cautioned that until wolves and wasting disease actually interact, such theories are just speculation. The biological agent responsible for this disease, which is a "prion," has been determined to survive passage through intestinal tracts and can be deposited into the environment via fecal material

(Safar et al. 2008). Therefore, it is possible that predators that kill and eat infected deer and elk may actually spread this disease in the environment. Both hypotheses are apparently speculative at the present time. Therefore, it appears there is inadequate evidence to support a conclusion that removal of wolves would worsen the spread of chronic wasting disease, or that wolves contribute in any substantive way to the spread of that disease. Also, based on IDFG (2008*a*) and IDFGH (2010*b*) and the current 10j Rule, wolf removals to protect ungulates in particular, and to a large degree, to protect livestock, are likely to occur anyway in the absence of any federal action or assistance by WS. Therefore, the environmental status quo with respect to potential effects on the spread of chronic wasting disease would be similar with or without action by WS. For more information regarding chronic wasting disease, see http://fishandgame.idaho.gov/cms/wildlife/manage_issues/cwd.cfm.

Comment: The EA overstates the potential role of wolves in human health and safety risks to promote its own anti-wolf agenda. The EA cites 2 "probable" human fatalities related to wolf attacks, but the odds of being killed in a farm accident are far greater.

Response: As a clarification, the two documented wolf-caused human deaths since 2005 are considered confirmed, rather than just "probable". The risk of being attacked or killed by a wolf is extremely low, but as the incidents discussed at Section 1.3.4 of the EA illustrate, the possibility of wolf attacks does exist. The relative likelihood of being killed by a wolf versus the likelihood of dying from some other cause is irrelevant to the issue of identifying the potential, albeit unlikely need to address any wolf threats to human safety.

Under the terms of the MOU referenced at Section 1.4.12 of the EA, IDFG has responsibility for responding to incidents involving concerns about wolf threats to human safety, but IDFG may request that WS respond to such types of incidents. Because of this provision, it was deemed appropriate to discuss the possibility of this type of occurrence in the EA.

Comment: The EA has a clear anti-wolf bias and biased discussions.

Response: We believe that the EA gives adequate views of the issues related to wolf damage management and the Alternatives that could potentially be implemented to carry such out. In completing the document, we believe that the EA was held to a professional standard and provides a well-balanced view of wolf damage management from the varying perspectives. We do not believe that the EA is biased against predators, but focuses on their management (thus possibly giving the commenter the feeling it was biased).

Comment: The EA mischaracterizes the AVMA euthanasia guidelines as recommending a gunshot to the head as an acceptable method of euthanasia.

Response: The relevant AVMA (2007) recommendation states "When other methods cannot be used, an accurately delivered gunshot (to the head) is a conditionally acceptable method of euthanasia." WS believes AVMA's qualified recommendation of a gunshot to the head can in fact be interpreted as an endorsement of this method as an acceptable form of euthanasia for wolves captured in foothold traps. Julien et al. (2010) reviewed AVMA approved euthanasia methods and determined that a gunshot to the head was humane in some field circumstances because it may be the quickest method and the only practical method available. The AVMA ranked gunshot to the head when administered by trained personnel as more humane than a penetrating captive bolt because death is instantaneous, and the method also does not require personnel to handle a live animal, therefore it would be less stressful for the animal and safer for field personnel. Proper use of drugs for euthanizing trapped animals could cause increased stress during the restraint process to properly administer the drug, and could also present a risk to personal

safety while trying to restrain the animal. A gunshot to the head can be administered quickly and humanely, with the least amount of stress to the animal.

Comment: Neck snares should not be used in wolf damage management because non-target animals such as domestic dogs or non-target individual wolves might be killed, whereas an animal caught in a foothold trap could be released.

Response: Snares are used in limited circumstances in wolf control actions, but no dogs have ever been killed in Idaho in snares set for wolves. If there are concerns about possibly killing a non-target individual wolf (such as an already radio-collared animal), snares are not ordinarily used. As discussed in Section 2.4.4 of the EA, the only species for which an average of more than one individual per year are taken unintentionally during Idaho WS wolf management efforts are coyotes and red fox (Table 2-1 in the EA). Both of these canid species are abundant in Idaho, and they occur to varying degrees in many of the same areas as wolves and are attracted to the same types of baits and lures used to attract wolves to foothold traps.

Comment: Wolves should not be controlled to increase ungulate herds.

Response: As indicated at Section 2.5.4 of the EA, the appropriateness of trying to limit the impacts of wolf predation on ungulates is outside the scope of analysis for this EA.

Comment: Wolf control to increase ungulate populations is futile. Hebblewhite (2007) suggests that wildlife managers need to take a serious look at ungulate population objectives and harvest regimes and recognize that maintaining pre-wolf ungulate numbers and harvest may be "fantasy" and "incompatible with ecosystem management."

Response: The specific scientific sources of information regarding the need for and the relative effectiveness of wolf control to protect ungulates were discussed at Sections 1.3.3 and 4.4.2.2 of the EA. The Hebblewhite (2007) paper referenced by this commenter suggests that, in the author's opinion, wolf control to protect ungulates may be incompatible with the ecosystem-based, non-consumptive management objectives in National Parks. The author of that paper also acknowledges, however, that traditional and current management objectives outside of National Parks are consumptive based, and focus on harvestable surpluses, rather than reduced ungulate population levels. And while Hebblewhite (2007) points out the need to conduct wolf control for protection of ungulates over relatively large areas for multiple years, one of the primary references he relied upon in his analysis (Hayes et al. 2003) advocates public trapping of wolves to help sustain higher densities of ungulates and to help reduce the need for larger-scale wolf control. That is exactly what the Idaho Fish and Game Commission was planning prior to the court's overturning of the wolf delisting decision. Under the provisions of the 2008 10j rule, the IDFG can still elect to undertake wolf control to enhance elk populations in the Lolo zone, but it will likely take more agency effort than if public harvest of wolves was also allowed.

Comment: It is not clear that current rules, permits and agreements would provide the necessary authorization for WS to become involved in wolf removals to protect ungulates.

Response: The current 10(j) rule can be interpreted to provide for the necessary authorization for WS involvement in wolf removals to protect ungulates. Specifically, 50 CFR 17.84(n)(4)(xi)(A) provides that the USFWS or their designated agent may take wolves for "scientific purposes". If WS employees were to become involved in removal of wolves to protect ungulates in Idaho, it would only be done as part of a cooperative effort with IDFG for the scientific purpose of determining whether such efforts would help improve ungulate survival and recruitment. Additionally, 50 CFR 17.84(n)(4)(xiii) provides that a designated agent of the USFWS (in this case IDFG) may issue written authorization for individuals to

take wolves in the wild pursuant to approved scientific study proposals. If the USFWS approves IDFG's proposal to remove wolves to benefit elk in the Lolo and/or Selway elk management zones that would amount to an "approved scientific study proposal" under which WS could be authorized to remove wolves. Additionally, on October 20, 2010, the USFWS provided a letter authorizing WS to act as the Service's designated agent to take problem wolves, and to take wolves for other purposes as provided for at 50 CFR 17.84(n)(xi) and (xii), which could include take of wolves for ungulate protection when requested by IDFG and approved by USFWS.

While the current MOU between IDFG and the Idaho State Animal Damage Control Board does not specifically address WS involvement in wolf control to protect ungulates that would not necessarily preclude WS involvement in such an activity. That MOU has been under discussion for revision since 2009, and the new revision will specifically address WS involvement in wolf removals to protect ungulates as well as domestic animals. The current MOU between the Idaho State Animal Damage Control Board and APHIS-WS does provide generally for cooperation in the "…*implementing of animal damage control policies*…" This MOU is also being updated and will clarify specifically that APHIS-WS serves as the designated agent for the Idaho State Animal Damage Control Board in conducting wildlife damage management activities in the state.

Although the subpermit issued to WS by the USFWS for conducting wolf damage management has included authorization to conduct such activities in the experimental-nonessential population area of Idaho, as well as the area north of I-90 where wolves are listed as endangered, the USFWS has agreed that no such authorization is actually necessary for the experimental-nonessential area south of I-90. The 10j rule provides all the authorization necessary for WS involvement in wolf damage management south of I-90 in Idaho, including removal of wolves for ungulate protection as requested by IDFG and approved by the USFWS as long as wolves remain listed. Should WS be requested to conduct wolf removals as allowed under whichever of the 10j rules is in effect at the time, *i.e*., the 2005 or 2008 10j rules, we and the USFWS would verify that the activity is covered adequately under required permits as determined by the USFWS prior to taking such action.

Comment: It is inappropriate to consider the pain and suffering of domestic animals and ungulates (caused by wolf attacks) as part of the rationale for conducting wolf control.

Response: Owners of the livestock which are attacked, maimed, eaten alive and killed outright by wolves would strongly disagree with the commenter's assertion that it is inappropriate to consider the pain and suffering of domestic animals. Many hunters would likewise strongly disagree with commenter's assertions that it is inappropriate to consider the pain and suffering of ungulates preyed upon by wolves. As stated in Section 2.3.4 of the EA, "*An objective analysis of this issue must consider not only the welfare of a wild animal caught in a foothold trap, but also the welfare of the domestic animals and wild prey that may continue to be maimed and killed if the foothold trap or other control tools were not being used.*"

Comment: Reducing wolf numbers from 800+ individuals to around 500 individuals will have a negative impact on the environment because of the damage that more elk will do to riparian zones.

Response: The Idaho wolf population was estimated to be 512 individuals at the end of 2005. There was no evidence that the managed elk herds in Idaho were causing significant damage to riparian areas in the State in 2005, or prior to that time when there were even fewer wolves. Idaho elk populations are not at the same densities as elk populations in several western U.S. National Parks and therefore do not suffer from the same density related problems.

Comment: WS should use non-lead ammunition.

Response: Although there is no legal or policy requirement to do so, most WS aerial gunning operations in Idaho for wolves are conducted using steel shot, rather than lead shot. But even if wolves were killed using lead ammunition, the number of wolf carcasses left unrecovered in the field is low, and there are currently no federally listed threatened or endangered species deemed likely to encounter or scavenge on any of these carcasses. Therefore, the risk of the Proposed Action or any Alternative leading to significant environmental effects because of lead toxicity is low.

Comment: WS must consult with the USFWS Wolf Recovery Program Coordinator and with the public land management agencies regarding the Proposed Action.

Response: When the draft EA was released to the public for a 30-day comment period, wolves were delisted. However, there is no requirement under the ESA that Federal agencies must consult with any one particular individual in the USFWS. As part of the EA process, WS requested that all the agencies listed on the cover of the EA (including the USFWS) review and provide any relevant comments on the EA.

In addition, as indicated at Section 1.6 of the EA, all the agencies listed on the cover of the EA (including the U.S. Forest Service and the BLM) were consulted during the development of the document. Additionally, WS meets at least annually with local offices of the Forest Service and the BLM to confer and coordinate regarding wildlife damage management activities anticipated to occur in the coming year on lands administered by these agencies. Restricted actions would not be conducted by WS without prior consultation with the responsible land management agency. Regarding this commenter's specific hypothetical example of landing helicopters in a wilderness area to live-capture wolves, WS has never undertaken such an activity in a wilderness area, and does not anticipate doing so in the future. If WS were to ever consider such an activity, it would not occur without prior consultation with the responsible land management agency.

Comment: IDFG is not managing wolves for the appropriate population size.

Response: As pointed out at Section 2.5.6 of the EA, this issue is outside the scope of analysis. Currently, IDFG is not involved in managing wolves at any level. The USFWS is the lead agency responsible for wolf management in Idaho. In the future, IDFG will probably be involved again and they will commit to managing Idaho's wolf population at sustainable levels. IDFG had previously committed to manage for above 500 wolves or more than five times the number that USFWS established as the recovery objective. This is pointed out at Section 2.5.6 and is discussed repeatedly in the EA (*e.g.*, Sections 2.3.1, 2.5.6, 4.1.1.3, 4.4.1, 4.4.1.1, 4.4.2.1, and in Table 4-3).

Comment: Wolf reintroduction into the NRM is the model of successful carnivore reintroduction on the world stage and there is no room for error.

Response: Contrary to commenter's opinion on this issue, we believe there is likely substantial room for error when it comes to wolf reintroduction and management in the Northern Rockies. The first 10 years of wolf recovery in Idaho demonstrated that the wolf population could increase at over 20% annually, essentially doubling about every 4 years. And as pointed out by this commenter, research has suggested that even with removal of as much as 80% of the wolf population, the population could return to pre-removal levels within just several years.

Comment: WS jeopardizes wolf recovery.

Response: This issue was addressed in Sections 4.2.1, 4.4.1.1 and 4.4.2.1. WS conducts wolf damage management only after a conflict has occurred and only as authorized and directed by the USFWS or IDFG. Neither of the managing agencies (USFWS or IDFG), intend for the wolf population to be reduced below a sustainable population; both agencies desire that wolves be managed in a healthy and viable manner (USFWS 1994, 73 FR 4720, 50 CFR 17.84 (n), 74 FR 15123, IDFG 2008a).

Comment: Section 2.4.2 of the draft EA inappropriately dismisses the idea that removal of wolves through hunting seasons and/or depredation control actions might actually exacerbate depredation problems. The EA should have considered recent papers by Treves (2009), Wallach et al. (2009), and Rutledge et al. (2010), which discuss the possibility that killing wolves and disrupting pack social structure might contribute to greater depredation problems.

Response: The papers cited by the commenter include speculative discussion about what might happen as a result of wolves or other predators being killed and their social structure being disrupted. In contrast, the EA cites actual data on the numbers of confirmed wolf depredation incidents which occurred prior to, and after a wolf hunting season in Idaho. The data does not support the theory that hunting wolves exacerbates depredation problems, but it does appear to indicate that Idaho's first-ever wolf hunting season may have helped reduce depredation problems. Section 2.4.2 of the EA also points out that as wolf numbers have increased in Idaho, depredation problems have increased, and cites Bradley (2004), who found that after partial or complete wolf pack removal, depredations usually ceased for the remainder of the given grazing season. Bjorge and Gunson (1983, 1985) likewise found that wolf predation on livestock in Canada was reduced after control actions.

Comment: WS should consult with the USFWS regarding potential indirect effects of wolf removals on grizzly bear populations. Wolf removals could result in a reduction in the amount of wolf-killed carrion available to grizzly bears, and this carrion may be increasingly important to grizzly bears as global warming contributes to a reduction in other important grizzly bear foods, such as whitebark pine seeds.

Response: WS has entered into Section 7 consultation with the USFWS regarding the potential indirect effects of wolf removals on grizzly bears. Initial discussions with the USFWS on this issue suggest there is probably little likelihood of any significant indirect effect, based on the limited numbers of wolves removed in grizzly bear range in Idaho. According to WS MIS data, since the first reintroductions in 1995, Idaho WS has killed 417 wolves in response to livestock depredations. Of those wolves killed, only 9 (~2%) were taken in occupied grizzly bear range, and they were in the GYA. The GYA grizzly bear population has actually been increasing during the time that these limited wolf removals have occurred, which suggests these removals are not limiting grizzly bear recovery. The vast majority (>95%) of Idaho wolf depredations occur outside of occupied grizzly habitat, so there is likely little, if any effect on grizzly bear survival related to WS wolf damage management operations.

Due to the grizzly bears' low reproductive rate (Schwartz et al. 2003) and status as a threatened species[58] (USFWS 1993), the effects of wolves on carrion availability and cub survival was an important consideration for wolf reintroduction and grizzly bear conservation efforts. Grizzly bears now occupy 48% more of the GYA than when they were first listed. When grizzly bears in the GYA were listed in 1975, as few as 136 remained. Estimates today place the GYA grizzly population at more than of 650 bears and since the mid-1990s the GYA grizzly bear population has grown 4 to 7% per year. Currently,

[58] On March 22, 2007, the USFWS announced that the GYA DPS of grizzly bears is a recovered population no longer meeting the Endangered Species Act's (ESA) definition of threatened or endangered. However, on September 21, 2009, the Federal District Court in Missoula issued an order enjoining and vacating the delisting of the GYE grizzly population. In compliance with this order, the GYA grizzly population is once again a threatened population under the ESA (75 FR 14496, March 26, 2010).

about 84-90% of females with cubs occupy the Primary Conservation Area (PCA) and about 10% of females with cubs have expanded beyond the PCA within the Distinct Population Segment (DPS). Grizzly bears now occupy 68% of the suitable habitat within the GYA DPS and may soon occupy the remainder of the suitable habitat. The GYA DPS now has a viable grizzly population of sufficient numbers and distribution of reproductive individuals to provide a high likelihood that the species will continue to exist and be well distributed throughout this portion of its range for the foreseeable future. The State and Federal agencies' agreement to implement the extensive Conservation Strategy and state management plans ensure that adequate regulatory mechanisms are in place to protect grizzly bears and that the GYA grizzly bear population will not become an endangered species (http://www.igbconline.org/html/yellowstone.html).

The potential effects of wolves on the region's grizzly bear population were evaluated by Servheen and Knight (1993) and 15 North American grey wolf and wolf-prey scientists prior to the reintroduction (Lime et al. 1994). There was consensus among the 15 panelists that in other locations, such as the Yukon, Alaska and Glacier National Park, wolves and grizzly bears generally do well together (Lime et al. 1994). It was recognized that in areas where wolves and grizzly bears coexist, interspecific killing by both species occurs (Ballard 1980, 1982, Hayes and Baer 1992) with most agonistic interactions involving defense of young or competition for carcasses (Murie 1981, Ballard 1982, Hornbeck and Horejsi 1986, Hayes and Mossop 1987, Kehoe 1995, MacNulty et al. 2001). Six of the 15 panelists thought wolves would provide more protein for grizzly bears; four believed the overall impact would be "slightly beneficial." The six who did not believe wolves would provide more protein called the effect "neutral" or "slightly negative." The two remaining panelists described the overall impact as "slightly negative" (Lime et al. 1994). Servheen and Knight (1993) predicted that reintroduced wolves could reduce the frequency of winter-killed and disease-killed ungulates for grizzly bears to scavenge, but that grizzly bears would occasionally usurp wolf-killed ungulate carcasses[59]. Servheen and Knight (1993) and Lime et al. (1994) hypothesized that interspecific killing and competition for carcasses would have little or no population level effect on either species. Lime et al. (1994) further added that "this is not surprising considering the historic coexistence of these animals throughout most of their range."

Grizzly bears obtained ungulate meat primarily by preying on and scavenging rut-weakened and rut-killed elk *(Cervus elaphus canadensis)* and bison (*Bison bison*) in late summer and fall (Mattson 1997), by scavenging winter-killed elk and bison carcasses in spring[60] (Green et al. 1997) and by preying on elk calves in late spring and early summer (Gunther and Renkin 1990). Female grizzly bears with reliable high-energy foods have been shown to attain larger body size and litter sizes than their counterparts with less reliable food resources. However grizzly bears, and particularly female bears with cubs, may not be able to take advantage of the carrion during mid-winter due to their hibernation. In addition, Gunther and Smith (2004) documented two incidents where wolf packs probably killed grizzly bear cubs. Although no direct observation occurred for either incident, evidence from the carcasses and kill sites suggest that wolves killed both cubs. Both cubs were killed near the carcasses of ungulates that had attracted grizzly bears and wolves. In addition, the distances between canine puncture wounds in the hides of both cubs suggests that they were attacked by more than one animal, consistent with predation by wolf packs (Mech 1970, Paradiso and Nowak 1982), but not by solitary mountain lions (Dixon 1982) or black bears (Jonkel 1978, Pelton 1982).

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[59] Female grizzly bears with cubs were successful at usurping carcasses from wolves in only 1 of 5 observed interactions at carcasses (Gunther and Smith 2004). Although Gunther and Smith (2004) documented 1 case of a female grizzly bear with cubs usurping a carcass, interactions between wolves and grizzly bears with dependent young were rare during their study. The energy gained by female grizzly bears with dependent cubs that usurp wolf-killed ungulates is potentially significant, there are also potentially lethal risks associated with kleptoparasitism, as demonstrated by two cubs that were killed by wolves near ungulate carcasses.

[60] Deep snows lead to increased elk metabolic activity (Parker et al. 1984) and decreases access to forage, thereby causing elk to weaken and die (Houston 1982).

Foraging theory provides a context to understand and predict the amount of wolf-provisioned carrion available to scavengers. Elk carrion is an important winter food for many scavengers[61] in Yellowstone National Park (YNP) (Houston 1978). When gray wolves partially consume prey, they subsidize scavengers with a high calorie food. In addition, depending on weather conditions, wolves can change the timing of carrion availability from a more abundant resource at the end of severe winters to a more constant resource throughout the winter (Wilmers and Getz 2005, Wilmers and Post 2006). Carrion abundance before wolf reintroduction was primarily from abiotic factors (severe winters and snow depth) (Gese et al. 1996), but is now primarily from wolves (Mech et al. 2001, Wilmers et al. 2003*b*).

Wilmers et al. (2003*b*) hypothesize that wolves found in the Lamar Valley of YNP would: 1) increase the abundance, 2) alter the timing, 3) decrease year-to-year variation, and 4) change of the variance of carrion available to scavengers. During mild winters, Wilmers et al. (2003*b*) model predicts that wolves would increase the amount of carrion available to scavengers from February to March. During severe winters, wolf predation would result in a small increase in carrion overall, with a decrease in mid-winter carrion, when conditions were most severe, and a small increase in carrion at the end of winter, when conditions were milder. Wilmers et al. (2003*b*) also reported that as wolf pack size changes, the amount of carrion available to scavengers also changes. Initially the amount of carrion available to scavengers would increase as wolf numbers increase and kill more but would decline as wolf numbers continue to increase as wolves would consume a higher percentage of their kills. Wolf packs of intermediate size kill at a relatively high rate but consume only part of the carcass, thereby maximizing the amount of carrion for scavengers in YNP. To the extent wolf removals through depredation control efforts might reduce larger packs to more intermediate sized packs, these wolf removals might therefore contribute to an increase in the availability of wolf-killed carrion. But with the limited number of wolf removals that have occurred and are expected to occur in the GYA, there would likely be little, if any effect on carrion availability to grizzly bears or other scavengers.

Comment: Fair chase hunting would be fine with me but not aerial shooting or gassing.

Response: The list of evaluation criteria discussed on page 51 (at Section 3.3.3) of the draft EA to determine what control methods should most appropriately be employed does not include "fair chase" considerations. Wildlife damage management practitioners try to resolve problems as quickly, selectively, and efficiently as possible, within a host of variable constraints, in order to reduce the amount of damage occurring as quickly as possible and at the lowest cost. The limitations on using sport hunting to resolve wolf damage problems were discussed at Section 3.5.6 of the draft EA. The rationale for using aerial shooting and the gas cartridge as control methods was discussed at Section 3.4.4 of the draft EA.

Comment: Wolf damage management methods such as the foothold traps and neck snares could impact non-target species populations, especially T&E species.

Response: This issue was addressed in Sections 2.4.4 and 4.4 of the EA. These sections discuss information on non-target species populations, including T&E species, and analyze impacts of wolf damage management on them. Standard operating procedures to avoid taking non-targets, including species of concern and T&E species in predator damage management were addressed in Section 3.6. Monitoring is conducted annually to determine how many, if any, non-target animals are taken.

[61] Ravens *(Corvus corax),* bald eagles *(Haliaeelus leucocephahis),* golden eagles *(Aquila chrysaetos*), black-billed magpies *(Pica pica),* coyotes *(Canis latrans),* grizzly bears *(Ursus arctos),* and black bears *(Ursus americanus)* are each frequent visitors at wolf kills (Wilmers et al 2003b) and use carrion for survival and reproductive success (Wilmers et al 2003b, Crabtree and Sheldon 1999, Blanchard 1987, Newton et al 1982, Swenson et al 1986, Dhindsa and Boag 1990).

Comment: Wolf damage management has significant potential threats to human health and safety that were not addressed in the EA. Aerial gunning has significant impacts on human health and safety from accidents.

Response: As indicated at Section 4.4.1.3 of the EA, the greatest risks associated with WS wolf damage management methods, including aerial shooting, are incurred by the WS employees who implement those methods. WS is unaware of any impacts to public health or safety associated with implementation of WS wolf damage management methods in Idaho or in any other state. WS aerial operations employed in predation management typically occur in relatively remote areas with no or very low human presence on the ground. USDA (1994-Appendix P) conducted a risk assessment for methods used in wildlife damage management and concluded there was very little, if any, risk to the public from WS aerial hunting activities. Other prior analysis of aircraft accidents by WS has 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). Therefore, we find no reason to believe that aerial operations used in wolf damage management present any significant risk to public health or safety.

Comment: The EA relied on dated science that was biased towards "old ways" of doing things (anachronistic view).

Response: WS relies on the best available science to complete analyses. Sometimes studies may be greater than 10 years old, but the findings are still relevant and current, and new studies may not be available.

Comment: There are technologies being developed in Europe to protect livestock which involve broadcasting specific wolf calls which "claim" that area as part of a wolf pack's territory and turns away new wolves from entering that territory.

Response: Chapter 3 describes all of the currently used management methods used for wolf damage management in Idaho. Some methods are implemented by the producer while others are implemented by WS. The NWRC, the research arm of WS, continues to test and develop new methodologies with 70% or more of their effort focused to nonlethal techniques. NWRC researchers continually monitor current research to develop or refine new methods. The USFWS, IDFG and WS use wolf vocalizations to assist in monitoring and surveying wolves and as a method to lure wolves into an area for a management action to be conducted. Currently, a graduate student is conducting research on the potential utility of using recorded wolf howls and bio-fencing to move wolves away from rendezvous sites. That research is not yet completed, but if results indicate this may be an effective method, WS would consider incorporating this technique in appropriate circumstances as part of an integrated approach to reducing wolf damage problems.

Comment: Consideration should be given to relocating some of the wolves to areas that are now overrun by deer and don't have natural predators and where deer are spreading Lyme disease to domestic pets and their owners.

Response: The Idaho legislature passed a law in 2009 (Idaho Code 36-116) which required the IDFG to contact all other fish and game departments in the county to see if any of them would be willing to accept any of Idaho's wolves. No other states in the U.S. were willing to accept any of Idaho's wolves. As indicated at Section 1.3.1 of the draft EA, the USFWS has provided rationale for why relocation of NRM wolves is no longer considered an appropriate management option (70 FR 1286). Relocating recovered/healthy populations of wildlife can be expensive, time consuming, and finding appropriate

places for wolves to be relocated can be difficult and is not necessary for the species to survive or thrive. Further, relocation of wolves captured by WS for causing damage may cause similar problems at a new location, and may also involve stress to the relocated animal which may result in poor survival rates. Relocated individuals may also leave the area where they are released and return to former sites. Because of these reasons, the agencies have opted not to relocate wolves when in conflict with human interests, but rather to use those funds for the benefit of other more imperiled species.

Comment: A Nonlethal Before Lethal Methods Alternative should be considered specifically requiring that: 1) cooperators show evidence of sustained and ongoing use of nonlethal/husbandry techniques aimed at preventing or reducing predation prior to receiving services from WS, 2) WS would use or recommend, as a priority, nonlethal techniques in response to a confirmed damage situation, and 3) lethal techniques would only be used when the use of nonlethal methods failed to keep damages below an acceptable level.

Response: This Alternative is now considered in Section 3.5.7 of the revised EA.

Comment: As proposed, this action would threaten recovery by impeding genetic connectivity on a population-wide basis and recovery of wolves at the site-specific level of the Lolo region itself.

Response: As discussed previously, WS only conducts wolf management activities with the approval of the appropriate management agency, either USFWS or IDFG. The responsible management agency would monitor wolves to determine if genetic connectivity is a concern. As discussed in Section 4.1.1.2, there appears to be sufficient wolf habitat connectivity between Canada, northwestern Montana, GYA and Idaho to ensure exchange of ample numbers of dispersing wolves to maintain demographic and genetic diversity in the NRM wolf population (Oakleaf et al. 2006, Carroll et al. 2006, vonHoldt et al. 2008, vonHoldt et al. 2010). In addition, the USFWS-approved Montana (Montana Wolf Management Advisory Council 2003) and Idaho (ILWOC 2002, IDFG 2008*a*) State wolf management plans commit to maintaining the metapopulation structure and maintaining sufficient genetic diversity to ensure the long-term viability of the wolf population.

IDFG adopted a Predation Management Plan in 2003 for the Lolo and Selway Zones which proposed an adaptive elk-wolf management strategy in the Lolo Zone. Prior to ESA protections being reinstated for wolves, the wolf population in the Lolo Zone was planned to be managed through regulated public hunting**.** Since wolves have been provided protection by the U.S. Federal District Court in Missoula, Montana (Defenders of Wildlife et al. v. Salazar, CV 09-77-M-DWM and Greater Yellowstone Coalition v. Salazar, CV 09-82-M-DWM), which vacated the delisting of the NRM DPS gray wolf, public hunting seasons have been suspended. IDFG has stated that, if approved, the wolf removals in the Lolo region will occur even without assistance by WS. Therefore, WS has no ability to affect this particular environmental outcome with any decision we could make as a result of this EA process.

Comment: To date, no conclusive evidence has been published which shows that connectivity between the GYA recovery area and central Idaho and northwest Montana has been achieved.

Response: As discussed in Section 4.21.1.2, there appears to be enough habitat connectivity between occupied wolf habitat in Canada, northwestern Montana, GYA 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). Wolf movements between Canada and northwestern Montana have been documented from radio-telemetry monitoring (Pletscher et al. 1991, Boyd and Pletscher 1999, Sime et al. 2007) and wolf movement between Idaho and Montana, and at least five wolves dispersing into the GYA have occurred (71 FR 6634). In addition, the USFWS approved Montana (Montana Wolf Management Advisory Council 2003) and Idaho (ILWOC

2002, IDFG 2008*a*), State wolf management plans commit to maintaining the metapopulation structure and maintaining sufficient genetic diversity, by various methods, including relocation if necessary, to ensure the long-term viability of the wolf population.

Comment: The EA needs to discuss how WS determines which wolves are the offending wolves when conducting control actions.

Response: This issue was addressed at Section 2.4.8 of the draft EA.

Comment: The EA needs to include a cost-benefit analysis for all the alternatives being considered.

Response: NEPA does not require preparation of a specific cost-benefit analysis, and consideration of this issue is not essential to making a reasoned choice among the alternatives being considered. As indicated at Section 3.3.3 of the revised EA, the costs of damage management actions are only one of the multiple variables considered in determining how to implement individual damage management actions.

Comment: The EA needs to analyze how WS plans to use radio-collars, the impacts of radio-collars to wolves, and the impact of the simplification of wolf control efforts associated with using radio-collared wolves.

Response: WS and the other agencies involved in wolf management have routinely relied on the use of radio-collars and radio telemetry equipment in wolf monitoring, research and management throughout the period of wolf recovery. Use of radio-collars on wolves was discussed at Sections 1.5.4, 2.4.8, 3.4.1, 4.1.1.2, and 4.4.1.2 of the draft EA. Having radio-collars on wolves can help facilitate population monitoring and identification of wolf home ranges, and can help identify individual depredating wolves or wolf packs. Knowledge gained through radio telemetry can help ensure that the appropriate wolf packs are being targeted during control actions, and having radio-collars on potentially depredating wolves can help increase the effectiveness of nonlethal measures to deter wolf predation on livestock.

Comment: The EA needs to include an alternative which eliminates aircraft from WS' arsenal of control methods.

Response: Aerial operations are among the most efficient tool for quickly resolving wolf damage situations, and are virtually 100% selective for target species. Therefore, we believe it would be counterproductive to effective resolution of wolf damage problems and to the goal of minimizing take of non-target species to the extent practical if we were to eliminate aerial operations. Therefore, we have decided not to analyze this alternative in detail.

Comment: The EA fails to adequately analyze how its control actions will impact public and private research and monitoring of wolves.

Response: Individuals and institutions involved in conducting any research or monitoring of wolves in Idaho should be aware that individual wolves and/or wolf packs involved in depredations on livestock are subject to removal through WS control actions. Although wolf removals might conceivably impact some research projects to some degree, the projects are undertaken with the recognition that wolf removals may occur, and this possibility is considered in the development of research projects.

Comment: Wolves should have never been reintroduced because we will suffer the same problems as before they were removed.

Response: The USFWS reintroduced wolves into central Idaho and GYA starting in 1995 (USFWS 1994). The USFWS wolf reintroduction program is outside the scope of any decision WS could make.

Comment: The red wolf (*Canis rufus*) reintroduction program in North Carolina has been successful not only in restoring wolf populations, but also in working with local residents. Maybe the Idaho government should use North Carolina as an example.

Response: When wolves were reintroduced in central Idaho, the USFWS, Nez Perce Tribe and WS conducted outreach meetings in affected local areas to help local residents understand how wolves in Idaho were being monitored and managed, and how conflicts could be dealt with. Wolf recovery in Idaho has far exceeded the established biological recovery goals, and the state of Idaho has demonstrated it can successfully manage wolves if allowed to do so.

Comment: BLM's horse round-up is appalling.

Response: Many commenters referred to the BLM horse round-up. BLM's horse round-up is clearly outside the scope of the EA.

Comment: WS needs to conduct coyote, bear, or mountain lion damage management.

Response: The EA was focused on one aspect of the Idaho WS Program - wolf damage management - which was discussed throughout the EA. We believe that the scope of the EA is fully described and, therefore, all other wildlife damage management activities are outside the scope of the EA.

Comment: Human overpopulation is the primary cause of most of our problems.

Response: Idaho WS has no way to affect the human population and this issue is outside the scope of the EA.

Comment: Wildlife, especially including T&E species such as wolves and grizzlies, should have priority over domestic animals such as cattle on public lands. Livestock should not be grazed on public lands.

Response: The WS program is non-regulatory and does not administer any grazing programs or make decisions about whether a grazing allotment is leased to a livestock producer or saved as critical habitat for a T&E species. This issue is outside the scope of this EA.

Comment: Overdevelopment and habitat loss are the biggest problems.

Response: WS cannot determine or dictate how landowners develop their lands. This issue is outside the scope of the EA.

Comment: WS used the pesticide Arsenal/imazapyr in New Mexico killing entire ecosystems.

Response: WS does not use the herbicide imazapyr and we are unsure who the commenter is referring to. This issue is outside the scope of the EA.

Comment: We have concerns about issues such as use of DDT, Love Canal, oil spills (BP), eliminating the natural coastal barrier along the gulf coast precipitating the Katrina disaster, and climate change due to greenhouse gas.

Response: These environmental events, while a concern, are not within the scope of the EA.

Comment: Mining activities (*e.g.*, boreal forests and wetlands of Alberta for tar sands oil extraction, Kennecott Mining Corporation activities in the Upper Peninsula of Michigan) and the Gulf oil spill have had a devastating impact on our environment.

Response: The WS program is non-regulatory and has no involvement in any of these actions. Thus, these activities are outside the scope of the EA.

APPENDIX D

LITERATURE AND REFERENCES CITED

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