



**Meeting Report  
Wolf-Livestock Stakeholder Subgroup  
January 7, 2014**

California Dept. of Fish and Wildlife  
Wildlife Branch 2<sup>nd</sup> Floor Conference Room  
1812 9<sup>th</sup> St.  
Sacramento, CA 95811



**California Department of Fish and Wildlife**

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## **1.0 Introduction**

On January 7, 2014 the Wolf-Livestock Interactions Subgroup (WLIS) of the California Wolf Stakeholder Working Group (SWG) convened in the California Department of Fish and Wildlife's Wildlife Branch conference room in Sacramento. This was the third meeting of the WLIS which was established to help the California Department of Fish and Wildlife (CDFW, Department) develop a consensus-driven framework of management strategies for effectively dealing with potential wolf impacts on California's livestock populations.

## **2.0 Meeting Objectives and Mechanics**

The purpose of the meeting was to continue building consensus through discussion of potential topics for inclusion in a Wolf-Livestock Interactions chapter in the California Wolf Plan.

Objectives of the meeting as initially planned were:

1. Introductions and Housekeeping
2. Review November meeting (What did we accomplish? Comments on meeting report?)
3. Review/discuss December 27 version of State by State Comparison of Management Strategies
  - a. Review updated items on this version
  - b. Identify any inaccurate or incomplete statements
  - c. Identify any other elements/categories which will be useful to developing a California strategy
4. Discussion of December 27 version of lessons learned document. Note changes made based on November meeting and continue discussion beginning with item 9.
5. Methods (a discussion of how we can reach an endpoint and accomplish objectives)
6. Planning (develop a work plan strategy, including products and timeframes)
7. Next steps (scheduling, commitments)

The meeting was attended in person by nine stakeholders and five CDFW staff. Appendix A provides a list of participants, their affiliations, and their contact information. The agenda for the meeting is captured in Appendix B.

The meeting began with introductions led by Mr. Mark Stopher, who serves as chair of the Wolf-Livestock Subgroup (WLIS). Mr. Stopher, Ms. Karen Kovacs, CDFW Wildlife Program Manager and overall wolf planning lead, and Dr. Eric Loft, CDFW Wildlife Branch Manager then provided updates. Topics included the date and location for the next general stakeholder group meeting, the facilitation contract, OR7, the wolf

management plan, and the wolf status review. The bulk of the meeting consisted of discussing the November, 2013 WLIS meeting report, and updates to the Draft Wolf-Livestock Interactions: State-By-State Comparison of Management Strategies (Appendix C), and the Draft Overview of Lessons Learned from the Western United States Regarding Wolf-Livestock Interactions (Appendix F). These documents were developed by Mr. Stopher as a means of facilitating discussion among the subgroup members, to inform them of strategies used in other states, and to attempt to reach consensus on strategies the Department may adopt for managing wolf-livestock interactions in California. The group also engaged in a brief discussion of what management strategies they can begin discussing for California, in the absence of specific conservation goals for wolves. The meeting concluded with a scheduling of the next subgroup meeting on February 3<sup>rd</sup>, 2014.

### **3.0 Meeting Outputs**

#### **Introductions and Updates**

After brief introductions in which each member stated their names and affiliations, Mr. Stopher, Ms. Kovacs, and Dr. Loft provided the group with some updates.

##### ***Next Meeting***

The next meeting is scheduled for January 29, 2014 at the Blood Source building in Redding, and will be for the full stakeholder group.

##### ***Facilitation Contract***

The Department continues to work on finalizing a contract for a meeting facilitator to assist with developing agendas, acquiring venues, and other aspects of holding these meetings. There were four bids from which one was selected, but it was discovered that this bidder was out of compliance with state requirements, so the Department awarded the contract to the next bidder. This prompted the first awardee to file a protest, so the effort has been delayed for legal review. It is unlikely there will be a facilitator in place for the January 29<sup>th</sup> meeting.

##### ***OR7***

OR7 is in the vicinity of Howard Prairie in Oregon. He was in Butte Valley, California for about a day and a half in December, and seems to be generally following the ungulate migration.

## ***Wolf Management Planning***

The first draft of the background chapter for the wolf management plan is completed and will be shared at the next full stakeholder meeting. The wolf-human interactions, and wolf-other wildlife interactions chapters are underway. These will likely not be extensive nor require significant time to complete.

## ***Wolf Status Review***

The draft status review has gone through the external peer review process, and has been sent to executive branch. Some of the comments from reviewers were more substantive than others, and there were some opinions that we should include information in the status review that the Department disagreed with. In particular, habitat models from other states may not be appropriate models for determining suitable habitat for wolves in California. There is a Fish and Game Commission (FGC, Commission) agenda meeting today during which they will decide if the status review will be presented to the Commission at their February meeting. If the document is presented at the Commission meeting in Sacramento in February, it will be discussed at the April meeting in Ventura.

The topic of suitable habitat for wolves prompted one stakeholder to ask about the concept of critical habitat, which he was concerned about due to possible constraints on land use. Dr. Loft and Mr. Stopher explained that critical habitat is a federal designation that requires Section 7 consultation to determine if land modifications may jeopardize the continued existence of the listed species. For this discretionary decision to be made, the United States Fish and Wildlife Service (USFWS) has to have designated critical habitat for wolves in California, which they have not done, and there is no parallel requirement under California state law.

## **Review of November Wolf-Livestock Interactions Subgroup Meeting Report**

Stakeholders suggested several changes to the November meeting report. After some discussion, those changes will be made as listed below:

- With respect to the wolf status review, change “heard by” the Fish and Game Commission to “received by” or “presented to” (pg. 4)
- Correct Noelle Cremer’s email address
- Re-word the portion of page 7 where lethal take of wolves caught in the act is discussed, and place a period after “where wolves remain federally listed.”

- In the last paragraph on page 7, insert the word “private” in front of “individuals” to be consistent with the previous use of the phrase
- Also on page 7, change “once the population reaches established conservation goals where listing as threatened or endangered is not warranted” to read “once the population reaches established conservation goals and the Fish and Game Commission has delisted the species...”
- In the first paragraph of page 10 change \$1.2 to \$1.2 million

## **Review/Discuss December 27<sup>th</sup> Version of State by State Comparison of Management Strategies**

This document was last presented to the Wolf-Livestock Subgroup at their November, 2013 meeting. It lists different strategies used by the five western states currently managing wolves. These states, Montana, Idaho, Wyoming, Oregon, and Washington, differ in their legal and regulatory responsibilities for wolves, due primarily to differing wolf status under federal and state Endangered Species legislation. Future federal and state listing scenarios for wolves in California are uncertain. The U.S. Fish and Wildlife Service (USFWS) has proposed to delist gray wolves throughout their range in the U.S. with the exception of the Mexican gray wolf (*Canis lupus baileyi*). In addition the FGC will be making a listing decision for wolves under the California Endangered Species Act (CESA) in early 2014. Consequently, Department staff wanted to present various management options that may be available in California under the various potential listing scenarios. The purpose of developing this comparison table was, therefore, to help the stakeholders and Department staff to reach a common understanding of the practices in use by other states in the western U.S., and ultimately to decide on approaches for California. During the November meeting, the group made recommendations for corrections and additional information in the document. The December 27<sup>th</sup> version, which incorporates those recommendations, was presented for further comment during the January 7, 2014 meeting, and represents Appendix C of this report. The following is a list of those additional recommendations:

- Number the rows for easier navigation and discussion
- Clarify portion that addresses lethal take of wolves in Oregon and Washington
- Add number of breeding pairs to each state’s approximate wolf population size to simplify comparing to state population objectives
- Make corrections to reflect accurate state wolf population objectives for east versus west sides of Oregon
- Add the alternate delisting criteria for Washington

- Add detail with respect to state managed livestock depredation compensation programs
- Add detail with respect to state managed programs for non-lethal proactive measures to reduce depredation
- Amend language with respect to lethal take of wolves in the act in Oregon: differentiate between phase 1 and phase 2
- Clarify the extent to which lethal take of wolves in the act of depredating domestic animals by private parties is affected by wolf legal status in Washington
- Add “and confirming” to “which entity is responsible for investigating wildlife depredations?”
- In the row “does swa relocate depredating wolves?” change to “does the swa relocate wolves depredating livestock or domestic animals,” change the answer for Oregon to “no” and add a row for “does swa use translocation for conservation” or “as a management tool”
- Revise Washington’s budget for wolf management to \$1.2 million over 2 years
- Create a different table to lay out state compensation programs

During the discussion of this document, significant time was spent explaining the phased approach to state delisting of wolves that is being undertaken in Oregon. The approach is complex in that wolves are federally delisted in the eastern one-half of the state, but will remain federally listed in the western one-half until population goals are met there. However state law prevents removing a species from the state endangered species list from a portion of the state. Because the state needed greater flexibility for managing wolves which were depredating livestock in eastern Oregon, they developed a phased approach to delisting. When Phase 1 goals are reached (minimum of 4 breeding pairs for 3 consecutive years) in eastern Oregon, the state can begin the statewide delisting process. Then under rule, any wolves in western Oregon would still be managed as if listed until they too reached Phase 1 goals. The diagram in Appendix D was drawn by Amaroq Weiss to help explain the approach to the other stakeholders and Department staff.

The Washington approach to wolf recovery is also complex. As in Oregon, wolves in Washington are federally delisted in the eastern one-half of the state, remain federally listed in the western one-half, and are state endangered statewide. The state has established three recovery regions, and they will reclassify wolves from state endangered to state threatened when each recovery region supports two pairs for at least three years. They will again reclassify from threatened to sensitive when each recovery region supports four breeding pairs for three years. Reclassifying allows for greater flexibility in managing wolves, and the state may consider translocating animals from one recovery region to another to more quickly reach goals that allow this to occur. Appendix E displays Washington’s management regions.

## Discussion of December 27<sup>th</sup> Version of Lessons Learned Document

This document represented the next iteration of the “Lessons Learned” document that was discussed at the previous Wolf-Livestock subgroup meeting in November, 2013. The purpose of the document is to develop the group’s understanding of other states’ experiences with respect to managing wolf-livestock interactions. Mr. Stopher elicited comments and recommendations from the stakeholders at the November meeting. The December 27<sup>th</sup> version, which incorporates those recommendations, was presented for further comment during the January 7, 2014 meeting, and represents Appendix D of this report. The following is a list of those additional recommendations:

- Reframe #3g to reflect the feasibility of non-lethal preventive measures in various scenarios in which livestock occur
- Remove #3h, emotional stress component
- Rephrase #11 to say “...approximately 53% of minimum known wolf population...” and to clarify that hunting and trapping of wolves were not related to wolf depredations of livestock, but rather legal hunting and trapping seasons established by the states
- Create a general statement for 11, and then turn 11 through 14 into 11a, 11b, 11c, 11d sub-statements
- Clarify #12 by including the calculation for how the wolf population figure of 2,584 was obtained
- In Table 1, the row heading “Agency lethal control wolf mortality” should indicate that not all of these agency control mortalities were a result of wolf depredations on livestock
- Change #16 to read “confirmed depredation by wolves has been stable for cattle but variable for sheep...”
- Consider changing #17. One suggestion was “Current technology allows lethal control actions to be used on individual wolves or packs reliably determined to have been engaged in livestock depredation; tying in the technology part”
- Consider combining 18, 29, 20 into one item with subsections; include an element of time

During discussion of this document at the November meeting stakeholders pointed out that USDA agricultural statistics reports indicated livestock depredations caused by wolves in parts of the U.S. where wolves do not occur. Noelle Cremers followed up on this concern, and presented a clarification to the group today. The national USDA reports are a compilation of data provided to them by their state offices. The state offices



generate the data via annual surveys to randomly selected agricultural producers within their state. Some of these producers may have experienced livestock depredations while their herds were grazing in another state. These producers then report the depredations to their home state USDA office, which may be a state without wolves, while the depredation occurred in a state that does have wolves. The takeaway message was that the USDA reports provide good general information that likely has some application to this group, but there are nuances in the data that may be confounding.

## **Methods: A Discussion of How We Can Reach an Endpoint and Accomplish Objectives**

This section was a general discussion about the direction this WLIS should take once the Lessons Learned and State-By-State Comparison tables are completed. These two documents are intended to inform the group about what other western states have experienced with wolf recolonization, in order to develop a strategy for California. The Department hopes the stakeholders will help them to populate the comparison table with California's approach to those management needs listed. Questions and comments from stakeholders included:

- How often should we meet in order to have a draft management plan by June, 2014 as suggested on the schedule?
- Do we want to bite off individual topics for our meetings versus going through multiple issues at each meeting?
- We need more information on what California is going to do in terms of management phases and population targets in different regions, etc. before we make a recommendation on specific strategies like nonlethal requirements, compensation, etc.
- If in California we don't have a lot of habitat based on all factors, then the need for a compensation program is lower
- Conservation objectives for wolves will determine where we need to be more focused on management tools and what they need to be
- Department needs to look at resources and technology to make notification of wolf activity to operators so they can take precautionary measures; Oregon is serving both sides pretty well by informing landowners
- Some members of the public will view giving money to livestock industry through a compensation program as a corporate subsidy; this doesn't go down well to a lot of people; there's no money for so many things but money for a corporate subsidy
- We've had lots of discussion on the role of the Department in confirming depredation; can you provide us with what your capacity looks like?

Ms. Kovacs explained that the outcome of the work to develop the Wolf-Ungulate Interactions chapter will affect what we establish as our goals and management strategies for wolves in California. That work is still underway and includes the habitat modeling which is incomplete. Adequate habitat will include areas where there are fewer humans and roads, and adequate deer and elk. But at present we do have enough information to discuss whether and how to develop nonlethal and compensation programs. The group can discuss some key elements without specific goals and objectives for wolf numbers and distribution. Mr. Stopher further stressed the value in having some strategies in place soon, even in the absence of specific wolf objectives. He proposed that we the group discuss a nonlethal strategy for the next meeting, and he will work to gather some information for that discussion.

## **Summary and Wrap-up**

The meeting ended with a decision to meet next on February 3<sup>rd</sup>, 2014 in Sacramento.

## **Additional Action Items**

1. Amaroq Weiss will provide the group with the text of the recent Washington State Rule that amended the WA wolf plan with language about lethal take of wolves
2. Determine the role of the sheriff if any in confirming depredation causes
3. Get the status review peer review comments into the document library
4. Bob Timm will forward the article from Beef Magazine on sublethal effects of wolves on cattle to Karen Kovacs
5. Noelle Cremers will forward the Master's thesis on reduced weaning weights from Montana to Karen Kovacs
6. Justin Oldfield will email Karen Kovacs with his specific question about the Department's capacity to deal with investigating a suspected wolf depredation if one were to occur today

**APPENDIX A  
WORKSHOP PARTICIPANTS**

<b>Name</b>	<b>Affiliation</b>	<b>Email</b>
<b>Stakeholders</b>		
Noelle Cremers	California Farm Bureau	<a href="mailto:ncremers@cfbf.com">ncremers@cfbf.com</a>
Robert Timm	UC Agriculture and Natural Resources	<a href="mailto:rtimm@ucanr.edu">rtimm@ucanr.edu</a>
Pat Griffin	CA Ag Commission – Siskiyou County	<a href="mailto:pgriffin@co.siskiyou.ca.us">pgriffin@co.siskiyou.ca.us</a>
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<b>California Department of Fish and Wildlife Staff</b>		
Karen Kovacs	Wildlife Program Manager, Region 1	<a href="mailto:karen.kovacs@wildlife.ca.gov">karen.kovacs@wildlife.ca.gov</a>
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Karen Converse	Environmental Scientist – Wolf Program	<a href="mailto:karen.converse@wildlife.ca.gov">karen.converse@wildlife.ca.gov</a>
Mark Stopher	Senior Policy Advisor – CDFW	<a href="mailto:mark.stopher@wildlife.ca.gov">mark.stopher@wildlife.ca.gov</a>
Craig Stowers	Game Program Manager	<a href="mailto:craig.stowers@wildlife.ca.gov">craig.stowers@wildlife.ca.gov</a>

## **APPENDIX B**

### PROPOSED AGENDA

Wolf-Livestock Subgroup

10-4 PM January 7, 2014

CDFW Wildlife Branch, Second Floor conference room

1812 Ninth Street, Sacramento, CA

888.379.9287 Participant Code 476990

Host Code 536467

1. Introductions and Housekeeping
2. Review November meeting (What did we accomplish? Comments on meeting report?)
3. Review/discuss December 27 version State by State Comparison of Management Strategies
  - Review updated items on this version
  - Identify any inaccurate or incomplete statements
  - Identify any other elements/categories which will be useful to developing a California strategy
4. Discussion of December 27 version of lessons learned document. Note changes made based on November meeting and continue discussion beginning with item 9.
5. Methods (a discussion of how we can reach an endpoint and accomplish objectives)
6. Planning (develop a work plan strategy, including products and timeframes)
7. Next steps (scheduling, commitments)

## **APPENDIX C**

### **WOLF-LIVESTOCK INTERACTIONS: STATE-BY-STATE COMPARISON OF MANAGEMENT STRATEGIES (DECEMBER 27<sup>TH</sup> VERSION)**

WOLF-LIVESTOCK INTERACTIONS, STATE-BY STATE COMPARISON OF MANAGEMENT STRATEGIES

Indicated management actions by the State Wildlife Agency (SWA) are for those lands where Federal Endangered Species Act listing does not preempt SWA authority.

Element/State	Montana	Idaho	Wyoming	Oregon	Washington	California
Federal Listing Status	Not listed	Not listed	Not listed	Endangered in western <u>2/3 of the state. Oregon</u> Unlisted in eastern Oregon ( <u>east of Hwys 395/78/95</u> )	Endangered in western 2/3 of the state. Unlisted in eastern Washington	Endangered
State Listing Status	Designated as a "Species in need of Management)	Designated as a big game species	Trophy game animal in NW part of State. Predatory animal in balance of State (some seasonal overlap exists)	Endangered <u>Oregon Plan divides state into eastern and western management zones defined by Hwys 97/20/395</u>	Endangered	Nongame mammal <u>CESA Candidate</u>
Approximate Wolf Population Size (Jan 1, 2013)	625 (minimum) with ≥ 147 packs	Estimated at 683 with ≥ 117 packs.	277 (minimum) with ≥ 43 packs	46 (minimum) in 6 known packs	51 (minimum) in 9 known packs. Estimated population is 101 wolves.	one
<u>State wolf population objectives</u>	<u>Minimum Objectives: Population: 150 Breeding Pairs: 15</u>	<u>Minimum Objectives: Population : 150 Breeding Pairs: 15</u>	<u>Minimum Objectives: Yellowstone NP and Wind R. Reservation: Population: 50 Breeding Pairs: 5 Balance of State: Population:</u>	<u>Phase 1 – Conservation Population Objective: 4 breeding pairs for three consecutive year in both E. and W. Oregon. Phase II - Management</u>	<u>Established 3 recovery regions (RR). Reclassify to Threatened: 2 breeding pairs in each RR for 3 years. Reclassify to Sensitive: 4 breeding pairs in each</u>	<u>TBD</u>

Element/State	Montana	Idaho	Wyoming	Oregon	Washington	California
			<u>100 Breeding Pairs: 10</u>	<u>t Population Objective (delisted) 7 breeding pairs for three consecutive years in both E. and W. Oregon Phase III – maintenance objective: TBD</u>	<u>RR for 3 years. Delist: 4 breeding pairs in each RR for 3 years, and 3 more breeding pairs anywhere.</u>	
Is there a State managed livestock depredation compensation Program?  (Comment by MS: Develop details on funding level, adequate or not, ratio for compensation, wolf only? May need a separate table for compensation programs)	Yes. Through the Montana Livestock Loss Board.	Yes	Yes, in NW part of the State.	Yes. A Wolf Depredation Tax Credit also exists (requires ODFW confirmation). <u>Fund also provides for pro-active non-lethal methods</u>	Yes	<del>To Be</del> <u>Determined</u> <u>TBD</u>
<u>Is there a state managed program for non-lethal proactive measures to reduce depredation ?</u>						
Is lethal take of wolves <u>by private parties while</u>	Yes (actual biting, wounding or grasping	Yes. Molesting or attacking	Allowed statewide	Yes, <u>by landowners or lawful occupants</u>	Yes, by livestock owners on private land	TBD

Element/State	Montana	Idaho	Wyoming	Oregon	Washington	California
wolf is “in the act” of depredating on livestock allowed?	livestock or domestic dogs).	livestock or domestic animals.		on their property if biting, wounding or killing livestock. Landowners may also take wolves chasing livestock in designated area of chronic depredation	or public grazing allotments	
Are wolf lethal take permits issued to private individuals?	Yes	Yes, where depredation is confirmed.	Yes	No in Phase I. Yes in Phase II. (until “management phase” is reached, i.e. 5-7 breeding pairs in state)	No (until delisted under State law)	TBD
Does SWA notify landowners of wolf presence?	Rarely	Limited to active den or rendezvous sites.	No	Yes	Yes	TBD
Are non-lethal control measures required before SWA authorizes permits lethal take of wolves?	No	No	No	Yes	Yes	TBD
Which entity is responsible for investigating livestock	USDA Wildlife Services	USDA Wildlife Services	SWA in NW Wyoming. Animal Damage Board or local	SWA (east of Hwys 395-78-95). USFWS, USDA Wildlife	SWA with support from USDA Wildlife Services or USFWS	TBD

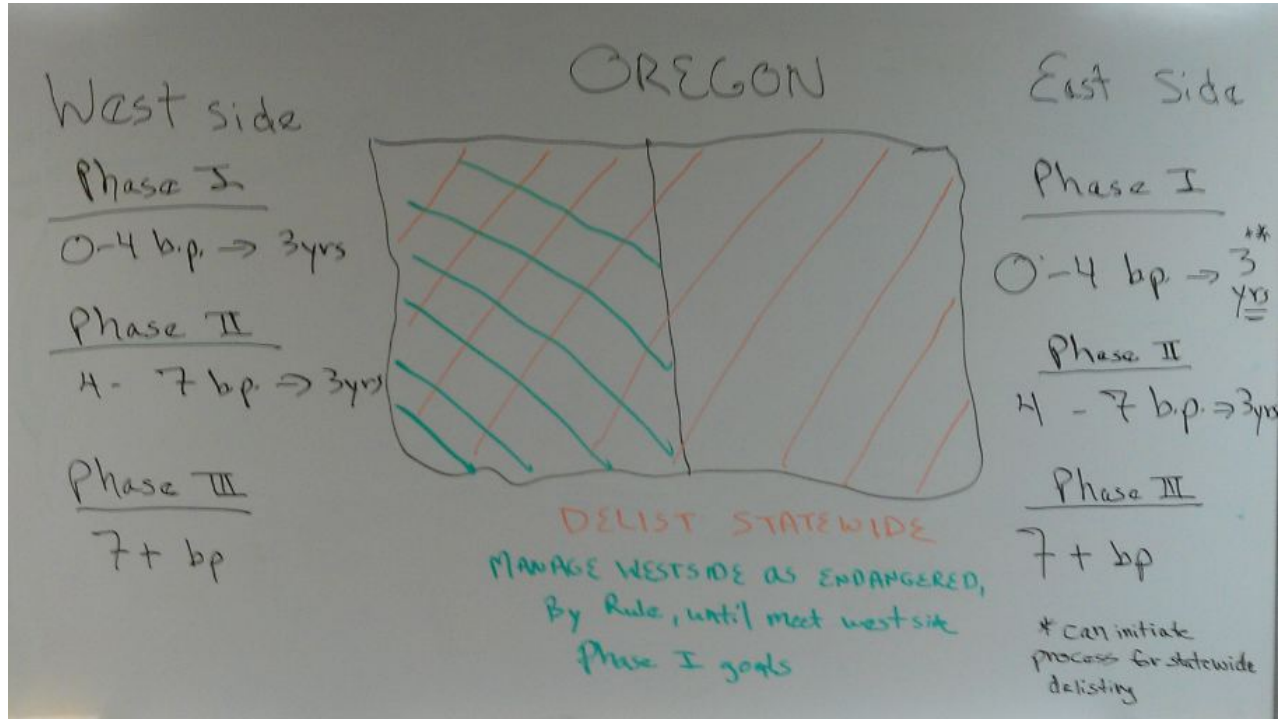


Element/State	Montana	Idaho	Wyoming	Oregon	Washington	California
depredation ?			Predator Management District in balance of state	Services or ODFW in western Oregon.  (Comment by MS: role of sheriff?)	(Comment by MS: Check status)	
Does SWA develop wolf-livestock conflict deterrence plans?	No	No	No	Wolf-Livestock Conflict Deterrence Plans are prepared in a designated "Area of Depredating Wolves".	SWA enters into Damage Prevention Cooperative Agreements with landowners	TBD
Is non-injurious harassment <u>of wolves by landowners</u> allowed?	Allowed – no permit required	Allowed – no permit required	Allowed – no permit required	Allowed – no permit required	Allowed – no permit required	TBD
Is non-lethal injurious harassment <u>of wolves by landowners</u> allowed?	Allowed – no permit required	Allowed – no permit required	Allowed – no permit required	Allowed with a permit	Allowed with a permit	TBD
Does SWA relocate depredating wolves?	No	No	No	Not for wolves known to have depredated livestock or pets	On a case by case basis	TBD
Does SWA provide technical support for non-lethal control methods?	Yes	Yes	Provided through Wyoming Animal Damage Board or local Predator Management	Yes	Yes. SWA enters into Damage Prevention Cooperative Agreements with landowners	TBD

Element/State	Montana	Idaho	Wyoming	Oregon	Washington	California
			t District			
SWA budget for wolf management  (Comment by MS: Breakdown if possible into staffing, operations, depredation components)	State law mandates \$900K/year. Current year (approximate) \$425 <u>K</u> from wolf tag sales, \$325 <u>K</u> Federal, and \$120K PR funds.	FY 2014 \$1.2 M total. Federal contribution was \$380 K this year	Approximately \$650 K. Federal contribution in 2012 of \$230 K.	2011-13 budget was \$608,269. (Unclear whether this is for one or two years).	Approximately \$1.4 million/year	Current - Zero

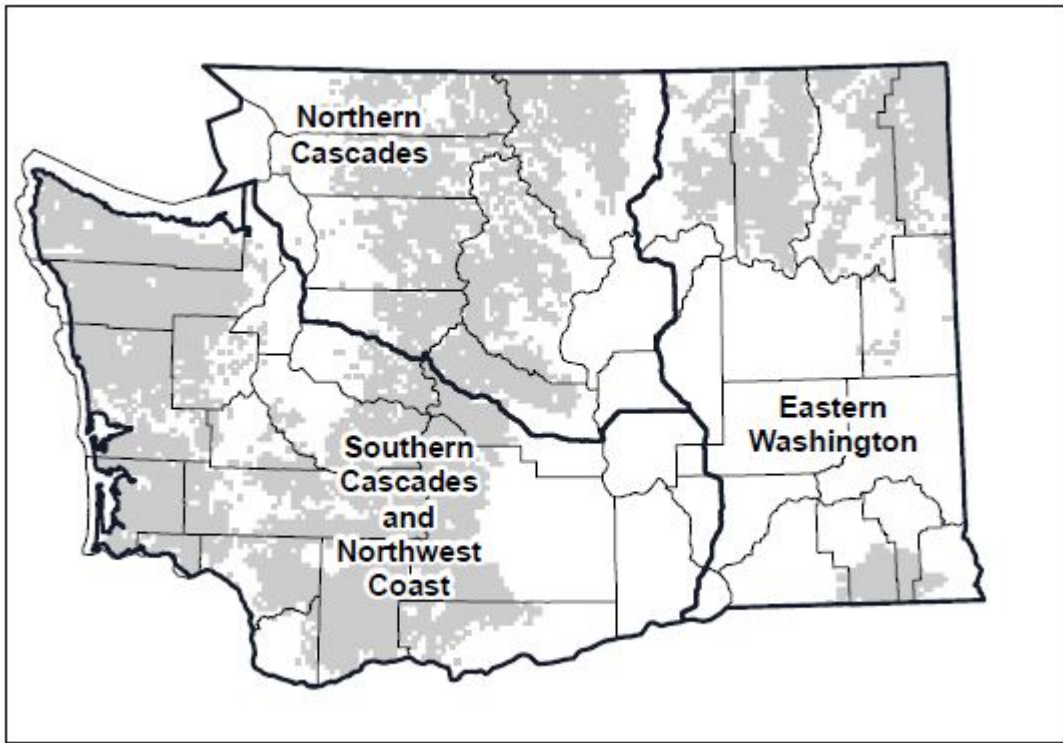
# APPENDIX D

## OREGON MANAGEMENT PHASES DIAGRAM



**APPENDIX E**

**WASHINGTON WOLF RECOVERY REGIONS**



**APPENDIX F**

**DRAFT OVERVIEW OF LESSONS LEARNED FROM THE WESTERN UNITED STATES REGARDING WOLF-LIVESTOCK INTERACTIONS (DECEMBER 27<sup>TH</sup> VERSION)**

1. Where wolves and livestock are sympatric, depredation by wolves on livestock has been a consistent result.
2. Where wolves and livestock are sympatric, ~~many but~~ not all; wolves and wolf packs, attempt to kill, or kill livestock. For example, in 2010, Montana reported that an average of 35% of packs were confirmed to depredate livestock. In 2012, the Fish and Wildlife Service estimates that approximately 28% of known wolf packs (in the northern Rocky Mountains Distinct Population Segment) were involved in at least 1 confirmed livestock depredation.
3. When characterizing the severity of wolf ~~depredation impacts~~ on livestock, geographic scale for the analysis, context (e.g. grazing practices and landscape conditions) and mechanism (i.e. lethal or non-lethal) of effect are important.
  - a. Depredation by wolves on livestock is a very small fraction (i.e. <1%) of livestock mortality from all causes when analyzed at a statewide scale.
  - b. Depredation by wolves on livestock is a very small fraction (i.e. <5%) of the overall depredation mortality by wildlife (e.g. coyotes, bears, lions) on livestock when analyzed at a statewide scale.
  - c. Depredation mortality by wolves on livestock can be ~~important significant~~ for individual livestock producers.
  - d. Sub-lethal effects of wolf presence, harassment and failed attempts to kill livestock can be ~~important significant~~ to individual livestock producers.
  - e. Sub-lethal effects can include reduced weights of livestock caused by increased vigilance, reduced foraging, ~~and~~ increased physical activity, ~~reduced reproduction~~; and non-lethal wounds.
  - f. Impacts to individual livestock producers through management efforts to avoid and minimize depredation by wolves can be important, in terms of time and financial costs.
  - g. Relative risk of depredation
  - f-h. Emotional stress.
4. Most livestock depredation by wolves is of cattle or sheep.
5. Depredation incidents on cattle generally take 1-2 animals/incident.

**Comment [MS1]:** My notes reflect that we recognized that while such effects are widely reported or at least hypothesized in the available literature there is very little empirical data to quantify these effects. I think this also applies to the next bullet (i.e. f.).

**Comment [MS2]:** My notes reflect some discussion of a possible bullet regarding the relative risk of depredation for different ranching practices. I am not sure we need to explicate this further here more than already exists in #3 above. However, this is a topic that should be described in some detail in the narrative of the wolf plan itself.

**Comment [MS3]:** Pat Griffin mentioned the emotional toll on ranchers of dealing with wolf depredation and I recall someone else mentioned the social breakdown of pack structure resulting from killing wolves and emotional stress for wolves that may result. I suggest we leave this out and agree these are probable but unquantifiable. Further I am not sure how to bound it. For example, would we also address emotional distress of ungulates, both wild and domestic from wolf predation? Ultimately I do not see management actions being proposed in the wolf plan to manage emotional stress.

<sup>1</sup> For purposes of this information, the western United States includes Wyoming, Montana, Idaho, Oregon and Washington.

6. Depredation incidents by wolves on sheep often result in much larger numbers of dead animals (compared to cattle).
7. Other livestock species, including goats, horses and llamas are rarely killed by wolves (i.e. 3-20/year).
8. Confirmed wolf depredation on dogs has varied between 2 and 25 animals/year for the last ten years.
9. Statistics based on “confirmed” wolf mortalities, through forensic evaluations under-count actual mortality, because:
  - a. Not all dead livestock are found.
  - b. Some dead livestock, when found, are consumed by scavengers to an extent that a conclusive determination of the cause of death is not possible.
10. ~~Statistics based on r~~Reports of wolf predation from livestock producers, including USDA NASS data, include instances where some other cause of death is ultimately determined or the cause of death cannot be determined. which are not confirmed with a forensic evaluation, likely overestimate actual mortality. For example, the following figure is presented in the 2010 Montana annual wolf report. The geographic context is not provided but the number of incidents suggests it is a multi-state compilation.

**Comment [MS4]:** Tabled the conversation after this point.

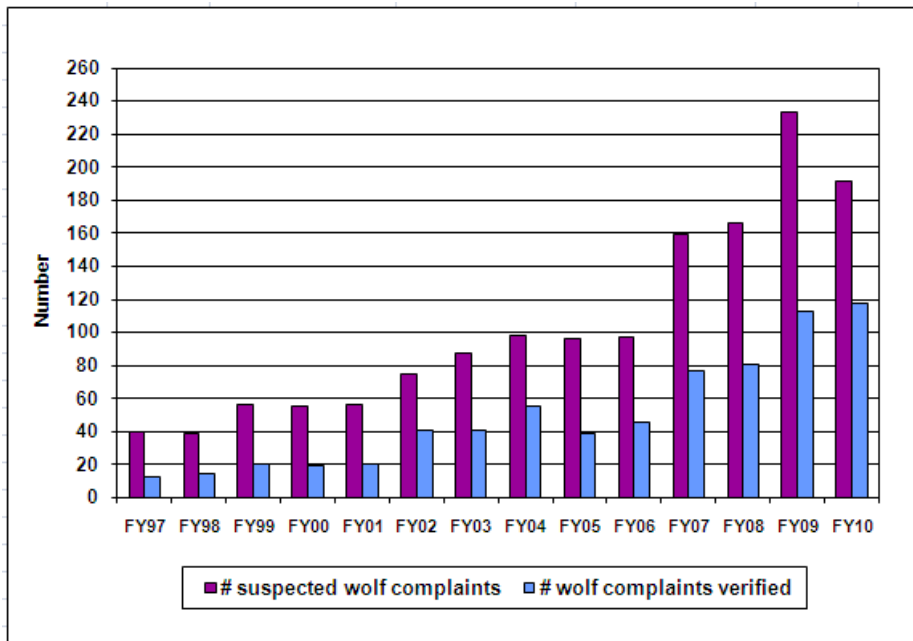


Figure 1. Number of complaints received by USDA Wildlife Services as suspected wolf damage and the percent of complaints verified as wolf damage, federal fiscal years 1997 – 2010. Federal fiscal years from October 1 to September 30.

Data in this table is consistent with an examination of depredation investigations conducted by Oregon Department of Fish and Wildlife, and available at [http://www.dfw.state.or.us/Wolves/livestock\\_loss\\_investigations\\_2012.asp](http://www.dfw.state.or.us/Wolves/livestock_loss_investigations_2012.asp). These reports demonstrate that forensic investigations of suspected wolf depredation often determine some other cause of death, or are unable to confirm wolves as the cause of livestock mortality.

11. Documented wolf mortality in 2012 by hunting, trapping, lethal control and other causes, removed approximately 50% of the wolf population known to exist at the beginning of the year (Table 1).
12. By combining the 2012 year end minimum wolf population with known mortality the absolute minimum number of wolves existing at some point in 2012 can be estimated. That number is 2,584 wolves<sup>2</sup>.

<sup>2</sup> The 2012 USFWS Annual Report estimates 2,569 but this does not take into account later population revisions.



13. Documented wolf mortality in 2012 reduced the year-end wolf population by approximately 5% from December 31, 2011, compared to December 31, 2012.
14. Numbers of wolf packs have increased and average pack size has decreased since hunting and trapping have been implemented.
15. Wolves killed by hunting and trapping may not have been involved in livestock depredation.
16. Confirmed depredation by wolves on cattle has been stable but variable for sheep over the past four years (see Table 1).
17. Lethal control actions on wolves can be focused on individual animals or packs reliably determined to have engaged in livestock depredation.
18. Non-lethal deterrent methods have successfully reduced wolf depredation on livestock in many applications.
19. Non-lethal methods are not always successful in preventing wolf depredation of livestock.
- ~~20.~~ In some cases, wolves become habituated to non-lethal deterrents and effectiveness may decline over time.

Table 1. Detailed Data by State for Cattle and Sheep Depredation, Wolf Populations and Wolf Mortality<sup>i</sup>

		<u>2007</u>	<u>2008</u>	<u>2009</u>	<u>2010</u>	<u>2011</u>	<u>2012</u>
<b>Cattle depredation</b>	Oregon	<u>0</u>	<u>0</u>	1	8	13	4
	Washington	<u>0</u>	<u>0</u>	0	0	0	7
	Idaho	<u>53</u>	<u>96</u>	75	75	71	73
	Montana	<u>75</u>	<u>77</u>	97	87	74	67
	Wyoming	<u>55</u>	<u>41</u>	20	26	35	44
	Totals	<u>183</u>	<u>214</u>	193	196	193	195
<b>Sheep depredation</b>	Oregon	<u>0</u>	<u>0</u>	28	0	0	8
	Washington	<u>0</u>	<u>0</u>	0	0	0	1
	Idaho	<u>170</u>	<u>218</u>	324	148	121	312
	Montana	<u>27</u>	<u>111</u>	<del>195</del> <u>202</u>	64	<del>30</del> <u>11</u>	37
	Wyoming	<u>16</u>	<u>26</u>	195	33	30	112
	Totals	<u>213</u>	<u>355</u>	<del>749</del> <u>2</u>	245	<del>162</del> <u>81</u>	470
<b>Wolves (min # at year end)</b>	Oregon	<u>?</u>	<u>?</u>	14	21	29	<del>53</del> <u>46</u>
	Washington	<u>?</u>	<u>?</u>	5	19	27	51
	Idaho	<u>732</u>	<u>846</u>	870	705	746	683
	Montana	<u>422</u>	<u>497</u>	524	566	653	625
	Wyoming	<u>359</u>	<u>302</u>	320	343	328	277
	Totals	<u>1513</u>	<u>1645</u>	1733	1654	1783	<del>168</del> <u>29</u>

<b>Wolf Packs (min # at year end)</b>	Oregon	<u>0</u>	<u>1</u>	2	2	5	<u>76</u>
	Washington	<u>0</u>	<u>1</u>	2	3	5	9
	Idaho	<u>83</u>	<u>88</u>	94	87	101	117
	Montana	<u>73</u>	<u>84</u>	101	108	130	147
	Wyoming	<u>36</u>	<u>42</u>	37	45	48	43
	Totals	<u>192</u>	<u>216</u>	236	245	289	323
<b>Agency lethal control wolf mortality</b>	Oregon	<u>0</u>	<u>0</u>	2	0	2	0
	Washington	<u>0</u>	<u>0</u>	0	0	0	7
	Idaho	<u>50</u>	<u>108</u>	93	80	63	73
	Montana	<u>73</u>	<u>110</u>	145	141	64	108
	Wyoming	<u>63</u>	<u>46</u>	32	40	37	43
	Totals	<u>186</u>	<u>264</u>	272	261	166	231
<b>Hunting &amp; trapping wolf mortality</b>	Oregon	<u>0</u>	<u>0</u>	0	0	0	0
	Washington	<u>0</u>	<u>0</u>	0	0	0	0
	Idaho	<u>0</u>	<u>0</u>	134	46	200	329
	Montana	<u>0</u>	<u>0</u>	68	0	121	175
	Wyoming	<u>0</u>	<u>0</u>	0	0	0	66
	Totals	<u>0</u>	<u>0</u>	202	46	321	570
<b>Other known wolf mortality</b>	Oregon	<u>1</u>	<u>0</u>	0	1	0	1
	Washington	<u>0</u>	<u>0</u>	0	1	0	2
	Idaho	<u>28</u>	<u>45</u>	45	18	33	23
	Montana	<u>29</u>	<u>51</u>	42	38	31	41
	Wyoming	<u>12</u>	<u>50</u>	9	18	15	27
	Totals	<u>69</u>	<u>146</u>	96	76	79	94

<sup>i</sup> Data sources were USFWS annual interagency reports <http://www.fws.gov/mountain-prairie/species/mammals/wolf/>, annual reports for individual states and updated information available on individual state websites. Where data discrepancies between the USFWS and state reports existed, the most recent state data was used. Such discrepancies were minor. These data reflect confirmed cattle and sheep depredation. Wolf population and mortality data reflect the best efforts of state and federal agencies to document populations which are dynamic and are minimum counts of wolves and wolf packs. There is inherent uncertainty when designating wolves and wolf packs as resident in one state or another when home ranges are near a state line. Dispersing uncollared wolves are difficult to count and detection of all wolves or wolf mortality is impossible. Actual numbers of depredated cattle and sheep, wolf packs and wolves are all likely greater than presented. These data are most useful as indicating trends, rather than absolute numbers.