State of Washington
DEPARTMENT OF FISH AND WILDLIFE
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Main Office Location: Natural Resources Building, 1111 Washington Street SE, Olympia, WA

February 22, 2022

Dear Interested Parties:

The Washington Department of Fish and Wildlife (WDFW) has prepared a Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Wolf-Livestock Conflict Deterrence Rule Making proposal. WDFW has prepared this Draft SEIS in compliance with the State Environmental Policy Act (SEPA) and other relevant state laws and regulations. The Draft SEIS is now available to other agencies and the public for a 48-day public comment period.

This Draft SEIS supplements the July 2011 Final Environmental Impact Statement for the Wolf Conservation and Management Plan for Washington. The Draft SEIS provides additional information and specifically addresses alternatives and potential impacts related to this rule making.

The purpose and need for rule making is instituting practices that will avoid the repeated loss of livestock to wolf depredation and wolves to subsequent agency removal in Washington. This Draft SEIS analyzes four alternative rule making options that encompass a broad range of varying approaches that could meet the purpose and need of this rule making. The described alternatives in this Draft SEIS could have significant impacts on one primary SEPA environmental element not specifically examined in detail in the 2011 Final EIS: **Animals**, specifically wolves and the impacts of measures to mitigate wolf-livestock conflict, and this document explores those potential impacts.

Comments must be received by April 11, 2022.

The following procedures govern the method to comment on agency SEPA proposals. Comments received through these procedures are part of the official SEPA record for this proposal.

Please submit your comments through **one** of the following methods:

- Online through the Public Input comment portal for this proposal at: https://publicinput.com/SEPAWolfConflictDeterrence
- Email to SEPAWolfConflictDeterrence@PublicInput.com

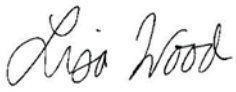
- Call 1-855-925-2801 to record your input by phone. The project code is 6659.

See Fact Sheet included at the beginning of the Draft SEIS for more information.

After the Draft SEIS comment period concludes, WDFW will review comments. A Final SEIS will be prepared that contains the responses to the comments and provides additional updates as appropriate. WDFW anticipates issuing the Final SEIS mid-year 2022.

Project information and updates can be found at: https://wdfw.wa.gov/about/regulations/development/wolf-livestock-conflict-deterrence. SEPA documents are available for review at: https://wdfw.wa.gov/licenses/environmental/sepa/open-comments.

Sincerely,



Lisa Wood
SEPA Responsible Official and SEPA/NEPA Coordinator
Protection Division
Habitat Program

# Wolf-Livestock Conflict Deterrence Rule Making

## DRAFT Supplemental Environmental Impact Statement

Washington Department of FISH and WILDLIFE

Date of publication: February 22, 2022

# Fact Sheet

**Title:** Draft Supplemental Environmental Impact Statement (Draft SEIS) for the Wolf-Livestock Conflict Deterrence Rule Making

**Description:** The Washington Department of Fish and Wildlife (WDFW) initiated new rule making in response to a decision by Governor Jay Inslee in September 2020 to grant a petition for rule making directed to the Washington Fish and Wildlife Commission relating to wolf management with the goal of instituting practices that will avoid the repeated loss of wolves and livestock in Washington.

The purpose and need for rule making is instituting practices that will avoid the repeated loss of livestock to wolf depredation and wolves to subsequent agency removal in Washington. Under the umbrella of the 2011 Wolf Conservation and Management Plan goals, WDFW has identified two objectives for adopting new rules related to wolf management in Chapter 220-440 WAC:

1. Establish procedure for identifying WDFW expectations for use of non-lethal tools to mitigate wolf-livestock conflict in areas of chronic conflict, while recognizing the use of non-lethal tools is encouraged statewide.
2. Establish criteria for the use of WDFW's lethal removal authority in areas of chronic wolf-livestock conflict.

The Draft SEIS analyzes four alternative rule making options that encompass a broad range of varying approaches that could meet the objectives of this rule making: Alternative 1: Develop a rule based on the 2017 Wolf-Livestock Interaction Protocol to establish general criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict; Alternative 2: Develop a rule that uses area-specific conflict mitigation plans to establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of chronic conflict; Alternative 3: Develop a rule similar to the "Petition to amend the Washington Administrative Code to require use of nonlethal techniques to reduce livestock-wolf conflict" sent to the Fish and Wildlife Commission on May 11, 2020, which would establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict both generally and with specific criteria for areas with chronic conflict; and Alternative 4: No Action (Status Quo). The alternatives address specific options for analysis that are not specifically addressed in the Final Environmental Impact Statement (Final EIS) for the Wolf Conservation and Management Plan for Washington (July 28, 2011).

The final action taken by the WDFW Fish and Wildlife Commission may not be identical to any single alternative; the WDFW Fish and Wildlife Commission may choose a hybrid approach that combines components of different alternatives, and/or more and less restrictive expressions of the components to best meet the environmental, social, economic, and political needs of the rule making.

Rule making progress and documents can be viewed at:
https://wdfw.wa.gov/about/regulations/development/wolf-livestock-conflict-deterrence

**Location of Proposal, including street, if any:** The Wolf-Livestock Conflict Deterrence Rule(s) will apply statewide.

**Proponent/Applicant:**

Washington State Department of Fish and Wildlife (WDFW)

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**Authors and Principal Contributors:** Washington Department of Fish and Wildlife (WDFW)

**Date of Issue:** February 22, 2022

**Date Comments are Due:** April 11, 2022

**Date Final Action is Planned:** The Wolf-Livestock Conflict Deterrence rule making proposal will be provided to the WDFW Commission for action on May 13, 2022. If adopted, the rule or rules are tentatively scheduled to be implemented in January 2023.

**Date of Next Action and Subsequent Environmental Reviews:** The final environmental impact statement (Final SEIS) on the Wolf-Livestock Conflict Deterrence rule making proposal is expected to be released in May 2022.

**Availability:** A link to the Draft SEIS is posted on WDFW's SEPA website and the wolf-livestock conflict deterrence rule making website: https://wdfw.wa.gov/about/regulations/development/wolf-livestock-conflict-deterrence. After the Draft SEIS is finalized, the Final SEIS will be posted at https://wdfw.wa.gov/licenses/environmental/sepa/closed-final and https://wdfw.wa.gov/about/regulations/development/wolf-livestock-conflict-deterrence.

**Title and Date of Document Being Adopted:**

Final Environmental Impact Statement (Final EIS) for the Wolf Conservation and Management Plan for Washington (July 28, 2011).

**Agency that Prepared Document Being Adopted:** Washington Department of Fish and Wildlife (WDFW)

**Description of Document (or Portion) Being Adopted:** The entire contents of the 2011 Final EIS for the Wolf Conservation and Management Plan for Washington.

WDFW completed the Final EIS, in conjunction with a Preferred Alternative Recommended Wolf Conservation and Management Plan for Washington, in 2011. The purpose of the Wolf Conservation and Management Plan, adopted with revisions by the Fish and Wildlife Commission in December 2011, is to ensure the reestablishment of a self-sustaining population of gray wolves in Washington and to encourage social tolerance for the species by addressing and reducing conflicts. The plan serves as the state recovery plan for the species per WAC 220-610-110(11.1).

The 2011 Final EIS evaluated four alternatives, including the revised Preferred Alternative. The alternatives varied in how conservation of wolves in Washington could be accomplished and how conservation and management would be balanced. These included differences in the geographic distribution of recovery objectives, numbers of recovery areas, management options to address conflicts, and compensation for livestock depredation. Alternative 2, the wolf conservation and management plan, was the Preferred Alternative because it met the goals and objectives for establishing a long-term viable wolf population in Washington while at the same time addressing wolf-livestock conflicts and interactions between wolves and wild ungulates. The Final Preferred Alternative was modified from its previous version in the Draft EIS based on the public, scientific, and agency reviews and input.

**If the Document Being Adopted has been Challenged, Please Describe:** N/A

**Lead Agency and Name of Agency Adopting the Document:** WDFW

**The Documents are Available to be Read at:** The 2011 Final EIS is available at: https://wdfw.wa.gov/publications/01355.

After independent review, we have identified and adopted the referenced 2011 Final EIS as being appropriate for this proposal. The document meets some, but not all, of our environmental review needs for the current proposal and will accompany the proposal to the decision maker along with a draft Supplemental EIS that specifically addresses alternatives and potential impacts related to this rule making.

*Individuals who need to receive this information in an alternative format, language, or who need reasonable accommodations to participate in WDFW-sponsored public meetings or other activities may contact the Title VI/ADA Compliance Coordinator by phone at 360-902-2349, TTY (711), or email (Title6@dfw.wa.gov).*

# Table of Contents

# Tables and Figures

# Executive Summary

This draft Supplemental Environmental Impact Statement (SEIS) to the Final Environmental Impact Statement (2011 Final EIS) for the 2011 Wolf Conservation and Management Plan for Washington (Wolf Plan) analyzes potential environmental impacts of alternative rule making options as a part of the Washington Department of Fish and Wildlife (WDFW) rule making proposal. This proposal was initiated in response to a decision by Governor Jay Inslee in September 2020 to grant a petition for rule making directed to the Washington Fish and Wildlife Commission relating to wolf management with the goal of instituting practices that will avoid the repeated loss of wolves and livestock in Washington.

## Background

The range of the gray wolf (*Canis lupus*) historically covered the state of Washington. Following nearly eight decades of extirpation from Washington, gray wolves began naturally recolonizing the state in the 1990s from populations in surrounding states and provinces. The first breeding pair was documented in Okanogan County in 2008, and Washington's wolf population has grown at an average rate of 26 percent annually since then. Conflict between wolves and livestock has been documented everywhere the two coexist but is generally low and not uniform across the landscape. In Washington, 76 percent of known wolf packs were not involved in any documented livestock depredation in 2020 (average 86 percent from 2008 – 2020). When conflict between wolves and livestock does occur, it has the potential to become chronic and have significant economic impacts on individual livestock operations. WDFW focuses on promoting the proactive use of non-lethal deterrents to minimize wolf-livestock conflict and considers lethal removal as a last resort when those tools have not mitigated conflict.

The alternatives considered in the 2011 Final EIS include both lethal and non-lethal measures to mitigate wolf-livestock conflict. The alternatives presented for lethal control of wolves involved in repeated livestock depredations specify that lethal control is allowed consistent with state and federal law under all state-listed statuses, but do not provide or analyze criteria for use of lethal removal beyond a few general provisions.

## Purpose and need for and objectives of wolf-livestock conflict deterrence rule making

The purpose and need for rule making is instituting practices that will avoid the repeated loss of livestock to wolf depredation and wolves to subsequent agency removal in Washington. Under the umbrella of the 2011 Wolf Conservation and Management Plan goals, WDFW has identified two objectives for adopting new rules related to wolf management in Chapter 220-440 WAC:

1. Establish procedure for identifying WDFW expectations for use of non-lethal tools to mitigate wolf-livestock conflict in areas of chronic conflict, while recognizing the use of non-lethal tools is encouraged statewide.

2. Establish criteria for the use of WDFW's lethal removal authority in areas of chronic wolf-livestock conflict.

## Alternatives considered

The alternative rule making options considered below (including the no-action alternative) encompass a broad range of varying approaches that could meet the objectives of this rule making. The proposed alternatives in this Draft SEIS address specific options for analysis that are not specifically addressed in the 2011 Final EIS for the Wolf Plan. The final action taken by the WDFW Fish and Wildlife Commission may not be identical to any single alternative; the WDFW Fish and Wildlife Commission may choose a hybrid approach that combines components of different alternatives, and/or more and less restrictive expressions of the components to best meet the environmental, social, economic, and political needs of the rule making.

**Alternative 1: Develop a rule based on the 2017 Wolf-Livestock Interaction Protocol (Protocol) to establish general criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict.**

Under Alternative 1, WDFW would use the criteria outlined in the Protocol to codify in rule the use of non-lethal and lethal measures to mitigate wolf-livestock conflict. The components of the rule based on the Protocol would include expectations for non-lethal deterrence measures, examples of deterrence measures, range rider roles and responsibilities, the depredation investigation process, criteria for lethal removal of wolves, and implementation of lethal removal of wolves. There are no special provisions for areas of chronic conflict in this alternative.

**Alternative 2 (WDFW preferred): Develop a rule that uses area-specific conflict mitigation plans to establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of chronic conflict.**

Under Alternative 2, WDFW would develop a rule based on the use of area-specific conflict mitigation plans through which WDFW would establish area-specific criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of chronic conflict. WDFW would author the conflict mitigation plans in consultation with willing, affected livestock producers. The rule would focus WDFW resources to areas of Washington where most wolf depredations on livestock and related wolf removals take place, specifically pack territories (or a portion thereof) where wolf depredations of livestock occurred and lethal removal of wolves was authorized in two of the last three years. The components of the rule based on this concept would include designation of chronic conflict areas, components and provisions of area-specific conflict mitigation plans, criteria for lethal removal of wolves in chronic conflict areas, and expectations for lethal removal authorizations.

**Alternative 3: Develop a rule similar to the "Petition to amend the Washington Administrative Code to require use of nonlethal techniques to reduce livestock-wolf conflict" sent to the Fish and Wildlife Commission on May 11, 2020 (Petition), which would establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict both**

**generally and with specific criteria for areas with chronic conflict.**

Under Alternative 3, WDFW would develop a rule similar to the proposed rule attached to the Petition, which would codify in rule criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict. This alternative would be the most prescriptive of the four alternatives and would include the most specific expectations for use of non-lethal and lethal measures to mitigate wolf-livestock conflict. The rule based on the Petition would include expectations for non-lethal deterrence measures, examples of deterrence measures, specific expectations for range riders, criteria for lethal removal of wolves, expectations for lethal removal authorizations, and components and provisions of area-specific conflict mitigation plans.
**Alternative 4: No Action. WDFW would not develop rule changes related to wolf-livestock conflict deterrence.**

WDFW wolf-livestock conflict management and expectations for non-lethal and lethal measures would continue to operate under the non-binding guidance of the Wolf Plan and Protocol. The components of Alternative 4 would be similar to Alternative 1, but the use of non-lethal and lethal measures to mitigate wolf-livestock conflict would not be codified in rule.

## Summary of impacts

Impacts to wolves include direct effects of lethal removal (i.e., loss of individual wolves) and indirect effects of lethal removal (e.g., changes to pack size, composition, and resilience, as well as associated effects on pup survival and recruitment). Data from wolf metapopulations in the western United States and Great Lakes states show that where wolves have been subject to lethal removal in response to livestock depredation at all stages of recovery, the wolf populations have continued to thrive. This data indicates that Washington's wolf population is likely to continue to grow under all of the alternatives considered. Lethal control actions, as long as they are targeted to specific wolf packs implicated in livestock depredation and limited, are not likely to have significant effects on recovery or continued viability of Washington's wolf population.

None of these alternatives would preclude the consideration of lethal removal of wolves entirely. Because many components of the proposed alternatives are already current practice for WDFW, levels of wolf mortality associated with agency lethal removal and associated impacts are likely to be similar to the current conditions under all alternatives. All alternatives will likely result in levels of lethal removal comparable to previous years in Washington and no alternative is likely to have negative effects on the recovery, population growth, and long-term sustainability of wolves in the state.

There is an inherent aspect of uncertainty about the environmental impacts of each alternative given the fact-specific nature of wolf-livestock conflicts. Because Alternatives 2 and 3 require the development of area-specific, proactive conflict mitigation plans in areas where wolf-livestock conflict has repeatedly occurred in Washington, these alternatives may result in fewer wolf removals than Alternative 1 and the No Action Alternative. Alternative 3 is the most prescriptive of the four alternatives and would include the most specific expectations for use of non-lethal and lethal measures to mitigate wolf-livestock conflict, but broadly prescribed measures (outside of

area-specific conflict mitigation plans) that are not scenario-specific may not actually result in less wolf-livestock conflict and resultant wolf removals. Higher thresholds at which lethal removal of wolves can be considered in Alternative 3 may result in fewer wolf removals in the short-term, but may ultimately allow wolf-livestock conflict to escalate (ODFW 2021) and not reduce wolf removals in the long-term. Alternative 2 may result in lethal removal of wolves more quickly than what is considered in other alternatives, but could result in fewer wolf removals long-term if depredations are addressed quickly.

## Mitigation measures

Wolf-livestock conflict scenarios involve multiple sources of uncertainty about factual circumstances that make concrete analysis of impacts and outcomes challenging. Because of this uncertainty, all alternatives include a provision that lethal removal of wolves would be considered only if it is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions. This measure is already in practice by WDFW using empirical and predictive data each time lethal removal of wolves is considered.

Documented wolf mortality in Washington is generally low and has not occurred at levels that have stymied wolf population growth. However, in a worst-case scenario, the potential exists that WDFW may discover a higher level of wolf mortality (e.g., from causes such as disease, poaching, or tribal harvest) than was known by WDFW at the time that a decision to lethally remove wolves was made. This could result in agency lethal removal of wolves unintentionally adding to a disproportionate impact on the wolf population due to unknown mortality. The uncertainty of this worst-case scenario exists under all alternatives.

## Next Steps

Following the publication of the Draft SEIS on February 22, 2022, there will be a minimum 30-day public comment period, during which reviewers have the opportunity to comment on the accuracy and completeness of the environmental analysis, the methodology used in the analysis, and the need for additional information and/or mitigation measures, so that improvements to the SEIS can be made before it is finalized. Comments can be submitted online through the Public Input comment portal for this proposal at https://publicinput.com/SEPAWolfConflictDeterrence, or call 1-855-925-2801 to record your input by phone (the project code is 6659).

The final supplemental environmental impact statement (Final SEIS) on the Wolf-Livestock Conflict Deterrence rule making proposal is expected to be released in May 2022. The Draft SEIS reviewer should note the SEPA EIS process informs Washington's rule making process and corresponds with the development and decision-making of the proposed rule. WDFW's preferred rule making alternative is expected to be proposed to the WDFW Commission for action on May 13, 2022. The Commission will decide on whether to adopt a final rule, which would become effective no less than 31 days after it is filed with the Code Reviser. If adopted, the rule or rules are tentatively scheduled to be implemented in January 2023.

# 1. Introduction

This draft Supplemental Environmental Impact Statement (SEIS) to the Final Environmental Impact Statement (2011 Final EIS) for the 2011 Wolf Conservation and Management Plan for Washington (Wolf Plan) analyzes potential environmental impacts of alternative rule making options as a part of the Washington Department of Fish and Wildlife (WDFW) rule making proposal. This proposal was initiated in response to a decision by Governor Jay Inslee in September 2020 to grant a petition for rule making directed to the Washington Fish and Wildlife Commission relating to wolf management with the goal of instituting practices that will avoid the repeated loss of wolves and livestock in Washington.

The range of the gray wolf (*Canis lupus*) historically covered the state of Washington. Following nearly eight decades of extirpation from Washington, gray wolves began naturally recolonizing the state in the 1990s from populations in surrounding states and provinces. The first breeding pair was documented in Okanogan County in 2008, and Washington's wolf population has grown at an average rate of 26 percent annually since then. Conflict between wolves and livestock has been documented everywhere the two coexist but is generally low and not uniform across the landscape. In Washington, 76 percent of known wolf packs were not involved in any documented livestock depredation in 2020 (average 86 percent from 2008 – 2020). When conflict between wolves and livestock does occur, it has the potential to become chronic and have significant economic impacts on individual livestock operations. WDFW focuses on promoting the proactive use of non-lethal deterrents to minimize wolf-livestock conflict and considers lethal removal as a last resort when those tools have not mitigated conflict.

The alternatives considered in the 2011 Final EIS include both lethal and non-lethal measures to mitigate wolf-livestock conflict. The alternatives presented for lethal control of wolves involved in repeated livestock depredations specify that lethal control is allowed consistent with state and federal law under all state-listed statuses, but do not provide or analyze criteria for use of lethal removal beyond a few general provisions.

The proposed alternatives in this Draft SEIS address specific options for analysis that are not specifically addressed in the 2011 Final EIS. The final action taken by the WDFW Fish and Wildlife Commission may not be identical to any single alternative; the WDFW Fish and Wildlife Commission may choose a hybrid approach that combines components of different alternatives, and/or more and less restrictive expressions of the components to best meet the environmental, social, economic, and political needs of the rule making.

# 2. Background, Purpose, and Objectives

## 2.1. Rule making background

### *2.1.1. Overarching goals in WDFW wolf conservation and management*

The 2011 (Wolf Plan) was developed to guide recovery and management of gray wolves as they naturally disperse into the state and reestablish a breeding population.

The purpose of the Wolf Plan is to ensure the reestablishment of a self-sustaining population of gray wolves in Washington and to encourage social tolerance for the species by addressing and reducing conflicts. Goals of the plan are to:

- Restore the wolf population in Washington to a self-sustaining size and geographic distribution that will result in wolves having a high probability of persisting in the state through the foreseeable future (>50-100 years).
- Manage wolf-livestock conflicts in a way that minimizes livestock losses, while at the same time not negatively impacting the recovery or long-term perpetuation of a sustainable wolf population.
- Maintain healthy and robust ungulate populations in the state that provide abundant prey for wolves and other predators as well as ample harvest opportunities for hunters.
- Develop public understanding of the conservation and management needs of wolves in Washington, thereby promoting the public's coexistence with the species.

The first two goals listed above are specifically pertinent to this rule making. Balancing the goals outlined above is one of the most important yet controversial challenges wildlife managers face, and every state that has wolf populations must make these difficult management decisions. One of the keys to successful wolf conservation is bridging the chasm of values between people whose livelihoods are impacted by wolves and people who advocate for wolves. WDFW has worked with diverse stakeholders for years to develop guiding documents both to address livestock depredations and to promote overall wolf recovery efforts. It is WDFW's intent to prioritize the proactive use of non-lethal deterrents to mitigate wolf-livestock conflict statewide. WDFW seeks to promote practices to minimize livestock depredations to reduce the need for lethal removal of wolves.

RCW 77.04.012 mandates that wildlife, fish, and shellfish are the property of the state, and declares that the Fish and Wildlife Commission, Director, and Department of Fish and Wildlife shall preserve, protect, perpetuate, and manage the same in a manner that does not impair the resource. WDFW's wildlife management authority includes the authority to "authorize the removal or killing of wildlife that is destroying or injuring property, or when it is necessary for wildlife management…." RCW 77.12.240(1). The Fish and Wildlife Commission may also promulgate rules that allow landowners (and some related persons) to trap or kill wildlife that is threatening human safety or causing

property damage without a WDFW permit, subject to limitations and conditions established in such rules. RCW 77.36.030. These statutory authorities extend to lethal removal of wolves. However, while WDFW's enabling statutes authorize broad discretion to manage wildlife, they do not generally authorize WDFW to mandate, regulate, or enforce animal husbandry practices.

### *2.1.2. Wolf recolonization and population growth in Washington*

Gray wolves were formerly common throughout most of Washington, but they declined rapidly between 1850 and 1900. The primary cause of this decline was the killing of wolves by Euro-American settlers as ranching and farming activities expanded. Wolves were essentially eliminated as a breeding species from the state by the 1930s. Following the recovery of wolves in Idaho, Montana, and Wyoming, the first fully documented breeding pack in Washington was confirmed in 2008. As of July 2011, there were five confirmed packs in the state: two in Pend Oreille County, one in Pend Oreille/Stevens counties, one in Kittitas County, and one in Okanogan/Chelan counties. As of December 31, 2020, WDFW counted a minimum of 178 wolves in 29 packs with at least 16 successful breeding pairs occupying 12 counties (Table 1, Figure 1). Human-related mortality, particularly illegal killing and legal control actions to resolve conflicts, is the largest source of mortality for the species.

Table 1. Wolf population growth trends in Washington, 2008-2020.

| Year | Minimum count | Packs | Breeding pairs | Annual growth rate (%) | Documented mortality |
|---|---|---|---|---|---|
| 2008 | 5 | 1 | 1 | - | 0 |
| 2009 | 14 | 2 | 2 | - | 0 |
| 2010 | 19 | 3 | 1 | 36 | 2 |
| 2011 | 35 | 7 | 5 | 84 | 0 |
| 2012 | 51 | 9 | 5 | 46 | 9 |
| 2013 | 52 | 13 | 5 | 2 | 5 |
| 2014 | 68 | 16 | 5 | 31 | 10 |
| 2015 | 90 | 18 | 8 | 32 | 7 |
| 2016 | 115 | 20 | 10 | 28 | 14 |
| 2017 | 122 | 22 | 14 | 6 | 14 |
| 2018 | 126 | 27 | 15 | 3 | 12 |
| 2019 | 145 | 26 | 10 | 14 | 21 |
| 2020 | 178 | 29 | 16 | 24 | 16 |

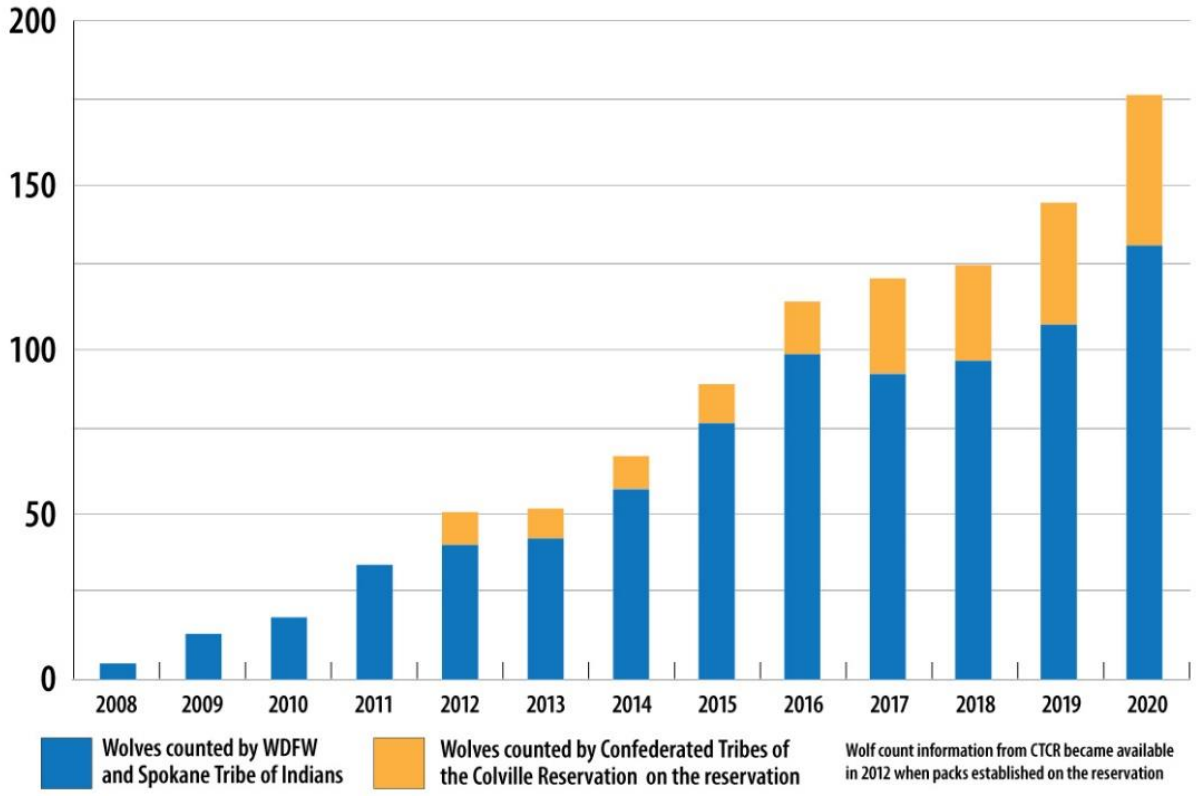


Figure 1. Minimum wolf population count in Washington, 2008-2020.

### *2.1.3. The Wolf Plan, Wolf-Livestock Interaction Protocol, and prioritization of non-lethal conflict mitigation tools*

WDFW focuses on promoting the proactive use of non-lethal deterrents to minimize wolf-livestock conflict and considers lethal removal as a last resort when those tools have not mitigated conflict. WDFW's spending reflects that commitment, with more than 80% of the budget for wolf-livestock conflict spent on non-lethal approaches. WDFW encourages the use of non-lethal measures to deter wolf-livestock conflict, and the number of livestock producers in Washington implementing proactive, non-lethal deterrence measures has markedly increased (WDFW 2017).

WDFW's recovery efforts for wolves are guided principally by the Wolf Plan. Although the Wolf Plan prioritizes use of non-lethal tools, it expressly recognizes the potential use of lethal removal to resolve repeated livestock depredations. WDFW subsequently developed non-binding guidance to address the use of non-lethal conflict deterrents and lethal removals – the most recent version is the 2017 Wolf-Livestock Interaction Protocol (Protocol).

The Protocol restates the lethal removal guidance contained in the Wolf Plan but includes more details to inform the implementation of the Wolf Plan. The Protocol provides guidance on working with livestock owners to proactively implement non-lethal measures and expectations for their use,

how to confirm a wolf depredation event, the number of livestock killed or injured before WDFW would typically consider lethal removal, communications with the public, and potential implementation of lethal removal of wolves.

Notably, most wolf packs in Washington are not implicated in livestock depredation (86% on average over 13 years). The level of documented depredations (ranging from four to 45 individual animals injured or killed in confirmed or probable wolf depredation incidents annually, with an average of 24 per year from 2012 through 2020) has remained relatively low compared with the number of livestock on the landscape, despite an increasing wolf population. Depredation incidents occur almost evenly across public and private land (including private industrial timber land), with an average of 51% of incidents occurring on public land from 2012 – 2021.

### *2.1.4. Agency lethal removal of wolves*

Lethal removal is perhaps the most contentious issue in wolf management, but WDFW consistently works to bridge the gap of different perspectives and cultures. Many Washington citizens would prefer earlier action to kill wolves that attack livestock; conversely, other citizens would prefer deferred (or no) lethal action.

WDFW has repeatedly considered the experiences of other states supporting wolf recovery, numerous scientific studies, and diverse (often divergent) perspectives of individuals directly affected by or generally concerned about lethal removal decisions. WDFW's Wolf Plan and Protocol reflect compromises between these different interests and the number of wolves in Washington has continued to increase every year since resident wolves were first documented in the state.

WDFW has used lethal removal in an attempt to resolve conflicts with livestock in seven of 13 years of wolf recovery in Washington, and annually since 2016. All of the affected livestock operations and pack territories were in Ferry and Stevens counties in northeast Washington, with the exception of Grouse Flats in southeast Washington (Table 2). WDFW only considers lethal removal of wolves in the area of the state where the gray wolf is not listed as endangered or threatened under the federal Endangered Species Act (as of February, 10, 2022, wolves are federally delisted in Washington east of Highway 97 from the British Columbia border south to Monse, Highway 17 from Monse south to Mesa, and Highway 395 from Mesa south to the Oregon border, and are federally listed west of these highways).

Table 2. WDFW wolf lethal removal actions, 2008-2020.

| Year | Packs with lethal removal authorized | Wolves removed by WDFW | Percentage of minimum wolf population removed[2] |
|---|---|---|---|
| 2008 | - | 0 | 0 |
| 2009 | - | 0 | 0 |
| 2010 | - | 0 | 0 |
| 2011 | - | 0 | 0 |
| 2012 | Wedge | 7 | 14 |
| 2013 | - | 0 | 0 |
| 2014 | Huckleberry | 1 | 1.5 |
| 2015 | - | 0 | 0 |
| 2016 | Profanity Peak[1] | 7 | 6 |
| 2017 | Sherman[1], Smackout | 3 | 2.5 |
| 2018 | Smackout, OPT[1], Togo | 4 | 3 |
| 2019 | Grouse Flats, OPT[1], Togo | 9 | 6 |
| 2020 | Leadpoint, Wedge, Togo | 3 | 2 |

[1] Profanity Peak, Sherman, and OPT packs occupied the same geographic pack territory.
[2] Derived by dividing the number of wolves removed by WDFW by the minimum annual wolf count.

### *2.1.5. The Wolf Advisory Group and focus on areas of chronic conflict*

The Protocol was developed in consultation with the Wolf Advisory Group (WAG), a citizen stakeholder group made up of citizens of Washington State who provide a broad range of perspectives to help inform management efforts for wolves. Participants range from livestock producers to wolf conservation groups and animal activists to land managers and outdoor recreation organizations to hunting advocates. Despite their differences in geography, experiences, and ideology, WAG members have learned to bridge gaps in understanding and culture. Although they may not always agree on certain topics, the group works as a team toward successes for people, wolves, and livestock.

Although the implementation of the Wolf Plan and Protocol have resulted in successful wolf-livestock conflict mitigation in most occupied wolf territory, no document or rule can or does account for every scenario in which WDFW must exercise discretion. Areas that have experienced recurrent and significant levels of livestock depredation and subsequent wolf removals do not neatly fit the guidance set out in the Protocol. The Protocol does not provide guidance in a situation where chronic depredations and lethal removals have occurred in the same territory for multiple years.

Starting in December 2018, the WAG began dedicating time during their meetings to discussing areas where conflict between wolves and livestock appeared to be focused and recur annually. Some members started to question whether the guidance provided in the Protocol resulted in the desired outcome of fewer depredations in certain areas that seemed prone to wolf-livestock

conflict. The elimination of the Profanity Peak pack in 2016, followed by the subsequent recolonization and removal of the Old Profanity Territory (OPT) pack in 2018 and 2019, followed by the recolonization of the Kettle pack in 2019, all in the same geographic pack territory, underscored this question.

The WAG decided to create a new section of the Protocol specifically dedicated to areas of chronic conflict and spent all or portions of their meetings from 2019 through April 2021 working on this subject. Some of the topics WAG members wrestled with include issues of shared goals, root causes of depredation, proactive conflict mitigation plans, how to get reluctant parties involved in decision making, roles and responsibilities of involved parties, and compliance with commitments made by WDFW staff and livestock producers. Despite investing significant time in the section and developing several drafts, the WAG has not come to consensus on the guidance provided by this section to date.

### *2.1.6. Petitions for rule making and litigation about lethal removal of wolves*

Environmental organizations filed a petition for rule making in July 2013 to codify the Wolf Plan and then withdrew it after discussions with WDFW. The withdrawal was predicated on WDFW working with the WAG to develop rules to address key issues in the Wolf Plan. WDFW did work with the WAG on those issues for several months after the May 2014 meeting and was preparing to file WDFW's proposal.

Prior to the filing, WDFW received several communications from WAG members and a couple of the petitioners expressing concern about the process leading to the development and the draft proposal itself. They asked WDFW to consider using a mediated process to develop a rule proposal for Commission consideration. WDFW also received a letter from several legislators requesting consideration of a mediated process.

During this same timeframe, WDFW received a second petition (June 2014) from the petitioners. With the concerns that had been expressed, WDFW postponed filing a rule proposal (CR-102) until after the Commission considered that petition. The Commission denied the June 2014 petition. The petitioners appealed the Commission's decision in 2014, and Governor Jay Inslee denied the appeal at that time.

In late 2014, the Department contracted with Human-Wildlife Conflict Collaboration (HWCC) to assess the social conflict around the subject. In March 2015, Francine Madden of HWCC completed her report (Madden 2015) that discussed in detail the levels of conflict in Washington around this subject and strategies to transform the conflict into opportunities for social change. In spring 2015, WDFW contracted with HWCC and Ms. Madden for strategic guidance, to facilitate the WAG process, and increase the WDFW's capacity to resolve deep rooted and identity-based conflict.

Environmental organizations challenged several of WDFW's lethal removal actions from 2017 through 2019 in litigation; all of these lawsuits were either dismissed or the court ruled in favor of WDFW.

Environmental organizations followed up these decisions by filing another petition for rulemaking in May 2020, which was denied by the Fish and Wildlife Commission. In September 2020, following appeal by the petitioners, Governor Jay Inslee directed WDFW to initiate a new rule making relating to wolf management with the goal of instituting practices that will avoid the repeated loss of wolves and livestock in Washington.

The Governor asked that the Department include clear and enforceable measures in the proposed rule to achieve the following management outcomes:

- Standardized definition and requirements for the use of range riders;
- Requirements for use of non-lethal deterrents most appropriate for specified situations (wolf population and range, size and location of livestock operation, terrain and habitat, history of depredation);
- Action plans in areas of chronic depredation to end the need for annual lethal removal; and,
- Compliance measures where livestock operators do not implement the required non-lethal measures.

### *2.1.7. Considerations and limitations for rule making*

- WDFW recognizes that repeated livestock loss and wolf removals are likely to cause significant hardship for livestock producers and their animals, as well as their communities, wolf packs, the wolf advocate community, and WDFW staff.
- Livestock depredation by wolves is not uniform across the landscape and multiple confounding factors make it difficult to predict where and when depredations by wolves will occur. Each calendar year from 2012 – 2020 (excluding 2013 and 2015 when no lethal removals of wolves occurred), wolf depredations on livestock have escalated to the point of lethal removal authorization by the WDFW Director in 14 pack territories, 13 of which were located in Ferry and Stevens counties.
- Washington state has more than 9,000 beef cattle livestock operations alone (not to mention dairy cattle, sheep, and other livestock operations), and it is neither feasible nor sustainable for WDFW to oversee and document the implementation of non-lethal conflict mitigation tools on an individual basis for each livestock operation in occupied wolf territory.
- Although WDFW's enabling statutes authorize broad discretion to manage wildlife, they do not authorize WDFW to mandate, regulate, or enforce animal husbandry practices or the management of livestock operations.

## 2.2. Purpose and need for and objectives of wolf-livestock conflict deterrence rule making

The purpose and need for rule making is instituting practices that will avoid the repeated loss of livestock to wolf depredation and wolves to subsequent agency removal in Washington. In light of the limitations discussed above and under the umbrella of the Wolf Plan goals, WDFW has identified two objectives for adopting new rules related to wolf management in Chapter 220-440 WAC:

1. Establish procedure for identifying WDFW expectations for use of non-lethal tools to mitigate wolf-livestock conflict in areas of chronic conflict, while recognizing the use of non-lethal tools is encouraged statewide.

2. Establish criteria for the use of WDFW's lethal removal authority in areas of chronic wolf-livestock conflict.

# 3. Alternatives

## 3.1. Description of alternatives in Draft SEIS

The alternative rule making options considered below (including the no-action alternative) encompass a broad range of varying approaches that could meet the objectives of this rule making (listed above on page 1). The alternatives considered in the 2011 Final EIS include both lethal and non-lethal measures to mitigate wolf-livestock conflict. The alternatives presented for proactive measures to reduce depredation specify personnel who would provide technical assistance to livestock producers to implement proactive measures to reduce conflicts, but do not analyze criteria for use of these measures (e.g., the number of measures in place, timeline of implementation, appropriateness of the measure for the specific scenario, expectation of use). The alternatives presented for lethal control of wolves involved in repeated livestock depredations specify that lethal control is allowed consistent with state and federal law under all state-listed statuses, but do not provide or analyze criteria for use of lethal removal beyond the following (which are also repeated in the Protocol):

> "Lethal removal may be used to stop repeated depredation if it is documented that livestock have clearly been killed by wolves, non-lethal methods have been tried but failed to resolve the conflict, depredations are likely to continue, and there is no evidence of intentional feeding or unnatural attraction of wolves by the livestock owner. Situations would have to be evaluated on a case-specific basis, with management decisions based on pack history and size, pattern of depredations, number of livestock killed, state listed status of wolves, extent of proactive management measures being used on the property, and other considerations. If it is determined that lethal removal is necessary, it would likely be used incrementally, as has been done in other states, with one or two offending animals removed initially. If depredations continue, additional animals may be removed" (2011 Final EIS, pg. 34).

The following proposed alternatives for the supplemental EIS address specific options for analysis that are not specifically addressed in the 2011 Final EIS. The final action taken by the WDFW Fish and Wildlife Commission may not be identical to any single alternative; the WDFW Fish and Wildlife Commission may choose a hybrid approach that combines components of different alternatives, and/or more and less restrictive expressions of the components to best meet the environmental, social, economic, and political needs of the rule making.

The provisions allowing for lethal removal of wolves in each alternative apply only to the area of the state where the gray wolf is not listed as endangered or threatened under the federal Endangered Species Act.

**Alternative 1: Develop a rule based on the Protocol to establish general criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict.**

Under Alternative 1, WDFW would use the criteria outlined in the Protocol (corresponding sections listed below) to codify in rule the use of non-lethal and lethal measures to mitigate wolf-livestock conflict.

- The components of the rule based on the Protocol would include expectations for non-lethal deterrence measures (section 3), examples of deterrence measures (section 4), range rider roles and responsibilities (section 4, pg. 8-9), the depredation investigation process (section 5), criteria for lethal removal of wolves (section 6), and implementation of lethal removal of wolves (section 7).

- This alternative includes specific thresholds of depredation at which WDFW would consider lethal removal (specifically, at least three depredation events within a 30-day rolling window of time, or at least four depredation events within a 10-month rolling window of time, and at least one depredation must be a confirmed mortality event).

- To consider lethal removal, this alternative requires that at least two proactive deterrence measures and/or responsive deterrence measures appropriate for the scenario and time of year have been implemented and are in place a sufficient amount of time; depredations are expected to continue; and the lethal removal of wolves is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions. The specific proactive deterrence measures and/or responsive deterrence measures are not prescribed.

- Lethal removal would be predicated on the use of non-lethal conflict deterrence measures as set out in rule.

- Lethal removal authorizations would not have specific expiration dates, but instead be discontinued at the discretion of the Director or Director's designee.

- This alternative provides examples of effective nonlethal deterrence measures but does not prescribe specific methods that should be in place prior to the consideration of lethal

removal.

- There are no special provisions for areas of chronic conflict in this alternative.

**Alternative 2 (WDFW preferred): Develop a rule that uses area-specific conflict mitigation plans to establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of chronic conflict.**

Under Alternative 2, WDFW would develop a rule based on the use of area-specific conflict mitigation plans through which WDFW would establish area-specific criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of chronic conflict. WDFW would author the conflict mitigation plans in consultation with willing, affected livestock producers. The rule would focus WDFW resources to areas of Washington where most wolf depredations on livestock and related wolf removals take place, specifically pack territories (or a portion thereof) where wolf depredations of livestock occurred and lethal removal of wolves was authorized in two of the last three years.

- The components of the rule based on this concept would include designation of chronic conflict areas, components and provisions of area-specific conflict mitigation plans, criteria for lethal removal of wolves in chronic conflict areas, and expectations for lethal removal authorizations.

- This alternative does not include specific thresholds of depredation at which WDFW would consider lethal removal; rather, thresholds may be established in each area-specific conflict mitigation plan.

- This alternative would not broadly establish specific non-lethal deterrence measures that would be required before WDFW would consider lethal removal; rather, expectations for the use of specific non-lethal deterrence measures would be established in each area-specific conflict mitigation plan.

- Under this alternative, the rule would state that in order to consider lethal removal in chronic conflict areas, WDFW and livestock producers must substantially comply with the expectations established within the conflict mitigation plan. The rule would outline the subject matter that must be addressed in a conflict mitigation plan and the processes WDFW would use in adopting a conflict mitigation plan. The rule may establish minimum substantive requirements that would be contained in a conflict mitigation plan.

- Lethal removal would be predicated on the use of non-lethal conflict deterrence measures as set out in rule and the provisions of each conflict mitigation plan.

- Lethal removal of wolves would be considered only if it is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf

recovery regions.

- The lethal removal authorization will have an expiration date specified at the time of issue. Once issued, the authorization may be revised or terminated by WDFW if on-the-ground conditions or state of knowledge changes.

- Under this alternative, if a livestock producer within a chronic conflict area chooses not to participate in or adhere to the expectations outlined in a conflict mitigation plan, the Director (or Director's designee) may consider lethal removal within the area only if other livestock producers in the same wolf pack area are experiencing wolf depredations and they have deployed appropriate deterrence measures meeting expectations outlined by the Department.

**Alternative 3: Develop a rule similar to the "Petition to amend the Washington Administrative Code to require use of nonlethal techniques to reduce livestock-wolf conflict" sent to the Fish and Wildlife Commission on May 11, 2020 ("Petition" or "Pet."), which would establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict both generally and with specific criteria for areas with chronic conflict.**

Under Alternative 3, WDFW would develop a rule similar to the proposed rule attached to the Petition, which would codify in rule criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict. This alternative would be the most prescriptive of the four alternatives and would include the most specific expectations for use of non-lethal and lethal measures to mitigate wolf-livestock conflict.

Some components proposed in the Petition have been omitted from Alternative 3 because WDFW lacks the requisite statutory authority to implement the component, some components may place requirements on land managers over which WDFW does not have authority, and/or the element would be difficult or impossible to implement due to operational limitations and/or limited resources.[1] Below are the components of Alternative 3 for consideration in rule making:

[1] Specific components of the Petition not considered in Alternative 3, and the rationale for not including them, are as follows:

1. "…the department must: (i) Confirm the presence of any den or rendezvous site; and (ii) In conformance with all applicable rules and policies regarding sharing of sensitive information, instruct livestock operators to move salt blocks away from the den or rendezvous site(s), clean up the area around the salt block, and move and keep cattle at least one mile away from the known den or rendezvous site(s) until the department can confirm those sites are no longer being used." (Pet. at 15)

2. "Livestock killed within 1000 yards of a known den or rendezvous site on public lands will not count toward the lethal removal thresholds…" (Pet. at 17)

- The rule based on the Petition would include expectations for non-lethal deterrence measures, examples of deterrence measures, specific expectations for range riders, criteria for lethal removal of wolves, expectations for lethal removal authorizations, and components and provisions of area-specific conflict mitigation plans.

- Under this alternative, certain non-lethal deterrence measures would be prescribed, including delaying turnout of livestock calves to forested/upland grazing pastures until

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- WDFW currently encourages livestock producers to avoid wolf high-use areas, such as den and rendezvous sites, and communicates these locations to affected livestock producers when known. However, as written, a requirement to "confirm the presence of any wolf den or rendezvous site" would require WDFW staff to guarantee the ability to collar wolves in every known pack to definitively "confirm" a den site, which is neither possible to guarantee nor desirable in the interest of minimizing capture, handling, and harassment of wolves. "Confirming" den and rendezvous sites would also require WDFW staff to visit and inspect these sites, which is not currently standard practice in Washington. Visiting den and rendezvous sites may cause undue disturbance to wolves and often results in wolves moving pups to a different site (Fritts et al. 2003, Frame et al. 2007, Argue et al. 2008).

- Because den and rendezvous sites change often, and visits by humans may cause wolves to move these sites, the requirement causes practical issues for understanding wolf proximity to livestock at the level of accuracy required in the Petition language. The requirement also makes it impractical to measure with accuracy whether livestock were killed within 1000 yards of a known den or rendezvous site.

- Because wolves typically consume and disarticulate (i.e. separate and scatter bones) kills quickly (Peterson and Ciucci 2003), knowing precisely where a kill occurred is not always possible. The requirement to measure with accuracy whether livestock were killed within 1000 yards of a known den or rendezvous site (or on public or private land in the case of patchwork land ownership, which is common in wolf-occupied areas of Washington) is not a practicable regulatory requirement.

- Although WDFW coordinates with other land managers to mitigate wolf-livestock conflict where possible, WDFW does not have statutory authority to change other land managers' grazing operating instructions or instruct livestock producers to move salt sites or livestock except in limited circumstances on WDFW-owned lands.

3. "Lethal removal will not orphan or jeopardize the survival of any pups under a year and a half old." (Pet. at 16)

- Wolf pup survival is influenced by a multitude of factors, and depending on the specific scenario, lethal removal of certain pack members could reduce, enhance, or have no effect on pup survival (see section 4.2.2. of this document for further discussion). WDFW does not have the ability to know or predict definitively if lethal removal would jeopardize the survival of wolf pups.

- By the time wolf pups reach 6 months old, they closely resemble adults; when wolf pups are 10-12 months old, visually distinguishing between juvenile and adult wolves is difficult or impossible at a distance (Mech 1970). As written, the language quoted above is not a workable regulatory requirement and cannot be practicably applied.

calves reach at least 200 pounds and after wild ungulates are born in mid-June (Pet. at 14); ensuring sanitation (removal, burying, burning, liming, or fencing off of livestock carcasses) is being conducted (Pet. at 14); and range riding if wolf-livestock conflict occurs on public land (Pet. at 16).

- This alternative outlines specific expectations for range riders, including specific numbers of range riders; an expectation to spend a certain number of hours in the field including at night if necessary; a requirement to carry a GPS; and daily logs for Department-contracted range riders (Pet. at 15).

- This alternative includes specific thresholds of depredation at which WDFW would consider lethal removal (specifically, at least three depredation events within a 30-day rolling window of time, or at least four depredation events within a six-month rolling window of time, all of which must be confirmed events) (Pet. at 16).

- To consider lethal removal, this alternative requires the following:

    - At least two Department-approved appropriate non-lethal techniques are in place (Pet. at 16);

    - The non-lethal techniques are applied to the specific group of livestock involved in the conflict and used for at least two weeks prior to the conflict occurring (Pet. at 16);

    - Carcass sanitation is carried out at all times separate from the use of other non-lethal techniques (Pet. at 16);

    - Range riding is used as one of the non-lethal measures if the depredations occur on public land (Pet. at 16);

    - WDFW does not believe other available non-lethal techniques exist that could reasonably be employed in the specific situation to mitigate further conflict (Pet. at 16);

    - Depredations are expected to continue (Pet. at 16);

    - The wolf or wolves identified for removal are those the Department reasonably believes to be associated with the qualifying livestock depredations (the removal of which the Department reasonably believes will decrease the risk of repeated predation in the affected locale) (Pet. at 16);

    - The lethal removal of wolves is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions (Pet.

at 16); and

- Livestock producers are operating pursuant to all relevant applicable laws, all terms and conditions of any applicable federal or state grazing permits, and all notification, investigation and reporting requirements of the Department (Pet. at 16).

- Lethal removal would be predicated on the use of non-lethal conflict deterrence measures as set out in rule.

- Lethal removal authorizations would expire when the wolf or wolves identified in the authorization are removed or after 30 days, whichever comes first. No more than two wolves would be lethally removed in any given removal action to allow time to assess the impacts of removal (Pet. at 17).

- Under this alternative, there would be special provisions for areas of chronic conflict (including development of area-specific conflict mitigation plans), defined in this alternative as areas where wolf-livestock conflict has occurred for at least two consecutive years, or two out of five years in the same area or with the same livestock operator. No lethal action would be taken against wolves on public lands grazing allotments or for livestock depredations which occurred on public lands grazing allotments if there have been repeated wolf-livestock conflicts and wolf lethal removals on that same allotment for two consecutive years or in two out of five years (Pet. at 17).

**Alternative 4: No Action. WDFW would not develop rule changes related to wolf-livestock conflict deterrence.**

WDFW wolf-livestock conflict management and expectations for non-lethal and lethal measures would continue to operate under the non-binding guidance of the Wolf Plan and Protocol. The components of Alternative 4 would be similar to Alternative 1, but the use of non-lethal and lethal measures to mitigate wolf-livestock conflict would not be codified in rule.

## 3.2. Summary and comparison of Draft SEIS alternatives

Table 3. The components of four alternatives for wolf rule making to establish criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict.

| Element | Alternative 1 | Alternative 2 (Preliminarily assessed as agency preferred) | Alternative 3 | Alternative 4 (No Action, current management) |
|---|---|---|---|---|
| General expectations for non-lethal deterrence measures | Yes | Yes | Yes | Yes (in Protocol), but not codified in rule |
| Expectations for range riding | Yes | Yes, in area-specific conflict mitigation plans in chronic conflict areas if applicable | Yes | Yes (in Protocol), but not codified in rule |
| Prescribes specific proactive non-lethal measures that should be in place prior to the consideration of lethal removal | No | Yes, in area-specific conflict mitigation plans in chronic conflict areas | Yes | No |
| Area-specific proactive conflict mitigation plans | No | Yes | Yes | No |
| Depredation thresholds for consideration of lethal removal of wolves specified in rule | Yes - at least three depredation events within a 30-day rolling window of time, or at least four depredation events within a 10-month rolling window of time, and at least one depredation must be a confirmed event | No - thresholds would be established in area-specific conflict mitigation plans in chronic conflict areas | Yes - at least three depredation events within a 30-day rolling window of time, or at least four depredation events within a six-month rolling window of time, all of which must be confirmed events | No |
| Lethal removal predicated on use of nonlethal tools | Yes | Yes | Yes | Yes, but not codified in rule |
| Lethal removal considered only if not expected to harm the wolf | Yes | Yes | Yes | Yes, but not codified in rule |

| | | | | |
|---|---|---|---|---|
| population's ability to reach recovery objectives statewide or within individual wolf recovery regions | | | | |
| Expiration dates on lethal removal authorizations | No | Yes | Yes | No |
| Geographic scope | Statewide, but could be applied solely to chronic conflict areas | Chronic conflict areas with statewide provision for use of non-lethal measures | Statewide with special provisions for chronic conflict areas | Statewide |

# 4. Affected Environment, Impacts, and Mitigation Measures

## 4.1. Affected environment

Recognizing that wolves are likely to eventually colonize all suitable habitat in the state and through dispersal may be present anywhere in Washington (including areas not considered preferred wolf habitat), the affected natural environment for all four alternatives is statewide. The affected built environment for all four alternatives includes areas of livestock production in Washington, regardless of land ownership (excluding tribal and National Park Service land).

SEPA rules provide a list of 16 environmental elements to be considered in an EIS analysis; however, the EIS must evaluate only the elements that apply to the proposal (WAC 197-11-440(6)(a). The 2011 Final EIS evaluated the following elements with respect to consideration of possible environmental effects of implementing conservation and management strategies in the Wolf Plan:

**(1) Natural Environment (Plants and Animals)**

a. Habitat for and numbers or diversity of species of plants, fish, or other wildlife (wolves, other carnivores, ungulates, ecosystem effects)
b. Unique species (listed species, candidate species, and species of concern)

**(2) Built Environment (Land and Shorelines Use)**

a. Recreation (hunting, wildlife watching, other types of backcountry recreation)
b. Agricultural crops (livestock)
c. Land use

The described alternatives in this SEIS could have significant impacts on one primary SEPA environmental element not specifically examined in detail in the 2011 Final EIS: **Animals**, specifically wolves and the impacts of measures to mitigate wolf-livestock conflict. Environmental elements considered, but not likely to be impacted by the described alternatives, are discussed in section 4.6.

## 4.2. Impacts on Animals: Wolves

*4.2.1. Effects of lethal removal on wolf population growth and viability*

Limited lethal control for effective depredation management has been a central component of the recovery strategy for wolves across the United States and has been practiced regularly by all states with increasing or stable wolf populations (with the exception of California where lethal take is prohibited while wolves are listed as state endangered [Kovacs et al. 2016]) to ensure that recovering wolves are not having an outsized adverse impact on the communities coexisting with wolves (Fritts et al. 2003, Bangs et al. 2006, Ruid et al. 2009).

As stated in the 2011 Final EIS, "Human-caused mortality is the largest source of wolf mortality in the western United States (Mitchell et al. 2008) and is the only factor that can significantly affect the recovery of populations" (pg. 48). However, wolves can withstand high anthropogenic mortality rates (22-48%) if reproduction and immigration are high (Fuller et al. 2003, Adams et al. 2008, Creel and Rotella 2010, Gude et al. 2012). In most locations, sustainable mortality rates range from about 22-24% (Creel and Rotella 2010). The factors most influential to the percentage of a wolf population that can be killed by humans annually without reducing the population are its productivity and the rate of immigration from source populations (Fuller et al. 2003). If productivity is low and immigration limited, human-caused mortality can have a larger impact on population growth; if productivity is average or high, higher mortality rates can be sustained, especially if the controlled population is near a source population providing dispersers (Fuller et al. 2003).

Both the western United States (comprised of Idaho, Montana, Wyoming, Oregon, Washington, and California) and Great Lakes (comprised of Michigan, Minnesota, and Wisconsin) wolf metapopulations are connected to large and expansive populations of wolves in western Canada (estimated about 15,000 wolves) and eastern Canada (estimated about 12,000-14,000 wolves), respectively. The wolf populations within the states listed above are not discrete; in fact, they are extensions of the large populations in Canada and effective dispersal has been documented across state and international boundaries (USFWS 2020b).

Despite relatively high levels of mortality due to liberal harvest and lethal removal in response to livestock depredation, Idaho, Montana, and Wyoming have maintained stable wolf populations without federal protections for over a decade (Table 4, USFWS 2020a). From 2009 – 2015, Idaho removed an average of 10% of its wolf population in lethal control actions with total annual mortality from all causes averaging 45%; from 2009 – 2017, Montana removed an average of 14% of its wolf population in lethal control actions with total annual mortality from all causes averaging 47%; from 2009 – 2017, Wyoming removed an average of 15% of its wolf population in lethal control actions with total annual mortality from all causes averaging 30% (Table 4, USFWS 2020a). The most current estimates indicate approximately 1,000 wolves occurring in Idaho and 819 wolves in Montana; the most recent year-end minimum count shows at least 311 wolves in Wyoming (USFWS 2020b).

In the Great Lakes region of the United States (Michigan, Minnesota, and Wisconsin), 2,773 wolves were killed in response to depredations over a 33-year period during which this population was federally protected (Ruid et al. 2009). Despite lethal control actions during this recovery phase, wolves in the Great Lakes region have since increased to roughly 4,200 animals and now occupy most suitable habitat in the region (Ruid et al. 2009, USFWS 2020b). The annual percentage of each of the three states' wolf populations removed for depredation management ranged from 1-7% while their wolf populations were increasing and is currently about 5% annually with no evidence of jeopardizing population viability (Ruid et al. 2009).

Despite substantial public controversy surrounding lethal removal of wolves in response to livestock depredations, these control actions have not had significant effects on recovery or

continued viability of wolves in the western United States and Great Lakes wolf metapopulations, likely due to normal or high productivity levels and genetic connectivity of these wolf populations with those in Canada (USFWS 2020b).

Additional information about lethal removal of wolves is provided in the 2011 Final EIS (pg. 73-74) and Wolf Plan (pg. 80-81).

Table 4. Percentage and number of individuals of the minimum population lethally removed, percentage and number of individuals included in total mortality, and minimum population counts of wolves in Idaho, Montana, and Wyoming, 2009 – 2017 (USFWS 2020a).

| Year | Idaho | | | Montana | | | Wyoming | | |
|---|---|---|---|---|---|---|---|---|---|
| | % min. pop. lethally removed (# individuals)[1] | % total mortality (# individuals)[1] | Min. pop. count | % min. pop. lethally removed (# individuals)[1] | % total mortality (# individuals)[1] | Min. pop. count | % min. pop. lethally removed (# individuals)[1] | % total mortality (# individuals)[1] | Min. pop. count |
| 2009 | 11 (93) | 31 (272) | 870 | 28 (145) | 49 (258) | 524 | 10 (32) | 18 (57) | 320 |
| 2010 | 10 (78) | 19 (144) | 777 | 25 (141) | 32 (179) | 566 | 12 (40) | 20 (69) | 343 |
| 2011 | 8 (63) | 39 (296) | 768 | 10 (64) | 33 (216) | 653 | 11 (37) | 20 (64) | 328 |
| 2012 | 10 (73) | 59 (425) | 722 | 17 (108) | 28 (324) | 625 | 16 (43) | 49 (136) | 277 |
| 2013 | 14 (94) | 72 (473) | 659 | 12 (75) | 53 (335) | 627 | 11 (33) | 36 (109) | 306 |
| 2014 | 9 (67) | 47 (360) | 770 | 10 (57) | 55 (306) | 554 | 11 (37) | 23 (78) | 333 |
| 2015 | 10 (75) | 45 (357) | 786 | 7 (39) | 51 (276) | 536 | 14 (54) | 22 (84) | 382 |
| 2016 | NA | NA | NA | 11 (52) | 70 (334) | 477 | 30 (113) | 35 (132) | 377 |
| 2017 | NA | NA | NA | 9 (57) | 48 (305) | 633 | 18 (62) | 48 (168) | 347 |

[1] Derived by dividing the number of individuals by the minimum population count.

### *4.2.2. Effects of lethal removal on pack dynamics and social behavior of wolves*

*(Some of the text in this section has been adapted and updated from the 2011 Final EIS and Wolf Plan)*

Wolves are highly social and live in packs (Mech and Boitani 2003). The fundamental unit of wolf social structure is the male and female breeding pair (Mech 1970, Mech and Boitani 2003). Packs are formed when male and female wolves develop a pair bond, breed, and produce pups. The pack typically consists of a socially dominant breeding pair, their offspring from the previous year, and new pups. Other breeding-aged adults may be present, but they may or may not be related to the others (Mech and Boitani 2003). The pack hunts, feeds, travels, and rests together. Maintaining the pack social unit is important for acquiring food (Stahler et al. 2006, Sand et al. 2008) and enhancing pup survival (Brainerd et al. 2008, Stahler et al. 2020). The pack also shares pup-rearing responsibilities, including hunting and tending pups at the den or at a series of rendezvous sites.

Several studies show numerous advantages of living in packs and maintaining larger pack sizes, such as better success hunting elk (MacNulty et al. 2012), ability to adapt to prey size (Barber-Meyer et al. 2016), higher pup production (Stahler et al. 2013, Stahler et al. 2020), better success in defending against territorial attacks from other wolves (Cassidy et al. 2015), greater ability to compete with scavengers (Wilmers et al. 2003, Vucetich et al. 2004), and more successful recovery from mange infestation (Almberg et al. 2015). Mech and Boitani (2003) state, "Wolves maintain a complex social structure and therefore measures of abundance do not capture all impacts of harvest or the interactions between effects at the population, pack, and individual levels."

Pack size and breeder presence and turnover have been shown to be important factors in pup survival and recruitment as well as maintenance of the pack social unit. Mitchell et al. (2008) show that larger packs of 10 or more wolves in Idaho, Montana, and Wyoming have a 90% or greater chance of successfully rearing two or more pups through December of a given year, whereas smaller packs are much less likely to do so. For example, depending on location within these states, packs of four to five animals had only a 20-73% chance of successfully raising at least two pups to year's end. The unexploited wolf packs in Yellowstone National Park have maintained a long-term average of 10 individuals per pack and sometimes support larger numbers (Stahler et al. 2020), providing additional evidence that this pack size may be advantageous. Ausband and Mitchell (2021) found that reproductive rates were generally lower for wolves in small groups (1–4 adults) compared to those in large groups (≥8 adult wolves). Pup survival, however, was slightly higher for wolves in small groups compared to large groups except at very high densities. Large pack size resulted in less birthing failure, more female breeders per group, larger litter sizes, and ultimately more pups recruited per group.

In Brainerd et al.'s (2008) study of the impacts of the loss of breeding wolves from a pack, they found that at least one pup survived in 84% of cases regardless of the sex of the remaining breeder. In packs of six or more, pups survived more frequently compared with smaller groups; non-breeding wolves in the pack benefited pup survival. The number of adult-sized wolves remaining after breeder loss, along with pup age, had the greatest influence on pup survival. Wolves holding the territory reproduced the following season about half the time, and a greater proportion reproduced where one breeder was replaced versus cases where both breeders needed to be replaced. Wolf packs dissolved and abandoned their territories following breeder loss in 38% of

cases. Where groups dissolved, wolves reestablished territories in over half of cases, with neighboring wolves taking over territories in a few cases. Fewer groups dissolved where breeders remained versus cases where all breeders were lost. Pack size following breeder loss was smaller where packs dissolved compared with cases where packs did not dissolve. Similarly, Borg et al. (2015) found that the loss of a breeder preceded about three quarters of cases of pack dissolution; packs were more likely to dissolve if a female or both breeders were lost and pack size was small. Packs that lost breeders exhibited lower denning and recruitment rates. Although this study showed the importance of breeders in maintaining pack cohesion, breeder loss and pack dissolution had no significant effects on short- or long-term population dynamics, similar to findings of Brainerd et al. (2008).

Ausband et al. (2017a) also illustrate the importance of breeders to pup survival—in their study of harvest and group effects on wolf pup survival, the number of breeders present when pups reached 15 months of age was a strong predictor of pup survival. Large pack sizes and breeder stability increased pup survival in harvested wolf populations, but turnover of breeding males and the presence of older, non-breeding males decreased pup survival. In years where harvest occurred, the average effect of one additional adult in a pack was associated with a 1.14 times increase in pups reaching 15 months old. At 15 months of age for pups, increasing the number of breeders present by one was associated with a nearly four times increase in the probability of survival during years with harvest. Turnover of breeding males was associated with more than three times decrease in the probability of pup survival. Although increasing pack size generally had a positive effect on pup survival, each additional two-year-old or older non-breeding male present when pups reached 15 months of age was associated with a nearly three times decrease in the probability of pup survival. Ausband et al. (2017b) further elucidate how breeder turnover affects breeding opportunities of subordinates and the number and sex ratios of subsequent litters of pups. Breeder turnover led to shifts in the reproductive hierarchies within groups and the resulting changes to group composition were highly variable and depended on the sex of the breeder lost. Harvest had no effect on the frequency of breeder turnover, suggesting that even in unexploited wolf populations, breeder turnover may be common.

Although targeted lethal removal of wolves in response to livestock depredations is not likely to have a significant effect on recovery or viability of a wolf population as long as control actions are limited and populations are sufficiently large (Brainerd et al. 2008, Borg et al. 2015), lethal removal may fracture packs and affect pup survival and recruitment depending on which pack members are removed (Mech and Boitani 2003). However, pack social structure is adaptable and resilient. Typically, the loss of offspring (young of the year, yearlings, or older offspring) does not result in the disruption of the pack because the breeding pair continues to hold the territory (Mech and Boitani 2003). A wolf pack will generally maintain its territory if both members of the breeding pair are not killed, and even if one member of the breeding pair is killed, the pack may hold its territory until a new breeder arrives (Mech and Boitani 2003). If both members of the breeding pair are killed, the remaining members of the pack may disperse, starve, or remain in the territory until an unrelated dispersing wolf arrives and mates with one of the remaining pack members (Brainerd et al. 2008, Mech and Boitani 2003). If breeders are killed, they can typically be quickly replaced from

either within or outside the pack, and pups can be reared by another pack member if their parents die (Packard 2003, Brainerd et al. 2008, Mech 2006, Borg et al. 2015).

### *4.2.3. Wolf mortality, lethal removal, and population growth in Washington*

Agency lethal removal in response to conflicts with livestock and legal harvest on tribal reservations account for 57% of Washington's known wolf mortality from 2008 – 2020. All human-caused mortality during this time period constitutes 78% of known wolf mortality. Documented mortality ranged from 8-15% and averaged 9% of the known population over this time period (Table 5). With this level of documented mortality, Washington's wolf population has grown at an average rate of 26% annually since breeding wolves were first documented in the state (Table 1).

Table 5. Causes of documented wolf mortality in Washington, 2008 – 2020.

| Year | Minimum wolf count | Natural | Under investigation | Other human-caused | Caught-in-the-act | Vehicle collision | Unknown | Legal harvest | Agency removal | Total known mortalities |
|---|---|---|---|---|---|---|---|---|---|---|
| 2008 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2009 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2010 | 19 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 2011 | 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2012 | 51 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 7 | 9 |
| 2013 | 52 | 1 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 5 |
| 2014 | 68 | 3 | 0 | 4 | 0 | 0 | 2 | 0 | 1 | 10 |
| 2015 | 90 | 0 | 0 | 3 | 0 | 0 | 1 | 3 | 0 | 7 |
| 2016 | 115 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 7 | 14 |
| 2017 | 122 | 0 | 4 | 0 | 2 | 2 | 0 | 3 | 3 | 14 |
| 2018 | 126 | 0 | 2 | 0 | 0 | 0 | 0 | 6 | 4 | 12 |
| 2019 | 145 | 1 | 1 | 1 | 2 | 0 | 1 | 6 | 9 | 21 |
| 2020 | 178 | 2 | 0 | 1 | 0 | 1 | 1 | 8 | 3 | 16 |
| Total | - | 7 | 10 | 15 | 4 | 4 | 6 | 30 | 34 | 112 |

Individual wolves lethally removed by WDFW (2012-2020) have represented an average of 4% of the population each year and has never exceeded 14% (2012) of the minimum population count in a single year (Table 2). No wolves were lethally removed by WDFW from 2008-2011, 2013, and 2015 (Table 2).

## 4.3. Comparison of impacts on wolves associated with each alternative

**Common to all alternatives:** It is difficult to differentiate among potential impacts from the alternatives. All alternatives, including the No Action Alternative, allow for lethal control of wolves to mitigate depredation of livestock under specific criteria and provisions. Because many components of the proposed alternatives are already current practice for WDFW, levels of wolf mortality associated with agency lethal removal are likely to be similar to the current conditions (described below under the No Action Alternative) under all alternatives. Although wolf-livestock conflict scenarios are notoriously difficult to predict, multiple studies show that depredation risk

may increase after a wolf pack has learned to prey on livestock and there is a predictable pattern of recurrence of depredations in areas with prior conflicts (Harper et al. 2005, Sime et al. 2007, Karlsson and Johansson 2010, Bradley et al. 2015, DeCesare et al. 2018, Hanley et al. 2018, ODFW 2021). Development and implementation of area-specific, proactive conflict mitigation in areas of Washington that have experienced the most wolf-caused livestock depredation and subsequent wolf removals may reduce the recurrence of these events and impacts associated with wolf removal. Alternatives 2 and 3 both include provisions to develop area-specific, proactive conflict mitigation plans in areas where wolf-livestock conflict has repeatedly occurred; the No Action Alternative and Alternative 1 do not include this provision.

None of these alternatives would preclude the consideration of lethal removal entirely, but all would likely result in levels of lethal removal comparable to previous years in Washington and not be likely to have effects on the recovery, population growth, and long-term sustainability of wolves in the state. As discussed in the 2011 Final EIS (section 4.1.4.) and Wolf Plan (pg. 34-36), wolves play a role in ecosystems and have important ecosystem effects. Levels of removal projected under all alternatives are not likely to have a measurable impact on those effects provided that levels of lethal removal are not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions (a provision included in all alternatives, including the No Action alternative).

**No Action Alternative:**
WDFW wolf-livestock conflict management and expectations for non-lethal and lethal measures currently operate under the guidance of the Wolf Plan and Protocol. The existing environmental conditions under the No Action alternative may serve as a baseline for understanding levels of agency lethal removal that could potentially occur under Alternatives 1-3. From 2012-2020, wolves lethally removed by WDFW have represented an average of 4% of the population each year and have ranged from 0-14% of the minimum population count in a single year (Table 2). This range and average percentage of lethal removal is expected under the No Action Alternative.

**Alternative 1:** The use of lethal measures to mitigate wolf-livestock conflict under Alternative 1 is expected to be similar to the No Action Alternative, because Alternative 1 would largely be based on the criteria outlined in the Protocol (current guidance). Levels of lethal removal may be more similar to the average from 2012-2020 (4%) rather than the high end of the range (14%), because the year that 14% of the wolf population was removed (2012) involved a full pack removal in early stages of recovery when there were relatively few wolves on the landscape and no wolf-livestock interaction protocol in place.

**Alternative 2:** Because of the dynamic and fact-specific nature of wolf-livestock conflict scenarios, it is uncertain how the use of lethal measures to mitigate wolf-livestock conflict under Alternative 2 would compare to the baseline level of lethal removal described in the No Action Alternative. Alternative 2 could potentially result in lower levels of lethal removal of wolves than the baseline level in two ways:

1. Because Alternative 2 would establish proactive, area-specific criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of Washington where most wolf depredations on livestock and related wolf removals take place, levels of conflict that typically lead to wolf removal may be prevented. The individual circumstances of each

conflict scenario could be taken into account and planned for accordingly, rather than spending time and resources on broadly prescribed practices that may not be most critical for the situation at hand. Areas that have historically been hotspots for wolf-livestock conflict in Washington would have more attention and focus for resources that may proactively mitigate conflict, and the documented history of conflict would inform proactive planning.

2. Alternative 2 is aimed at preventing escalation of depredation behavior that could lead to higher levels of lethal removal of wolves in the long-term if not curtailed in the short-term. Targeted lethal removal of wolves in response to livestock depredations, as long as it occurs shortly after depredations are discovered, can reduce the probability of depredation recurrence (Bradley et al. 2015, DeCesare et al. 2018). If depredation thresholds for consideration of lethal removal of wolves are specified in each conflict mitigation plan, WDFW would potentially be able to remove wolves in early stages of conflict before high numbers of livestock depredations occur. Although this might result in lethal removal of wolves more quickly than what is considered in other alternatives, it might result in removing fewer wolves overall if conflict can be stopped with early incremental removal rather than waiting for conflict to escalate to the point where it can only be stopped through full pack removal. The potential to remove wolves in early stages of conflict may provide incentive for a higher standard of proactive, non-lethal measures implemented before any depredation occurs.

**Alternative 3:** Similar to Alternative 2, it is uncertain how the use of lethal measures to mitigate wolf-livestock conflict under Alternative 3 would compare to the baseline level of lethal removal described in the No Action Alternative because of the dynamic and fact-specific nature of wolf-livestock conflict scenarios. Alternative 3 could potentially result in lower levels of lethal removal of wolves than the baseline level in two ways:

1. Like Alternative 2, Alternative 3 would also establish proactive, area-specific criteria for the use of non-lethal and lethal measures to mitigate wolf-livestock conflict in areas of Washington where most wolf depredations on livestock and related wolf removals take place. This provision could potentially result in lower levels of lethal removal than the baseline level for the same reasons described above for Alternative 2.

2. Alternative 3 specifies that WDFW could only consider lethal removal of wolves if at least three depredation events occurred within a 30-day rolling window of time or four events within a six-month rolling window of time, and that all must be confirmed events. This provision would likely lead to WDFW considering lethal removal of wolves less often than under the thresholds specified in Alternative 1 and the current guidance followed under the No Action Alternative (at least three depredation events within a 30-day rolling window of time, or at least four depredation events within a 10-month rolling window of time, and only one depredation must be a confirmed mortality event). The more restrictive threshold of Alternative 3 could potentially result in fewer lethal removals of wolves.

Although Alternative 3 is the most prescriptive of the four alternatives and would include the most specific expectations for use of non-lethal and lethal measures to mitigate wolf-livestock conflict, general expectations that are not scenario-specific do not always mitigate conflict that leads to

lethal removal of wolves. This alternative prescribes certain non-lethal deterrence measures including delaying turnout of livestock calves to forested/upland grazing pastures until calves reach at least 200 pounds and after wild ungulates are born in mid-June; ensuring sanitation (removal, burying, burning, liming, or fencing off of livestock carcasses) is being conducted; and range riding if wolf-livestock conflict occurs on public land. These are excellent, basic livestock husbandry practices that WDFW supports and encourages in areas occupied by wolves. However, recent examples of wolf-livestock conflict scenarios in Washington provide evidence that general practices prescribed on a broad scale may not account for the specifics of each situation or lessen depredation and resultant lethal removal of wolves:

- The first example involves the Wedge pack in 2020, a scenario in which the pack was implicated in 16 depredation incidents over 83 days, resulting in agency removal of the entire pack. The scenario started with the pack injuring two calves and killing one in approximately a week. The calves were in a private pasture, where stipulations about turnout and range riding would not have applied. The affected operation had never previously been affected by wolf depredation and had been implementing standard husbandry practices such as carcass sanitation, treating injured livestock, and providing daily human presence because the livestock were in a pasture next to the house.

- The second example involves the Leadpoint pack in 2020, a scenario in which the pack was implicated in 12 depredation incidents over 57 days, resulting in attempted lethal removal of pack members. The depredations affected calves over 200 pounds in an open, private pasture where stipulations about turnout and range riding would not have applied or been the most appropriate nonlethal measures for the scenario. The affected livestock producer had implemented several proactive and reactive non-lethal deterrence measures, but trapping activity (although no wolves were trapped or removed) by WDFW staff near the affected pasture likely contributed to the stoppage of depredation by wolves.

- The third example involves a newly discovered and as yet unnamed pack in Columbia county, a scenario in which the pack was implicated in five depredation incidents over 83 days, resulting in lethal removal of two pack members. The depredations affected calves over 200 pounds in private pastures where stipulations about turnout and range riding would not have applied as well as calves that had already been removed from the range.

General requirements for specific non-lethal measures broadly described would not have prevented the depredations detailed in the examples above or kept the situations from escalating to consideration of lethal removal—it is not possible to predict or account for all variability of each situation and attempts to do so are speculative. It is uncertain how the provisions of Alternative 3 might or might not mitigate conflict that leads to lethal removal of wolves, particularly as wolves recolonize areas without grazing allotments. Many of the provisions of Alternative 3 are tailored to open, dispersed, public grazing allotments, which largely only applies to the eastern half of the state and does not consider that approximately half of all documented depredations in Washington from 2012 – 2021 occurred on private land.

Further, if a rule imposes too many restrictions on when depredations count toward consideration of lethal removal and/or when lethal removal can occur, it may result in scenarios where livestock depredation cannot be addressed in a timely manner (resulting in fewer lethal removals of wolves

in the short-term) and could escalate to the point of full pack removal (resulting in more lethal removals of wolves in the long-term) when removing fewer wolves early on might have mitigated the conflict. Although of all the alternatives, Alternative 3 restricts the circumstances under which lethal removal of wolves can be considered the most, these restrictions have the potential to create long-term livestock depredation problems that could contribute to a hostile environment for wolf recovery.

Recent conflict situations in Oregon where lethal removal of wolves was not available as a tool provide an example. Statewide, confirmed depredation events increased 94% in 2020 from the previous year. Over half of all depredations was attributed to the Rogue Pack, which depredated 16 times in 2020. Since confirmed depredations were first recorded in 2009, the Rogue Pack (2014 – present) and former Imnaha Pack (2008 – 2016) represent 45% of all confirmed depredations in Oregon. Neither of these packs were subject to lethal control (ODFW 2021).

In Oregon's East Wolf Management Zone (East WMZ), where lethal removal of wolves is available as a tool, Oregon's wolf population has increased significantly while depredation events and livestock losses have increased at a much lower rate. Conversely, in Oregon's West Wolf Management Zone (West WMZ) where lethal removal has not been available as a tool, confirmed depredations in the West WMZ have increased at a rate similar to the increase of the wolf population. In 2019 and 2020, the number of confirmed depredations in the West WMZ exceeded those of the East WMZ, despite the West WMZ only having 13% of the wolf population. The Rogue Pack has depredated since 2016 despite significant non-lethal measures by livestock producers and agency staff, with 40 depredations total (ODFW 2021).

## 4.4. Summary of impacts

Impacts to wolves include direct effects of lethal removal (i.e., loss of individual wolves) and indirect effects of lethal removal (e.g., changes to pack size, composition, and resilience, as well as associated effects on pup survival and recruitment). Data from wolf metapopulations in the western United States and Great Lakes states show that where wolves have been subject to lethal removal in response to livestock depredation at all stages of recovery, the wolf populations have continued to thrive. This data indicates that Washington's wolf population is likely to continue to grow under all of the alternatives considered. Lethal control actions, as long as they are targeted to specific wolf packs implicated in livestock depredation and limited, are not likely to have significant effects on recovery or continued viability of Washington's wolf population.

None of these alternatives would preclude the consideration of lethal removal of wolves entirely. Because many components of the proposed alternatives are already current practice for WDFW, levels of wolf mortality associated with agency lethal removal and associated impacts are likely to be similar to the current conditions under all alternatives. All alternatives will likely result in levels of lethal removal comparable to previous years in Washington and no alternative is likely to have negative effects on the recovery, population growth, and long-term sustainability of wolves in the state.

There is an inherent aspect of uncertainty about the environmental impacts of each alternative given the fact-specific nature of wolf-livestock conflicts. Because Alternatives 2 and 3 require the development of area-specific, proactive conflict mitigation plans in areas where wolf-livestock conflict has repeatedly occurred in Washington, these alternatives may result in fewer wolf

removals than Alternative 1 and the No Action Alternative. Alternative 3 is the most prescriptive of the four alternatives and would include the most specific expectations for use of non-lethal and lethal measures to mitigate wolf-livestock conflict, but broadly prescribed measures (outside of area-specific conflict mitigation plans) that are not scenario-specific may not actually result in less wolf-livestock conflict and resultant wolf removals. Higher thresholds at which lethal removal of wolves can be considered in Alternative 3 may result in fewer wolf removals in the short-term, but may ultimately allow wolf-livestock conflict to escalate (ODFW 2021) and not reduce wolf removals in the long-term. Alternative 2 may result in lethal removal of wolves more quickly than what is considered in other alternatives, but could result in fewer wolf removals long-term if depredations are addressed quickly.

## 4.5. Mitigation measures

### *4.5.1. Provision to prevent harming the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions*

Wolf-livestock conflict scenarios involve multiple sources of uncertainty about factual circumstances that make concrete analysis of impacts and outcomes challenging. Because of this uncertainty, all alternatives include a provision that lethal removal of wolves would be considered only if it is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions. This measure is already in practice by WDFW using empirical and predictive data each time lethal removal of wolves is considered (see Appendix A for a recent example).

Documented wolf mortality in Washington is generally low (Table 5) and has not occurred at levels that have stymied wolf population growth (Table 1). However, in a worst-case scenario, the potential exists that WDFW may discover a higher level of wolf mortality (e.g., from causes such as disease, poaching, or tribal harvest) than was known by WDFW at the time that a decision to lethally remove wolves was made. This could result in agency lethal removal of wolves unintentionally adding to a disproportionate impact on the wolf population due to unknown mortality. The uncertainty of this worst-case scenario exists under all alternatives.

## 4.6. Elements of the environment not likely to be impacted

### *4.6.1. Air and acoustic environment*

The fuel emissions and noise associated with the action of surveying, capturing, or lethally removing wolves by fixed-wing aircraft or helicopter could result in infrequent fuel emission and noise impacts to the affected environment. Impacts associated with management actions that use aircraft are likely to be infrequent and short in duration and would not result in any significant impact to air quality or the acoustic environment. Because management actions using aircraft are typically limited in frequency and duration and represent a fraction of overall air traffic, emissions and noise from aircraft are not likely to have significant effects on the affected environment. Both non-lethal and lethal conflict deterrence measures may involve minor use of fossil fuels to operate vehicles, but likely do not contribute much to the air pollution in the affected environment.

*4.6.2. Unique species (listed species, candidate species, and species of concern)*

Washington contains a number of state and federal listed species (endangered, threatened, sensitive), candidate species, and species of concern, with some of these occurring in areas occupied by or likely to be eventually occupied by wolves (discussed in sections 4.1.2, 4.1.4, and 4.1.5 of the 2011 Final EIS). The action of trapping and/or lethally removing wolves, if conducted indiscriminately, could have significant impacts on endangered species such as grizzly bears and lynx. However, such impacts are not likely because WDFW's current practice of employing selective lethal removal methods (described below) avoids non-target species, makes operations as safe and effective as possible for both wildlife and people, and reduces trauma, stress, and chances of injury and/or death to captured wildlife. No impacts on non-target species have been documented related to wolf trapping and/or lethal removal conducted by WDFW in Washington to date.

WDFW personnel use three primary methods to lethally remove wolves: 1) shooting via helicopter, 2) shooting from the ground, and 3) trapping and euthanasia. Each method has advantages and disadvantages in terms of environmental impacts, human safety, effectiveness, and utility based on each unique scenario, but all allow for selective lethal removal of specific species and individual wolves (they are not indiscriminate) that mitigate effects on non-target wolves and species. Of the 34 wolves lethally removed by WDFW in response to livestock depredation from 2012 – 2020, two were removed via ground shooting, two via trapping and euthanasia, and the remainder via helicopter.

**Shooting via helicopter:** Aerial shooting typically involves visually locating suspected depredating individual wolves or wolf packs from either a small single-engine fixed-wing aircraft or a helicopter and shooting them from the helicopter with a shotgun. Shooting typically results in a relatively quick death. At least one member of a wolf pack needs to be radio-collared in order to effectively locate the pack from the air. Good visibility is required for effective and safe aerial shooting operations, and relatively clear and stable weather conditions are necessary. Summer conditions limit the efficacy 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. Rugged terrain and forest canopy cover also limit the effectiveness of aerial operations, so much of the success of aerial operations is dependent on the location of the target wolves the day of the operation as well as the weather conditions. If the location of the wolves and weather are favorable, aerial shooting is one of the most effective and selective lethal tools available, and depredation problems can sometimes be resolved very quickly and effectively in the short-term through aerial shooting. There is virtually no risk of injuring or killing a non-target species using this method. However, low-level flying in small aircraft is dangerous and presents significant risk to human safety; it is the leading cause of job-related death for wildlife professionals (Sasse 2003, Conway et al. 2004).

**Ground shooting:** Shooting from the ground is highly selective for the target species, and may be employed in conjunction with the use of auditory attractants (sounds of prey animals in distress or imitations of wolf vocalizations) and/or shooting over a wolf-killed carcass (with the intent of lethally removing the wolf or wolves responsible for the depredation). Removal of one or two specific wolves by shooting in the area where depredations occurred can sometimes provide immediate relief from further depredation by wolves. Ground shooting offers the potential of solving a problem more quickly and selectively than trapping, 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 setting traps or aerial operations. There is virtually no risk of injuring or killing a non-target species using this method.

**Foot-hold trapping:** Trapping is an extremely important tool in wolf management and can be effectively used to live-capture wolves. When wolves are trapped, they are ordinarily physically restrained or chemically immobilized, radio-collared, and released on site, or euthanized on site. Wolves in Washington are captured with modified steel foot-hold traps. These traps have offset jaws with vulcanized rubber inserts that meet international humane trapping standards and meet WAC 220-417-040. Wolf traps are attached to a steel chain approximately 8-10 feet in length with a grapple type drag hook at the end (i.e., a drag). The chain has at least one swivel where the trap attaches to the chain and another one midway down the chain or at the end of the chain at the drag, as well as a shock-absorbing spring in the chain. These modifications reduce chances of injury to captured wildlife. Traps are visually inspected and tested before being used to make sure they operate properly. Effective trap placement, pan-tension devices and the selection and placement of appropriate lures by trained personnel contribute to the foot-hold traps' selectivity and safety of captured wildlife.

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., fox, coyote, bobcat), they cannot preclude the occasional capture of larger non-target species such as cougars or bears. However, they do allow for the release of any non-target animals captured. Trapping in the area where wolves have been documented injuring or killing livestock may increase the likelihood of targeting the wolf or wolves responsible for the livestock depredations.

WDFW has the following provisions in place for deploying wolf traps to make operations as safe and effective as possible for both wildlife and people, and to reduce trauma, stress, and chances of injury and/or death to captured wildlife:

- Before trapping session begins, the appropriate landowners, district biologists, USFWS biologists, etc. are contacted and permissions granted prior to trap deployment.
- Biologists involved in wildlife capture consult with the agency wildlife veterinarian on immobilization drugs and treatment recommendations for broken teeth, lacerations, or puncture wounds as well as pain medications.
- The capture crew must include a person certified in chemical immobilization and general wildlife capture and handling through a WDFW approved wildlife capture/immobilization course.
- All members of the team involved with chemical immobilization are educated on the safe handling of the drugs involved, their effects, and emergency human treatment.
- Ideally, the capture crew includes a person experienced in capturing and handling wild canids.
- Whenever WDFW personnel deploy traps for wolves, they post warning signs at access points into the area to alert people to the presence of traps.
- All traps are checked a minimum of once every 24 hours, and all trap checking is completed by 12:00 PM at the latest.

- Staff avoid trapping when weather conditions threaten the survival or well-being of trapped animals unless steps can be taken to mitigate these risks. In general, trapping occurs between late April and late October or when ambient nightly temperatures are above 25° F. If ambient temperatures on the trapline are above 80° F, traps are checked twice a day, once in the morning and once in the afternoon. The trapline may be shut down if daytime temperatures increase too rapidly to be able to check the trapline quickly enough to ensure the well-being of animals that are captured.
- Special protocols, considerations, and risk mitigation measures are in place if biologists are trapping in areas known to be occupied by grizzly bear and lynx (federally endangered species).

**Lead ammunition:** Lead is toxic and widely banned from household items in most developed countries, but lead ammunition is still widely used for hunting and shooting. It puts at risk the health of waterfowl, raptors, scavengers, and other species in the food web, including humans, when carcasses containing lead are consumed (Arnemo et al. 2016). Although WDFW does use lead shot in aerial lethal removal operations for wolves due to a lack of other suitable options to humanely conduct this work, all wolf carcasses are retrieved from the field, so there is no risk of lead consumption by scavengers.

## 4.7. Analysis limitations

The alternative rule making options proposed in Section 3 could potentially result in new or increased implementation of non-lethal conflict deterrence measures that may have effects on elements of the natural environment. For example, range riding using horses and all-terrain vehicles (ATVs) may contribute to soil erosion, damage to vegetation, and spread of invasive plants; livestock guardian dogs could have negative interactions with wildlife, including endangered species. However, many land use activities (including non-lethal conflict deterrence activities) associated with livestock production, grazing, and monitoring already occur at varying scopes and scales in Washington independent of the rule making effort analyzed in this document. Because implementation of non-lethal conflict deterrence measures is highly variable both temporally and geographically, we cannot meaningfully predict or quantify whether impacts to elements of the natural environment (with the exception of direct impacts to wolves) will occur as a result of implementation of any of the alternative rule making options. Based on years of observation in Washington and decades in other states (Bangs et al. 2006, Wilson et al. 2017) of non-lethal deterrence measures in practice, we do not anticipate significant adverse environmental impacts of implementation of non-lethal measures to the extent that we are able to foresee outcomes.

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# Appendix A. Analysis of Potential Impacts of Lethal Removal to the Regional or Statewide Wolf Population's Ability to Reach Recovery Objectives

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**Analysis of Potential Impacts of Lethal Removal to the Regional or Statewide Wolf Population's Ability to Reach Recovery Objectives**

**By: Donald A. Martorello and Ben Maletzke**

**1. Assessment based on predictive model**

The wolf population model in Maletzke et al. (2015) was described in WDFW's Wolf Plan in 2011 (appendices G and H), and was published in the peer-reviewed science journal called, "The Journal of Wildlife Management" in 2015. The authors developed a spatially explicit meta-population matrix model using vital rates based on empirical data from other states in the northwestern United States to estimate probability of occurrence, terminal extinction rates, and potential recovery time. They also used the model to project the risk of declining below recovery objectives if management scenarios (mimicking agency lethal removal actions) are considered during recovery.

The authors used the model to assess persistence of the recovery objectives established in the recovery plan (15 successful breeding pairs for 3 consecutive years, with ~4 pairs in each of the recovery regions) by running 9 different scenarios with 100 simulations each for 50 years. Scenarios 6 through 9 evaluated the effects of introducing additional adult mortalities (presumably through lethal removal) and immigration on persistence at a regional and statewide level. The lethal removal management scenario removed 30% of all dispersal and adult age classes 1 time every 4 years in a recovery region after the delisting goals were met. The removal scenario was additive to the baseline mortality already incorporated in the model, which was

conservatively set at 28% based on experience in other states. The lethal management scenarios 6 and 8 assessed whether the recovery goals would be reached on a statewide level if wolves were removed in the Eastern Washington Recovery Region once it had reached the recovery goal. The lethal management scenarios 7 and 9 assessed whether the northeast region would drop below recovery levels with 30% removals to the adult and dispersal population once every 4 years.

Scenario #6:

- Start with recovery objective (5 breeding pairs) met in the EW recovery region, but not in the other 2 recovery regions; assume immigration, conduct management.
- The model indicated that conducting wolf management in the EW recovery region after recovery objectives are met there, but before regional objectives are met in the other 2 regions, will not inhibit the ability to achieve recovery in all 3 regions over time.

Scenario #7:

- Start with recovery objective (5 breeding pairs) met in the EW recovery region, but not in the other 2 recovery regions; assume immigration, conduct management.
- The model indicated that conducting wolf management in the EW recovery region after recovery objectives are met there, but before regional objectives are met in the other 2 regions and with continued immigration, results in a 7% risk of falling below the recovery objective for Eastern WA; model assumed 1 of 5 pairs established in Blue Mountains.

Table 1. Wolf population information for the eastern recovery region.

| Dec 31 of each year | Min wolf pop in Eastern recovery region | Min SBP in EW recovery region | Min packs in EW recovery region | Scenarios 6 & 7 (Maletzke et al. 2015) | Actual wolf mgmt removal from EW recovery region | Comments |
|---|---|---|---|---|---|---|
| 2008 | -- | 0 | 0 | | 0 | |
| 2009 | -- | 1 | 1 | | 0 | |
| 2010 | -- | 1 | 2 | | 0 | |
| 2011 | 18 | 4 | 5 | | 0 | |
| 2012 | 43 | 4 | 7 | | 7 | Removed 7 wolves from Wedge, pack persisted |
| 2013 | 39 | 3 | 10 | | 0 | |
| 2014 | 56 | 4 | 13 | | 1 | Removed 1 wolf from Huckleberry, pack persisted |
| 2015 | 77 | 7 | 15 | 23.1 | 0 | EW recovery region first had 5 SBP in Dec 2015 |
| 2016 | 97 | 8 | 17 | | 7 | Removed 7 wolves from Profanity, pack dissolved |
| 2017 | 106 | 13 | 19 | | 3 | Removed 2 wolves from Smackout, pack persisted; removed 1 wolf from Sherman, pack dissolved |
| 2018 | NA | NA | NA | | 3 | Removed 1 wolf from Togo, removed 2 wolves from OPT |

## 2. Assessment based on empirical minimum wolf population estimates in annual wolf reports

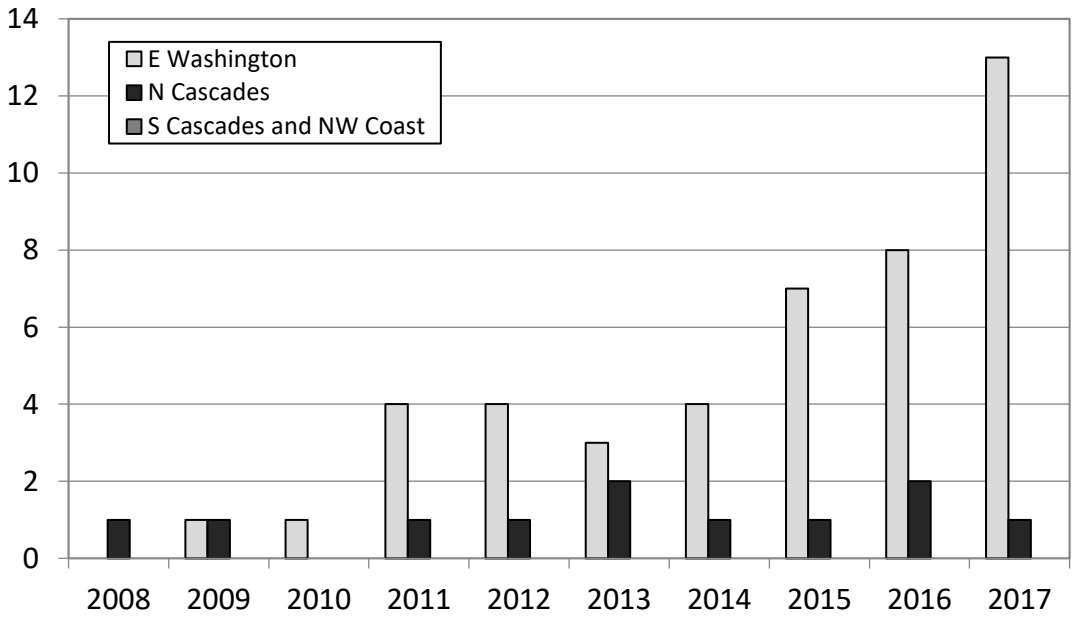
WDFW has implemented lethal removal of one or more wolves from 7 packs since the first pack was documented in 2008. Below is the estimated minimum number of wolves in the EW recovery region before (Dec 31 the prior year) and after (Dec 31 of that year) the removals. The regional and statewide wolf population has increased despite WDFW wolf removal actions.

Table 2. Wolf population size before and after agency wolf removals.

| | | | Min # wolves in EW region | | Min # wolves statewide | |
|---|---|---|---|---|---|---|
| | | # wolves | January 1 | | January 1 | December 31 |
| Year | Pack | removal | | December 31 | | |
| 2012 | Wedge | 7 | 18 | 43 | 35 | 51 |
| 2014 | Huckleberry | 1 | 39 | 56 | 52 | 68 |
| 2016 | Profanity | 7 | 77 | 97 | 90 | 115 |
| 2017 | Smackout | 2 | 97 | 106 | 115 | 122 |
| 2017 | Sherman | 1 | | | | |
| 2018 | Togo | 1 | 106 | NA | 122 | NA |
| 2018 | OPT | 2 | 106 | NA | 122 | NA |
| ALL | ALL | 21 | | | | |

### 3. Assessment based on minimum SBP in annual wolf reports

**Figure 4.** Minimum known number of SBP by recovery area in Washington, 2008 – 2017.



- Based on the wolf management plan adopted in 2011, our metric for monitoring the recovery of the wolf population is successful breeding pairs (SBP). The recovery objective for the Eastern WA recovery area is a minimum of 4 SBP. That region increased by 5 SBP between 2016 and 2017 alone.
- The model explains the risk from a standpoint of when WA was just hovering around the recovery objectives (5 SPB) for the Eastern region. However the wolf population is already more robust than what the model reflected. Any calculations for quasi extinction would be much less than what was predicted in the model because we are so far above the recovery objectives for the eastern recovery region.
- Moreover, eight wolves dispersed from natal packs in the Eastern Recovery region. Based on the distribution of packs, the population is beginning to reach a saturation point and we saw a large increase in number of successful breeding pairs (8 to 13) between 2016 and 2017. Based on the information, trends and evidence available, the population appears be recovering well in the eastern recovery zone where potential lethal removal may take place.

**4. Assessment based on WA mortality and population data (from annual reports) and NRMDPS (documented in wolf plan)**

| | Washington 2011-2017 | | |
|---|---|---|---|
| Cause | Ave morts (# wolves) | Ave % of pop | ID, MT, WY |
| Natural | 0.6 | 0.01 | 0.03 |
| Human | 3.0 | 0.04 | 0.13 |
| Unknown | 0.9 | 0.01 | 0.00 |
| Harvest | 1.4 | 0.01 | 0.00 |
| Removal | 2.7 | 0.04 | 0.10 |
| | 8.6 | 0.11 | 0.26 |

From wolf plan…."Annual survival rates averaged 75% among wolves in Idaho, Montana, and Wyoming during 1982-2004 (Smith et al. 2010). Prior to the legal hunting seasons in 2009-2010, on average, an estimated 10% of the wolves in these states died annually from control actions, 10% from illegal killing, 3% from human-related accidents, and 3% from natural causes (USFWS 2009)"

**Summary**

The 30% removal rate modeled was in addition to other projected wolf mortalities, including agency removals, legal and illegal human causes, and natural and unknown causes, which the model conservatively assumes would be 28% annually based on experience in other states. In addition to the average annual growth rate of about 30% of the statewide wolf population from 2009-2017, the eastern recovery region has met the regional recovery objective since 2015 and the trend is increasing.

Lethal removal of a modest number of wolves from the in eastern recovery zone is not expected to harm the wolf population's ability to reach recovery objectives statewide or within individual wolf recovery regions, based the predictive model and empirical data.