Proposed Forest Plan Amendments

2011 Wildlife Conservation Strategy Phase 1: Forested Biological Community

Environmental Assessment

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Table of Contents

Chapter 1— Purpose and Need

1.1 Introduction 1-1
1.1.1 The Purpose of a Forest Plan 1-1
1.1.2 Location 1-2
1.1.3 Background 1-4
1.2 Purpose and Need for This Action 1-7
1.2.1 Purpose 1-7
1.2.2 Need 1-7
1.2.3 Summary of the Proposed Action 1-11
1.3 Decisions to be Made 1-13
1.3.1 Decisions to be Made in this Amendment Process 1-13
1.4 Document Organization 1-14

Chapter 2— Alternatives Considered

2.1 Introduction 2-1
2.2 Public Involvement 2-1
2.3 Issues and Concerns 2-2
2.3.1 Issues Considered in Detail 2-3
2.3.2 Concerns Not Addressed in Detail. 2-5
2.4 Development of a Reasonable Range of Alternatives 2-5
2.4.1 Alternatives Considered but Eliminated from Detailed Study 2-6
2.4.2 Alternatives Considered in Detail, Including the Proposed Action 2-10
2.5 Comparison of Alternatives 2-15
2.5.1 Comparison of Alternatives by Need for Change 2-16
2.5.2 Comparison of Alternatives by Issue 2-18
2.5.3 Comparison of Alternatives by Sustainability Outcome 2-20

Chapter 3— Environmental Consequences

3.1 Introduction 3-1
3.1.1 Purpose and Content 3-1
3.1.2 Analysis Calculations 3-2
3.1.3 Incomplete or Unavailable Information 3-2

3.1.4 Management Prescription Category–Based Analysis 3-3
3.1.5 Resources Not Evaluated in this Chapter.. 3-3
3.1.6 Analysis of Large Tree Size Class and Old-Forest Habitat in Lieu of Old Growth 3-4
3.2 Forested Vegetation Diversity and Fire Regime Condition Class 3-7
3.2.1 Introduction.. 3-7
3.2.2 Effects and Measures 3-15
3.2.3 Methods.. 3-16
3.2.4 Effects and Measures 3-18
3.2.5 Current Conditions.. 3-24
3.2.6 Direct and Indirect Effects by Alternatives 3-31
3.2.7 Cumulative Effects.. 3-45
3.3 Terrestrial Wildlife 3-47
3.3.1 Introduction.. 3-47
3.3.2 Effects and Measures 3-49
3.3.3 Methods.. 3-50
3.3.4 Habitat and Species Assessments 3-55
3.3.5 Family 1—Low-Elevation, Old-forest Habitat 3-64
3.3.6 Family 2—Broad-elevation Old-forest Habitat 3-77
3.3.7 Habitat Family 3—Forest Mosaic Family 3-113
3.3.8 Habitat Family 4—Early-Seral Forest Family.................................... 3-132
3.3.9 Cumulative Effects.. 3-136
3.3.10 Management Indicator Species for the Forested Biological Community 3-137
3.3.11 Species Associated with Other Biological Communities (Region 4 Sensitive Species) 3-145
3.4 Fire Management 3-146
3.4.1 Introduction.. 3-146
3.4.2 Effects Measures.. 3-149
3.4.3 Current Conditions.. 3-155
3.4.4 Effects Analysis 3-158
3.4.5 Cumulative Effects.. 3-164
3.5 Timberland Resources.. 3-165

3.5.1 Introduction ... 3-165
3.5.2 Effects and Measures ... 3-166
3.5.3 Methods for Assessing the Identified Measures ... 3-166
3.5.4 Affected Environment ... 3-168
3.5.5 Environmental Consequences ... 3-169
3.6 Tribal Rights and Interests ... 3-173
3.6.1 Introduction ... 3-173
3.6.2 Tribes with Expressed Interest in the Sawtooth National Forest ... 3-175
3.6.3 Effects Measures ... 3-183
3.6.4 Current Conditions ... 3-185
3.6.5 Environmental Consequences ... 3-189
Chapter 4— List of Preparers
4.1 Core Team Members ... 4-1
4.2 Sawtooth National Forest ... 4-2
4.3 Boise National Forest ... 4-2
4.4 Payette National Forest ... 4-2
4.5 Intermountain Regional Office ... 4-2
4.6 Federal/State Agencies ... 4-3
4.7 Contractor Support ... 4-3
4.8 Glossary, Acronyms, and Scientific Names ... 4-4
4.8.1 Glossary ... 4-4
4.8.2 Acronyms and Symbols ... 4-63
4.8.3 Scientific Names ... 4-64
4.9 Literature Cited ... 4-67

List of Appendices

Appendix 1 – Forest Plan, Midscale Wildlife Conservation Strategy
Appendix 2 – Proposed Forest Plan Amendments
Forest-wide Direction ... III-1
Common Management Prescription Category (MPC) Management

Direction III-22
Management Area Direction III-25
Forest Plan Chapter IV - Monitoring IV-1
Forest Plan Appendix A – Vegetation A-1
Forest Plan Appendix E – Terrestrial Wildlife Resources E-1
Appendix 3 – Maps
Appendix 4 – Analysis Process for Forested Vegetation
Appendix 5 – Resources Not Evaluated in Detail
Appendix 6 – Consultation
Appendix 7 – Response to Comments

List of Tables

Table 1-1. Fire Regimes and Percentages Identified for the Sawtooth National Forest... 1-8
Table 2-1. Comparison of Alternatives considered in detail by Needs for Change identified in Chapter 1 2-16
Table 2-2. Comparison of alternatives considered in detail and indicators for Issue 1—WUI exemption may affect ability to restore old-forest habitat in low- to mid-elevation forests. 2-18
Table 2-3. Comparison of Alternatives considered in detail by Issue 2—Forest is substantially below desired representation of large trees in most forest types; need to retain all large trees and snags until habitat is restored 2-19
Table 2-4. Comparison of Alternatives Considered in Detail by Sustainability Outcomes for Terrestrial habitat families and associated species 2-21
Table 2-5. Comparison of alternatives considered in detail by sustainability outcomes for Threatened, Endangered, Proposed, and Candidate (TEPC) species, regionally sensitive species, and Management Indicator Species (MIS) 2-21
Table 3-1. Historical Levels of Central Idaho Stands Occupied by Large Tree Size Classes and Stands with Late-Seral Old Growth Characteristics by Potential Vegetation Group. (Source: Morgan and Parsons 2001) 3-6

Table 3-2. Forested Potential Vegetation Groups (PVGs), Acres, Proportion of Total Forested Acres, Fire Regime Assignments, and Fire Regime Groupings for the Sawtooth National Forest 3-9
Table 3-3. Status of Overstory Species in the Forested Potential Vegetation Groups (PVGs) by Fire Regime for the Sawtooth National Forest 3-10
Table 3-4. Tree Size Classes 3-11
Table 3-5. Canopy Cover Classes 3-11
Table 3-6. Estimated Historical Distributions of Tree Size Classes for Forested Potential Vegetation Groups (PVGs) from Morgan and Parsons (2001) 3-12
Table 3-7. Estimated Historical Distribution of Canopy Cover Class for the Large Tree Size Class for Forested Potential Vegetation Groups (PVGs) 3-12
Table 3-8. Estimated Range of Historical Species Composition for Forested Potential Vegetation Groups (PVGs) from Morgan and Parsons (2001) 3-13
Table 3-9. Estimated Historical Range of Snags per Acre in "Green Tree Stands" With Minimum Height in Feet for Potential Vegetation Groups (PVGs) on the Sawtooth National Forest 3-13
Table 3-10. Estimated Historical Range of Coarse Woody Debris and Amounts in Large Size Classes for Potential Vegetation Groups (PVGs) on the Sawtooth National Forest 3-14
Table 3-11. Current Conditions for Grass/Forb/Shrub/Seedling (GFSS) Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres on the Sawtooth National Forest 3-24
Table 3-12. Current Conditions for Medium and Large Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres on the Sawtooth National Forest 3-25
Table 3-13. Current Conditions for Canopy Cover Classes in the Medium Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres in the Size Class on the Sawtooth National Forest 3-26
Table 3-14. Current Conditions for Canopy Cover Classes in the Large Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres in the Size Class on the Sawtooth National Forest 3-27
Table 3-15. Fire Regime Condition Classes for Current Conditions on the Sawtooth National Forest 3-28

Table 3-16. Current Conditions for Species Composition on the Sawtooth National Forest, (Compared with Historical Estimates), Expressed as Percent of Acres in the Potential Vegetation Group (PVG). Numbers in parenthesis represent historical estimates from Morgan a 3-28
Table 3-17. Current Seral Status Compared to Historical and Deviation from Historical by Potential Vegetation Group (PVG) for the Sawtooth National Forest 3-29
Table 3-18. Snags by Diameter Class in "Green Tree Stands" Forest wide by Potential Vegetation Group (PVG) and Relationship to the Historical Conditions for the Sawtooth National Forest] 3-29
Table 3-19. Average Tons per Acre of Coarse Woody Debris Forest-wide and by Potential Vegetation Group (PVG) for the Sawtooth National Forest (Trees per Acre in parenthesis) 3-30
Table 3-20. Summary of Current Conditions Relative to Historical by Potential Vegetation Group (PVG) for the Sawtooth National Forest............................ 3-31
Table 3-21. Forest-wide and Management Prescription Category Range of Desired Tree Size Classes for Alternative A, Expressed as Percentage of Forested Vegetation within each Potential Vegetation Group (PVG) 3-35
Table 3-22. Forest-wide Range of Desired Size Classes for Alternative B, Expressed as Percentage of Forested Vegetation within each Potential Vegetation Group (PVG) 3-36
Table 3-23. Management Prescription Category Range of Desired Canopy Cover Class Distribution within the Large Tree Size Class for Alternative A, Expressed as Percentage of Acres within the Class by Forested Potential Vegetation Group (PVG) 3-36
Table 3-24. Forest-wide Range of Desired Canopy Cover Class Distribution within the Large Tree Size Class for Alternative B, Expressed as Percentage of Acres within the Class by Forested Potential Vegetation Group (PVG) 3-36
Table 3-25. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Grass/Forb/Shrub/Seedling (GFSS) Tree Size Class for Two Alternatives on the Sawtooth National Forest 3-38

Table 3-26. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Medium Tree Size Class for Two Alternatives on the Sawtooth National Forest 3-39
Table 3-27. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Large Tree Size Class for Two Alternatives on the Sawtooth National Forest 3-40
Table 3-28. Desired Conditions, Current Conditions, and Trends for Decades 1, 5, and 10 for Low, Moderate, and Large Tree High Canopy Cover Class in the Size Class for Alternatives A and B........ 3-41
Table 3-29. Fire Regime Condition Class Current Conditions and Trends for Decade 1, Decade 5, and Decade 10 for Alternatives A and B 3-42
Table 3-30. Historical and Current Seral Status of Potential Vegetation Groups (PVGs) and Trends for Decades 1, 5, and 10 for Alternatives A and B for the Sawtooth National Forest 3-43
Table 3-31. Synthesis of Deviations from the Historical Range of Variability for Alternatives A and B over Three Decades for the Sawtooth National Forest........ 3-44
Table 3-32. Percentage of Forested Acres of Medium and Large Tree Size Class by Fire Regime for Decade 1, Decade 5, and Decade 10 for Alternatives A and B on the Sawtooth National Forest 3-44
Table 3-33. Sustainability Outcome and Effects Determination for Sawtooth National Forest Habitat Suite 1 Focal Species........ 3-54
Table 3-34. Trend in Old-forest Habitat on the Sawtooth National Forest for Habitat Families 1 and 2 by Analysis Area and Alternative........ 3-62
Table 3-35. Trend in Old-forest Habitat on the Sawtooth National Forest for Habitat Families 1 and 2 by PVG and Alternative 3-63
Table 3-36. Characteristics of Fire Regimes Defined for the Sawtooth National Forest........ 3-147
Table 3-37. Potential Vegetation Group, Historical Fire Regime, Fire Regime Assignment for Analysis........ 3-147
Table 3-38. Acres of Historical Forested Vegetation Fire Regimes and Percent of Total for the Sawtooth National Forest 3-148

Table 3-39. Numerical Rating for Historical Fire Regimes by Potential Vegetation Group 3-150
Table 3-40. Historical and Current Numerical Rating for Current Fire Regimes by Potential Vegetation Group (PVG) 3-156
Table 3-41. Current Condition of the Wildland-Urban Interface (WUI) Analysis Area and Class Producing the Largest and Next Largest Contribution to the WUI Hazard Rating By Potential Vegetation Group (PVG) for the Sawtooth National Forest 3-157
Table 3-42. Average Historical Hazard Rating and Rating for Alternatives for Decade 1, Decade 5 and Decade 10 by Fire Regime 3-158
Table 3-43. Proportion of Acres Where Prescribed Fire Could be Historically Used, Percent of Fire Regime Acres where Prescribed Fire Could Be Currently Used (with Departure from Historical) for Two Selected Decades by Alternative 3-159
Table 3-44. Wildland-Urban Interface Hazard Rating for the Current Condition and Forest-wide Desired Condition for Alternatives A and B by Potential Vegetation Group (PVG) for the Sawtooth National Forest 3-160
Table 3-45. Number of Additional Acres the Forest-wide Large Tree–Low Canopy Cover Desired Condition Would Need to be in the Wildland-Urban Interface (WUI) Analysis Area to Provide the Lowest WUI Hazard Rating by Fire Regime and Potential Vegetation Group (PVG) on the Sawtooth National Forest 3-161
Table 3-46. Current Percentage for Growth Stages that Provide Old Forest Habitat by Fire Regime and Potential Vegetation Group (PVG) and Proportion of the Wildland-Urban Interface (WUI) Hazard Rating in Large Tree, Moderate Canopy Cover on the Sawtooth National Forest.......... 3-162
Table 3-47. Wildand-Urban Interface Hazard Ratings for Desired Condition, Current Conditions of Alternatives A and B for Three Decadal Periods for the Sawtooth National Forest 3-162
Table 3-48. Wildland-Urban Interface (WUI) Hazard Rating for Alternatives A and B and for Three Decadal Periods by Potential Vegetation Group (PVG) on the Sawtooth National Forest 3-163

Table 3-49. Sawtooth National Forests Allowable Sale Quantity (ASQ) and Total Sale Program Quantity (TSPQ) 3-168
Table 3-50. Decadal Allowable Sale Quantity by Alternative 3-170
Table 3-51. Total Sale Program Quantity for the Next Five Decades, by Alternative........ 3-172
Table 3-52. Summary of acres in Management Areas 02-03, by alternative, with snag retention requirements........ 3-190
Table 3-53. Forested acres with a WUI exemption, by fire regime, within MAs 02-03........ 3-192
Table 3-54. Summary of acres forest-wide, by alternative, with snag retention requirements. 3-197
Table 3-55. Acres with a WUI exemption, by fire regime. 3-198

List of Figures

Figure 1-1. Location Map—Area Administered by Sawtooth National Forest........ 1-2
Figure 1-2. Sawtooth National Forest Proclaimed and Administrative Boundaries Map........ 1-3
Figure 1-3. Wolverine........ 1-7
Figure 3-1. Patch Dynamics of Fire Regimes (Source: Agee 1998) 3-15
Figure 3-2. Acres of Tree Size Class Forest-wide in 2003 Final Environmental Impact Statement Compared to 2008 on the Sawtooth National Forest........ 3-17
Figure 3-3. Percentage of Tree Size Class in 2003 Final Environmental Impact Statement Compared to 2008 for Potential Vegetation Groups that Comprise the Mixed2 and Lethal Fire Regimes on the Sawtooth National Forest........ 3-17
Figure 3-4. Percentage of Tree Size Class in 2003 Final Environmental Impact Statement Compared to 2008 for the Potential Vegetation Groups that Comprise the Nonlethal and Mixed1 Fire Regimes on the Sawtooth National Forest........ 3-18
Figure 3-5. Example Wildfire Profile for the Non-Wildland-Urban Interface Analysis Area on the Sawtooth National Forest........ 3-21

Figure 3-6. Acres Affected by Wildfire for Two Alternatives Over 29 Decades for the Sawtooth National Forest 3-37
Figure 3-7. Risk of Species Loss Relative to Departure from the Historical Range of Variability (HRV) (McComb and Duncan 2007) 3-56
Figure 3-8. Historical, Current, and Relative Change in Source Habitat for Family 1 on the Sawtooth National Forest 3-66
Figure 3-9. Historical, Current, and Relative Change in White-headed Woodpecker Source Habitat on the Sawtooth National Forest 3-72
Figure 3-10. Watersheds Providing Historical White-headed Woodpecker Source Habitat and Fire Regimes Capable of Providing White-headed Woodpecker Source Habitat on the Sawtooth National Forest 3-73
Figure 3-11. White-headed Woodpecker Source Habitat Trend on the Sawtooth National Forest by Alternative 3-74
Figure 3-12. Current White-headed Woodpecker Source Habitat on the Sawtooth National Forest 3-75
Figure 3-13. Historical, Current, and Relative Change in Family 2 Source Habitat on the Sawtooth National Forest 3-79
Figure 3-14. Historical, Current, and Relative Change in Boreal Owl Source Habitat on the Sawtooth National Forest 3-83
Figure 3-15. Boreal Owl Source Habitat Trend by Alternative with and without Departed Conditions on the Sawtooth National Forest 3-84
Figure 3-16. Historical, Current, and Relative Change in Fisher Source Habitat on the Sawtooth National Forest 3-88
Figure 3-17. Fisher Source Habitat Trend by Alternative with and without Departed Conditions Included on the Sawtooth National Forest 3-90
Figure 3-18. Historical, Current, and Relative Change of Flammulated Owl Source Habitat on the Sawtooth National Forest 3-93
Figure 3-19. Forest-wide Flammulated Owl Source Habitat Trend by Alternative on the Sawtooth National Forest 3-94
Figure 3-20. Flammulated Owl Current Source Habitat Patches and Structurally Similar Habitat on the Sawtooth National Forest 3-95
Figure 3-21. Historical, Current, and Relative Change in Great Gray Owl Source Habitat on the Sawtooth National Forest 3-99

Figure 3-22. Great Gray Owl Forest-wide Source Habitat Trend by Alternative with and without Departed Habitat Conditions on the Sawtooth National Forest 3-101
Figure 3-23. Historical, Current, and Relative Change in Northern Goshawk (Summer) Source Habitat on the Sawtooth National Forest 3-104
Figure 3-24. Northern Goshawk Forest-wide Summer Source Habitat Trend by Alternative with and without Departed Habitat Conditions on the Sawtooth National Forest 3-106
Figure 3-25. Historical, Current, and Relative Change in American Three-toed Woodpecker Source Habitat on the Sawtooth National Forest 3-110
Figure 3-26. American Three-toed Woodpecker Forest-wide Source Habitat Trend on the Sawtooth National Forest 3-112
Figure 3-27. Historical, Current, and Relative Change in Family 3 Source Habitat on the Sawtooth National Forest 3-116
Figure 3-28. Canada Lynx Source Habitat, by Lynx Analysis Units (LAUs) on the Sawtooth National Forest 3-121
Figure 3-29. Canada Lynx Source Habitat Patches and Large Fires on the Sawtooth National Forest 3-122
Figure 3-30. Wolverine Current Source Habitat Patches on the Sawtooth National Forest 3-127
Figure 3-31. Wolverine Current Source Habitat on the Sawtooth National Forest 3-128
Figure 3-32. Wolverine Source Habitat with Motorized Winter Recreation Opportunity Spectrum (ROS) on the Sawtooth National Forest 3-129
Figure 3-33. Wolverine Source Environment on the Sawtooth National Forest 3-130
Figure 3-34. Historical, Current, and Relative Change in Family 4 Source Habitat on the Sawtooth National Forest 3-134
Figure 3-35. Family 4 –Source Habitat Trend by Alternative on the Sawtooth National Forest 3-135
Figure 3-36. Historical, Current, and Relative Change in Pileated Woodpecker Source Habitat on the Sawtooth National Forest 3-140
Figure 3-37. Pileated Woodpecker Source Habitat Trend by Alternative with and without Departed Conditions on the Sawtooth National Forest 3-141

Figure 3-38. Northern Goshawk Source Habitat Trend by Alternative on the Sawtooth National Forest 3-143
Figure 3-39. Example of Nonlethal Fire in a Ponderosa Pine Community (photograph credit: Don Sasse) 3-148
Figure 3-40. Using Prescribed Fire to Treat Natural Fuels and Restore Ecological Processes in a Ponderosa Pine Stand (photograph credit: Kari Greer) 3-150
Figure 3-41. Wildland-Urban Interface Analysis Area for the Sawtooth National Forest 3-153
Figure 3-42. Average Acres Burned per Wildfire Start, by Decade, from 1940 through 2000 on the Sawtooth National Forest 3-155
Figure 3-43 Wildland-Urban Interface Rating for Alternatives A and B on the Sawtooth National Forest 3-163
Figure 3-44. Coordinated Use of Prescribed Fire to Restore Vegetative Conditions on the Sawtooth National Forests 3-164
Figure 3-45. Alternative A Allowable Annual Sale Quantity (ASQ) Harvest over 30 Decades, 5 Decade Nondeclining Flow Trend Line (ASQ), and Long-Term Sustained Yield Capacity (LTSYC) after Year 2010 3-171
Figure 3-46. Alternative B Allowable Annual Sale QuantityHarvest over 30 Decades, 5 Decade Nondeclining Flow Trend Line (ASQ), and Long-Term Sustained Yield Capacity (LTSYC) 3-172

Chapter 1—Purpose and Need

1.1 INTRODUCTION

The U.S. Forest Service (Forest Service) is proposing to modify, delete, and add to current land and resource management plan direction for the Sawtooth National Forest (Forest) in response to new information and/or changed conditions concerning wildlife habitat. This direction would be incorporated into the *Sawtooth National Forest Land and Resource Management Plan* (Forest Plan) through a Forest Plan amendment. This Environmental Assessment (EA) addresses the Forest Plan amendment and is prepared in accordance with the National Environmental Policy Act (NEPA) and its implementing regulations.

Assessing habitats occupied by native and desired nonnative wildlife species in the Forest (i.e. planning unit) is very complex. For example, more than 300 vertebrate, terrestrial wildlife species and their habitats must be addressed. To reduce this complexity, Forest Plan amendments will be completed through a four-phase approach over the next 4–5 years based on the following major biological communities:

- Phase 1: Forested Biological Community
- Phase 2: Rangeland Biological Community
- Phase 3: Unique Combinations of Forested and Rangeland Communities
- Phase 4: Riparian and Wetland Communities

This EA addresses Phase 1.

Additionally, this EA is tiered to the Final Environmental Impact Statement (EIS) supporting the Record of Decision (ROD) for the 2003 Forest Plan. Documented analyses in the Final EIS for the Forest Plan have been incorporated by reference rather than repeated in some instances. Detailed information supporting the analyses presented in this document, unless specifically noted otherwise, is contained in the planning record located at the Forest Supervisor's Office in Boise, Idaho.

1.1.1 The Purpose of a Forest Plan

Under the National Forest Management Act (NFMA), each planning unit of the National Forest System (NFS) is managed under a forest plan. Forest plans are strategic documents describing the overall management direction for a National Forest. A forest plan is similar to a county master plan and associated zoning ordinances. A forest plan describes the desired resource conditions across the planning unit and provides allocations, goals, objectives, standards, and guidelines for resource management to maintain or restore these desired resource conditions in a way that contributes to the social and economic interests of the public. Forest plans do not grant, withhold, or modify any contract, permit, or other legal instrument; subject anyone to civil or criminal liability; or create any legal rights. While forest plans guide site-specific project activities, they do not approve or execute these specific projects or activities. Decisions to implement site-specific projects are made after completion of a separate environmental analysis and public involvement under NEPA.

1.1.2 Location

The area administered by the Forest includes approximately 2,104,000 acres of NFS lands in central and southern Idaho and northern Utah (Figure 1-1) that are divided into six non-contiguous areas. The Forest Plan includes direction for managing NFS lands within the administrative boundary for the Forest (Figure 1-2). Portions of the Forest are located in Blaine, Boise, Camas, Cassia, Custer, Elmore, Oneida, Power and Twin Falls counties within Idaho and Box Elder County in Utah.

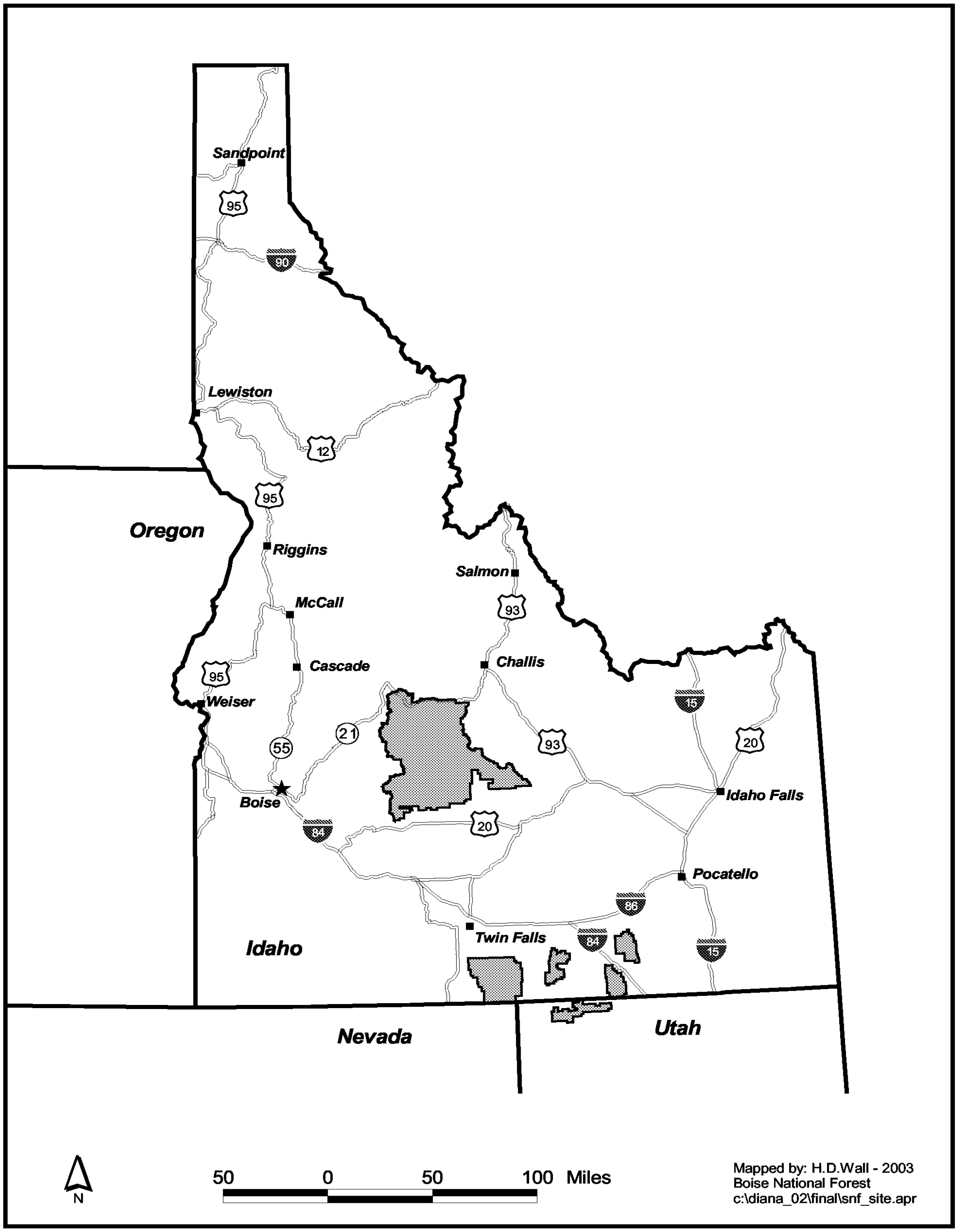

Figure 1-1. Location Map—Area Administered by Sawtooth National Forest

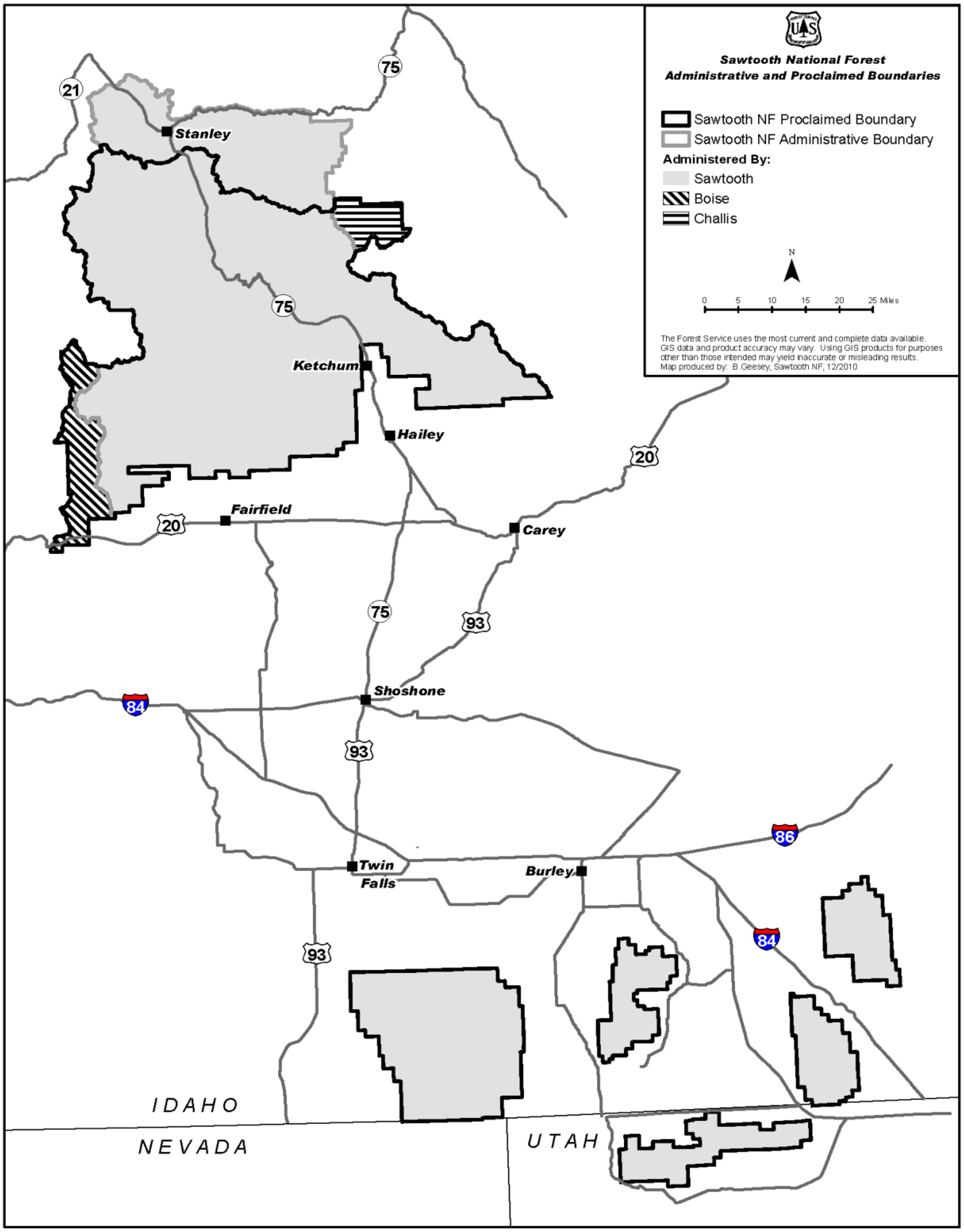

Figure 1-2. Sawtooth National Forest Proclaimed and Administrative Boundaries Map

Elevations vary greatly across the Forest, from 4,500 feet in Rock Creek Canyon on the Cassia Division southeast of Twin Falls to over 12,000 feet atop Hyndman Peak east of

Sun Valley, Idaho. Geologically, the Forest can vary widely with respect to lithology, depending upon location. Generally, the north half of the Forest lies within the granitic terrain of the Idaho Batholith—the largest contiguous batholith in the United States—and the mixed silicic volcanics of the Eocene Challis volcanic field. The southern half of the Forest is dominated primarily by basalt and rhyolite volcanism associated with the development of the Snake River Plain. In contrast, the Albion River and Raft River metamorphic core complexes within the southern Forest contain some of the oldest rocks recorded in the United States. The Forest contains important portions of watersheds of the Salmon, Payette, Boise, Snake, Big Wood, and Raft rivers and Goose Creek.

An estimated 50 percent of the Forest's lands are forested (approximately 1,000,000 acres); common tree species include lodgepole pine (*Pinus contorta*), Douglas-fir (*Pseudotsuga menziesii*), aspen (*Populus* spp.), subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Pinus albicaulis*). The Forest also includes smaller amounts of Ponderosa pine (*Pinus ponderosa*), which occurs at lower elevations on the Fairfield Ranger District (RD), and pinyon pine (*Pinus monophylla*) and juniper (*Juniperus osteosperma* and *Juniperus scopulorum*), which occurs on the Minidoka RD.

The Forest provides habitat for more than 300 terrestrial species of mammals, birds, reptiles, and amphibians. Elk (*Cervus canadensis*) and deer (*Odocoileus* spp.) are the most common large animals; however, moose (*Alces alces*), black bear (*Ursus americanus*), cougar (*Puma concolor*) and gray wolves (*Canis lupus*) are also present. The Forest also provides habitat for Canada lynx (*Lynx canadensis*), listed as threatened under the Endangered Species Act (ESA) of 1973. Habitat exists for other wide-ranging carnivores, such as wolverines (*Gulo gulo*) and fisher (*Martes pennant*). Birds present on the Forest include northern goshawk (*Accipiter gentilis*), greater sage-grouse (*Centrocercus urophasianus*), and numerous migratory land birds.

1.1.3 Background

In 2003, the Forest revised its 1987 Forest Plan. The supporting EIS for the revised 2003 Forest Plan included information for revising the Forest Plans of the Sawtooth, Payette, and Boise National Forests. The revised Forest Plan included management direction for wildlife based on available information. During Forest Plan revision, wildlife habitat families[1] that had declined from historical conditions were identified and management direction was developed for these families based on identified habitat conservation and restoration needs. The Forest Plan did not include a prioritized, comprehensive wildlife conservation strategy. Instead, this strategy was to be completed during Forest Plan implementation. Forest Plan wildlife objective WIOB03 called for developing a strategy to prioritize wildlife habitat maintenance and restoration by using information from sources such as species habitat models (USDA Forest Service 2003a, p. III-25).

As outlined in the September 2006 *Forest Plan Monitoring and Evaluation Report for the Forest* (USDA Forest Service 2006, p. 10), the Wildlife Conservations Strategy (WCS)

[1] A collection of wildlife species that share general similarities in source habitats, with similarities arranged along major vegetative themes that are conventionally addressed by managers.

will be integrated into the Forest Plan through the following:

- Forest Plan goals to maintain and restore wildlife habitat resources (Forest Plan Chapter 3, Forest-wide Management Direction)
- Identification and use of conservation principles and indicators for wildlife resources (Forest Plan Chapter 3, Forest-wide Management Direction, and Appendix E)
- Forest Plan objectives, standards, and guidelines for management of wildlife resources (Forest Plan Chapter 3, Forest-wide Management Direction and Management Area Description and Direction)
- Identification of planning period priorities for habitat families and species of greatest conservation concern (Forest Plan Chapter 3, Forest-wide Management Direction, and Appendix E)
- Integration of findings from a multi-scale analysis of watersheds within the Interior Columbia Basin and Forest (Forest Plan Appendix E)
- Identification of the appropriate type of restoration and long-term (15+ years) priorities for vegetation and habitat restoration (Forest Plan Chapter 3, Forest-wide Management Direction and Appendix A)
- Forest Plan monitoring and adaptive management provisions to track baseline changes and address data limitations and uncertainties (Forest Plan Chapter 4)

The Forest Plan WCS will complement the *Idaho Comprehensive Wildlife Conservation Strategy* (Idaho CWCS; IDFG 2005) and the *Utah Comprehensive Wildlife Conservation Strategy* (Utah CWCS; UDWR 2005) by building upon the broad-scale conservation needs identified in these strategies for areas that fall within the Forest. The Idaho CWCS and Utah CWCS provide a common framework that will enable conservation partners to jointly implement a long-term approach to habitat restoration and conservation that will benefit identified Species of Greatest Conservation Need (IDFG 2005, UDWR2005). Conservation partners include State, federal (including the Forest), and tribal agencies; local governments; conservation organizations; universities; industry; and private landowners (IDFG 2005, UDWR 2005).

To ensure the Forest Plan WCS is based on consideration of the best available science, the strategy draws upon a variety of scientifically accepted conservation concepts (Appendix 3). These conservation concepts provided the scientific basis for predicting species and habitat responses to conditions where data are incomplete, including future projections (Miller et al. 2004). Similar to that done for other conservation planning efforts, these concepts were converted into the following six general conservation principles to guide the development of forest plan strategies (i.e., the WCS) to manage habitat (Thomas et al. 1990; Wilcove and Murphy 1991; Noss, 1992; Noss and Cooperrider, 1994; and, Noss et al. 1997):

1. Species well distributed across their range are less susceptible to extinction than species confined to small portions of their range.
2. Habitat in contiguous blocks is better than fragmented habitat.
3. Large blocks of habitat containing large populations of focal species are superior to small blocks of habitat containing small populations.

4. Blocks of habitat close together are better than blocks far apart.
5. Interconnected blocks of fragmented habitat are better than isolated blocks, and dispersing individuals travel more readily through habitat resembling that preferred by the species in question.
6. Blocks of habitat that are in areas where the direct or indirect effects of human disturbance are low are more likely to provide all elements of species' source environments than areas where it is not.

These principles are widely accepted and among the best supported precepts of conservation biology (Noss 2007). The principles and associated indicators generated by the Interdisciplinary Team (IDT) provided the framework for developing the proposed action and evaluating and comparing the alternatives (Palik et al. 1997; MacNally et al. 2002; Groves 2003).

To ensure WCS development is based on current conditions, the multi-scale analysis completed for the 2003 Forest Plan revision was updated. Initiated in 2006 and completed in 2008, these updates evaluated macrovegetation elements, comparing the current condition of these elements to estimates of the historical range of variability (HRV) (Morgan and Parsons 2001). The vegetative baseline used for the 2003 Forest Plan revision reflected vegetation conditions through 2000. The WCS and associated Forest Plan amendments rely on vegetation baseline updates that reflect vegetative conditions through 2007.

These updated conditions include insect and disease outbreaks, unplanned wildland fire, and planned forest management activities. Between 2003 and 2007[2], the Forest experienced a mountain pine beetle (*Dendroctonus ponderosae*) outbreak that affected over 180,000 acres of the Sawtooth National Recreation Area (NRA) and wildfire that affected over 88,000 forested acres, for a total of about 27 percent of forested lands within the Forest's administrative boundary. Tree mortality from the pine beetle outbreak ranged from 30 to 70 percent of the stand. Wildland fires have ranged from high-severity, stand-replacing fires to low-severity forest underburns.

Like the EIS for the 2003 Forest Plan revision, this analysis draws upon principles and science generated as part of the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (ICBEMP; Raphael et al. 2000; Wisdom et al. 2000). In the ICBEMP Memorandum of Understanding [MOU] and Strategy 2003, the agency agreed that, "management plans shall address ways to maintain and secure terrestrial habitats that are comparable to those classified by the science findings as source habitats." Therefore, the WCS was developed using both source habitat and source environment to assess conditions for vertebrate, terrestrial wildlife species.

Source habitats are defined by macrovegetation that contributes to positive population growth for species in a specified area and time (Wisdom et al. 2000). Source habitat contributes to source environments (Wisdom et al. 2000). Source environments are the

[2] Wildfires occurring after 2007 will be included in the vegetation layer, which is currently being updated through field inventories.

composite of all environmental conditions, including the effects of human disturbance on source habitat, occurring in a specified area and time that result in stationary or positive population growth.

This updated multi-scale analysis incorporates new information generated after releasing the 2003 Forest Plan, including important midscale assessments such as the previously discussed *Idaho CWCS* and the Northwest Power and Conservation Council (NPCC) subbasin assessments (NPCC 2004).

1.2 Purpose and Need for This Action

1.2.1 Purpose

The purpose of this project is to complete a comprehensive WCS for the Forest and amend the 2003 Forest Plan to integrate the action components of the WCS.

Figure 1-3. Wolverine

The long-term goal of the WCS will be to maintain or restore a representative, resilient, and redundant network of habitats across the Forest. These habitats will provide for the diversity of native and desired nonnative wildlife species and be consistent with overall multiple use objectives. A short-term emphasis will be placed on the habitats of species believed to be of greatest conservation concern, such as the wolverine (*Gulo gulo*), and species that depend on old-forest conditions in Douglas-fir habitat (e.g., flammulated owl [*Otus flammeolus*]) (Figure 1-3). This approach to short-term restoration will address habitats in need of restoration according to priority. The long-term component of the strategy will address restoring habitats for species of lesser concern to identify and integrate with priority habitat restoration where and when it is practical to do so.

Developing a WCS at the planning unit (Forest) scale (approximately 2.1 million acres) allows the Forest to identify priorities to restore natural disturbance regimes, expand source environments, reconnect functional habitat areas, and better understand the effects of human disturbance. Prioritizing wildlife habitat restoration helps managers integrate future wildlife habitat restoration projects with other resource priorities, such as those areas identified in the Forest Plan Aquatic Conservation Strategy (ACS) and those areas where human values at risk must be addressed (e.g. wildland-urban interface [WUI]). Integrating priorities across the spectrum of biophysical and socio-economic needs allows the Forest to capitalize on common funding sources and minimize or avoid unintended effects.

1.2.2 Need

The nearly 2.1 million forested acres on the Forest can be grouped into four generalized fire regimes (Table 1-1): nonlethal (about 5 percent of the forested acres), mixed1 (about 24 percent), mixed2 (about 52 percent), and lethal (about 19 percent).

Table 1-1. Fire Regimes and Percentages Identified for the Sawtooth National Forest

Fire Regime	Percent of Forested Acres	Fire Interval	Fire Intensity	Vegetation Patterns (Agee 1998)
Nonlethal	5	5–25 years	Low—10% mortality or less	Relatively homogenous with small patches generally less than 1.0 acre of different seral stages, densities, and compositions created from mortality.
Mixed-1	24	5–70 years	Low to moderate—10–50% mortality	Relatively homogenous with patches created from mortality ranging in size from less than 1.0 to 600 acres of different seral stages, densities, and compositions.
Mixed-2	52	70–300 years	Moderate to high—50–90% mortality	Relatively diverse with patches created by mixes of mortality and unburned or underburned areas ranging in size from less than 1 to 25,000 acres of different seral stages, densities, and compositions.
Lethal	19	100–400 years	High—over 90% mortality	Relatively homogenous with patches sometimes greater than 25,000 acres of similar seral stages, densities, and compositions. Small inclusions of different seral stages, densities, and compositions often result from unburned or underburned areas.

Although historically wildfire disturbance helped shape the landscape, decades of fire suppression, past forest management, recent large wildfires and insect outbreaks, and other factors have altered the vegetation structure of the Forest. In particular, past forest management—that actively suppressed most if not all wildfires and favored the harvest of large, economically desirable ponderosa pine and other fire-resistant species in few locations on the Forest—has helped create conditions that vary from those experienced historically.

In many areas on the Forest, low to mid-elevation forested stands have fewer legacy ponderosa pine and Douglas-fir trees and fewer acres of old-forest habitat conditions compared to what existed historically (i.e., 100 years ago and longer). Ponderosa pine stands, although limited in distribution on the Forest, often have multiple canopy layers, dense forest structure, and continuous fuel levels. Douglas-fir forests often have denser forest structure and continuous fuel levels. These stands are at increased risk for stand-replacement wildfires and insect or intensified disease outbreaks.

Because of the altered vegetation structure, fire regimes on the Forest are transitioning from mostly nonlethal and mixed-1 to more lethal fire regimes. In addition, the number of acres affected by wildfire has increased over the last decade although fire occurrence (i.e., annual number of ignitions from natural or man-made sources) has remained relatively stable over the years. Thus, the altered vegetation structure has directly and indirectly affected habitat quality, quantity, and distribution, especially within the historically nonlethal and mixed-1 fire regimes.

Additionally, the updated assessment indicates that most terrestrial wildlife species of concern associated with the forested biological community are linked to habitats found in the nonlethal to mixed-1 fire regimes. Compared to historical conditions (HRV), the updated assessment found the following trends:

- Reductions in the abundance and extent of the large tree size class and old-forest habitat, especially in the nonlethal and mixed-1 fire regimes
- Reductions in the abundance of legacy ponderosa pine and Douglas-fir trees and large snags
- Increases in tree densities and ladder fuels within stands, resulting in reduced habitat quality and increased risks for habitat loss from future uncharacteristic wildfire or insect events
- Reductions in forest cover from wildfire and/or insect and disease events
- Reductions in habitat quantity and quality due to historical and/or continued increases in human uses—through forest management, recreation, and continued residential development—across forested landscapes

Similar findings were observed in other mid- to broad-scale assessments completed since 2003 that encompassed all or parts of the Forest, including the *Idaho CWCS* (IDFG 2005), *Utah CWCS* (UDWR 2005), and NPCC subbasin assessments (NPCC 2004).

Specifically, Forest Plan amendments are needed to accomplish the following:

- **Add to or modify management direction to emphasize the retention of most forest stands that meet the definition of old-forest habitat or large tree size class.**

  Acres of forests that meet the definition of large tree size class are deficient in nearly all forest types compared to historical estimates. Deficits in the low- to mid-elevation pine forests that historically fell within the nonlethal and mixed-1 fire regimes are of particular concern to wildlife species persistence.

- **Add to or modify management direction to focus restoration in forest stands classified as large tree size class and medium tree size class to promote desired old-forest habitat or large tree stand conditions and reduce hazards and risks to these habitats.**

  Undesirable changes in tree species composition and uncharacteristically high tree densities in stands classified as large tree size class and/or medium tree size class occur throughout the low- to mid-elevation forests and in the high-elevation whitebark pine community. These conditions reduce habitat quality and increase fuel, insect, and disease hazards across landscapes that may present an unacceptable risk for loss of important wildlife habitat.

- **Delete wildlife standard WIST01 and replace it with standards that focus on size class, canopy cover, and composition specific to individual potential vegetation groups (PVGs) identified to be in need of restoration rather than a one-size-fits-all standard.**

  The 2003 Forest Plan wildlife standard WIST01 is a "threshold that represents the minimum percent of a landscape area retained in the large tree size class…for assuring the viability of terrestrial wildlife species" (USDA Forest Service 2003a, page A-3). This standard is no longer an appropriate "threshold" for conserving wildlife habitats in the large tree size class based on local agency expert reviews of best available science, including Fahrig (2001, 2003) and Schulte et al. (2006).

- **Add or modify existing management direction to emphasize the retention of large snags while balancing other objectives associated with a given Management Prescription Category (MPC)[3].**

  At the Forest scale, the number of large snags (20 inches diameter at breast height [d.b.h.]) appears to be within desired conditions, and may be exceeding desired conditions in insect disturbance areas. However, large snags may not be well distributed, especially where road access is greater. Large snags are an important attribute of wildlife habitat; therefore, salvaging large snags on the Forest will be specifically addressed and restricted through management direction.

- **Prioritize vegetative and associated wildlife habitat restoration treatments to increase the overall probability of restoration success**

  Vegetation and wildlife habitat restoration is necessary across the Forest, especially in nonlethal and mixed-1 fire regimes and in the high-elevation whitebark pine community as these areas show the greatest departure from HRV. However, due to limited resources and funds, not all needs can be addressed at once. Prioritizing restoration areas will help ensure source environments are expanded and functional habitat areas are reconnected in a manner and time frame that provides the greatest benefit to species of conservation concern.

  In addition, the likelihood of restoration success increases as a landscape prioritization strategy is developed and implemented. A landscape prioritization strategy helps managers better understand the following: 1) how restoration in a given area relates to that in another area; 2) how benefits can be maximized for a given cost; and 3) how, through integrating with other resources within and between agencies, managers can capitalize on common objectives and minimize unintended effects to accomplish various restoration objectives (USDA Forest Service and USDI Bureau of Land Management 2000; Rieman et al. 2000; Mehl and Haufler 2004; Brown et al. 2004; Crist et al 2009).

- **Identify where potential conflicts between wolverine and human use may exist, especially during their critical winter denning period, and determine if additional management direction is warranted.**

  Science has clearly shown that human use can directly and indirectly impact wildlife habitat and directly disturb individual animals during critical life phases, such as the denning period. Assessments used for the WCS development rely on science-based indicators—such as road densities, groomed and designated snowmobile routes and cross-country ski trail locations, concentrated backcountry

[3] Refer to pages III-81 through III-90 of the Forest Plan for MCPs definitions (USDA Forest Service 2003a).

skiing use areas, and the semi-primitive motorized winter Recreation Opportunity Spectrum (ROS) category—to help identify *potential* conflict between wildlife and human use.

Understanding where potential conflicts from winter recreational use within important wolverine habitat areas may occur will allow areas to be prioritized for site-specific review. These site-specific reviews would verify if conflicts exist and what, if any, action might be needed to alleviate or resolve these conflicts.

- **Balance wildlife habitat restoration needs with multiple use objectives, allowing exceptions that respond to emergencies; provide for public health and safety; and allow for the exercise of existing rights and other statutory requirements.**

  Plant and animal community diversity should be provided for based on the suitability and capability of the specific land area to meet overall multiple-use objectives in the Forest Plan. However, there are other important objectives that may take precedence over diversity and other multiple-use objectives, including responding to emergency events (e.g., wildfire managed for resource benefit); hazardous fuel reductions in WUIs surrounding residential areas; public health and safety; the exercise of prior existing rights and Native American treaty rights; and the ability to address other statutory requirements (e.g., the ESA).

1.2.3 Summary of the Proposed Action

The proposed action (described as Alternative B in Chapter 2) includes six parts that are included as Appendix 1 of this EA:

1. *Forest-wide Management Direction*: Goals, objectives, standards, and guidelines that apply across all acres within the planning unit. Modifications, additions, and deletions to this direction are proposed in the Threatened, Endangered, Potential, and Candidate Species (TEPC); Wildlife Resources; Vegetation; Fire Management; and Timberland Resources sections to address WCS findings. Forest-wide management direction outlined in the proposed action would modify, supplement, or replace Forest Plan direction in these five sections.

   Key changes to Forest-wide direction in these resource areas that have been proposed include: 1) retention of existing old-forest habitat and large tree forested stands; 2) restoring habitat such that it promotes recruitment of old-forest habitat; 3) retaining legacy ponderosa pine and Douglas-fir trees; 4) using common set of conservation principles in project design and assessing a proposed project's contribution to Forest Plan goals and objectives pertaining to the Forest WCS; 5) managing the personal use firewood program; and 6) prioritizing restoration of habitats of conservation concern (e.g., low- to mid-elevation conifer forests and whitebark pine forests) and their associated species. To balance habitat restoration with other multiple-use objectives, exemptions to new or modified direction would be provided for those activities needed to address important human needs and values—such as public health and safety and hazardous fuel reduction treatments within the WUI—and to allow prior existing rights, treaty rights, and other statutes to be reasonably exercised.

   A change to Rangeland Resources standard RAST03 is also being proposed to address a need for correction identified in the 5-year monitoring report. The proposed correction would address relocating replaced water facilities outside of Riparian Conservation Areas (RCAs).

2. *MPC Management Direction:* New vegetative management direction would be added to MPCs 3.1, 3.2, 4.1c, 4.2, 5.1 and 6.1 that address large snag retention. As with the Forest-wide management direction, exceptions to new or modified direction are provided for activities an authorized official determines are needed to address important human needs and values—such as public health and safety and hazardous fuel reduction treatments within the WUI—and to allow prior existing rights, treaty rights and other statutes to be reasonably exercised.

   A new road guideline is also proposed in MPCs 5.1 and 6.1 that describes how public motorized use would be managed when building new roads to implement vegetation restoration projects.

3. *Management Area Descriptions, Objectives, Standards, and Guidelines for Individual Management Areas:* Resource descriptions for Vegetation, Wildlife Resources, Timberland Resources, and Fire Management would be updated to reflect the updated multi-scale analysis. Objectives and/or guidelines would be added and/or modified in some management areas to focus attention on identified restoration priorities.

4. *Proposed Monitoring Plan*: Chapter 4 of the Forest Plan would be updated to modify or add to monitoring elements that address risks to habitat and species and related levels of uncertainty. Chapter 4 would also be updated to address needed changes to monitoring elements that were identified through the Forest 5-year monitoring report. Monitoring will assist the Forest in evaluating the effects of management practices and any need for Forest Plan changes.

   Management Indicator Species (MIS) listed in Appendix E of the Forest Plan would be moved to Chapter 4. A new terrestrial wildlife MIS and a new aquatic MIS would be added. Population trends of the new terrestrial MIS and its relationship to habitat change would be monitored to help assess the effects of management activities to wildlife species in mid- to upper-elevation forests. Population trends of the new aquatic MIS and its relationship to habitat change would be monitored to help assess the effects of management activities to aquatic species on the south end of the Forest.

5. *Appendix A, Vegetation Resources*: Appendix A of the Forest Plan would be reformatted, and in some cases modified, to clarify how this appendix relates to the WCS. Changes to Appendix A would integrate several key conservation concepts (Table 1-1)—desired conditions for coarse filter and mesofilter vegetation elements, emulating natural disturbance, desired vegetative diversity, and patchworks. A Vegetation Restoration Prioritization Process and Spatial Map would also be added to this appendix, which, along with associated Forest Plan objectives, MPC allocations, and Appendix E Specific Short-Term Wildlife Habitat Priorities, should reflect the Forest's restoration emphasis for forested communities.

6. *Appendix E, Wildlife Resources*: Appendix E of the 2003 Forest Plan would be

modified to summarize the conclusions from the multi-scale assessment and describe how the conclusions should be used to help understand the purpose and interpret the use of proposed management direction during Forest Plan implementation. A Short-Term Wildlife Habitat Restoration Prioritization Process and a Wildlife Habitat Restoration Strategy Map, which would complement the broader vegetation restoration strategy, would also be added to this appendix. Short-term wildlife restoration needs would focus on fine filter needs for species of concern (e.g., sensitive species), including key vegetative elements or habitats (e.g., old-forest habitat) that need a more focused, short-term spatial strategy than provided in the Appendix A vegetation restoration strategy alone.

1.3 DECISIONS TO BE MADE

1.3.1 Decisions to be Made in this Amendment Process

This EA analyzes two alternatives for amending Forest Plan management direction for the Forest. Based on the analysis in this EA and comments received during the formal 30-day Notice of Proposed Action (NOPA) comment period on the EA, the Responsible Official will select an alternative to amend the Forest Plan. Documentation and rationale for this selection will be included in the Decision Notice and Finding of No Significant Impact (FONSI).

The following decisions will be made through this EA:

- Should Forest Plan management direction pertaining to wildlife habitat conservation, restoration, and maintenance be deleted, modified, or added to ensure that adequate and well-distributed habitat continues to be provided for a diversity of plant and animal communities, and if so, how should management direction be changed?
- Should Forest Plan direction be added that specifically addresses conservation of the subset of large-tree-dominated habitat referred to as “old-forest habitat” and if so, what should this direction be?
- Should exceptions to new or modified Forest Plan direction be included for activities that an authorized official determines are needed for the protection of life and property during an emergency event; to reasonably address other human health and safety concerns; to meet hazardous fuel reduction objectives within WUIs; and/or to allow reserved or outstanding rights, tribal rights, or statutes to be reasonably exercised or complied with, and if so, what should the exceptions to direction be?
- Should Forest-wide and management area objectives be modified or added to account for the WCS source habitat and source environment prioritization framework, and if so, how?
- Should potential conflicts between human uses and species of conservation concern, such as the wolverine, be considered in priority habitat areas, and if so, how?
- Should monitoring and evaluation of the Forest Plan strategy be modified if Forest Plan direction is deleted, modified, or added, and if so, what modifications should be adopted?
- Should goshawk (*Accipiter gentilis*) be added as an MIS to monitor management activities in mid- to high-elevation forests?

- Should Yellowstone cutthroat trout (*Oncorhynchus clarkii*) be added as an MIS to monitor management activities on the south end of the Forest?

1.4 Document Organization

This document consists of the following chapters:

- Chapter 1—Purpose and Need: Describes the proposed action, purpose and need of the action, and decisions to be made.
- Chapter 2—Alternatives: Includes public involvement and identification of major issues; descriptions of the alternatives considered in detail; alternatives considered but eliminated from detailed study; and a comparative summary of the environmental consequences, activities, and outputs.
- Chapter 3—Affected Environment and Environmental Consequences: Describes the existing conditions of the resources within the analysis area and the environmental impacts of the alternatives on those resources.
- Chapter 4—Consultation and Coordination: Provides a list of the primary preparers of this document and a list of agencies, organizations, and persons to whom copies of the EA have been sent.

This document also includes an acronym and glossary list, citations, index, and six appendices. Appendix 1 includes a description of the conservation concepts applied in this WCS; Appendix 2 includes the six aspects of the proposed action, as summarized above; Appendix 3 includes maps; Appendix 4 provides a description of the analysis and modeling process for forested vegetation and wildlife; and Appendix 5 is a description of resources not evaluated in detail.

Chapter 2—Alternatives Considered

2.1 INTRODUCTION

Chapter 2 describes management alternatives considered for this Forest Plan amendment and the process used to formulate the alternatives, including public involvement and development of major issues. This chapter concludes by summarizing and comparing the estimated effects of those alternatives on the major issues, conservation principles, and indicators.

Chapter 2 is divided into the following sections:

- **Public Involvement—**Describes the scoping and public involvement processes and how issues were developed based on comments received
- **Issues—**Describes the major issues used to generate alternatives and summarizes those concerns that did not result in major issues (and how they were addressed)
- **Development of a Reasonable Range of Alternatives—**Describes the process used to generate alternatives, including alternatives considered but not analyzed in detail and those analyzed in detail
- **Alternatives Not Analyzed in Detail—**Describes those alternatives considered but eliminated from detailed study and the issues they address
- **Alternatives Considered in Detail, Including the Proposed Action—**Describes each alternative, the components of the "action" alternatives, and the features common to all "action" alternatives
- **Comparison of Alternatives—**Summarizes and compares the environmental effects of the alternatives considered in detail, including how the alternatives respond to purpose and need and the major issues and address identified conservation principles and indicators

2.2 PUBLIC INVOLVEMENT

Scoping is the process the Forest Service uses to determine the scope of the issues to be addressed and to identify the major issues related to a proposal. As part of the scoping process, the Forest Service invites the public, American Indian tribes, and other governmental agencies to participate (40 CFR 1501.7; 36 CFR 220.4(e); FSH 1909.15, Chapter 11).

During scoping, public involvement on the Wildlife Conservation Strategy (WCS) and the associated Forest Plan amendment was sought at various points and multiple venues:

- Notices of Intent to prepare an environmental impact statement were published in the *Federal Register* in September 2007, December 2008, and April 2009, and a correction to the Notices of Intent was published in July 6, 2010, notifying the public of a change in the level of documentation from an Environmental Impact Statement (EIS) to an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for the analysis of the proposed amendment for the Forest Plan.
- Over 700 scoping packages outlining the WCS and comment process were mailed out in September 2007.

- A WCS newsletter was distributed to over 1,000 potential commenters in December 2008.
- Articles have been published in local newspapers.
- Congressional offices and State and other federal agencies have been contacted on an ongoing basis.
- Consultation with tribal governments has been ongoing, and the tribes have regularly participated in discussions with technical working groups.

Over 50 comments were received on the WCS during the scoping process from organizations, tribes, other government agencies, and individuals. The EA Interdisciplinary Team (IDT) compiled these comments and identified the preliminary issues that would (1) help develop alternatives; (2) influence the proposed Forest Plan direction; and/or (3) be used to track potential effects of the alternatives. The IDT presented these preliminary issues to the Responsible Official for review and selection of major issues to be analyzed. The comments and concerns, and the process used for identifying issues, are presented in detail in the planning record.

On February 8, 2012, the EA was released for public comment. A Legal Notice in the *Times News* announcing the formal Opportunity to Comment on the EA was published on February 10, 2012. Per request, hard copies and/or electronic copies (CD) of the entire EA were sent to nineteen agencies, individuals or organizations. The entire EA was posted on the Forest's website, with paper and electronic (CD) copies available upon request. The formal comment period for the EA ended on March 12, 2012.

During the EA comment period, letters, phone calls, and/or e-mails were received from 3 interested parties and two agencies (Environmental Protection Agency and Idaho State Parks and Recreation).

Comments on the EA generally fell into four perspectives: 1) agreement with the need to prioritize vegetative and wildlife habitat improvement needs including the need to restore old-forest, large tree components; 2) further protections are needed to protect wolverine and their habitat; 3) the proposed management direction designed to protect wolverine and their habitat will negatively affect winter recreation opportunities; and 4) better indicators are needed to address where conflicts between recreation uses and wolverine may occur. The comments and the Forest Service responses to them are included in Appendix 7 of the EA.

2.3 ISSUES AND CONCERNS

Issues are unresolved issues used in environmental analysis to formulate alternatives, prescribe mitigation measures, or analyze environmental effects. At the forest planning level, mitigation measures are incorporated into management direction through goals, objectives, standards, and guidelines or management prescriptions that influence the type, amount, and intensity of management actions that are implemented under the Forest Plan. The Responsible Official selected significant issues for revision based on one or more of the following criteria:

- Would these issues be used to help develop management alternatives or management direction or would they be used in the allocation of management prescriptions?

- Would the management alternatives, direction, or prescriptions have discernible effects on the issues or their related resources?
- Would effects to the issues be different enough by alternative to provide the Responsible Official with rationale for choosing a preferred or selected alternative?

2.3.1 Issues Considered in Detail

Using the comments received and the above criteria, the Responsible Official identified two major issues that were considered in detail. These issues are described below using an issue statement, a brief background explanation, and a summary of the issue indicators that will be used to track effects associated with the issue.

2.3.1.1 Issue 1

Under Alternative B, the Proposed Action, activities within the Wildland-Urban Interface (WUI) designed to reduce hazardous fuels that unacceptably increase wildfire risks[4] *to residential developments and public health and safety are exempt from proposed Forest-wide standards concerning retention of large-tree stands, old-forest habitat, and large snags. This exemption may affect the Forest's ability to restore the extent and distribution of old-forest habitats associated with some species of conservation concern. Of specific concern are the remaining acres of existing old-forest habitat—or those forest stands that could be restored to this condition in the near future—that are within the low- to mid-elevation conifer forests.*

2.3.1.1.1 Background for Issue 1

Within the WUI, hazardous fuel reduction objectives take priority over wildlife habitat needs under the proposed action. To meet hazardous fuel reduction objectives in the WUI, forests might need to be thinned to densities lower than those identified as important to addressing some habitat objectives in large-tree stands or old-forest habitat. Similarly, forests within the WUI might need to be more homogenous and uniform to reduce the risk of spreading wildfires, especially into tree crowns. Finally, large snags important to old-forest habitat may need to be removed in some WUI areas to reduce the risk that hazard trees present to public health and safety. Of particular concern is where removal will occur in the low- to mid-elevation conifer forests.

Based on the EA WUI analysis unit (section 3.4.3.2), an estimated 15 percent (146,800 acres) of the 1.04 million forested acres on the Forest fall within a WUI area. About 35 percent (51,700 acres) of these WUI acres fall within the nearly 295,600 acres of low- to mid-elevation conifer forests. Meeting hazardous fuel reduction objectives on these acres within the WUI that are also forest types of greatest conservation concern might affect the Forest's ability to provide well-distributed habitat across the Forest for wildlife species that uses these habitats.

Below is the subset of the various resource effects measures from Chapter 3 that will be used

[4] Risk represented by hazardous fuels that is considered unacceptable is determined by the Responsible Official. The Responsible Official considers those factors determined to be relevant to that site-specific situation and professional judgments of local agency experts.

as an indicator of effects related to this issue.

2.3.1.1.2 Indicators for Issue 1

- Acres of low- to mid-elevation forests potential vegetation groups (PVGs) 1, 2, 3, and 4) that fall within the WUI analysis unit
- Trends in acres of large-tree structure and old-forest habitat in all forests (PVGs 1–11) over time when examined within the EA WUI analysis unit, outside the WUI analysis unit, and when analysis unit trends are combined
- Trends in acres of large tree structure and old-forest habitat in low- to mid-elevation forests (PVGs 1, 2, 3, and 4) over time when examined within the EA WUI analysis unit, outside the WUI analysis unit, and when analysis unit trends are combined
- Sustainability outcome for wildlife habitat families 1 and 2
- Sustainability outcome for white-headed woodpecker (*Picoides albolarvatus*), flammulated owl, and pileated woodpecker (*Dryocopus pileatus*)

2.3.1.2 Issue 2

Assessments supporting WCS development indicate that forested lands on the Forest have fewer large trees than desired, primarily in low- and mid-elevation forest types. At the Forest scale, the number of large snags (20 inches diameter at breast height [*d.b.h].) appears to be within the desired condition or HRV except in managed areas and along road corridors. The Forest needs to retain all large trees, especially in existing "old-growth" habitat, until habitat is restored.*

2.3.1.2.1 Background for Issue 2

The proposed action includes management direction limiting the removal of large trees and snags and requiring the retention of old-forest habitat. Proposed management direction concerning large trees and snags was developed to promote maintenance or restoration of desired forest conditions consistent with overall multiple-use objectives. Multiple-use objectives vary by the Management Prescription Category (MPC) allocation and whether WUIs are involved. MPCs that contain suited timberlands (MPCs 4.2, 5.1, and 6.1) allow large trees and snags to be removed when they exceed the upper limit of the desired range of conditions in Appendix A of the Forest Plan. Restrictions are typically greater within MPCs that do not contain suited timberlands (all other MPCs not identified above). Large trees and snags are removed when needed to meet hazardous fuel reduction objectives within WUIs.

Some respondents indicated that if active management is needed to restore desired conditions, Forest managers must stop activities that further reduce resources of concern (e.g., large trees and snags) anywhere across the Forest, within all forest types. These respondents insisted that any further disturbance in any existing old-forest habitat must stop.

Below is the subset of the various resource effects measures from Chapter 3 that will be used as an indicator of effects related to this issue.

2.3.1.2.2 Indicators for Issue 2

- Large snag retention requirements by MPC by alternative and acres of those MPCs by alternative

- Acres with exceptions (e.g., WUI) to old-forest, large-tree structure, and snag retention standards
- Large-tree structure acres and old-forest habitat trends for all PVGs over time
- Sustainability outcome for wildlife habitat families 1 and 2
- Sustainability outcome and for white-headed woodpecker, flammulated owl, and pileated woodpecker

2.3.2 Concerns Not Addressed in Detail.

The Responsible Official also reviewed concerns that, while valuable, did not raise unresolved issues with the proposed action and were not used to develop alternatives, prescribe mitigation measures, or analyze environmental effects. These concerns were not treated as issues. These concerns address a variety of subjects, including, but not limited to, the following recommendations:

- Address and/or incorporate the WCS with aquatic and fish resource needs
- Consider needs across all habitats (i.e., all four phases identified in Chapter 1) in a single analysis and EIS to allow for the proper consideration of wildlife
- Include invertebrate and plant species in these considerations
- Envision ecological changes likely from alien invasive species
- Include a new restoration management prescription and actively promote a restoration economy and volunteer efforts as part of this strategy
- Consider the effects of recent wildfires
- Compare existing conditions with those of the previous decade; going back further in time (use of the HRV [historical range of variability] as defined) is guess work and could cause restrictions based on false assumptions
- Consider the effects of authorizing livestock grazing in forested landscapes on wildlife habitat restoration
- Consider expected climate change
- Use best available science and clearly disclose the science used
- Anticipate the effects on local communities, private inholdings, and counties
- Develop additional Forest Plan management direction to eliminate human disturbance to wolverine denning habitat
- Implement management direction from the Northern Rockies Lynx Management Direction project (USDA Forest Service 2007)

These and other concerns, and Forest Service responses to them, are outlined in the planning record.

2.4 Development of a Reasonable Range of Alternatives

As described earlier, public comments received during scoping helped generate issues with the proposed action. In turn, these issues were used to generate a preliminary set of alternatives. The alternatives were subsequently divided into “alternatives considered but eliminated from detailed study” and “alternatives considered in detail.” Both sets of alternatives are included in the reasonable range of alternatives considered for the Forest Plan amendment.

Only those alternatives that met the purpose and need for change and addressed one or more of the major issues identified by the Responsible Official were considered for detailed study. However, not all possible alternatives that met these criteria were studied in detail as the list of options would have been prohibitively large. Instead, the Responsible Official identified those alternatives that met the criteria and created a reasonable range of outputs, direction, costs, management requirements, and effects from which to consider implementation options.

2.4.1 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by the National Environmental Policy Act (NEPA) to rigorously explore and objectively evaluate a reasonable range of alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). The following alternatives were considered but eliminated from detailed study.

2.4.1.1 Reallocate Low- to Mid-Elevation Conifer Forests Currently Assigned to Passive Management MPCs (MPCs 1.2, 2.2, 3.1, and 4.1c) into MPC 5.1 (Restoration and Maintenance Emphasis within Forested Landscapes)

Under the 2003 Forest Plan, about 144,700 acres of low- to mid-elevation forests are assigned to MPCs that emphasize varying levels of passive management, ranging from MPC 1.2 (Recommended Wilderness) to MPC 4.1c (Undeveloped Recreation—Maintain Undeveloped Character, Allow Restoration) (USDA Forest Service 2003a). Under this alternative, these acres would be reallocated to MPC 5.1, which would allow use of the full complement of active restoration tools (e.g., mechanical treatments and prescribed fire), as well as increase the amount of suitable timberland acres. Suitable timberland acres are those acres where timber management is determined to be compatible with other land and resource management goals and objectives and where the Forest manages for a regular and predictable level of timber outputs.

This alternative would respond to preliminary issues raised by some commenters that at least one alternative should be considered that reallocates all or most forested areas currently in passive management MPCs that the Agency has identified as in need of active management (e.g., low- to mid-elevation pine forests) to an active management MPC. The commenters believe this alternative would not only allow restoration goals and objectives to be more fully realized in these forest types, but they also believe this alternative would increase wood product production to support struggling rural communities, and help demonstrate the “tradeoffs” of passive management to accomplish wildlife habitat restoration and hazardous fuel reduction objectives.

This alternative is similar to Final EIS Alternative 3 analyzed and developed for the 2003 Forest Plan, which allocated most of the forested acres determined to be in need of active restoration to MPC 5.1 (USDA Forest Service 2003b, pp. 2-33 through 2-35). Under the Final EIS Alternative 3, the maximum volume of timber that could be harvested from suited timberlands in a decade (i.e., Allowable Sale Quantity [ASQ]) was not greater than that allowed under Final EIS Alternative 7 (USDA Forest Service 2003b, pp. 2-25 to 2-28 and 3-700). Thus, the maximum volume that could be harvested in a decade does reflect that which would be anticipated should most forested acres in need of active restoration be allocated to an MPC that allowed use of mechanical treatments for restoration.

This alternative was considered but eliminated from detailed study because assigning these areas to MPC 5.1 is inconsistent with Forest Plan objectives for retaining Inventoried Roadless Areas (IRAs) and Wilderness areas. The USDA in October 2008 adopted a state-specific, final rule establishing management themes and direction for IRAs in Idaho. This rule is referred to as the Idaho Roadless Rule (USDA Forest Service 2008). Most of the IRAs on the Forest were categorized in the 2008 Idaho Roadless Rule as "Primitive" or "Backcountry/Restoration," which allow only limited timber harvest and/or road construction. While restoration in IRAs is an important objective under the Forest Plan, restoration in these areas will be achieved through passive management strategies that retain the undeveloped character. By contrast, the 2003 Final EIS for the Forest Plan characterized MPC 5.1 as a "Full Range of Development" MPC, which allows for activities that could affect the undeveloped character (USDA Forest Service 2003b, p. 3-841). The type and extent of mechanical treatments and potential road building allowed under MPC 5.1 are inconsistent with retaining the desired undeveloped character of Primitive and Backcountry/Restoration IRA management classes as described in this rule, except in limited areas referred to as community protection zones (CPZ).[5]

Because managing IRAs includes other multiple use goals and objectives not emphasized under an MPC 5.1 allocation and because this allocation would not be consistent with the 2008 Idaho Roadless Rule Primitive or Backcountry management themes, this alternative was not carried forward to be analyzed in detail. However, the effects of managing these areas under a passive restoration MPC to achieve vegetation and wildlife habitat desired conditions will be analyzed as part of all alternatives addressed in detail.

2.4.1.2 Addition of Diameter Limits

Under this alternative, a Forest-wide standard prohibiting the removal of any large trees and snags >20 inches d.b.h. would be adopted, along with those standards included in the proposed action that specify retaining old-forest habitat and large-tree stands. This alternative would partially respond to Issue #2 and to an issue raised by some commenters who stated that because the Forest has fewer large trees than desired, primarily in low- and mid-elevation forest types, and fewer large snags than desired in managed areas and along roadsides, the Forest needs to retain all large trees and snags, especially in existing old-growth habitat, until habitat is restored.

This alternative was considered but eliminated from detailed study because the Responsible Official determined that such a "one size fits all" approach would preclude achieving the project purpose and need (i.e., focus restoration to promote desired old-forest habitat or large-tree stand conditions). For example, retaining large trees of undesirable species would limit the Forest's ability to achieve or retain sustainable large-tree stands of desired species (Abella et al. 2007; Fule et al. 2006). Moreover, preliminary analysis of the proposed action, which does not include a diameter limit, shows that a "one size fits all" diameter limit is not warranted. Specifically, this preliminary analysis indicates that although the amount of large-

[5] The 2008 Idaho Roadless Rule characterized MPC 5.1 as being more consistent with the "General Forest, Rangeland/Grassland" IRA management theme (USDA Forest Service 2003a, Appendix B, p. B-5).

tree and old-forest habitat is currently below desired levels in our low- and mid-elevation conifer forests, measurable gains in the amount of these forests at all elevations is expected within 50–100 years under both the No Action and the Proposed Action Alternatives for this EA. The primary factor for increasing the number of large trees and acres of old-forest habitat of desirable tree species (e.g. ponderosa pine and Douglas-fir) appears to be time—that is, time for smaller trees to grow into the large tree size class regardless of whether they are in an active or passive management area.

2.4.1.3 Add Road Density and Winter Recreation Management Direction to Protect Wolverine

Under this alternative, additional management direction would be implemented, including the following measures:

- Restore roaded areas within suited wolverine habitat to a maximum road density of 1 mile of road per square mile (1 mi/mi^2) of wolverine habitat.
- Close areas identified as suitable wolverine denning habitat to snowmobiling, helicopter skiing, and other forms of intensive human use.

This alternative would respond to a preliminary issue raised by some commenters concerned that the Forest encompasses an important subpopulation for wolverine, which is listed as a "sensitive species" by the Intermountain Regional Forester, that scientific literature indicates unroaded areas serve as important wolverine refugia, and that wolverines will not use an area once human disturbance exceeds a certain threshold. Although the suggested maximum road density standard is based on recommendations from the Western Forest Carnivore Committee (unpublished 1994 memo), respondents acknowledge little scientific evidence supports a road density standard for wolverine or a threshold for winter recreational use.

Forest managers recognize that the Forest encompasses an important wolverine subpopulation, and science has clearly shown human uses can impact wildlife habitat and directly disturb individuals during denning and other critical life phases. For most of the management areas that provide wolverine habitat, the current Forest Plan includes direction to provide denning habitat security for wolverine and to restrict or modify winter recreational activities where conflicts with wolverine may occur.

WCS-related assessments used several mid-scale, science-supported indicators to help identify ***potential*** areas of conflict between wildlife and human use. These indicators include the Persistent Snow Layer Model (Copeland et al. 2010) to identify the most probable denning areas, road densities, groomed snowmobile route locations, heliskiing areas, and areas of concentrated backcountry skiing and trekking. These assessments have helped the Forest understand where conflicts may exist within priority habitat areas for wolverine that were not addressed in the current Forest Plan. The WCS identifies important watershed and linkage areas for wolverine and notes where existing levels of human disturbance may ***potentially*** affect denning success and overall wolverine persistence. Alternative B (Proposed Action) adds direction to those MAs with wolverine denning habitat that did not receive direction (as described above) in the current Forest Plan.

This alternative was eliminated from detailed study for the following reasons:

- Finer-scale investigations are needed to help the Forest Service acquire the additional information necessary to ensure mitigations are developed and applied where appropriate.
- Developing mitigation tailored to address conflicts in a specific location, rather than trying to resolve *potential* conflicts with a "one size fits all" Forest Plan standard or guideline, allows the Forest Service to balance its obligation to provide for a diversity of wildlife along with other multiple-use objectives identified in the Forest Plan. The 2003 Forest Plan provides several safeguard and conservation measures for the wolverine, including Forest-wide Wildlife Resources standard WIST03, which calls for mitigating management actions within known nesting or denning sites of sensitive species if those actions would disrupt the reproductive success of those sites during the nesting or denning period, with sites, periods, and site-specific mitigation measures to be determined during project planning (USDA Forest Service 2003a, p. III-27) and MA-specific direction to provide denning habitat security for wolverine and restrict or modify winter recreational activities where conflicts with wolverine may exist.

2.4.1.4 Add Management Direction to Prohibit Trapping and Provide Subpopulation Connectivity to Protect Wolverine

Under this eliminated alternative, additional management direction would be implemented, including the following measures:

- Prohibit all trapping that may pose a risk to wolverines within priority wolverine habitat.
- Identify and protect areas of connection between subpopulations across the entire western United States and Canada.

This eliminated alternative would respond to a preliminary issue raised by comment respondents concerned about protecting the wolverine subpopulation residing within the Forest.

This alternative was considered but eliminated from detailed study for the following reasons:

- In the *Idaho CWCS*, the State recognized that although wolverine trapping is illegal in Idaho, incidental trapping in wolverine habitat areas may contribute to mortality (IDFG 2005). The *Idaho CWCS* recommends developing trapping regulations that eliminate the possibility of incidental trapping, particularly where populations are small.
- This amendment only addresses National Forest System (NFS) lands. The Responsible Official does not have the authority or jurisdiction to make decisions concerning connectivity issues outside the Forest. However, the Forest Service considered connections with priority habitats adjacent to the Forest when identifying priority habitat areas for wolverine. The Forest Service also considered the wolverine focus areas identified by Idaho Department of Fish and Game (IDFG) in the *Idaho CWCS* (IDFG 2005), which considers connectivity needs across Idaho and with habitat in adjoining states. By considering these needs, as well as those identified through the Interior Columbia Basin Ecosystem Management Project (ICBEMP) and subbasin assessment projects in developing the Forest WCS, the Forest Service believes it will contribute to the broader connectivity needs within the western United States.

2.4.1.5 Increase Winter Motorized Recreation to Benefit Community Economies

Under this alternative, the Forest-wide standard TEST34 would be deleted. TEST34 specifies no net increases in groomed or designated over-the-snow routes or play areas (USDA Forest Service 2003a). The purpose of this direction is to protect Canada lynx, a threatened species.

This alternative would respond to a preliminary issue raised by commenters concerned that this standard constrains the Forest Service's ability to respond to increased demands for dispersed winter recreation. Given national media exposure about recreational opportunities and recent economic studies of the recreational impact, these commenters conclude that a WCS that negatively affects winter recreation could severely impact area economies.

This alternative was removed from detailed study for the following reasons:

- Winter motorized recreation will be addressed through future travel management efforts and is not part of the purpose and need for development of the WCS and associated Forest Plan amendment.
- Standard TEST34 provides some flexibility by allowing increases in groomed or designated over-the-snow routes where the biological assessment supporting a specific project "demonstrates that grooming or designation serves to consolidate use and improve lynx habitat."
- If through specific travel management assessments it is determined that the standard is not needed to address lynx habitat and is unnecessarily restricting opportunities for snowmobile route expansion, a project-specific amendment to the Forest Plan could be used to modify this standard.

Based on disclosures in the 2003 Final EIS concerning TEST34 and this EA, informal consultation with the U. S. Fish and Wildlife Service (USFWS), and discussions with local biologists, the Responsible Official has determined that the current 2003 Forest Plan standard TEST34 is still appropriate and needed to address suitable habitat conditions for the lynx.

2.4.2 Alternatives Considered in Detail, Including the Proposed Action

Only two alternatives, Alternative A (No Action) and Alternative B (Proposed Action), were considered in detail for this EA. Alternative A does not meet the purpose of and need for action stated in Chapter 1 of this EA. Alternative B meets the purpose and need for this action and addresses the major issues to various degrees.

2.4.2.1 Alternative A: No Action

Alternative A is the No Action alternative, which provides the baseline for comparing alternatives in this EA. Under Alternative A, management of the Forest would continue under the 2003 Forest Plan (as amended, and as updated with errata and corrections disclosed in annual Forest monitoring reports).

Alternative A includes the following key aspects, provided here to help when comparing the other alternatives considered in detail.

2.4.2.1.1 Forest-wide Management Direction

<u>Threatened, Endangered, Potential, and Candidate Species</u>

The Forest-wide direction would continue under the 2003 Forest Plan, Chapter III (USDA Forest Service 2003a, pp. III-8 through III-15).

Wildlife Resources

The Forest-wide direction would continue under the 2003 Forest Plan, Chapter III (USDA Forest Service 2003a, pp. III-25 through III-28).

Vegetation

The Forest-wide direction would continue under the 2003 Forest Plan, Chapter III (USDA Forest Service 2003a, pp. III-29 through III-31).

Fire Management

The Forest-wide direction would continue under the 2003 Forest Plan, Chapter III (USDA Forest Service 2003a, pp. III-38 through III-40).

Timberland Resources

The Forest-wide direction would continue under the 2003 Forest Plan, Chapter III (USDA Forest Service 2003a, pp. III-41 through III-43).

2.4.2.1.2 Management Direction Associated with Management Prescription Categories

Management direction concerning retention requirements for large snags during vegetation management activities, including salvage, would remain the same on lands identified as suitable and unsuitable for timber production within MPCs that allow salvage activities (i.e., MPCs 3.1, 3.2, 4.1c, 4.2, 4.3, 5.1, and 6.1).

2.4.2.1.3 Management Area Standards, Guidelines, and Objectives for Individual Management Areas

Management area direction—including standards, guidelines, and objectives for individual management areas—would remain the same as Chapter III of the 2003 Forest Plan (USDA Forest Service 2003a, pp. III-94 through III-317).

2.4.2.1.4 Forest Plan Monitoring and Evaluation Strategy

The Forest Plan monitoring and evaluation strategy would remain the same as Chapter IV of the 2003 Forest Plan (USDA Forest Service 2003a, pp. IV-1 through IV-18).

2.4.2.1.5 Appendix A (Vegetation Desired Conditions, Mapping, and Classification)

Appendix A of the Forest Plan would continue under the 2003 Forest Plan (USDA Forest Service 2003a, pp. A-1 through A-29).

2.4.2.1.6 Appendix E (Wildlife and Fish)

Appendix E of the Forest Plan would remain the same as in the 2003 Forest Plan (USDA Forest Service 2003a, pp. E-1 through E-9).

2.4.2.2 Alternative B: Proposed Action

Alternative B is the Proposed Action presented to the public in 2007, 2008, 2009, and 2010. Alternative B is the Forest Service's proposal to address the needs for change identified by the agency. The Proposed Action includes the following modifications in five areas of the Forest Plan:

- Changes in Forest-wide management direction for five resource areas—Threatened, Endangered, Potential, and Candidate Species; Wildlife Resources; Vegetation; Fire Management; and Timberland Resources (Chapter III of the Forest Plan)
- Changes in individual management area standards, guidelines, and objectives (Chapter III of the Forest Plan)
- Changes in management direction associated with individual Management Prescription Categories (MPCs)
- An update of the Forest Plan monitoring and evaluation strategy (Chapter IV of the Forest Plan)
- Revisions to Appendix A (Vegetation Desired Conditions, Mapping, and Classification) of the Forest Plan
- Revisions to Appendix E (Wildlife and Fish) of the Forest Plan to be specific to wildlife

The following update has been incorporated into the Proposed Action in response to public comment and preliminary analysis:

- Priorities for wolverine habitat connectivity and future investigations of potential wolverine and human conflicts as shown on the Sawtooth National Forest – North Source Environment Restoration Strategy map, within the range of wolverine on the Forest (Appendix 3). These priorities were developed to address requests for a wolverine conservation approach focusing ongoing wolverine research instead of imposing large area closures. The Forest Service has begun to study potential wolverine–human conflict in southwestern Idaho forests. This effort involves both land management agencies and winter recreation user groups. For example, the Idaho State Snowmobile Association is participating in and contributing funding to a multiagency wolverine study that involves parts of the Payette National Forest (Mitchell 2009). The importance of proactively addressing whether human uses may affect wolverines was recognized by the local Resource Advisory Council (RAC), which also contributed funding to this effort. In 2010, this study was expanded to include parts of the Sawtooth National Forest.

Alternative B includes the following key aspects (detailed in Appendix 2). In addition to the changes noted below, changes were made throughout both the Forest-wide and Management Area direction to reflect changes in terminology associated with management of wildland fire.

2.4.2.2.1 Forest-wide Management Direction

<u>Threatened, Endangered, Potential, and Candidate Species</u>

- Modify Forest-wide goals TEGO01, TEGO02, TEGO03, TEGO04, TEGO05, and TEGO06 for clarity.
- Delete objectives TEOB15, TEOB16, and TEOB17 that refer to species (bald eagle [*Haliaeetus leucocephalus*] and gray wolf [*Canis lupus*]) no longer listed under the Endangered Species Act (ESA).
- Correct or clarify objectives TEOB03, TEOB14, and TEOB24.

- Delete guideline TEGU09 because it is duplicative.

Wildlife Resources

- Modify goals WIGO01, WIGO02, WIGO03, and WIGO04 for clarity.
- Add objective WIOB13 and standards WIST08 and WIST09 to focus source habitat maintenance and restoration activities in wildlife priority watersheds and to emphasize conservation and restoration of old-forest habitat.
- Add objective WIOB14 to address species of conservation concern.
- Add objective WIOB15 to address species identified in the Idaho CWCS.
- Add objective WIOB16 to address the need to reduce road-related effects on wildlife habitat.
- Add guideline WIGU16 to address monitoring of Management Indicator Species (MIS).
- Add guideline WIGU17 to address monitoring of winter recreational use in wolverine denning habitat.
- Add guideline WIGU18 to address fuels reduction activities in wildlife habitat.
- Modify objectives WIOB01, WIOB02, and WIOB03; standard WIST03; and guidelines WIGU04 and WIGU05 for clarity.
- Modify objectives WIOB08 and WIOB09 for clarity and to remove references to MIS.
- Delete objective WIOB07 and standard WIST01 that specify managing for 20 percent large tree by 5th Hydrologic Unit Code (HUC).
- Delete objective WIOB10 because it would be incorporated into WIOB08.
- Delete guideline WIGU01 and replace with WIGU15, which promotes the use of conservation principles to design projects and/or assess effects of projects on wildlife habitat.
- Add the following exemption to WIST08 and WIST09 proposed standards concerning old-forest habitat:

    > This standard shall not apply to activities that an authorized official determines are needed for the protection of life and property during an emergency event; to reasonably address other human health and safety concerns; to meet hazardous fuel reduction objectives within WUIs; or to allow reserved or outstanding rights, tribal rights, or statutes from being reasonably exercised or complied with.

- Delete goals WIGO05 and WIGO06 because direction concerning the maintenance or improvement of habitat for MIS already exists (i.e., WIGO01 through WIGO04).

Vegetation

- Modify Forest-wide goals VEGO01, VEGO02, VEGO03, VEGO04, VEGO05, VEGO06, and VEGO07 for clarity and/or to describe the condition desired.
- Modify objectives VEOB01 and VEOB07 and guideline VEGU03 to improve clarity and/or include references.
- Add objective VEOB08 to identify the vegetation types in which to focus treatments in order to further vegetation restoration and maintenance efforts.

- Add standards VEST03 and VEST04 and guidelines VEGU07, VEGU08, VEGU09, and VEGU10 to retain important elements of vegetative diversity (e.g., large-tree stands) and to address the conservation of vegetation diversity elements (e.g., legacy trees).
- Add vegetative guideline VEGU11, specifying how the personal use firewood program should be managed to retain large snags.
- Apply the same exception to standards discussed above to proposed standards and guidelines under Vegetation.
- Delete guidelinesVEGU01 and VEGU02. Appendix A of the Forest Plan has been revised and provides the appropriate information concerning assessment scales and analysis approaches.

<u>Fire Management</u>

- Modify objective FMOB04 to focus hazardous fuel reduction and maintenance treatments in the WUI.
- Add objective FMOB08 to identify the use of prescribed fire, which will contribute to the accomplishment of objectives FMOB04 and VEOB08.

<u>Timberland Resources</u>

- Modify objective TROB01 to specify acreage anticipated to be treated on a decadal basis using commercial and noncommercial mechanical treatments that will contribute to objectives FMOB04 and VEOB08.
- Modify objectives TROB02 and TROB03 to reflect changes in ASQ and Total Sale Program Quantity (TSPQ) should this alternative be implemented.

2.4.2.2.2 Management Prescription Category Associated Management Direction

<u>MPC Direction</u>

- Add a vegetation standard, specifying large snag retention to MPCs 3.1, 3.2, and 4.1c.
- Add a vegetation standard, specifying how snags are to be retained in commercial salvage sales to MPCs 4.2, 5.1, and 6.1.
- Add a road guideline to MPCs 5.1 and 6.1, describing how public motorized use would be managed when building new roads to implement vegetation restoration projects. Where these roads are not needed for long-term management, temporary roads should be used and decommissioned following the restoration activity.

2.4.2.2.3 Management Area Standards, Guidelines, and Objectives for Individual Management Areas

- Update resource descriptions of conditions for Vegetation, Wildlife Resources, Timberland Resources, and Fire Management to reflect the updated multi-scale analysis.
- Add objectives and/or guidelines
    - to focus restoration on important vegetation components, such as whitebark pine

or old-forest habitat;
- to reduce road densities where they affect the use of source habitat in priority watersheds;
- to add direction for protecting wolverine habitat and to address wolverine–recreational use conflicts in those MAs that do not currently contain that direction but do contain wolverine habitat.

2.4.2.3 Forest Plan Monitoring and Evaluation Strategy

- Clarify and modify monitoring elements concerning Threatened, Endangered, Proposed, and Candidate (TEPC) species, sensitive species, and management indicator species (MIS).
- Move the MIS section in Appendix E to Chapter 4 of the Forest Plan
- Add a terrestrial wildlife and an aquatic MIS

2.4.2.3.1 Appendix A (Vegetation Desired Conditions, Mapping, and Classification)

- Modify discussions in Appendix A to note that desired conditions for size class, canopy cover, and species composition would be evaluated by division on the Minidoka Ranger District and by the north-end wide scale across the northern end of the Forest (Fairfield and Ketchum Ranger Districts and Sawtooth NRA), rather than 5th HUC scale, and that spatial patterns, described in terms of fire regimes and PVGs, would be evaluated at the 5th HUC scale.
- Clarify discussions in Appendix A by reformatting content.
- Add a vegetation restoration strategy, emphasizing large tree size class, spatial patterns, and declining seral tree species.

2.4.2.3.2 Appendix E (Wildlife Resources)

- Update Forest Plan Appendix E, making it specific to Wildlife Resources.
- Summarize the WCS and how it was integrated into the Forest Plan, and what its relationship is to Appendices A and B.
- Add detailed discussions concerning conservation principles and how they should be used in subsequent fine and project- or site-scale analyses.
- Delete the section concerning ESA and sensitive species because it is duplicative with existing Forest Service Handbook direction and the connectivity map provided for lynx does not provide a substantive purpose with the WCS now complete.
- Delete the Big Game section.

2.5 COMPARISON OF ALTERNATIVES

The following sections provide a comparison of the alternatives considered in detail by needs for change; issues and sustainability outcomes. The comparison is provided in a tabular format and includes

2.5.1 Comparison of Alternatives by Need For Change

Table 2-1 provides a comparison of how, from a management direction standpoint, the alternatives considered in detail respond to the seven Needs for Change identified in Chapter 1 (section 1.2.2).

Table 2-1. Comparison of Alternatives considered in detail by Needs for Change identified in Chapter 1

Alternative A—No Action	Alternative B—Proposed Action
NEED #1: Add to or modify management direction to emphasize the retention of most forest stands that meet the definition of old-forest habitat or large tree size class.	
Alternative A—No Action	**Alternative B—Proposed Action**
No specific standards or guidelines for retaining most stands of old-forest habitat would be provided. Wildlife standard WIST01 would remain and require the maintenance of at least 20 percent of the acres within each forested PVG found in a watershed in the large tree size class. Exceptions for activities identified under Alternative B do not exist, nor would any be added.	Standards would be added for retaining all existing old-forest habitat and large tree size class stands. Treatments would be allowed as long as they did not take stands out of the old-forest or large tree condition. Exceptions to standards and guidelines would be provided to exempt activities responding to emergency events, for human health and safety, to exercise prior existing rights and treaties, and within WUIs when in conflict with meeting hazardous fuel reduction objectives.
NEED #2: Add or modify management direction to focus restoration in forest stands classified as large tree size class and medium tree size class to promote desired old forest habitat or large tree stand conditions and reduce hazards and risks to these habitats.	
Alternative A—No Action	**Alternative B—Proposed Action**
No specific management direction would be added to focus restoration activities. No standards and guidelines would be provided to focus restoration in large and medium tree size class stands.	Objectives, standards, and guidelines would be added to focus restoration in large and medium tree size class stands so that desired old-forest habitat and large tree stand conditions are promoted, including direction addressing important fine-feature habitat elements such as legacy trees and snags. The same exceptions to standards and guidelines identified under Need #1 would be provided here.

NEED #3: Delete wildlife standard WIST01 and replace it with standards that focus on size class, canopy cover, and composition specific to individual potential vegetation groups (PVGs) identified to be in need of restoration rather than a one-size-fits-all standard.	
Alternative A—No Action	**Alternative B—Proposed Action**
No change in current management direction would be proposed.	WIST01 would be deleted. Wildlife species conservation would be provided through a more inclusive management strategy that emphasizes the restoration of habitat toward or within the HRV; habitat elements of greatest conservation concern, such as old-forest habitat, legacy trees, and large snags, would be retained or conserved. This alternative also develops and implements a spatial restoration strategy that prioritizes areas for action or conservation where the greatest benefits could be realized in the short term.
NEED #4: Add or modify existing management direction to emphasize the retention of large snags while balancing other objectives associated with a given management prescription category.	
Alternative A—No Action	**Alternative B—Proposed Action**
No specific management direction would be provided for conserving large snags.	A vegetation standard specifying how snags should be retained in commercial salvage sales would be added MPCs 4.2, 5.1, and 6.1. A standard requiring the retention of all large snags during vegetation treatments would be added to MPCs 3.1, 3.2, and 4.1c.
No specific direction to manage the firewood program would be provided at the Forest level.	A guideline would be added to the Vegetation Management section concerning management of the personal firewood use program with an emphasis on retaining large snags.
NEED #5: Prioritize vegetative and associated wildlife habitat restoration treatments to increase the overall probability of restoration success.	
Alternative A—No Action	**Alternative B—Proposed Action**
No spatial priorities for vegetative or wildlife habitat restoration would be provided.	Spatial priorities for vegetative or wildlife habitat restoration would be provided and additional Forest-wide and management area objectives would be added to reflect these priorities.
NEED #6: Identify where potential conflicts between wolverine and human use may exist, especially during their critical winter denning period, and determine if additional management direction is warranted.	
Alternative A—No Action	**Alternative B—Proposed Action**
Most Management Areas on the Forest with wolverine habitat have direction to provide winter habitat security and modify winter recreation activities where conflicts exist with wolverine; however, some key habitat areas for wolverines are not identified on the Forest, nor are important linkages or habitat connectivity areas important for wolverine. Areas have not been prioritized for subsequent investigations to determine if and where potential conflicts exist between wildlife species and human uses.	All Management Areas on the Forest with wolverine habitat would have direction to provide winter habitat security and modify winter recreation activities where conflicts exist with wolverine. Key habitat and linkage areas for wolverines, far-ranging carnivores, would be identified across their range of habitat on the Forest. These priorities would be reflected in consistent Management Area objectives and standards and in a Source Environment Habitat Restoration Map that identifies important wolverine linkage areas and areas for subsequent investigations to determine if and where potential conflicts exist between wildlife species and human uses.

NEED #7: Balance wildlife habitat restoration needs with multiple use objectives, allowing exceptions that respond to emergencies; provide for public health and safety; and allow for the exercise of existing rights and other statutory requirements.	
Alternative A—No Action	**Alternative B—Proposed Action**
No additional exceptions to plan direction would be added to exempt activities over that already provided in the 2003 Forest Plan.	Exceptions would be provided to proposed direction that exempt activities an authorized official determines are needed for the protection of life and property during an emergency event, to reasonably address other human health and safety concerns, to meet hazards fuel reduction objectives within wildland-urban interface areas, or to allow reserved or outstanding rights, tribal rights, or statutes from being reasonably exercised or complied with.

2.5.2 Comparison of Alternatives by Issue

Tables 2-2 and 2-3 display the key features and effects of each alternative, including each alternative's response to the issue indicators as described in section 2.3.

Table 2-2 Comparison of alternatives considered in detail and indicators for Issue 1—WUI exemption may affect ability to restore old-forest habitat in low- to mid-elevation forests.

Indicator	Unit	Alternative A	Alternative B
WUI exception within the low- to mid-elevation forests (in the nonlethal and mixed1 fire regimes)	Total acres within the low- to mid-elevation forests	295,600	295,600
	Forest acres within the WUI exemption	None	51,700
Trend in large tree size class (low- to mid-elevation forests)	Current acres	42,700	42,700
	Year 10 (acres)	49,900	50,200
	Year 50 (acres)	122,600	127,100
	Year 100 (acres)	201,600	209,000
Trend in old-forest habitat improvement (low-to mid-elevation forests)	Current Acres	25,670	25,670
	Year 10 (acres)	31,500	31,600
	Year 50 (acres)	87,100	89,500
	Year 100 (acres)	143,800	145,800
Sustainability outcome for habitat families	Family 1—current outcome D	trend to C	C
	Family 2—current outcome B	B	B
Sustainability outcome for focal species	White-headed woodpecker—current outcome D	trend to C	C
	Flammulated owl—current outcome B	B	B
	Pileated woodpecker—current outcome B	B	B

Note: Nonlethal and mixed1 fire regime; PVGs 1-4.

[a] Sustainability outcomes are defined as follows:
A—Focal species with this outcome are *likely* well distributed throughout their range within the planning area.
B—Focal species with this outcome are *likely* well distributed throughout *most* of their range within the planning area.
C—Focal species with this outcome are *likely* well distributed *in only a portion* of their range within the planning unit.
D—Focal species with this outcome are *likely not* well distributed across their range within the planning area.
E—Focal species with this outcome are *not* well distributed throughout much of their range within the planning area.

Table 2-3. Comparison of Alternatives considered in detail by Issue 2—Forest is substantially below desired representation of large trees in most forest types; need to retain all large trees and snags until habitat is restored

Indicator	Unit	Alternative A	Alternative B
Forested acres on the Sawtooth National Forest	Forested acres within all Management Prescription Categories (MPCs)	1,040,400	1,040,400
MPC direction to retain snag numbers in salvage operations at the high end of the range in Table A-5 (Forest Plan, Appendix A) in each size class and managing personal use firewood program to retain large snags	Forested acres within MPCs 4.2, 5.1, 6.1	N/A	192,800
MPC standard to retain all snags >20 inches d.b.h. in mechanical vegetation management	Forested acres within MPCs 3.1, 3.2, 4.1c	N/A	573,200
Exemptions to above MPC snag guidelines/standards (WUI—all forest types)	Forested acres within WUI	N/A	146,800
Trend in large tree size class (all forest types)	Current acres	102,890	102,890
	Year 10 (acres)	113,200	113,700
	Year 50 (acres)	219,600	225,500
	Year 100 (acres)	337,900	351,300
Trend in old-forest habitat improvements (all forest types)	Current Acres	81,380	81380
	Year 10 (acres)	86,600	86,800
	Year 50 (acres)	178,900	186,700
	Year 100 (acres)	277,400	285,600
Sustainability outcomes [a] for habitat families	Family 1—current outcome D	trend to C	C
	Family 2—current outcome B	B	B
Sustainability outcomes [a] for focal species	White-headed woodpecker—current outcome D	trend to C	C
	Flammulated owl—current outcome B	B	B
	Pileated woodpecker—current outcome B	B	B

[a] Sustainability outcomes are defined as follows:
A—Focal species with this outcome are *likely* well distributed throughout their range within the planning area.
B—Focal species with this outcome are *likely* well distributed throughout *most* of their range within the planning area.
C—Focal species with this outcome are *likely* well distributed *in only a portion* of their range within the planning unit.
D—Focal species with this outcome are *likely not* well distributed across their range within the planning area.
E—Focal species with this outcome are *not* well distributed throughout much of their range within the planning area.

2.5.3 Comparison of Alternatives by Sustainability Outcome

Tables 2-4 and 2-5 display habitat family sustainability outcomes and species of concern sustainability outcomes, respectively, for each alternative. The sustainability outcome conclusions were based on assessments of the six conservation principles and their associated indicators described in detail in Chapter 3. The establishment and use of thresholds for indicators considered the landscape in question, the assemblages or particular species of interest, and the ecological processes in question. A rating for a family was based on the predicted outcomes for modeled species in that family.

A) Source environments are either broadly distributed or highly abundant compared to their historic distribution. The combination of distribution and abundance of environmental conditions provides opportunity for continuous or nearly continuous intraspecific interactions for the focal species. Focal species with this outcome are *likely* well-distributed throughout their range within the planning area.

B) Source environments are either broadly distributed or highly abundant compared to their historical distribution, but gaps exist where source environments are absent or only present in low abundance. However, the disjunct areas of suitable environments are typically large enough and close enough to permit dispersal among subpopulations and to allow the species to potentially interact as a metapopulation. Focal species with this outcome are *likely* well-distributed throughout *most* of their range within the planning area.

C) Source environments are distributed frequently as patches and/or exist in low abundance. Gaps where source environments are either absent or present in low abundance are large enough that some subpopulations are isolated, limiting opportunity for intraspecific interactions. Opportunity exists for subpopulations in most of the planning area to interact, but some subpopulations are so disjunct or of such low density that they are essentially isolated from other populations. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. Focal species with this outcome are *likely* well-distributed *in only a portion* of their range within the planning area.

D) Source environments are frequently isolated and/or exist at very low abundance. While some of the subpopulations associated with these environments may be self-sustaining, limited opportunity exists for population interactions among many of the suitable environmental patches. For species for which this is not the historical condition, reduction in species' range in the planning area may have resulted. Focal species with this outcome are *likely* not well-distributed across their range within the planning area.

E) Source environments are highly isolated and exist at very low abundance. With little or no possibility of population interactions among suitable environmental patches, a strong potential exists for extirpations within many of the patches and little likelihood of recolonization of such patches exists. There has likely been a reduction in the species' range from historical conditions, except for some rare, local endemics that may have persisted in this condition since the historical time period. Focal species with this outcome are *not* well-distributed throughout much of their range within the planning area.

Table 2-4. Comparison of Alternatives Considered in Detail by Sustainability Outcomes for Terrestrial habitat families and associated species

	Sustainability Outcomes [a] (Trends Over Next 100 Years)		
	Current	**Alternative A**	**Alternative B**
Family 1—Low-elevation, old forest	D	Trend to C	C
Family 2—Broad-elevation, old forest	B	Remain in B	Remain in B
Family 3—Forest mosaics	C	Remain in C	Remain in C
Family 4—Early seral and lower montane	A	Remain in A	Remain in A

[a] Sustainability outcomes are defined as follows:
A—Focal species with this outcome are *likely* well distributed throughout their range within the planning area.
B—Focal species with this outcome are *likely* well distributed throughout *most* of their range within the planning area.
C—Focal species with this outcome are *likely* well distributed *in only a portion* of their range within the planning unit.
D—Focal species with this outcome are *likely not* well distributed across their range within the planning area.
E—Focal species with this outcome are *not* well distributed throughout much of their range within the planning area.

Table 2-5. Comparison of alternatives considered in detail by sustainability outcomes for TEPC species, regionally sensitive species, and MIS

	Sustainability Outcomes [a] (Trends Over Next 100 Years)		
	Current	**Alternative A**	**Alternative B**
TEPC species			
Lynx	B	B	B
Wolverine	C	C	C
Sensitive species			
Boreal owl	B	B	B
Fisher	B	B	B
Flammulated owl	B	B	B
Great gray owl	B	B	B
Northern goshawk	B	B	B
Three-toed woodpecker	B	B	B
White-headed woodpecker	D	Trend to C	C
MIS			
Pileated woodpecker	B	B	B

[a] Sustainability outcomes are defined as follows:
A—Focal species with this outcome are *likely* well distributed throughout their range within the planning area.
B—Focal species with this outcome are *likely* well distributed throughout *most* of their range within the planning area.
C—Focal species with this outcome are *likely* well distributed *in only a portion* of their range within the planning unit.
D—Focal species with this outcome are *likely not* well distributed across their range within the planning area.
E—Focal species with this outcome are *not* well distributed throughout much of their range within the planning area.

Chapter 3—Environmental Consequences

3.1 INTRODUCTION

3.1.1 Purpose and Content

Chapter 3 describes the physical and biological resources that may be affected by the alternatives presented in Chapter 2 and the effects the alternatives may have on them. The “Affected Environment” and “Environmental Consequences” sections are combined in this chapter to provide a concise depiction of the resources potentially affected by the proposed Forest Plan amendment[6]and predicted effects under the different alternatives. The environmental effects analysis forms the scientific and analytic basis for the comparison of alternatives.

Chapter 3 is organized by the following resources:

- Forested vegetation diversity and fire regime condition class
- Terrestrial wildlife habitat and species
- Fire management
- Timberland resources
- Tribal interests and rights

Each resource section is organized as follows:

- **Introduction** - introduces the analysis and summarizes its focus. It also identifies what resources analyzed in the 2003 Final EIS (USDA Forest Service 2003b) will not be evaluated in this proposed Forest Plan amendment Environmental Assessment (EA)
- **Effects and Measures** - describes the indicators used to measure effects from the alternatives for each resource
- **Methods** - summarizes the analysis procedures and assumptions used to develop the current conditions and environmental consequences. Detailed analysis procedures and assumptions for each resource area can be found in the project record
- **Affected Environment or Current Conditions** - summarizes the current conditions of the resource as these conditions relate to the potential effects of the alternatives. It includes a brief description of the geographic area potentially affected for a given resource and, as needed, includes history, development, past disturbances, natural events, and interactions that have helped shape the current conditions.
- **Environmental Consequences** - contains the following subsections:
    - **Effects Common to all Alternatives** (as Appropriate) - describes the general type of effects that may occur to the resource from implementation of the alternatives
    - **Direct and Indirect Effects** - analyzes the amount and intensity of direct and

[6] As described later in this section, the proposed Forest Plan amendment is not anticipated to have measurable effects on several other resources, and these resources will not be evaluated further in this EA.

indirect effects by alternative. Direct effects are caused by an action and occur at the same time and place as that action. Indirect effects are caused by an action but occur later in time or farther away geographically.

- **Cumulative Effects** - analyzes the cumulative effects to the resource that might result from the incremental impacts of an action alternative when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions (40 CFR 1508.7 and 1508.8).

The chapter concludes with several required effects disclosures regarding potential resource commitments.

3.1.2 Analysis Calculations

In the modeling and analysis included throughout Chapter 3, the numbers for road miles, acres of treatment, and others are all best estimates based on the latest available information. The modeling and analysis conducted for this EA are intended and designed to indicate relative differences between the alternatives rather than to predict absolute amounts of activities, outputs, or effects. Due to the importance of the vegetation modeling outputs to all resource disclosures in this chapter, a more detailed summary of those methods and assumptions have been included in Appendix 4, along with a summary of the wildlife analysis methods and assumptions.

3.1.3 Incomplete or Unavailable Information

The Council on Environmental Quality (CEQ) regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA) (40 CFR 1502.22) require Federal agencies to identify relevant information that may be incomplete or unavailable for evaluating reasonably foreseeable significant adverse effects.

The ecology, inventory, and management of ecosystems are complex, developing disciplines. However, central ecological relationships are well established, and a substantial amount of credible information about ecosystems in the planning unit is known. The alternatives were evaluated using the best available information.

The data collection effort for this analysis can generally be categorized into five basic groups:

1. Resource databases used to compile and summarize information
2. Geographic information system (GIS) spatial analyses linking database information to geographic locations
3. Expert science reviews of methodology and assumptions such as those used in development of the WCS, including use of the six conservation principles to assess habitat families and associated species sustainability
4. Information and analysis documented in reports prepared under contract such as that done for the Science Review
5. Current scientific literature reviews

Additional detail about the data used by interdisciplinary team (IDT) members to support their analyses and the limitations of these data is summarized in each resource section and as appropriate, in Appendix 4 of this EA, and described in more detail in related project record documentation.

3.1.4 Management Prescription Category–Based Analysis

Forest plans are strategic documents that describe the overall management direction for a National Forest. The Forest Plan, as amended by this action, would modify desired resource conditions across the planning unit and modify goals, objectives, standards, and guidelines for resource management to maintain or restore these desired resource conditions in a way that contributes to the social and economic interests of the public. While forest plans guide site-specific project activities, they do not approve or execute these projects or activities.

Decisions to implement site-specific projects are made after completing a separate environmental analysis and public involvement under NEPA.

Management prescriptions identified in the Forest Plan describe the management practices and intensity selected and scheduled for application on a specific allocation area within the planning unit. Management Prescription Categories (MPCs) are broad categories of management prescriptions that indicate the general management emphasis prescribed for a given area, and activities allowed under the various MPCs contribute to the multiple uses described in Forest Plan goals and objectives applicable to that area.

The MPC-based analysis compares the potential effects of the proposed modifications to the MPCs on management activities that could occur by alternative. The effects are modeled using assumptions about the type, amount, and intensity of management activities that would be allowed under each MPC for the No Action Alternative versus the Proposed Action Alternative. As stated above, the modeled effects in the EA are designed to show relative differences in the two alternatives—not to precisely predict the amount or location of management activities that would occur during the planning period should that alternative be selected for implementation.

3.1.5 Resources Not Evaluated in this Chapter

The purpose of the proposed Forest Plan amendment is to complete a comprehensive WCS for the Forest and amend the 2003 Forest Plan as needed to specifically integrate the WCS recommendations. This EA is “of a lesser scope” than the Environmental Impact Statement (EIS) developed for the 2003 Forest Plan because the purpose of the 2003 Forest Plan was to guide all natural resource management activities on the Forest (USDA Forest Service 2003a, p. I-4) to support a variety of multiple-use objectives. There are a number of resources the IDT has determined would not be measurably affected by the proposed Forest Plan amendment. Therefore, the analysis of the effects of the proposed Forest Plan amendment on these resources is tiered to that disclosed in the 2003 Final EIS (USDA Forest Service 2003b). The following resources are not discussed in detail:

- Air quality and smoke management
- Soil, water, riparian, and aquatic (SWRA) resources
- Botanical resources
- Nonnative plants

- Rangeland resources
- Recreation
- Scenic environment
- Cultural resources
- Roads and facilities
- Inventoried Roadless Areas
- Wilderness and recommended Wilderness
- Wild and Scenic Rivers
- Socio-economics

Appendix 5 summarizes the IDT's findings as to why these resources would not be measurably affected by the proposed Forest Plan amendment. This approach is consistent with CEQ NEPA regulations, which endorse "tiering" to incorporate by reference the coverage of general matters in broader EISs, such as national program or policy statements, with subsequent narrower statements or environmental analyses, such as regional or basinwide program statements or site-specific statements (40 CFR 1508.28). The CEQ regulations also provide that tiering may be appropriate from a program, plan, or policy EIS to a program, plan, or policy statement or analysis of lesser scope or to a site-specific statement or analysis (40 CFR 1508.28).

3.1.6 Analysis of Large Tree Size Class and Old-Forest Habitat in Lieu of Old Growth

In 2003 the USDA Forest Service (Regions 1, 4, and 6); U. S. Department of Interior (USDI) Bureau of Land Management (BLM) (Oregon, Washington, Idaho, and Montana); USDI Fish and Wildlife Service (Regions 1 and 6); U.S. Environmental Protection Agency (EPA) (Region 10); and National Marine Fisheries Service (Northwest Region) signed an Interagency Memorandum of Understanding (MOU) (USDA Forest Service et al. 2003b) to cooperatively implement "The Interior Columbia Basin Strategy" through 2012 (USDA Forest Service et al. 2003a). A specific component of this strategy is "Terrestrial Source Habitats Maintenance and Restoration," which states the following (USDA Forest Service et al. 2003a, page 7):

> Management Plans shall address ways to maintain and secure terrestrial habitats that are comparable to those classified by the science findings as "source" habitats (Wisdom et al. 2000) that have declined substantially in geographic extent from the historical to the current period and habitats that have old forest characteristics. Direction should address opportunities to re-pattern these habitats when and where necessary, maintain and guide expansion of the geographic extent and connectivity of source habitats that have declined where they can be sustained.

This section goes on to specifically highlight that (USDA Forest Service et al. 2003a, page 7):

> Old forest in the dry and moist forest potential vegetation groups [PVGs] is relatively scarce therefore management direction shall address steps appropriate to prevent the loss of this habitat and promote long-term sustainability of these

existing stands. Restoration direction shall be developed to increase the geographic extent and connectivity of these vegetation groups addressing active and passive management options, where appropriate (such as harvest, thinning, prescribed fire and wildland fire for resource benefit).

As a result of commitments made by the Region 4 Regional Forester to implement this strategy, the 2003 Forest Planning Team adopted the term "old-forest habitat" instead of "old growth" in developing the 2003 Forest Plans. In addition, the 2003 and WCS planning teams believe "old-forest habitat" better represents this desired habitat condition, as described below.

The descriptions and variables that define old growth vary considerably, with no single definition that describes all types of old growth. Additionally, the role of ecological disturbances in defining old growth has been ambiguous. For example, some definitions exclude forests with fire influences, even where fire is a part of the historical disturbance regime. In other cases, such disturbance is incorporated in the old growth concept. However, it is generally agreed that "old" forests share several traits: they contain relatively mature old trees with little-to-no evidence of post-settlement activities. Thomas et al. (1988) emphasizes that there is no single all-inclusive definition and that old growth characteristics vary by region, forest type, and local conditions. Hunter (1990) promotes that a universal old growth definition is not desirable and that forest ecologists should develop unique definitions for each forest type, taking into account forest structure, development, function, and patterns of human disturbance.

Early work on old growth primarily concerned western hemlock (*Tsuga heterophylla*) plant associations of the maritime Pacific Northwest. In this historic work, recognition and description of forest stand structure dominated by large trees (a condition that comes with old age) was often linked to late-seral/climax conditions. There was little recognition of mid-seral, disturbance-maintained old growth forest conditions (Green et al. 1992). However, more recently old growth has been recognized as a dynamic structural condition associated with both mid-seral stages dominated by early seral conifer species and late-seral stages dominated by later-seral and climax conifer species (Rust 1990). Wider recognition of mid-seral old-growth forest stand conditions has grown out of a national effort to describe old-growth forest attributes and conduct restoration in those forest types.

Because of differing land capabilities, old growth should be based on a site potential stratification, such as habitat type, series, or habitat type groups (e.g., PVGs). Ecological definitions of all successional stages, stratification by habitat types, and other site conditions will help provide better management for a landscape with a full range of biological diversity, reflective of historical functions and processes.

Mid-seral vegetative structural conditions in central Idaho developed with disturbance processes (fire, insect, disease, wind) and climate variations. By contrast, late-seral/climax, old-growth characteristics generally develop in the absence of frequent disturbances. This type of old growth was important historically, but not widespread in central Idaho, where warm, dry forests dominated by large trees were extensive and maintained by nonlethal fires (Morgan and Parsons 2001; Wisdom et al. 2000). Table 3-1 (from Morgan and Parsons 2001) shows the estimated percentage of forested landscapes in the central Idaho batholith that were historically occupied by stands in the large tree size class and by stands with old-growth characteristics, as defined by Mehl et al. (1998) and Hamilton (1993), based on the assumption that disturbances were limited. Estimates were developed for each of the 11 PVGs on the Forest.

The main reason for the different percentages of large tree size class and old growth is that in central Idaho, disturbance is common and the late-seral/climax condition is a small percentage of the large tree size class. Historically, forested stands in lower-elevation PVGs with nonlethal-to-mixed1 fire regimes likely developed stands of large ponderosa pine trees with relatively open canopies during mid-seral stages, and these conditions were maintained over time by frequent low-intensity fire. Denser stands with late seral/climax species compositions and decadence typically associated with late-seral stage conditions that developed without frequent disturbance were rarer in those areas with frequent fire. However, these types of stands did occur more extensively in PVGs with longer fire intervals.

Table 3-1. Historical Levels of Central Idaho Stands Occupied by Large Tree Size Classes and Stands with Late-Seral Old Growth Characteristics by Potential Vegetation Group. (Source: Morgan and Parsons 2001)

	Nonlethal		Mixed-1		Mixed-2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Percent of PVG historically in the large tree size class (mean value)	91.0	80.0	41.0	34.0	21.0	27.0	0.0
Percent of PVG estimated to represent old growth (historically)	0.0	0.0	8.5	8.4	4.0	1.2	0.0

Note: Large tree size class refers to stands where the largest trees average 20.0 inches diameter breast high or greater.

As stated by Mehl et al. (1998), “specific measures of old growth characteristics have not been developed for the understory fire maintained systems.” They note that climax forests, from which initial “old growth” definitions were developed, and “old” characteristics that develop in forests dominated by seral species can be different entities. However, they also state that, “If species composition and tree densities meet the requirements of the understory fire–large tree growth stage, it is likely to closely represent old growth conditions as we currently understand them” (Mehl et al. 1998). In the approach used by Morgan and Parsons (2001), forest types with frequent nonlethal fire rarely meet old-growth characteristics although forests are composed of large trees, often with a component of large, old trees. However, rather than exclude these large tree conditions that contain old trees because they do not meet Mehl et al. (1998), or Hamilton (1993) early or late-phase old growth definitions, or rather than use old growth definitions that outline a condition that rarely occurred, the IDT advocated applying the broader definition of old-forest habitat as defined by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) (O’Hara et al. 1996; Hann et al. 1997) and adopted by Wisdom et al. (2000). This more inclusive definition captures a greater array of large tree conditions, including large old trees in stands that may or may not be defined as old growth, and stands that contain large, old trees of early seral species. Thus, old-forest habitat as defined in Appendix E includes old growth but is also broader to include the mid-seral, fire maintained systems. Further discussion of old forest habitat and its definitions by PVG are available in Appendix E of the Forest Plan (Appendix 2).

3.2 FORESTED VEGETATION DIVERSITY AND FIRE REGIME CONDITION CLASS

3.2.1 Introduction

Vegetation is a cornerstone of biological diversity, and many biophysical processes and functions are connected to vegetative conditions. Vegetation is an integral part of ecosystem composition, function, and structure: vegetation shapes, and in turn, is shaped by the ecosystems in which it occurs. It provides plant and animal habitat and determines how fire, insects, disease, and other disturbance processes and functions operate across the landscape. Vegetative condition is often the single most important component that determines how landscapes are used and the interactions between biological and physical resources. Conservation of biodiversity is important at all levels, including genetic, species, and ecosystem. Vegetation unites a large share of the components and processes that contribute to these levels.

Recent advances in ecosystem sciences have demonstrated the need to understand these various organizational levels and interactions at a scale larger than what has been used in the past. The organizing unit used to encompass levels at and above the ecosystem is a landscape. Forman and Godron (1986) define a landscape as a heterogeneous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout. The mechanisms that create landscapes include geomorphological processes, colonization patterns of organisms, and disturbances. Forman and Godron (1986) state that landscape ecology is the study of the following characteristics:

1. Structure—the spatial relationships among ecosystems or elements within ecosystems
2. Function—the interactions between structures
3. Change—the alteration in structure and function over time

Landscape ecology involves understanding the basic principles of structure, function, and change and using these principles to formulate and resolve issues. Another important concept in understanding landscapes is spatial and temporal scales. Recent advances in theory and empirical studies of landscape ecology indicate that to maintain biological diversity across landscapes, management needs to consider the major disturbance processes that occur over time, including the variability and scale that organize ecosystem components and their spatial pattern (Baker 1992; Baker and Cai 1992; Hessburg et al. 2007).

Coarse-filter units of macrovegetation are described here using classification systems that consider groups or communities of vegetation appropriate for midscale planning. The Forest uses PVGs, tree size class, canopy cover class, cover types, and community types to classify vegetation. Current vegetation conditions and relationships to structure, function, and change have been established using several of these classification elements. Because fire was historically a major disturbance process in the West, fire regimes are used to help set context for the classification of landscapes and their desired conditions (Wallin et al. 1996).

3.2.1.1 Vegetative Communities on the Forest

Of the 2,111,000 acres on the Sawtooth National Forest, 52 percent is forestlands and 48 percent is non forest. Only the coniferous forested communities are addressed in this Forest Plan amendment. The woodlands that occur on the Forest are deciduous climax aspen and are not addressed in this amendment.

3.2.1.2 Forested Vegetation

The key to resilient and resistant ecosystems is healthy structural and functional diversity across landscapes (Franklin and Forman 1987). Achieving multiple-use objectives dictates that Forest managers maintain biological diversity. A diversified forest provides a greater array of production opportunities, biological organisms, and inputs to soil productivity than a more homogenous forest. Increased genetic diversity contributes to sustainability over time, particularly in the face of uncertainties related to factors such as climate change.

The variety of vegetative species that occur within ecosystems contributes to processes and functions in different ways. Some species, particularly early seral species such as ponderosa pine or whitebark pine, were historically long lived and persistent within landscapes, often due to disturbances that reduced competition with later-seral species. These species evolved with historical disturbances, and longevity and resistance to these disturbances contributed to their persistence (Covington and Moore 1994). Other species such as lodgepole pine, though shorter lived, were also adapted to historical disturbances. Different species host different insect and disease agents, which, in turn, influence wildlife use. The decaying fungi introduced by bark beetles (*Scolytidae* sp.) facilitate excavation by primary cavity nesters (Bull et al. 1997). Other species like subalpine fir, which is often infected with heart-rotting fungi, provide large, live, hollow spaces for wildlife.

Forested habitat types, which use potential climax vegetation as an indicator of environment, define similar land units. That is, habitat types provide a mechanism for classifying units of land that have similar species reproduction and competitive effects due to similar environmental factors. Each habitat type represents a relatively narrow range of environmental conditions. Habitat types are grouped into PVGs, which share similar environmental characteristics, site productivity, and disturbance regimes. These groupings facilitate a coarse-filter description of vegetative conditions. PVG 7, which is the Warm Dry Subalpine fir group, makes up 32 percent of the forested vegetation on the Forest (Table 3-2) (2010 0507 Sawtooth_VDDT_input.xls). This PVG falls into the mixed2 fire regime.

Some PVGs transition between fire regimes but were assigned to a single fire regime grouping for the analysis. For example, PVG 4 contains habitat types that historically ranged from mixed1 to mixed2. This broad PVG was assigned to the mixed1 fire regime

Forest wide. However, this assignment is not meant to imply that this PVG is only mixed1. This is also the case for other PVGs that transition between fire regimes in that they were assigned to a single fire regime for the analysis even though, historically, fire effects were more variable depending on local site conditions.

In total, the mixed2 and lethal fire regimes make up almost three quarters of the acres within the forested ecosystems. Douglas-fir is a dominant species across all PVGs that occur in the nonlethal and mixed1 fire regimes. Table 3-3 displays the seral status (accidental, seral, or climax) of Douglas-fir and other tree species that occur within PVGs (Steele et al. 1981; Mehl et al. 1998). In the nonlethal and mixed1 fire regimes, ponderosa pine and Douglas-fir are the climax species. In the mixed2 and lethal fire regimes, subalpine fir is the climax species.

Table 3-2. Forested Potential Vegetation Groups (PVGs), Acres, Proportion of Total Forested Acres, Fire Regime Assignments, and Fire Regime Groupings for the Sawtooth National Forest

Potential Vegetation Group	Acres	Percent of Forested Acres (%)	Historical Fire Regimes	Historical Fire Regime Groupings
PVG 1—Dry Ponderosa Pine/Xeric Douglas-fir	38,670	4	Nonlethal	Nonlethal (4%)
PVG 2—Warm Dry Douglas-fir/Moist Ponderosa Pine	10,990	<1		
PVG 3—Cool Moist Douglas-fir	37,420	4	Mixed1-Mixed2	Mixed1 (24%)
PVG 4—Cool Dry Douglas-fir	208,530	20		
PVG 7[a]—Warm Dry Subalpine Fir	330,310	32	Mixed2	Mixed2 (52%)
PVG 11—High Elevation Subalpine Fir	211,210	20		
PVG 10—Persistent Lodgepole Pine	203,230	20	Mixed2-Lethal	Lethal (20%)
Total	1,040,360	100		100%

[a] PVG 9 acres have been combined with PVG 7 since only a few PVG 9 acres occur on the Forest.

Often the existing vegetation (cover type) is a seral stage to a climax plant community. Examples of cover type classes are ponderosa pine and Douglas-fir, which indicate species were dominant, and ponderosa pine/Douglas-fir, which indicate these species were co-dominant. Historically, these cover types were the result of some form of disturbance. Late-seral or climax plant communities result from succession, which is defined as the replacement of one plant community by another. Later-seral and climax

Table 3-3. Status of Overstory Species in the Forested Potential Vegetation Groups (PVGs) by Fire Regime for the Sawtooth National Forest

PVG	Aspen	Lodgepole Pine	Ponderosa Pine	Whitebark Pine	Douglas-Fir	Engelmann Spruce	Subalpine Fir
Nonlethal							
1	(Seral)[a]	—	Seral (climax)[b]	—	(Climax)	—	—
2	(Seral)	Accidental	Seral (climax)[b]	—	Climax	—	—
Mixed1							
3	(Seral)	(Seral)	Seral	—	Climax	—	—
4	(Seral)	Seral	Accidental	—	Climax	—	—
Mixed2							
7	(Seral)	Seral	Accidental	Accidental or minor seral	Seral	Seral	Climax
11	—	Seral	—	Seral and climax	—	—	Climax
Lethal							
10	(Seral)	Seral[b]	—	Seral	Accidental	Seral	Climax

[a] Parentheses indicate tree species only occurs in part of the PVG
[b] Persistent seral species; climax in some habitat types

species are generally shade tolerant and can regenerate under the canopy of other species. On the Forest, an example is subalpine fir. In some cases, particularly on very cold sites, climax species rely on the solar or thermal protection provided by other, usually early seral species. These early seral species are those that establish immediately following a disturbance, often requiring mineral soil to regenerate. They are generally shade intolerant and often have fast growth rates. On the Forest, examples are ponderosa pine and lodgepole pine. Tree size distribution can also vary over time depending on disturbance. Some species, such as ponderosa pine and Douglas-fir, can grow to very large size classes while others, such as lodgepole pine, rarely attain large tree size class.

In addition to the species composition of cover types and tree size class, canopy cover class is another important attribute of forested vegetation. For example, sun-loving plant species are unlikely to be found in dense shade; these species require more open cover to persist in a landscape. Canopy cover plays a major role in how disturbances such as insects, disease, wind, and fire operate within landscapes.

Snags are dead standing trees. Coarse woody debris and logs are products of snags or result from windthrow, breakage, and damage of live trees. Snags, live trees with decay, hollow trees, logs, and other dead wood provide an important ecological component in forest ecosystems and are used by a variety of wildlife for foraging, nesting, denning, roosting, and resting (Bull et al. 1997).

Distinct plant and wildlife species and habitats exist across the landscape based on the combinations and arrangements of cover type, tree size class, canopy cover class, snags, and coarse woody debris. Though most vegetation management is conducted at the stand scale, understanding vegetative conditions and patterns within a landscape context is imperative to provide for the diversity of conditions that contribute to resistant and resilient ecosystems that can meet a host of uses and needs.

Tree size class (Table 3-4) and canopy cover class (Table 3-5) are used to describe conditions within PVGs. The combination of these two characteristics is defined as the macrovegetation for this Forest Plan amendment. Because vegetative conditions are intrinsic to so many functions and processes, macrovegetation provides an indicator for assessing a host of issues and effects.

Table 3-4. Tree Size Classes

Tree Size Class	Description
Grass/Forb/ Shrub/Seedling (GFSS)	Trees less than 1.0 inch d.b.h., and areas without trees but capable of or previously having forest tree cover. All canopy cover densities of 0–100 percent may be present.
Saplings	Trees range from 1.0 to 4.9 inches d.b.h. Canopy cover is at least 10 percent.
Small Trees	Trees range from 5.0 to 11.9 inches d.b.h. Canopy cover is at least 10 percent.
Medium Trees	Trees range from 12.0 to 19.9 inches d.b.h. Canopy cover is at least 10 percent.
Large Trees	Trees are 20.0 inches or more d.b.h. Canopy cover is at least 10 percent.

Table 3-5. Canopy Cover Classes

Canopy Cover Class	Description
Nonstocked or Nonforested	May include some conifer tree cover but less than 10 percent total cover. May also include forest vegetation cover types regardless of density if in the GFSS tree size class.
Low	Canopy cover ranges from 10 to 39 percent.
Moderate	Canopy cover ranges from 40 to 69 percent.
High	Canopy cover is 70 percent or greater.

3.2.1.3 Historical Range of Variability

Reference conditions for forested vegetation were established using the historical range of variability (HRV) based on the time period prior to Euroamerican settlement (Morgan et al. 1994). Reference conditions provide an ecological basis from which to compare current conditions and management options. HRV has become a common reference condition for assessing landscapes as it provides a context for understanding the conditions within which plants and animals evolved (Keane et al. 2009). Estimates of historical tree size classes are based on modeling conducted by Morgan and Parsons (2001) for PVGs in the Southern Idaho Batholith (Table 3-6). Morgan and Parsons (2001) did not determine canopy cover class (or other density measures) as part of the HRV modeling. Historical canopy cover class was approximated from other sources (Steele et al. 1981; Sloan 1998) (Table 3-7). The HRV estimates for canopy cover class presented in Table 3-7 vary from the HRV estimates in the 2003 Final EIS (USDA Forest Service 2003b, p. 3-431, Table V 9) due to new information. HRV estimates for species composition were also developed by Morgan and Parsons (2001) and are displayed in Table 3-8.

Table 3-6. Estimated Historical Distributions of Tree Size Classes for Forested Potential Vegetation Groups (PVGs) from Morgan and Parsons (2001)

Tree Size Class	Historical Distribution (%)						
	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
GFSS	0–6	0–7	1–14	0–10	0–20	8–21	11–25
Saplings	0–3	0–4	3–18	3–18	6–22	6–20	3–15
Small	0–4	0–4	4–33	4–35	10–49	5–29	39–59
Medium	1–6	3–22	10–45	16–59	14–34	8–44	11–27
Large	47–99	59–99	23–65	20–47	10–29	14–43	N/A

Table 3-7. Estimated Historical Distribution of Canopy Cover Class for the Large Tree Size Class for Forested Potential Vegetation Groups (PVGs)

Canopy Cover Class	Historical Distribution (%)						
	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Low	63–83	61–81	5–25	8–28	0–14	25–45	0–21
Moderate	17–37	19–39	75–95	72–92	86–100	55–75	71–91
High	0	0	0	0	0	0	0–18

The large tree size class was historically the most common (Table 3-6), in PVGs that fall within nonlethal fire regimes where ponderosa pine was maintained on the landscape as a dominant cover type. Though the range of large tree size class was greater in the mixed1 fire regimes, the portion at the larger end of the range generally represents the lower elevations or warmer portions of the PVG where ponderosa pine was dominant or co-dominant. The smaller end of the range represents higher elevations or cooler portions where Douglas-fir or lodgepole pine made up a greater proportion of the species composition. In PVGs where disturbance regimes were more variable, for example in the mixed2 fire regimes, tree size class ranges were greater in the smaller tree size classes, resulting in a greater diversity across the landscape compared to the nonlethal fire regime, where the ranges in the smaller size classes was narrower.

Table 3-8. Estimated Range of Historical Species Composition for Forested Potential Vegetation Groups (PVGs) from Morgan and Parsons (2001)

Species	Historical Distribution (%)						
	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Aspen	—	—	1–11	4–13	6–11	—	—
Lodgepole pine	—	—	—	10–20	28–42	18–25	82–94
Ponderosa pine	96–99	81–87	24–41	—	—	—	—
Whitebark pine	—	—	—	—	—	32–47	—
Douglas-fir	0–2	10–16	47–69	66–81	24–34	—	—
Engelmann spruce-Subalpine fir	—	—	—	—	15–26	26–42	—

Canopy cover class historically varied by PVG (Table 3-7). In some cases, particularly in the nonlethal fire regime, canopy cover class was low due to frequent fire. In the mixed1 fire regime, which is slightly more mesic, more moderate canopy cover class occurred. In the lethal fire regime, which, historically, had the longest fire return interval, canopy cover classes generally ranged from moderate to high.

Historical estimates were also developed for snags (Table 3-9) and coarse woody debris (Table 3-10). These estimates were derived from a variety of sources, including Agee (1998, 2002); Blair and Servheen (1995); Brown and Reinhardt (2001); Bull et al. (1986); Graham et al. (1994); Evans and Martens (1995); Flanagan et al. (1998); Harrod et al. (1998); Mehl et al. (1998); Saab and Dudley (1998); Spahr et al. (1991); Thomas et al. (1979); Wisdom et al. (2000) and Wright and Wales (1993). The snag and coarse woody debris historical conditions were developed for “green tree stands” and, therefore, do not reflect historical conditions for stands with high levels of mortality from stand-replacing fire or insects.

Table 3-9. Estimated Historical Range of Snags per Acre in “Green Tree Stands” With Minimum Height in Feet for Potential Vegetation Groups (PVGs) on the Sawtooth National Forest

Diameter Group	Historical Distribution (%)						
	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
10–20 inches	0.4–0.5	1.8–2.7	1.8–4.1	1.8–2.7	1.8–5.5	1.4–2.2	1.8–7.7
≥20 inches	0.4–2.3	0.4–3.0	0.2–2.8	0.2–2.1	0.2–3.5	0.0–4.4	N/A
Total	0.8–2.8	2.2–5.7	2.0–6.9	2.0–4.8	2.0–9.0	1.4–6.6	1.8–7.7
	Minimum Height						
Feet	15	30	30	30	30	15	15

Table 3-10. Estimated Historical Range of Coarse Woody Debris and Amounts in Large Size Classes for Potential Vegetation Groups (PVGs) on the Sawtooth National Forest

Diameter Group	Historical Distribution (%)						
	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Dry weight (tons per ac) in Decay Classes I and II	3–10	4–14	4–14	4–14	5–19	4–14	5–19
Distribution >15 inch d.b.h.[a]	>75%	>75%	>65%	>65%	>50%	>25%	>25%

[a] 12 inch d.h.h for PVG 10

The presence of snags, hollow, or dead portions of live trees, and coarse woody debris in green stands depends on a variety of factors, including vegetative patterns and distribution. The major disturbance agents that create snags are fires, winds, insects, diseases, and accelerated mass soil and debris movements. These disturbances, along with forest stand development and plant succession, also help create coarse woody debris (Spies and Cline 1988). The individual trees that become snags and coarse woody debris have different characteristics that produce diversity within the forest. The cause of death determines the diversity of the structural and functional roles served by the dead tree. These roles change when the snag falls to the forest floor (Maser et al. 1988).

Snag and coarse woody debris quantities and conditions are highly variable in time and space. Harrod et al. (1998) developed a process for estimating historical snag densities in dry forests of the eastern Cascades and their underlying premise was that snag densities in historically dry forests were predictable, based on a historical disturbance regime of frequent, low-intensity fire. These types of fires produced small patches of younger trees in stands of predominately large ponderosa pine. Harrod et al. (1998) assumed that tree mortality was continuous and occurred in small patches as a result of fire, insects, and disease. In nonlethal fire regimes, frequent fires consumed the dry logs and snags that produced very low but stable levels of coarse woody debris. Large snags were consistently produced but had a short life span. Mixed fire regimes maintained variable but consistently high levels of coarse woody debris. The lethal fire regimes had the classic “boom and bust” dynamic. After a stand replacement event, coarse woody debris would be abundant, but new input of large material would be limited until the new stand was large enough to contribute functional size classes.

Snags generally occurred in clumps due to the localized impacts of disturbance agents such as disease, insects, and fire (Bull et al. 1997). Larger-diameter snags are generally retained longer than smaller diameter snags (Bull 1983; Morrison and Raphael 1993; Forbes 1994), resulting in snags distributed on a landscape scale in a variety of decay classes.

Fire regimes were historically a major contributor to spatial patch and pattern within landscapes (Agee 1998) (Figure 3-1). Patterns like those in Figure 3-1 were the result of disturbance regimes and succession that created patches within and between vegetation types. Landscapes are arrangements of distinct and interacting patches (Forman 1995). The kinds, size, and connectivity of patches throughout landscapes are important indicators of biodiversity and species persistence (Fahrig 2003). Depending on the mix of fire regimes, a landscape may be dominated by a few or many patches. For example, a landscape dominated by nonlethal fire regimes may be primarily large tree size class with small patches of younger size classes. A landscape dominated by mixed fire regimes may have numerous small to large patches of different size classes, while a landscape dominated by lethal fire regimes may be predominately small tree size class with patches of larger sized trees.

Landscape spatial patterns affect ecological processes and can be illustrated through differences in plant species composition and structure and habitat utilization by wildlife. Ecosystems often include recognizable patchiness, usually corresponding to physical changes in topography, hydrology, and substrate or due to large disturbances (Whittaker 1956; Bormann and Likens 1979; Taylor and Skinner 2003). Patchiness in the landscape can create changes in microclimate at patch edges, resulting in demographic fluxes of individual species, varied species distribution, and edge oriented patterns (Matlack and Litvaitis 1999). These effects can subsequently alter ecological processes and habitat utilization.

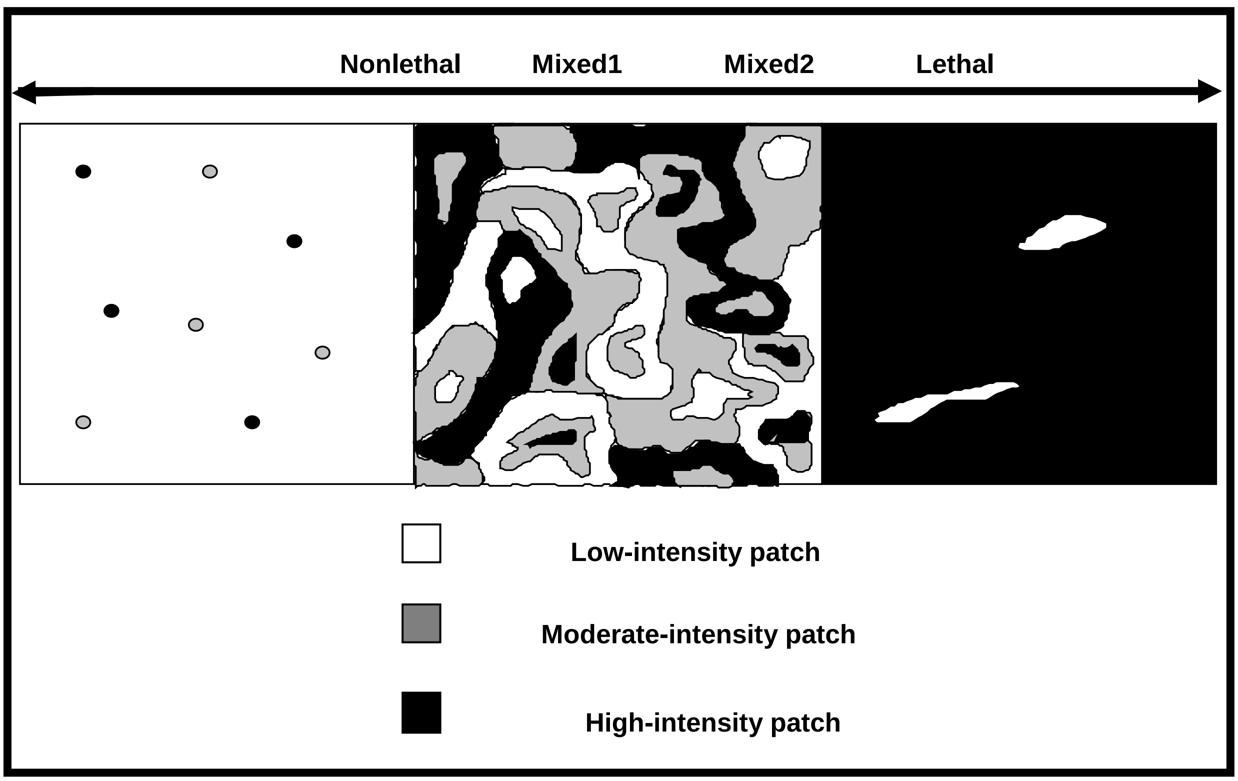

Figure 3-1. Patch Dynamics of Fire Regimes (Source: Agee 1998)

3.2.2 Effects and Measures

- Effect #1: The Forest Plan amendment may affect vegetative biodiversity by changing species composition, spatial patch and pattern, size class, canopy cover class, and snags and coarse woody debris.

- Measures for effects:
    - Changes in Grass/Forb/Shrub/Seedling (GFSS), medium, and large tree size class toward desired conditions by PVG
    - Canopy cover class changes within large tree size class toward desired conditions by PVG
    - Changes in Fire Regime Condition Class (FRCC) by PVG
    - Changes in seral status toward desired conditions by PVG
    - Large tree size class trends by fire regime in and out of the Wildland-Urban Interface (WUI) Analysis Area
    - Large tree size class trend in MPC groups 1, 2, and 3 and MPC groups 4, 5, and 6

Preserving sustainable ecosystems and biodiversity and the host of plant and animal species that use these ecosystems is premised on evolutionary principles of adaptation (Covington et al. 1994). Species have adapted to a set of disturbances, vegetative communities, processes, and functions and altering this context can affect species survival. Evolutionary adaptation is a generational process, and species are most vulnerable to sudden changes in their environment. The cataloging metric used in the Forest Plan amendment to describe the conditions that species have adapted to is the HRV. The HRV is used to define tree size class, canopy cover class, and seral status in various areas on the Forest including the WUI and MPCs. The FRCC is based on the HRV and is an additional metric for characterizing risks to ecosystem elements, processes, and functions and patch and pattern within landscapes.

3.2.3 Methods

3.2.3.1 Forested Vegetation

Current conditions for forested vegetation size class and canopy cover classes were determined from the remote sensing classification (Landsat) developed at the University of Montana (Redmond et al. 1997). Scenes for this classification were collected in 1991 and 1995. The tree size class and canopy cover class attributes were updated in 2008 from what was reported in the 2003 Forest Plan (USDA Forest Service 2003a) to reflect changes due to wildland fires and insect and disease outbreaks. In total, 228,113 acres were adjusted: 72 percent of the change was from wildland fire, and the remaining 28 percent was from insects and disease outbreaks, primarily mountain pine beetle. The methodology and final products for this process are located in the following documents:

2008 0215 Sawtooth North ruleset.doc
2008 0214 Sawtooth_ruleset_Southhills.doc
2006 0317 Sawtooth_refresh_forestwide_comparison.xls
2010 0504 Sawtooth_forest_wide_refresh_graphics.xls

Forest wide, this update resulted primarily in changes to the GFSS and small and medium tree size classes. Only minor changes occurred to the large tree size class (Figure 3-2).

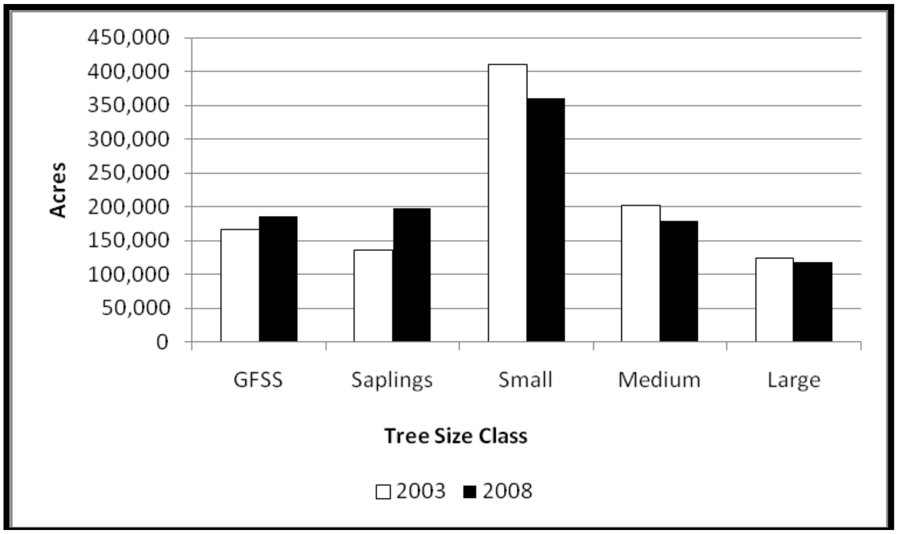

Figure 3-2. Acres of Tree Size Class Forest-wide in 2003 Final Environmental Impact Statement Compared to 2008 on the Sawtooth National Forest

However, most of the change in tree size class was in the mixed2 and lethal fire regimes (Figure 3-3), with much less change in the nonlethal and mixed1 fire regimes (Figure 3-4). Cover types were not updated due to ongoing efforts to develop a consistent cover type classification within the region. Once completed, forests will tier to this classification for future updates to existing vegetation mapping products.

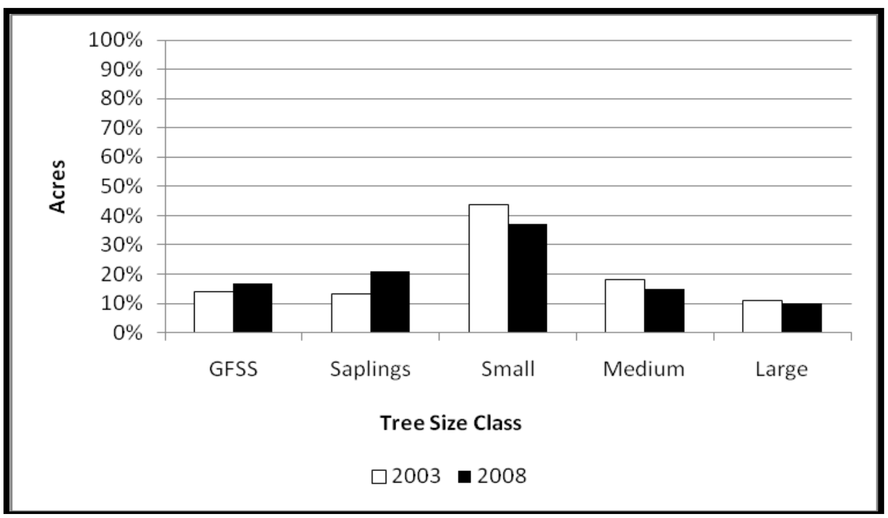

Figure 3-3. Percentage of Tree Size Class in 2003 Final Environmental Impact Statement Compared to 2008 for Potential Vegetation Groups that Comprise the Mixed2 and Lethal Fire Regimes on the Sawtooth National Forest

Landscape spatial patterns affect ecological processes and can be illustrated through differences in plant species composition and structure and habitat utilization by wildlife. Ecosystems often include recognizable patchiness, usually corresponding to physical changes in topography, hydrology, and substrate or due to large disturbances (Whittaker 1956; Bormann and Likens 1979; Taylor and Skinner 2003). Patchiness in the landscape can create changes in microclimate at patch edges, resulting in demographic fluxes of individual species, varied species distribution, and edge oriented patterns (Matlack and Litvaitis 1999). These effects can subsequently alter ecological processes and habitat utilization.

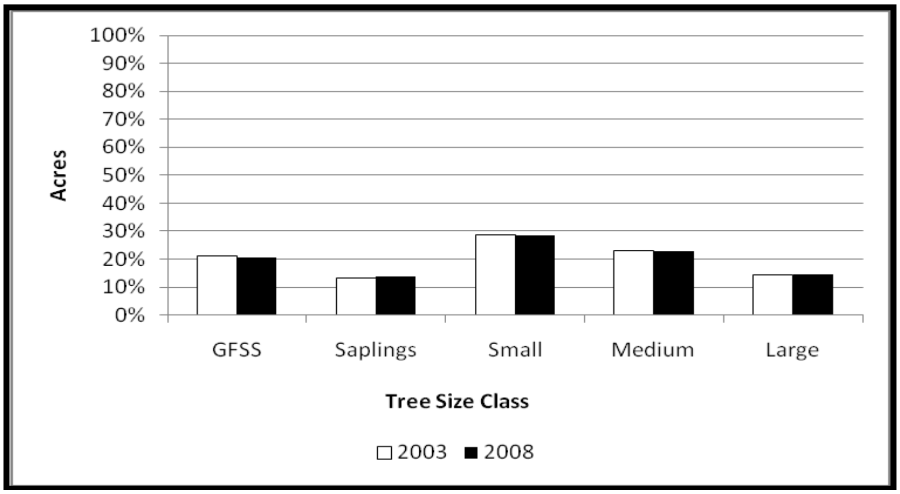

Figure 3-4. Percentage of Tree Size Class in 2003 Final Environmental Impact Statement Compared to 2008 for the Potential Vegetation Groups that Comprise the Nonlethal and Mixed1 Fire Regimes on the Sawtooth National Forest

3.2.4 Effects and Measures

- Effect #1: The Forest Plan amendment may affect vegetative biodiversity by changing species composition, spatial patch and pattern, size class, canopy cover class, and snags and coarse woody debris.

In order to approximate the current condition for species composition, cover types from the Landsat data were overlain with the PVG layer. Cover types were then divided into individual species, based on knowledge of species distribution in the various PVG groups. These results were compared to the HRV estimates. PVGs were then placed in a seral-status category based upon the species composition and relationship to current FRCC. This category was compared to the historical seral status. The deviations represent relative values to quantify this change. For example, if a PVG historically consisted of seral species but is currently composed of both seral and climax species (mid-seral), this change represents a relative deviation of 1.0 from the historical condition. If a PVG historically was comprised of both seral and mixed-seral species but has lost the seral species in the current condition, a deviation of 0.5 captured this change. A similar scenario exists for those PVGs that historically were mid-seral but are currently comprised of mid-seral and climax species. The largest relative changes are when a PVG was seral historically and is currently climax species.

3.2.4.1 Reference Conditions

HRV estimates were developed by Morgan and Parsons (2001) with the help of researchers and experts from industry, universities, and agencies with first-hand knowledge of the vegetative conditions within the Southern Idaho Batholith. Expert opinion was supported by research relevant to the vegetation types modeled. The Vegetation Dynamics Development Tool (VDDT) model was used as the platform for assimilating assumptions about growth and historical disturbance processes, including insects, disease, fire, and windthrow. This approach is the most common method of developing HRV and has been applied to several other areas adjacent to and including the Sawtooth National Forest (i.e., the Interior Columbia River Basin project). The HRV modeling effort for the Southern Idaho Batholith addressed many of the issues that Keane et al. (2009) noted in a review of HRV uses for land management planning. These issues included limited historical information, scale effects, complexity, and conceptual concerns and were due in large part to the Southern Idaho Batholith area itself. The area is large enough to reasonably represent the scale of disturbances thought to occur historically; a large proportion of the area, historically and currently, contains ponderosa pine communities that represent a large share of the current literature regarding historical fire (Graham and Jain 2005); and is relatively simple in terms of soil moisture regimes (though with complex topography and climate), which are important factors in plant community development. These factors and others provided the boundaries for addressing conceptual issues inherent in modeling and for developing assumptions. The process is documented in Morgan and Parsons (2001).

Restoration ecologists acknowledge that future climatic regimes may be different than the climatic regimes used to develop historical representations of landscapes. However, Fulé et al. (2009) argue that historical reference conditions remain useful in light of evidence of climate change because historical forests were likely more resilient and resistant to drought, insect pathogens, and severe wildfire. Noss (2001) supports this approach and advocates that resilience and resistance are created by the following:

- maintaining a diversity of functional groups
- maintaining species richness and redundancy within functional groups
- identifying keystone species
- maintaining keystone species at optimal, not just minimally viable, populations.

This approach provides the best opportunity for species to adapt to changes. Noss (2001) also states that climate change is not the greatest threat to today’s forests but is an additional stressor and suggests that restoration of vegetative conditions will result in more adaptable forests. He recommends the following strategies for enhancing resistance and resilience to climate change:

- Create representative ecosystems in reserves
- Protect microrefugia at multiple scales
- Protect large patches of older forests
- Reduce fragmentation and increase connectivity
- Create buffers around boundaries
- Practice low-intensity management and prevent conversion to plantations
- Maintain natural fire regimes
- Maintain genetic diversity
- Identify and protect functional groups and the processes associated with these groups

The application of reference information as a way to address future climates is logical as current types of vegetative communities will likely shift spatially rather than convert to entirely new communities. For example, lower and upper timberlines may shift or drier communities may move onto more mesic aspects or topographic settings. Forests that are resilient to disturbance should be better adapted to potential climatic changes than forests that are already maladapted to current conditions.

3.2.4.2 Fire Regime Condition Class

In the 2003 Final EIS, vegetative hazard was used to describe vegetative conditions at risk to uncharacteristic wildfire or epidemic insect disturbances. Since 2003, a national interagency technical group commissioned by the Forest Service and other partners has developed the FRCC process, which is similar in concept to the vegetative hazard assessment described in the 2003 Final EIS. The FRCC, in combination with the vegetation modeling conducted for the Forest Plan amendment, replaces the vegetative hazard section in the 2003 Final EIS.

The FRCC is used to describe general landscape fire regimes, vegetative conditions, and potential associated risks and threats (Hann et al. 2004). Estimates of current conditions are calculated for comparison with estimates of historical fire regime reference values using macrovegetation. The FRCC is calculated as a percentage departure from the current condition, and then translated into a three-class rating system of FRCC 1, FRCC 2, or FRCC 3. Vegetative conditions that classify as FRCC 1 are closest to the HRV while FRCC 3 areas are farthest away. The resulting rating provides a relative measure of departures that could possibly result in changes to key ecosystem components such as species composition, tree size class, canopy cover class, patch dynamics, fuel composition, fire frequency, fire intensity/severity, and other associated disturbances (e.g., insect and disease mortality, and drought). Possible causes of this departure include fire exclusion, timber harvesting, livestock grazing, introduction and establishment of nonnative plant species, and introduced insects and disease. The FRCC can be evaluated at different scales, from entire landscapes to individual stands. In the FRCC methodology, a landscape is defined as the contiguous area large enough to include variation in vegetative conditions that would result from historical fire regimes.

The FRCC can be calculated using Biophysical Settings, which are similar to PVGs. However, products already developed for the Forest Plan amendment (PVGs, fire regimes, reference conditions [HRV estimates], and current condition of macrovegetation [tree size class and canopy cover class]) were used to calculate the FRCC, rather than defaulting to national products, to be consistent with other analyses in this amendment. The FRCC process provides the flexibility to use locally derived information and, therefore, using products developed for the Forest Plan amendment was appropriate. The assignment of FRCC for the current conditions is located in 2010 0504 Sawtooth_FRCC_Current_Conditions.xls.

3.2.4.2.1 Vegetation and Wildlife Restoration Strategy and Map

The *Vegetation and Wildlife Restoration Strategy Map* was developed to identify potential priority watersheds (5th Hydrologic Units [HUC]) that, based on the Landsat information, appear to have greater amounts of medium and large tree size class in PVGs 1, 2, 3, and 4 relative to other watersheds. The assumption is that areas with greater amounts of these tree size classes provide the most opportunity to move toward desired conditions at the stand and landscape scale. In addition, the restoration strategy identifies priorities for restoring species in decline including aspen and whitebark pine. Douglas-fir and ponderosa pine, also species of conservation concern across the forest, will be addressed through the restoration of desired conditions for the large tree size class, the development of old forest, and the retention of legacy trees.

3.2.4.2.2 Modeling of Macrovegetative Trends

The VDDT model (see Appendix 4) was used to represent macrovegetation over time. Modeling products developed for the 2003 Forest Plan SPECTRUM model provided the starting point, since most of the assumptions about succession, growth, treatments types, treatment scenarios, and timber harvest yields were already in place. This crosswalk, as well as the documentation for the modeling process, is described in: 2010 0428 VDDT_Modeling_Sawtooth.docx. This information was reviewed and refined as necessary for the VDDT model. However, unlike the model used in 2003, the VDDT model has the ability to represent stochastic disturbances such as wildfire and insects. Wildfire frequency profiles were developed using Forest data from 1956 through 2009 to reflect potential vegetative effects from wildfire. A separate profile was developed in and out of the WUI Analysis Area due to differences in fire sizes (*see section 3.4, Fire Management*). Fire sizes were categorized into five frequency classes to represent a range of acres burned annually. The result was a random distribution of different sized fires over the modeling period (Figure 3-5). This distribution provides a more realistic representation of the variability in acres affected by wildfire year to year than can be captured using an average. It is also intended to represent the way wildland fire is currently managed, which includes fire suppression. That is, the wildland fire rates modeled are not intended to represent historical fire frequencies or effects, but current.

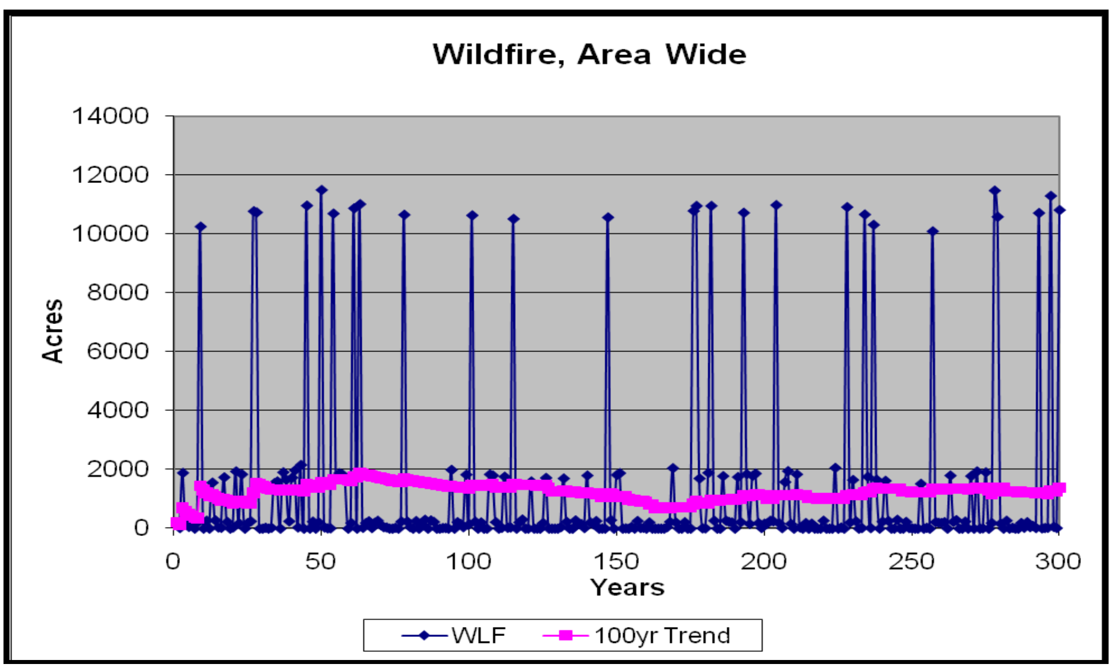

Figure 3-5. Example Wildfire Profile for the Non-Wildland-Urban Interface Analysis Area on the Sawtooth National Forest

Bark beetles and defoliators were used to represent insect effects. Forest Health Protection aerial detection surveys for the past several years were used to calibrate the number of acres affected by insects Forest-wide. The effects of nonlethal and lethal wildfire and moderate and high insect activity were assigned to a macrovegetation unit in each PVG to reflect changes that could result from wildfire and insects. Wildfire profiles and insect probabilities were the same for all alternatives. The wildfire profiles and insect activity interactions are not an attempt to forecast either disturbance, but to show differences between alternatives from these disturbance agents in combination with treatments.

Individual MPCs were combined into MPC groups for the 2003 SPECTRUM modeling to simplify the modeling process and reduce the number of analysis units (USDA Forest Service 2003b, Volume 2, Appendix B). MPCs were grouped based on assumptions about the types and rates of management activities that would occur based on the MPC and additional Forest Plan direction, such as standards and guidelines. These original groups were retained without modification for the Forest Plan amendment analysis:

- MPC group 1—MPCs 1.2, and 2.2
- MPC group 2—MPCs 4.1c
- MPC group 3—MPC 3.1
- MPC group 4—MPC 3.2
- MPC group 5—MPCs 4.2, 5.1, and 6.1

Analysis units were combinations of acres in and out of the WUI Analysis Area by MPC groups, PVGs, tree size class, and canopy cover class. Treatment types were developed for each PVG by MPC group. Total acres treated were the same for both alternatives, but the treatment types and number of acres treated within MPC groups varied between the alternatives. Sensitivity analyses were conducted to test the states (macrovegetation), transitions (succession), interaction with disturbance processes, and treatment assumptions. Treatment scenarios were developed for each alternative to reflect desired conditions, objectives, and standards. Timber harvest volumes were assigned to combinations of PVG, tree size class, canopy cover class, treatment type, and alternative. The model period was 300 years and results were summarized by decade. The final VDDT Simulation Reports are described in the 2010 0428 VDDT_Modeling_Sawtooth.docx. The simulation reports were further summarized into the following working files used to develop outcomes for various analyses:

2010 0428 Sawtooth_NA_combo_large_tree.xls
2010 0429 Sawtooth_NA_combo_large_tree_current_conditions.xls
2010 0506 Sawtooth_NA_combo_nonwui_large_tree.xls
2010 0428 Sawtooth_NA_combo_OF.xls
2010 0429 Sawtooth_NA_combo_OF_current_conditions.xls
2010 0506 Sawtooth_NA_combo_wui_large_tree.xls
2010 0429 Sawtooth_NA_large_tree_forestwide.xls
2010 0429 Sawtooth_NA_large_tree_forestwide_current_conditions.xls
2010 0428 Sawtooth_NA_nonwui_base_veg.xls
2010 0429 Sawtooth_NA_wui_base_veg_current_conditions.xls
2010 0429 Sawtooth_NA_OF_forestwide.xls

2010 0429 Sawtooth_NA_OF_forestwide_current_conditions.xls
2010 0428 Sawtooth_NA_wui_base_veg.xls
2010 0429 Sawtooth_NA_wui_base_veg_current_condition.xls
2010 0429 Sawtooth_PA_combo_large_tree.xls
2010 0506 Sawtooth_PA_combo_nonwui_large_tree.xls
2010 0429 Sawtooth_PA_combo_OF.xls
2010 0506 Sawtooth_PA_combo_wui_large_tree.xls
2010 0429 Sawtooth_PA_large_tree_forestwide.xls
2010 0429 Sawtooth_PA_nonwui_base_veg.xls
2010 0429 Sawtooth_PA_OF_forestwide.xls
2010 0429 Sawtooth_PA_wui_base_veg.xls
2010 0108 Sawtooth_Wilderness_base_veg.xls
2010 0429 Sawtooth_Wilderness_base_veg_current_conditions.xls
2009 0918 Sawtooth_Wilderness_combo_large_tree.xls
2010 0429 Sawtooth_Wilderness_combo_large_tree_current_conditions.xls
2010 0429 Sawtooth_Wilderness_combo_OF.xls
2010 0429 Sawtooth_Wilderness_combo_OF_current_conditions.xls

As species composition was not defined for the VDDT states (macrovegetation), future species composition could not be determined from the VDDT modeling outputs. However, inferences can be made using the FRCC rating. The FRCC infers species composition based on potential changes in landscape conditions (Hann et al. 2004). An increased departure from historical condition implies an increase in later-seral or climax species. Conversely, a decrease in departure generally represents a shift toward historical conditions. FRCC ratings and the relationship to historical seral status were used as indicators for assessing current conditions and trends.

3.2.4.3 Snags and Coarse Woody Debris

The amount, size, and distribution of snags and coarse woody debris are related to the PVG (Brown and See 1981; Harris 1999). Diameter classes for snags were broken into three categories; only medium and large classes were analyzed since these are the classes with desired conditions:

- Small: 5–9.9 inches diameter at breast height (d.b.h.)
- Medium: 10–19.9 inches d.b.h.
- Large: >20 inches d.b.h.

Forest inventory data, collected as part of the Forest Inventory and Analysis (FIA) program, were assessed to determine current amounts of snags and coarse woody debris in each PVG. Data were summarized for all inventory sites classified as forestland; data from nonforested sites were not included. Averages were calculated for all inventory sites with tree data, not just those that contained snags and coarse woody debris. Standing dead trees were inventoried as snags if they were at least 5.0 inches d.b.h. and 4.5 feet tall. Revised Forest Plan guidelines recommend snag minimum heights of 15 or 30 feet, depending on PVG and based on the needs of primary cavity nesters. The snag estimates for the Forest Plan amendment by PVG only include snags that meet desired heights. Estimates are for “green tree” stands only. Therefore, recently burned stands that no longer met the definition of “green” were addressed separately. Recently burned but still “green” tree stands were defined as those that had at least 10 percent tree canopy cover and classified into a tree size class other than GFSS. Coarse woody debris 3 inches d.b.h. and greater was inventoried using a fuel transect. Data from the inventory were then converted to tons per acre for comparison.

3.2.5 Current Conditions

3.2.5.1 Tree Size Class and Canopy Cover Class

HRV is used as the reference for assessing current conditions for tree size class and canopy cover class. Though HRV estimates exist for all tree size classes, comparisons are shown only for the GFSS, medium, and large tree size classes (2010 0504 Sawtooth_NA_combo_large_tree_forestwide_table_current_conditions_3_25.xls).

Currently, GFSS ranges from 13 percent in PVG 10 to 31 percent in PVG 1 (Table 3-11 and Table 3-12). Forest wide, PVGs 10 and 11 meet the HRV for this size class. All other PVGs exceed their HRV for this size class. The greatest deviations from the HRV are in PVGs 1 and 2, while PVG 7 has the smallest deviation.

Table 3-11. Current Conditions for Grass/Forb/Shrub/Seedling (GFSS) Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres on the Sawtooth National Forest

Fire Regime	PVG	Size Class	Current Condition (%)	HRV Range (%)	In or Out of Range (Low or High Relative to Range; Distance from Low or High End)
Nonlethal	PVG 1	GFSS	31	0–6	Out (High; +25)
	PVG 2	GFSS	25	0–7	Out (High; +18)
	Overall	**GFSS**	**30**	**0–6**	**Out (High; +24)**
Mixed1	PVG 3	GFSS	22	1–14	Out (High; +8)
	PVG 4	GFSS	18	0–10	Out (High; +8)
	Overall	**GFSS**	**19**	**0–11**	**Out (High; +8)**
Mixed2	PVG 7	GFSS	21	0–20	Out (High; +1)
	PVG 11	GFSS	15	8–21	In
	Overall	**GFSS**	**18**	**3–20**	**In**
Lethal	**PVG 10**	**GFSS**	**13**	**11–25**	**In**

PVG 7 is the only PVG which is within the HRV for the large tree size class. All other PVGs that terminate in the large tree size class are below the low end of the HRV (Table 3-13). PVGs in the nonlethal fire regime are the most deviated. Historically the nonlethal fire regimes supported the greatest amount in this class and therefore are most departed. The mixed1 and mixed2 fire regimes are much less departed because the PVGs in these fire regimes supported a smaller proportion of large tree size class at the low end of the range.

Table 3-12. Current Conditions for Medium and Large Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres on the Sawtooth National Forest

Fire Regime	PVG	Size Class	HRV Range (%)	Current Condition (%)	In or Out of Range (Low or High Relative to Range; Distance from Low or High End)
Nonlethal	PVG 1	Medium Large	1–6 47–99	16 10	Out (High; +6) Out (Low; –37)
	PVG 2	Medium Large	3–22 59–99	32 14	Out (High; +10) Out (Low; –45)
	Overall	**Medium** **Large**	**1–10** **50–99**	**20** **11**	**Out (High; +10)** **Out (Low; –39)**
Mixed1	PVG 3	Medium Large	10–45 23–65	22 14	In Out (Low; –9)
	PVG 4	Medium Large	16–59 20–47	23 15	In Out (Low; –5)
	Overall	**Medium** **Large**	**19–57** **20–50**	**23** **15**	**In** **Out (Low; –5)**
Mixed2	PVG 7	Medium Large	14–34 10–29	17 18	In In
	PVG 11	Medium/Large	22–87	14	Out (Low; -8)
	Overall	**Medium** **Large**	**17–55** **10–29**	**16**	**Out (Low; –1)** **In**
Lethal	**PVG 10**	**Medium**	**11–27**	**20**	**In**

Though all PVGs increased in GFSS since 2003, changes to the large tree size class since 2003 were relatively minor because recent wildfires and insect epidemics impacted intermediate tree size classes, such as small, the most (Figure 3-2) PVGs 1 and 2 are above the HRV range for the medium size class. PVG 11 is below the HRV range for the medium/large size classes. PVGs 3, 4, 7, and 10 are within the HRV range for medium size class.

Although canopy cover class HRV ranges were developed only for the largest tree size class, they are used here to gauge the medium and large tree size classes since these two classes are related to each other through succession. Canopy cover classes for the medium and large tree size classes are within the HRV for only a few PVGs (Table 3-13 and Table 3-14). Only PVG 10 is currently within the HRV for all canopy cover classes in the medium tree size class. All other PVGs have too much area in the high canopy cover class. Those PVGs that terminate in large tree size class also have too much area in the high canopy cover class (Table 3-14). In the nonlethal PVGs, the amount in low canopy cover class for large trees is below the low end of the HRV range. In the mixed1 and mixed2 PVGs, high canopy cover class is overrepresented and moderate is underrepresented.

Table 3-13. Current Conditions for Canopy Cover Classes in the Medium Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres in the Size Class on the Sawtooth National Forest

Fire Regime	PVG	Canopy Cover Class	HRV Range (%)	Current Condition (%)	In or Out of Range (Low or High Relative to Range; Distance from Low or High End)
Nonlethal	PVG 1	Low Moderate High	63–83 17–37 0	36 64 0	Out (Low; –27) Out (High; +27) N/A
	PVG 2	Low Moderate High	61–81 19–39 0	51 39 9	Out (Low; –10) In Out (High; +9)
	Overall	**Low** **Moderate** **High**	**63-83** **17–37** **0**	**42** **55** **3**	**Out (Low; –21)** **Out (High; +18)** **Out (High; +3)**
Mixed1	PVG 3	Low Moderate High	5–25 75–95 0	22 44 34	In Out (Low; –31) Out (High; +34)
	PVG 4	Low Moderate High	8–28 72–92 0	20 57 23	In Out (Low; –15) Out (High; +23)
	Overall	**Low** **Moderate** **High**	**8–28** **72-92** **0**	**20** **55** **24**	**In** **Out (Low; –17)** **Out (High; +24)**
Mixed2	PVG 7	Low Moderate High	0–14 86–100 0	12 54 34	In Out (Low; –32) Out (High; +34)
	PVG 11	Low[a] Moderate High	25–45 55–75 0	29 53 18	In Out (Low; –2) Out (High; +18)
	Overall	**Low** **Moderate** **High**	**10–26** **74–90** **0**	**18** **54** **28**	**In** **Out (Low; –20)** **Out (High; +28)**
Lethal	**PVG 10**	**Low** **Moderate** **High**	**0–21** **71–91** **0–18**	**8** **83** **9**	**In** **In** **In**

[a] Canopy cover class for the medium and large tree size class

Because the size class relationships are outside of HRV for all but PVG 10—even though some PVGs are within historical canopy cover class distributions for the medium and large tree size class—overall macrovegetation appears to be departed from historical conditions. At the landscape scale, disturbance regimes, patch and pattern dynamics, and other functions and processes related to landscape arrangement and connections are likely also departed.

Table 3-14. Current Conditions for Canopy Cover Classes in the Large Tree Size Class Compared with Historical Range Estimates, Expressed as a Percent of Total Acres in the Size Class on the Sawtooth National Forest

Fire Regime	PVG	Canopy Cover Class	HRV Range (%)	Current Condition (%)	In or Out of Range (Low or High Relative to Range; Distance from Low or High End)
Nonlethal	PVG 1	Low Moderate High	63–83 17–37 0	37 63 0	Out (Low; –26) Out (High; +26) N/A
	PVG 2	Low Moderate High	61–81 19–39 0	43 34 24	Out (Low; –18) In Out (High; +24)
	Overall	**Low** **Moderate** **High**	**63–83** **17–37** **0**	**39** **54** **7**	**Out (Low; –24)** **Out (High; +17)** **Out (High; +7)**
Mixed1	PVG 3	Low Moderate High	5–25 75–95 0	28 53 20	Out (High; +3) Out (Low; –22) Out (High; +20)
	PVG 4	Low Moderate High	8–28 72–92 0	31 42 27	Out (High; +3) Out (Low; –30) Out (High; +27)
	Overall	**Low** **Moderate** **High**	**8–28** **72–92** **0**	**31** **44** **26**	**Out (High; +3)** **Out (Low; –28)** **Out (High; +26)**
Mixed2	PVG 7	**Low** **Moderate** **High**	0–14 86–100 0	**28** **43** **29**	**Out (High; +14)** **Out (Low; –43)** **Out (High; +29)**

3.2.5.2 Fire Regime Condition Class

Only PVGs 10 and 11 are currently in FRCC 1, though they are at the high end of the rating (FRCC 1+) (Table 3-15) PVGs 1 and 2 are in FRCC 3 and all other PVGs are in FRCC 2. Since these ratings are based on macrovegetation, they are consistent with the results from the analysis of tree size class and canopy cover class displayed in Table 3-11 to Table 3-14. Departures in the FRCC are interpreted as changes in spatial patch and pattern, disturbance processes, and functions that have consequences to vegetative communities, species, and habitats. A landscape in FRCC 1 has key ecosystem components intact, such as large trees and soil characteristics that would naturally be found on that site (Hann et al. 2004). An FRCC 3 rating indicates that landscapes are likely not functioning in a manner similar to their historical functions and processes, since an FRCC 3 landscape has likely lost key ecosystem components.

Table 3-15. Fire Regime Condition Classes for Current Conditions on the Sawtooth National Forest

FRCC	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Current Condition[a]	3	3-	2-	2-	2-	1+	1+

[a]Ratings: 0–10% = 1−; 11–22% = 1; 23–33% = 1+; 34–44% = 2−; 45–55% = 2; 56–66% = 2+; 67–77% = 3−; 78–88% = 3; 89–100% = 3+

3.2.5.3 Species Composition and Seral Status

Table 3-16 displays the current condition for species composition compared to estimates of the HRV (the information contained in this table is from the USDA 2003b, Table V 28, page 3-456). PVGs 4 and 10 match the HRV for species composition. Other PVGs are departed from the species composition as a whole, though individual species are within the HRV in PVGs 3 and 11.

PVGs 4 and 11 have seral species compositions that are equal to the HRV. The other PVGs have seral species compositions that are higher in the later-seral and climax species and lower in the early seral species, causing a shift in seral status (Table 3-17) (2010 0507 Sawtooth_Seral_Status.pdf describes current conditions and comparison of the alternatives). The PVGs in the nonlethal fire regime are the most deviated from the HRV.

Table 3-16. Current Conditions for Species Composition on the Sawtooth National Forest, (Compared with Historical Estimates), Expressed as Percent of Acres in the Potential Vegetation Group (PVG). Numbers in parenthesis represent historical estimates from Morgan [a]

Species	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Aspen	5 (*) [a]	1 (*)[a]	4 (1–11)	7 (4–13)	3 (6–11)	1 (*)[a]	4 (*)[a]
Lodgepole pine	N/A	<1 (*)[a]	6 (*)[a]	15 (10–20)	12 (28–42)	2 (18–25)	82 (82–94)
Ponderosa pine	10 (96–99)	59 (81–87)	3 (26–41)	<1 (*)[a]	<1 (*)[a]	N/A	N/A
Whitebark pine	N/A	N/A	N/A	N/A	N/A	40 (32–47)	2 (*)[a]
Douglas-fir	85 (0–2)	40 (10–16)	87 (47–69)	77 (66–81)	52 (24–34)	N/A	3 (*)[a]
Engelmann spruce	N/A	N/A	N/A	N/A	1 (3–5)	8 (8–13)	<1 (*)[a]
Subalpine fir	N/A	N/A	N/A	N/A	30 (12–21)	49 (18–29)	9 (*)[a]

[a] An asterisk (*) was used for species not explicitly modeled during the historical range of variability development.

Table 3-17. Current Seral Status Compared to Historical and Deviation from Historical by Potential Vegetation Group (PVG) for the Sawtooth National Forest

Species	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
Historical	Seral	Seral	Mid-seral	Mid-seral	Seral to mid-seral	Seral to mid-seral	N/A
Current	Climax	Mid-seral to climax	Mid-seral to climax	Mid-seral	Mid-seral	Seral to mid-seral	N/A
Deviation from historical	2.0	1.5	1.0	0.0	0.5	0.0	N/A

3.2.5.4 Snags and Coarse Woody Debris

Forest-wide, total snag numbers exceed the HRV for all PVGs except PVG 1 (Table 3-18). This excess is due to an abundance of snags in the medium (10.0–19.9 inches d.b.h.) diameter group in all PVGs.

Forest wide, large-diameter snags are within the HRV for all PVGs. Snag distribution across the landscape is unknown and is likely below desired condition along roads and in heavily managed areas.

Table 3-18. Snags by Diameter Class in "Green Tree Stands" Forest wide by Potential Vegetation Group (PVG) and Relationship to the Historical Conditions for the Sawtooth National Forest

Species	Nonlethal		Mixed1	Mixed2		Lethal
	PVG 1	PVG 2/3	PVG 4	PVG 7	PVG 11	PVG 10
Forest-wide						
10.0–19.9 inches	1.0	15.5	4.2	9.4	7.7	8.0
≥20.0 inches	1.5	2.8	1.2	0.3	2.2	N/A
Total	2.5	18.3	5.4	9.7	9.9	8.0
Relationship to Historical Conditions						
10.0–19.9 inches	In	Out (High; +11.7) [a]	Out (High; +1.5)	Out (High; +3.9)	Out (High; +5.5)	Out (High; +0.3)
≥20.0 inches	In	In	In	In	In	N/A
Total	In	Out (High; +11.7)	Out (High; +1.5)	Out (High; +3.9)	Out (High; +5.5)	Out (High; +0.3)

[a] Relative to the high end of the historical range

Coarse woody debris levels across the Forest are below the HRV for all but PVG 1 (Table 3-19).

Table 3-19. Average Tons per Acre of Coarse Woody Debris Forest-wide and by Potential Vegetation Group (PVG) for the Sawtooth National Forest (Trees per Acre in parenthesis)

Species	Nonlethal		Mixed1	Mixed2		Lethal
	PVG 1	PVG 2/3	PVG 4	PVG 7	PVG 11	PVG 10
Forest-wide						
10.0–19.9 inches	3.0 (0)	0.4 (2.2)	0.2 (1.0)	1.3 (6.3)	0.8 (4.1)	1.0 (5.1)
≥20.0 inches	0.3 (0.2)	0.4 (0.3)	0.4 (0.3)	0.1 (0.1)	0.9 (0.7)	N/A
Total	3.3	0.8	0.6	1.4	1.7	1.0
Relationship to Historical Conditions						
Total	In	Out (Low; –3.2)	Out (Low; –3.4)	Out (Low; –3.6)	Out (Low; –2.3)	Out (Low; –4.0)

3.2.5.5 Summary of Current Conditions for Forested Vegetation

None of the PVGs are within the HRV for all vegetative attributes (Table 3-20) (summary displayed in 2010 0507 Sawtooth_Total_Average_Deviations_FEIS.pdf). Overall, the greatest deviations are in the PVGs that comprise the nonlethal fire regime, followed by the mixed fire regimes. The lethal fire regime has the least deviation. In the nonlethal fire regimes, too much medium tree size class exists and not enough large tree size class exists. In addition, species composition has shifted from seral to climax in many PVGs, particularly in PVGs that historically maintained a large area in seral species due to disturbance. For example, in PVGs 1 and 2 the predominant historical cover type was ponderosa pine, which is adapted to the nonlethal fires that were common in these PVGs. In these areas, the amount of ponderosa pine has declined below the estimated historical levels and Douglas-fir, the climax species, has increased.

As the results display, factors such as the combined influences of fire exclusion, insect epidemics, and other uses have affected vegetative communities. Fire exclusion has resulted in stands developing uncharacteristically high levels of tree density, fuel loading, and climax species, all resulting in increased uncharacteristic lethal wildfires. The average number of wildfire occurrences per year (42) from lightning and human-caused ignitions has remained relatively static over time. Wildfires have burned approximately 319,000 acres on the forest since 1940; 92 percent of these burned acres have occurred since 1980 (see Fire Management section).

Table 3-20. Summary of Current Conditions Relative to Historical by Potential Vegetation Group (PVG) for the Sawtooth National Forest

Indicator	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
GFSS	High	High	High	High	High	In	In
Medium Tree	High	High	In	In	In	Low	In
Low	Low	Low	In	In	In	In	In
Moderate	High	In	Low	Low	Low	Low	In
High	N/A	High	High	High	High	High	In
Large Tree	Low	Low	Low	Low	In	N/A	N/A
Low	Low	Low	High	High	High	N/A	N/A
Moderate	High	In	Low	Low	Low	N/A	N/A
High	N/A	High	High	High	High	N/A	N/A
Seral Status	High	High	High	In	High	In	N/A
Medium Snags	In	High	High	High	High	High	High
Large Snags	In	In	In	In	In	In	
Coarse Wood	In	Low	Low	Low	Low	Low	Low
Average Number of Deviations	193		133		99		4

3.2.6 Direct and Indirect Effects by Alternatives

3.2.6.1 Effects Common to All Alternatives, Resource Protection Methods, and Forest Plan Direction

Although desired conditions for vegetation resources vary by alternative, management direction for all alternatives has been developed to maintain or improve vegetative conditions on National Forest System (NFS) lands. Direction occurs at both the Forest-wide and management-area levels. Vegetation resource goals and objectives were designed to achieve desired vegetative conditions over the long term to maintain or restore sustainable levels of biodiversity, habitat, recreational settings, timber and forage production, and ecosystem functions and processes. Vegetation standards and guidelines have been designed to protect upland and riparian vegetation, as well as other resources that could be adversely affected by vegetation management activities. Furthermore, management direction for other resource programs—such as soils, water, riparian, aquatic, wildlife, timber, range, and recreation in the existing Forest Plan and any added as a result of the Forest Plan amendment—provide additional guidance and resource protection in an integrated manner.

By providing macrovegetation in amounts and distributions relative to the HRV and maintaining or restoring the ecological processes that supported those vegetation components, the Forest will provide the overall biological diversity necessary to sustain individual species of concern, while providing economic, social, and cultural opportunities for Forest users. Vegetation protection is provided by standards and guidelines at the Forest-wide and management area levels, by State of Idaho best management practices, and by Forest Service Manual and Handbook direction. All three alternatives have several MPCs in common that would feature the same types of management over the same areas.

3.2.6.2 Forest Plan Implementation

Managing vegetation in relation to some range of desired conditions generally depends on current and site-specific information about local habitat types, current vegetative conditions, methods of vegetation treatment or management, duration and intervals of treatment, and biophysical limiting factors. These factors are not easily addressed at the programmatic level. Watershed and vegetative management planning processes, however, can and will address all of these factors at the project area or watershed scale. Through this process, which is the same for all alternatives, adjustments in management practices would be made to address resource concerns in a timely, effective, and site-specific manner that involves the Forest Service and public working together. Actions would also be monitored and evaluated for any needed future adjustments. Recent improvements in inventory information and technology (e.g., Landsat imagery, GIS databases) allow Forest personnel to better identify current vegetation conditions and track changes to those conditions over time. These improvements will also enhance the design and effectiveness of vegetation treatments and monitoring.

Currently, several vegetative types within the Forest have vegetative conditions outside historical and desired conditions for tree size class, canopy cover class, species composition, disturbance regimes, and spatial patch and pattern. Vegetation diversity conditions are expected to move toward desired conditions under all alternatives with the implementation of Forest Plan management direction. However, the desired conditions, their relationship to the HRV and the rate of change may vary by alternative.

3.2.6.3 General Effects

Forest management activities affect tree size class, canopy cover class, species composition, and spatial patch and pattern within forest stands. These activities include fire (wildland fire use and prescribed burning), mechanical activities associated with timber management and restoration, and road construction. Snags and coarse woody debris are also affected by these activities, and their future recruitment is a function of size class, density, species composition, and structure of forest stands. The amounts and distributions of vegetation components would vary by alternative, depending on the amount, type, and timing of prescribed vegetative management. Management—such as mechanical thinning or prescribed fire—would likely result in relatively controlled and targeted changes to vegetation, whereas the effects from ecological processes would tend to be more stochastic in space and time. The effects to ecosystem components can be classified as either direct or indirect, as described below.

3.2.6.4 Direct Effects

The most notable direct effects occur at the landscape scale. The Forest contains large amounts of many vegetation types across thousands of acres. Depending on the alternative chosen, the direction those vegetation conditions take will have far-reaching spatial and temporal effects. The diversity of macrovegetation, snags, and coarse woody debris and how these are distributed and arranged across the landscape will have numerous impacts, including direct and indirect benefits and/or negative effects to the risk of uncharacteristic or undesirable wildland fire, wildlife habitat, watersheds, and numerous others areas.

Uncharacteristic wildland fire can affect tree size and canopy cover class distributions, species composition, snag and coarse wood components, and the pattern of patches. Many areas will require mechanical preparation of fuels before fire can be reintroduced as a management tool. Fire use, either alone or with mechanical treatments, may alter vegetation density, maintain vegetative conditions, or replace conditions to an earlier seral stage. However, long-term benefits include restoring fire regimes, thereby restoring vegetative conditions and ecosystem functions and processes. Fire both creates (through tree mortality) and destroys (through burning, particularly during uncharacteristic wildfires) snags and coarse wood. As snags were often historically created in patches, prescribed burning used as a tool to restore fire regimes would benefit their creation in the long term. Wildfire, particularly at intensities greater than the HRV, would create large pulses of snags and downed logs in size classes reminiscent of the burned stands. In general, restoring fire regimes would benefit the creation of snags and coarse wood.

Mechanical activities include those treatments necessary for vegetation management, whether for restoration or to meet growth and yield objectives. Mechanical activities can also alter tree size class, canopy cover class, species composition, vertical and horizontal structure, and seral status. Mechanical activities associated with the alternatives can either reduce or increase the levels of snags and coarse wood on the landscape. Where restoration is the objective, short-term negative impacts can lead to longer-term benefits. Mechanical activities conducted to meet growth and yield objectives can reduce coarse woody debris by making use of the wood, clearing sites for tree planting, and reducing fire risk (Spies and Cline 1988; Pearson 1999). However, timber management, other mechanical activities, and prescribed burning can provide opportunities to create snags and coarse woody debris. Current and proposed management direction for all alternatives would maintain or move snags and coarse woody debris toward desired conditions.

3.2.6.5 Indirect Effects

On a landscape level, amount and distribution of habitats for a wide variety of plant, fish, and wildlife species would be affected. Levels and rates of disturbance, soil hydrological processes, and climatic influences are just some of the indirect effects that can occur from large-scale management of Forest vegetation.

Restoring or maintaining vegetative conditions to reduce levels of uncharacteristic disturbances such as fire, insects, and pathogens would benefit Forest species composition, tree size classes, canopy cover classes, and the creation of snag and coarse wood debris in the long term. Structural simplification of stands, through either mechanical activities or uncharacteristic disturbance, can alter vegetative conditions, such as size class, density, species composition and structure, and associated habitat. These changes could, in turn, affect processes such as soil erosion and nutrient cycling and off-site attributes such as stream temperature. These actions can eliminate some large trees, snags, and fallen trees, thus reducing the range of tree size class and growth forms available as a future recruitment pool of coarse woody debris and affecting the spacing of trees and coarse woody debris (Franklin and Maser 1988). These actions not only affect the number and size of snags and down logs, but also their distribution on the landscape. Uncharacteristic disturbance can increase the snag and course woody debris levels beyond what was historically common. Uncharacteristic lethal fire could affect processes such as litter fall, which creates approximately 50 percent of soil organic material (Covington and Sackett 1984; Laiho and Prescott 1999; Tiedemann et al. 2000).

Noxious weed invasion and spread can increase as a result of increased roads, ground disturbance, or fire. Changes in macrovegetation and the rate of forest development can affect other resources, such as wildlife, soils, and fuels. Restoring vegetation conditions to reduce the levels of uncharacteristic disturbance would benefit overall vegetative diversity and ecological processes. Altering vegetative conditions, whether through forest management activities or successional processes, changes responses to insects, disease, wind, and other endemic disturbance processes with subsequent effects on forest composition and structure. Road construction and recreational development often have indirect effects on vegetative conditions and can affect snag numbers due to increased access for firewood cutting and increased need to remove hazard trees.

3.2.6.6 Desired Conditions Relative to the Historical Range of Variability

Desired conditions reflect the intent and theme of the alternatives and were established for tree size class (Table 3-21 and Table 3-22), canopy cover class (Table 3-23 and Table 3-24), species composition (Table 3-8), snags (Table 3-9), and coarse woody debris (Table 3-10) using HRV as the reference condition. The HRV is considered a useful reference for setting general management goals and desired conditions (Landres et al. 1999). The HRV is not necessarily used to exactly replicate or re-create what occurred in the past, but to improve our understanding about ecological context and landscape-scale effects of disturbance and to increase ecosystem resilience and resistance to disturbance. This understanding helps inform decisions about management trade-offs and potential implications relative to ecological sustainability (Covington et al. 1994; Wallin et al. 1996). The desired conditions for tree size class and canopy cover class vary between the alternatives and were developed relative to the HRV. Species composition, snag, and coarse woody debris desired conditions are the same between the alternatives and the HRV.

3.2.6.6.1 Desired Conditions for Tree Size Class

Alternative A is the “no action” (current Forest Plan) alternative. The desired conditions described here are those currently displayed in Appendix A of the Forest Plan (USDA Forest Service 2003a, Volume 2) (Table 3-21). For the tree size class, the ranges represent the total PVG acres desired in each class. For the canopy cover class, the ranges represent the percentage of the large (or medium for PVG 10) tree size class desired in each class.

- The desired conditions vary between MPCs for the GFSS and large tree size class (Table 3-21).
- For PVGs 1, 2, 3 and 4, the desired large tree size class ranges are the low end of the HRV and the mean of the HRV
- For PVGs 7 and 11, the desired large tree size class ranges are 20 percent[7] and the mean of the HRV
- For PVG 10, which does not have a large tree size class, the medium tree desired condition is the mean of the HRV

Table 3-21. Forest-wide and Management Prescription Category Range of Desired Tree Size Classes for Alternative A, Expressed as Percentage of Forested Vegetation within each Potential Vegetation Group (PVG)

Tree Size Class	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10
GFSS	1–12	4–5	9	14–15	7–16	9–15	16–23
Saplings	2–12	3–7	9	7–9	11–15	14–15	11–16
Small	2–18	5–21	18–27	19–22	21–22	19–22	46–48
Medium	3–29	7–35	23–36	24–36	32–36	22–38	20
Large	47–91	59–80	23–41	20–34	20–21	20–27	N/A

GFSS and subsequent intermediate classes were adjusted relative to the desired conditions for the large tree size class, primarily to adjust for using the mean of the HRV for the high end rather than the full range of the HRV and to provide some of all size classes within the PVGs. Historically, for some PVGs such as PVGs 1 and 2, some size classes may not have been present in the landscape at some points in time (Table 3-6). Benkobi and Uresk (1996) state that to maintain biodiversity, all defined vegetative stages must be maintained. Therefore, because of the desire to provide for the full range of biodiversity within the administrative area, desired conditions were developed to provide some distribution of all size classes for all PVGs.

Desired conditions for Alternative B are the same as Alternative A for the sapling, small, and medium tree size classes. There are minor adjustments for the large tree size class due to the replacement of the 20 percent standard (Table 3-22).

[7] Per WIST01 which states, “Maintain at least 20 percent of the acres within each forested PVG...”

Table 3-22. Forest-wide Range of Desired Size Classes for Alternative B, Expressed as Percentage of Forested Vegetation within each Potential Vegetation Group (PVG)

Tree Size Class	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG11	PVG 10
GFSS	1–12	4–5	9	14–15	7–16	9–15	16–23
Saplings	2–12	3–7	9	7–9	11–15	14–15	11–16
Small	2–18	5–21	18–27	19–22	21–22	19–22	46–48
Medium	3–29	7–35	23–36	24–36	32–36	22–38	11–20
Large	47–91	59–80	23–41	20–34	10–21	14–27	N/A

3.2.6.6.2 Desired Conditions for Canopy Cover Class

Desired conditions for canopy cover classes within the large tree size class vary only slightly between the alternatives and are based on some refinements for a few PVGs (Table 3-23 and Table 3-24).

Table 3-23. Management Prescription Category Range of Desired Canopy Cover Class Distribution within the Large Tree Size Class for Alternative A, Expressed as Percentage of Acres within the Class by Forested Potential Vegetation Group (PVG)

Canopy Cover Class	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10[a]
Low	80–100	74–94	5–25	0–14	0–14	0–16	0
Moderate	0–20	6–26	75–95	87–100	86–100	84–100	81–100
High	0	0	0	0	0	0	0–19

[a] Applies to medium tree size class

Table 3-24. Forest-wide Range of Desired Canopy Cover Class Distribution within the Large Tree Size Class for Alternative B, Expressed as Percentage of Acres within the Class by Forested Potential Vegetation Group (PVG)

Canopy Cover Class	Nonlethal		Mixed1		Mixed2		Lethal
	PVG 1	PVG 2	PVG 3	PVG 4	PVG 7	PVG 11	PVG 10[a]
Low	63–83	61–81	5–25	8–28	0–14	25–45	0–21
Moderate	17–37	19–39	75–95	72–92	86–100	55–75	71–91
High	0	0	0	0	0	0	0–18

[a] Applies to medium tree size class

3.2.6.7 Forest-wide Trends in Macrovegetative Conditions and Relationship to Desired and Historical Conditions for the Alternatives

3.2.6.7.1 Acres Affected by Wildfire and Insects

Forest-wide acres affected by wildfire are almost identical between the alternatives since the same wildfire profile was used for each alternative and each analysis area (Figure 3-6). Since disturbance rates do not change between the alternatives, disturbances can be evaluated while still being able to directly compare alternatives. However, affected acres and disturbance results can vary between the alternatives as different vegetative conditions develop as a result of Forest Plan desired conditions, MPCs, and other management direction.

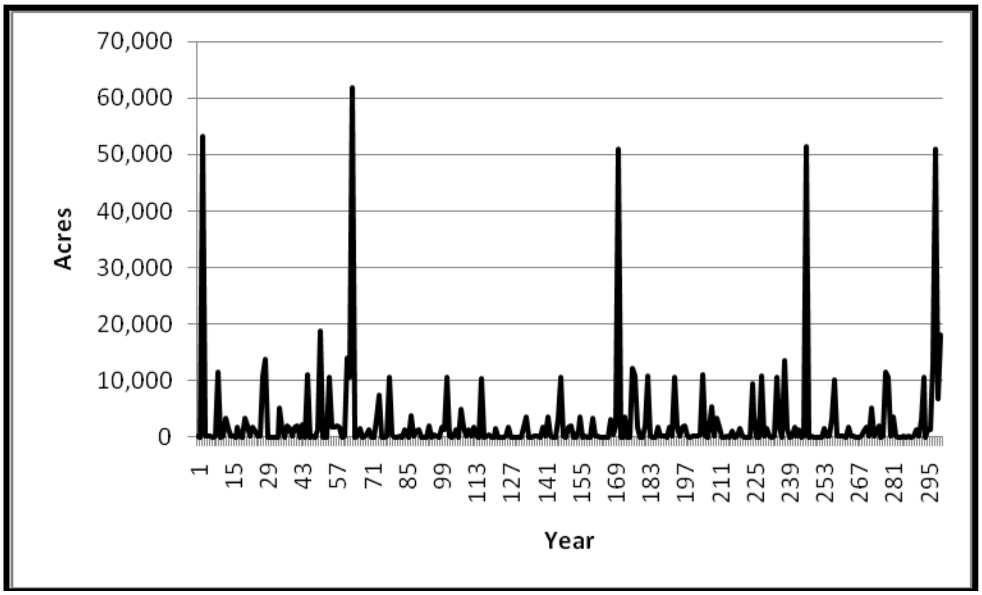

Figure 3-6. Acres Affected by Wildfire for Two Alternatives Over 29 Decades for the Sawtooth National Forest

The average number of acres affected by wildland fire was 3,110 per year for Alternative A and 3,090 for Alternative B. Annual fire sizes ranged from 0 to 61,780 acres (2010 0429 Treatment_acres_alternatives_sawtooth.xlsx). The modeled average is similar to the Forest's annual average of 4,360 acres of wildfire based on fire occurrence data from 1940 through 2008. The largest fire modeled in VDDT is at the high end of the range of fire sizes in the occurrence database. However, the average and the high end of the range from the occurrence database are the result of large fires that have occurred on the Forest from 1986 through 2007. Prior to 1986, average fire size was 840 acres per year. From 1986 through 2007, average fire size was 12,430 acres. Therefore, the average and range used in modeling are more reflective of fire sizes since 1986. This range was chosen as it may be more indicative of the future fire sizes that could occur as a result of a warming climate. Acres affected by insects were 5,220 per year for Alternative A and 5,210 per year for Alternative B.

3.2.6.7.2 Tree Size Class

The analysis depicts trends in vegetative conditions based on the modeling for the two alternatives. The modeling describes what could happen to macrovegetation from implementing an alternative based on desired conditions, MPCs, succession, mixes of tools, wildfire, insects, and other inputs. Because the alternatives start at the same current conditions, short-term differences in the alternatives are minor and differences become more apparent over time. However, even over time the relative differences between the alternatives remains small. While the type of vegetation treatment varies between the two alternatives, the number of acres treated in the model is virtually the same for both alternatives. This accounts for the minor difference in trend between the two alternatives. Though the model was projected up to 300 years, tabular results are displayed for the Decades 1, 5, and 10. Alternatives in tables are compared using a simple arithmetic deviation based on the desired conditions. Shaded boxes represent conditions that are within desired conditions for an alternative.

PVG 11 meets the GFSS tree size class desired conditions (Table 3-25). By Decade 10, only Alternative A in PVG 2 would meet the desired condition. Alternative B would be below the desired condition for this PVG. For all other PVGs, both alternatives would be below the desired condition.

Table 3-25. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Grass/Forb/Shrub/Seedling (GFSS) Tree Size Class for Two Alternatives on the Sawtooth National Forest

Fire Regime	PVG	Alternative	Desired Condition Range (%)	Current Condition	Decade 1 Trend	Decade 5 Trend	Decade 10 Trend
Nonlethal	1	A	1–12	31	28	1	<1
		B	1–12		28	1	<1
	2	A	4–5	25	22	5	4
		B	4–5		21	2	1
	Total	A	2–11	30	27	2	1
		B	2–11		26	1	<1
Mixed1	3	A	9	22	20	6	6
		B	9		19	3	1
	4	A	14–15	18	16	2	1
		B	14–15		16	2	1
	Total	A	13–14	19	16	3	2
		B	13–14		16	3	1
Mixed2	7	A	7–16	21	19	5	3
		B	7–16		19	4	2
	11	A	9–15	15	15	5	4
		B	9–15		15	5	4
	Total	A	8–16	18	18	5	3
		B	8–16		18	5	3
Lethal	10	A	16–23	13	15	11	9
		B	16–23		16	11	9

PVGs 1, 2, and 10 currently meet medium tree size class desired conditions for all alternatives (Table 3-26). By Decade 10 PVGs 2 and 11 would meet the desired conditions for both alternatives. PVG 1 for Alternative A would meet the desired condition in Decade 10, while Alternative B would be slightly above the desired condition. For PVGs 3, 4, and 7, both alternatives would be below the desired condition. PVG 10 for both alternatives would exceed the desired condition.

All PVGs that produce large tree size class are below desired conditions, except for PVG 7, Alternative B (Table 3-27). By Decade 10, PVG 1 would achieve desired conditions for both alternatives. In PVG 2 Alternative B will achieve the desired condition in Decade 10 while Alternative A will still be below the desired condition. In all other PVGs both alternatives would exceed the desired condition by Decade 10. Alternative A would be slightly closer to the desired condition than Alternative B due to Alternative A allowing regeneration treatments.

Table 3-26. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Medium Tree Size Class for Two Alternatives on the Sawtooth National Forest

Fire Regime	PVG	Alternative	Desired Condition Range (%)	Current Condition	Decade 1 Trend	Decade 5 Trend	Decade 10 Trend
Nonlethal	1	A	3–29	16	17	24	28
		B	3–29		17	27	32
	2	A	7–35	32	30	24	27
		B	7–35		30	26	29
	Total	A	4–30	20	20	24	28
		B	4–30		20	27	31
Mixed1	3	A	23–36	22	23	29	20
		B	23–36		23	30	19
	4	A	24–36	23	24	27	19
		B	24–36		24	26	18
	Total	A	24–36	23	24	28	19
		B	24–36		24	27	18
Mixed2	7	A	32–36	17	17	26	27
		B	32–36		17	26	26
	11	A	44–65	14	17	42	53
		B	36–65		17	42	54
	Total	A	37–47	16	17	32	37
		B	34–47		17	32	37
Lethal	10	A	20	20	21	39	43
		B	11–20		20	37	43

Table 3-27. Desired Conditions, Current Conditions, and Trends for Decade 1, Decade 5, and Decade 10 for the Large Tree Size Class for Two Alternatives on the Sawtooth National Forest

Fire Regime	PVG	Alternative	Desired Condition Range (%)	Current Condition	Decade 1 Trend	Decade 5 Trend	Decade 10 Trend
Nonlethal	1	A	47–91	10	12	35	64
		B	47–91		11	32	61
	2	A	59–80	14	15	31	45
		B	59–80		16	37	60
	Total	A	50-89	11	12	34	60
		B	50-89		12	33	61
Mixed1	3	A	23–41	14	17	40	61
		B	23–41		17	44	72
	4	A	20–34	15	18	45	73
		B	20–34		18	46	74
	Total	A	20–35	15	18	50	71
		B	20–35		18	45	74
Mixed2	7	A	20–21	18	19	28	40
		B	10–21		19	29	43

3.2.6.7.3 Canopy Cover Class

Very few PVGs are within the desired condition for the canopy cover class of the largest tree size class produced by the PVG (Table 3-28). A majority of PVGs are above the desired condition for the low canopy cover class, below the desired condition for the medium canopy cover class, and above the desired condition for the high canopy cover class. Both alternatives result in similar canopy cover ranges.

Table 3-28. Desired Conditions, Current Conditions, and Trends for Decades 1, 5, and 10 for Low, Moderate, and Large Tree High Canopy Cover Class in the Size Class for Alternatives A and B

Fire Regime	PVG	Alternative	Desired Condition Range (%)	Current Condition	Decade 1 Trend	Decade 5 Trend	Decade 10 Trend
Low Canopy Cover Class							
Nonlethal	1	A	80–100	37	42	61	74
		B	63–83		42	60	73
	2	A	74–94	43	38	23	22
		B	61–81		38	23	24
Mixed1	3	A	5–25	28	26	20	19
		B	5–25		27	23	24
	4	A	0–14	31	31	30	30
		B	8–28		31	30	30
Mixed2	7	A	0–14	28	29	30	30
		B	0–14		29	30	31
	11a	A	0–16	29	39	66	62
		B	25–45		39	65	61
Lethal	10c	A	0	8	8	8	8
		B	0–21		8	8	8
Moderate Canopy Cover Class							
Nonlethal	1	A	0–20	63	58	39	26
		B	17–37		58	40	27
	2	A	6–26	34	39	59	61
		B	19–39		41	60	62
Mixed1	3	A	75–95	53	49	37	34
		B	75–95		50	35	32
	4	A	87–100	42	46	58	60
		B	72–92		46	58	60
Mixed2	7	A	86–100	43	45	53	55
		B	86--100		45	53	54
	11a	A	84–100	53	45	24	26
		B	55–75		46	25	26
Lethal	10c	A	81–100	23	83	86	87
		B	71–91		83	85	87
High Canopy Cover Class							
Nonlethal	1	A	0	0	0	0	0
		B	0		0	0	0
	2	A	0	24	22	18	17
		B	0		22	17	14
Mixed1	3	A	0	20	25	43	47
		B	0		24	41	44
	4	A	0	27	24	12	10
		B	0		24	12	10
Mixed2	7	A	0	29	27	17	15
		B	0		27	17	15
	11a	A	0	18	16	10	12
		B	0		16	10	13
Lethal	10c	A	0–19	9	9	6	5
		B	0–18		9	6	5

[a] Medium and large tree size class
[b] Less than 50 acres in this MPC
[c] Medium tree size class

3.2.6.7.4 Fire Regime Condition Class

The FRCC ratings for most PVGs do not change over time. PVGs 1 and 2 are the only PVGs that trend toward lower departures over time (Table 3-29) (2010 0505 Sawtooth_Analysis_FRCC_forestwide.xlsx).

Table 3-29. Fire Regime Condition Class Current Conditions and Trends for Decade 1, Decade 5, and Decade 10 for Alternatives A and B

Fire Regime	PVG	Alternative	Current Condition	Decade 1 Trend	Decade 5 Trend	Decade 10 Trend
Nonlethal	1	A	3	3–	2+	1+
		B		3–	2+	1+
	2	A	3-	2+	2+	2
		B		2+	2	2
Mixed1	3	A	2-	2	2-	2-
		B		2	2-	2
	4	A	2-	2–	1+	2
		B		2–	1+	2
Mixed2	7	A	2-	2–	2	2
		B		2–	2	2
	11	A	1+	2	1+	2-
		B		2	1+	2-
Lethal	10	A	1+	1	1	1+
		B		1	1	1+

3.2.6.7.5 Species Composition and Seral Status

Succession, wildfire, insects and disease, fire use, and mechanical treatments all influence species composition. When succession occurs without disturbance, species composition moves toward climax vegetative species such as subalpine fir, and in some PVGs, Douglas-fir. Disturbance provides the conditions that favor seral species such as ponderosa pine, lodgepole pine, and in some PVGs, Douglas fir. In some cases, a mix of seral and climax species can occur depending on disturbance or transitions between cover types during succession. Insect outbreaks that kill seral species (Douglas fir bark beetle, western pine beetle (*Dendroctonus brevicomis*), mountain pine beetle) can accelerate the landscape toward climax vegetation. However, other insects can affect climax species (spruce budworm (*Choristoneura fumiferana*), Douglas-fir tussock moth [*Orgyia pseudotsugata*], fir engraver beetle [*Scolytus ventralis*]), shifting the landscape toward seral species.

The alternatives would move some PVGs toward their historical status relative to their current conditions (Table 3-30). Overall, the PVGs in the nonlethal fire regime would make the most movement. PVGs in the mixed fire regimes would generally maintain their current seral status under all alternatives. For all fire regimes, changes in seral status would be similar between both alternatives.

Table 3-30. Historical and Current Seral Status of Potential Vegetation Groups (PVGs) and Trends for Decades 1, 5, and 10 for Alternatives A and B for the Sawtooth National Forest

Fire Regime	PVG	Alternative	Historical Status	Current Status	Decade 1	Decade 5	Decade 10
Nonlethal	1	A	Seral	Climax	Climax	Mid-seral to climax	Seral to mid-seral
		B			Climax	Mid-seral to climax	Seral to mid-seral
	2	A	Seral	Mid-seral to climax	Mid-seral to climax	Mid-seral to climax	Mid-seral
		B			Mid-seral to climax	Mid-seral	Mid-seral
Mixed1	3	A	Mid-seral	Mid-seral to climax	Mid-seral to climax	Mid-seral to mid-seral/climax	Mid-seral to mid-seral/climax
		B			Mid-seral to climax	Mid-seral to mid-seral/climax	Mid-seral to climax
	4	A	Mid-seral	Mid-seral	Mid-seral	Mid-seral	Mid-seral
		B			Mid-seral	Mid-seral	Mid-seral
	7	A	Seral to mid-seral	Mid-seral	Mid-seral	Seral/mid-seral to mid-seral	Seral/mid-seral to mid-seral
		B			Mid-seral	Seral/mid-seral to mid-seral	Seral/mid-seral to mid-seral
	11	A	Seral to mid-seral	Seral to mid-seral	Seral to mid-seral	Seral to mid-seral	Seral to mid-seral
		B			Seral to mid-seral	Seral to mid-seral	Seral to mid-seral
Lethal	10	A	N/A	N/A	N/A	N/A	N/A
		B			N/A	N/A	N/A

3.2.6.7.6 Summary of Forest-wide Macrovegetative Trends

Based on a synthesis of the relationship of each alternative to the HRV for Decades 1, 5, and 10 for the GFSS, medium, and large tree size classes; canopy cover classes; and seral status; both alternatives would create similar conditions (Table 3-31) (2010 0507 Sawtoth_total_average_deviations.pdf).

Table 3-31. Synthesis of Deviations from the Historical Range of Variability for Alternatives A and B over Three Decades for the Sawtooth National Forest

Fire Regime	Number of Deviations	
	Alternative A	Alternative B
Nonlethal	69	67
Mixed1	76	80
Mixed2	76	77
Lethal	19	17
Total	240	241

3.2.6.8 Snags and Coarse Woody Debris

Because live trees become dead trees and dead trees become coarse wood, the effects of the alternatives on snags and coarse woody debris will largely be influenced by what happens to live trees. Forest-wide standards and guidelines provide direction to retain and create snags and coarse wood, but this ability is dependent on having adequate numbers of live trees in the right size classes on the landscape and the kinds of disturbance processes that maintain snags over time. Alternatives were compared based on trends in medium and large tree size class relative to total forested acres within fire regime groups and Forest-wide to represent the pool of live trees available to become snags.

Forest-wide trends in the medium and large tree size class would be similar between the two alternatives across all fire regimes, (Table 3-32) (2010 0505 Analysis_GFSS_Medium_Large_Alternatives_Sawtoot.xls).

Table 3-32. Percentage of Forested Acres of Medium and Large Tree Size Class by Fire Regime for Decade 1, Decade 5, and Decade 10 for Alternatives A and B on the Sawtooth National Forest

Tree Size Class	Fire Regimes	Alternative	Percent of Forested Acres (%)		
			Decade 1	Decade 5	Decade 10
Medium	Nonlethal-Mixed1	A	23	27	21
		B	23	27	20
	Mixed2-Lethal	A	18	35	39
		B	18	35	39
	Total	A	20	33	34
		B	20	33	34
Large	Nonlethal-Mixed1	A	17	41	68
		B	17	43	71
	Mixed2-Lethal	A	19	27	39
		B	19	29	42
	Total	A	18	34	53
		B	18	35	53

Snag and coarse woody debris diversity result from the variety of agents that kill trees. These agents differ in the nature, magnitude, and pattern of their impacts on forests (Lundquist and Ward 2004). Diseases, insects, and other small-scale disturbances are the primary source of heterogeneity in forest structure and composition, including the dead wood component. Patches created by insect or disease pockets or some windthrow events operate at the tree or stand level but cause landscape patterns and consequences (Steed and Wagner 2002). These mortality agents act on a variety of tree species and sizes (diameter and height) and create variation in dead wood regarding species, size, and resultant decay activity.

Because snags are spatially and temporally dynamic, short- and long-term recruitment must be considered. Management activities that damage trees, such as fire, can result in direct or indirect mortality that contributes to short-term snag recruitment (Harmon 2002). However, snags have a relatively short life span and must be replaced over time. Harrod et al. (1998) developed a model of snag dynamics in ponderosa pine forests assuming that 100 percent of the small snags (12 inches and less) would have fallen within 20 years and 100 percent of the medium (17–25 inches) to large (over 25 inches) snags would have fallen within 45 years. Therefore, achieving and maintaining disturbance processes—including those within stand dynamics that contribute to patch mortality through competition stress, endemic insect activity, or increased fuel loadings that produce localized areas of high intensity fire—is an important element of meeting the desired conditions.

3.2.7 Cumulative Effects

Activities and disturbances that occur on NFS lands can affect larger-scale functions beyond Forest borders, while the land management outside of the national forest boundaries may influence Forest ecosystems. Vegetation management on adjacent land—including private, state, and other Federal lands—may or may not consider the broad needs of ecosystem integrity or its more specific vegetation components. Therefore, NFS lands must provide for these attributes to contribute to functioning ecosystems, regardless of ownerships. Adjacent lands under varied ownership and interspersed ownership may have different management direction than the Forest regarding the retention and production of vegetation components. Therefore, any Forest Service management activities affecting these components, particularly those vegetation components that are scarce outside of NFS lands, would affect the overall ecology and habitat properties they provide for large areas. How the Forest Service manages vegetation can have far-reaching impacts on other ownerships, including impacts to disturbance processes, wildlife dispersal, or soil-hydrological functions in watersheds. NFS lands can also be influenced in similar ways by vegetation management on other ownerships. Understanding the interactions between the processes generating patterns in forest landscapes, the many functional ecological responses to these patterns, and how they change through time is key to effective forest management (Franklin and Forman 1987; Oliver et al. 1999; Spies and Turner 1999).

Tree size class, canopy cover class, and species composition and distribution of snags and coarse woody debris are difficult to cumulatively assess because they encompass a diverse array of PVG types that vary in their distribution across the landscape. These elements differ in the degree to which Forest Service management and other management may affect their status. The amount of current scientific information and distribution data available also varies greatly, often limiting the assessment of the cumulative effects of all management activities and environmental consequences on vegetation components.

Several assumptions can be made, however, regarding cumulative effects. For example, it can be assumed that almost all of the higher-elevation PVGs in the cumulative effects area exist on NFS lands. Therefore, any Forest Service management activities affecting these communities will, in general, affect the overall ecology of high-elevation vegetation in the region. In the lower elevation PVGs that are currently furthest outside of the HRV, the restoration of these ecosystems, which would likely occur on Federal lands, would benefit the overall function and habitat for these vegetation types, particularly those that contain ponderosa pine. Some vegetation components may take many years before noticeable changes occur on the landscape. Other, more localized changes can be dramatic and immediate. For example, removing large trees affects not only size class distributions of forest stands but the recruitment of snags over time and would reduce the density of large snags on a landscape basis. Given the current conditions, large tree removal on or off NFS lands would affect distribution of the large tree component and future snags and coarse woody debris at a landscape scale. Therefore, the retention and future development of these critical components on NFS lands is essential to providing habitat elements needed by many species. Particularly in the lower-elevation ponderosa pine and warm, dry PVGs, improvements to these components would cumulatively affect and improve the conditions of these PVGs, given that restorative management can be limited on lands under other ownership.

Disturbances such as fire, insects, disease, and windthrow will migrate across a landscape, depending upon conditions. They may move from NFS lands to other ownerships or vice versa. Vegetative conditions have a big influence on the spread, extent, and direction of disturbances. Noxious weeds are another example in which cumulative effects will fluctuate between ownerships. Even within NFS lands, noxious weeds can spread if different forests are not managing weeds at the same intensity levels.

Variability is a key attribute of ecological systems, as well as a practical and realistic foundation for landscape-scale management. Sustaining ecosystems, species populations, and the amenities and commodities that society desires from ecological systems will require a long-term, landscape-scale approach to management that balances the needs, capabilities, and impacts of different areas within that landscape. Creating static reproductions of past ecosystems is neither possible nor desirable; however, understanding past ecological systems and the principal interactions and processes that influenced them helps managers set goals that respond to the ecological context and social values of an area (Landres et al. 1999). Using HRV concepts is not necessarily an attempt to simply mimic or recreate the processes that occurred on a site long ago or to return managed landscapes to a single and unchanging past condition. Rather, it is an attempt to improve understanding about the ecological context of an area and the landscape-scale effects of disturbance. This understanding may then be used to make existing and future conditions more relevant and variable, and ultimately, ecologically sustainable (Covington et al. 1994; Wallin et. al. 1996; Lertzman et al. 1997). As seral stages change, some plant species will be lost and others gained. These are tradeoffs that can be evaluated, but to maintain biological diversity, all defined seral stages must be maintained (Benkobi and Uresk 1996). Analysis of an ecosystem at different sites and time frames provides the context that current theory suggests is important in understanding the driving variables, constraints, and behavior of a system at local and shorter time scales (Allen and Hoekstra 1992).

3.3 TERRESTRIAL WILDLIFE

3.3.1 Introduction

Managing for sustainable populations of terrestrial wildlife species depends on maintaining the appropriate mix of habitat quantity, quality, and distribution across the landscape. Landscapes on the Forest are diverse, highly complex systems influenced by many factors, including the interaction of soils, aspect, elevation, climate, disturbance events, and humans. Together, these influences have shaped vegetative composition and patterns that, in turn, have influenced the distribution of biodiversity across the landscape (Mehl et al. 1998).

Fire has historically been a dominant influence in the northern Rocky Mountains (Gruell 1983; Agee 1999). Fire, insects, weather events, disease, animals, and plant succession were the agents that modified habitat and altered species' habitat use (Graham and Jain 1998; Morgan and Parsons 2001). Over time, ecosystems fluctuate within some range of variability related to the types of disturbances that occur within them. The term historical range of variability (HRV) has been used to describe these fluctuations in ecosystems using conditions prior to Euro-American settlement as a reference point (Morgan et al. 1994). Historically, low-elevation forests in the western Rocky Mountains burned frequently with low-intensity ground fires, leaving most of the large trees alive. In contrast, high-elevation forests usually burned with stand-replacing fires that killed most trees but at infrequent intervals, as much as hundreds of years apart.

Changes in vegetation due to natural or human-caused disturbances and human influence on the landscape are affecting terrestrial wildlife species and their habitat on the Forest. Spatial characteristics of landscapes—such as patch size and distribution, connectivity, and fragmentation of habitat—are largely determined by management actions and natural disturbances such as fire, insects, and disease. Despite the complexity of factors affecting changes within and across landscapes, six basic conservation principles were used as a basis to analyze management of the quantity, quality and distribution of habitat that supports sustainable populations of wildlife species:

1. Species well distributed across their range are less susceptible to extinction than species confined to small portions of their range.
2. Habitat in contiguous blocks is better than fragmented habitat.
3. Large blocks of habitat containing large populations of species are superior to small blocks of habitat containing few individuals.
4. Blocks of habitat close together are better than blocks far apart
5. Interconnected blocks of fragmented habitat are better than isolated blocks, and dispersing individuals travel more readily through habitat resembling that preferred by the species in question.

6. Blocks of habitat that are in areas where direct and indirect effects of human disturbance are low are more likely to provide all elements of a species' source environment than areas where it is not.

Together, these six principles provide for representative, resilient, and redundant habitats able to persist through time in the presence of disturbance and maintain wildlife populations.

Today, fire regimes in some forest vegetation types have changed due mostly to increases in vegetation densities and fuel loadings that are outside of the HRV (see "Fire Management" section 3.2 and "Forested Vegetation Diversity and Fire Regime Condition Class," sections 3.4). Increases in vegetation densities and fuels have been largely caused by fire suppression and exclusion in ecosystems that historically had relatively frequent fire return intervals and by certain timber management practices.

Humans have caused other major changes in vegetative patterns through activities, such as livestock grazing, road and facility construction, spread of invasive species, and recreation. Habitats adjacent to forests have changed or been converted for agricultural use, urban development, dams, or water diversions, all of which have influenced species that use NFS lands. In addition, greater human use and access have increased disturbance to wildlife species and disruption and fragmentation of their habitats (Forman and Alexander 1998). These changes have resulted in local constrictions of some species across their historical range; decreased connectivity between habitat blocks; fewer and smaller habitat patches; and greater human influence on the landscape in these smaller, disparate habitat blocks.

The Forest Plan provides guidance to maintain or restore habitats that have declined, identifies opportunities as to where or when to re-pattern declining/departed habitats, and guides habitat expansion and connectivity. The Forest Plan also guides restoration of important vegetative components—species composition, vegetative structure, and snags or logs—within source habitats[8]. These components are critical for many wildlife species' ability to survive and reproduce. Broad direction in the Forest Plan exists to address human impacts on habitats and species as well.

This Forest Plan amendment examines how management alternatives contribute to, address, or mitigate habitat alteration, fragmentation, and disturbance to wildlife. Specifically, this analysis (1) identifies terrestrial source habitats in decline at the Forest scale; (2) compares the habitat patterns and trends identified at finer scales with the patterns and trends seen in the Interior Columbia Basin; (3) determines how well 2003 Forest Plan direction addresses the identified habitats in decline; (4) assesses how well proposed direction under the action alternatives addresses species associated with these habitats; and (5) assesses how well proposed direction under the action alternatives addresses species affected by human influences on the landscape. Particular attention has been paid to those species and their habitats whose sustainability may be affected by the

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[8] Source habitats are those characteristics of macrovegetation (e.g., cover types and structural stages) that contribute to stationary or positive population growth for a species in a specified area and time (Wisdom et al. 2000).

alternatives and their associated direction.

3.3.2 Effects and Measures

Proposed Forest Plan amendments may affect wildlife source environments and related source habitats associated with the forested biological community which could, in turn, affect the sustainability of associated species. Effects to terrestrial wildlife resources in this EA will be evaluated using the following measures.

Effect #1: Without a source habitat restoration and prioritization strategy on the Forest, habitat restoration would have less impact and may not occur in the most strategic locations.

Measure:

- Whether a restoration and prioritization strategy is in place or not and, if it is, how well it improves the likelihood of expanding the geographic extent and connectivity of source habitats at the landscape scale

Effect #2: Forest Plan amendments may affect old-forest and large-tree habitat important to species associated with Families 1 and 2

Measure:

- Trend in large tree and old-forest habitat[9] by fire regime (i.e., nonlethal, mixed1 and mixed2) across the Forest and relationship to the HRV

Effect #3: Forest Plan amendments may affect retention of large diameter snags important to all habitat families (i.e., Families 1–4).

Measure:

- Forest Plan direction in MPCs 4.2, 5.1, and 6.1 versus that in MPCs 3.1, 3.2 and 4.1c concerning snag retention

Effect #4: Forest Plan amendments may affect sustainability of source environments and source habitats for Families 1–4 and associated Endangered Species Act (ESA) threatened species and Region 4 sensitive species.

Measures:

- Current and predicted sustainability outcome for Family 1 and associated Region 4 sensitive species (white-headed woodpecker)
- Current and predicted sustainability outcome for Family 2 and associated Region 4 sensitive species (boreal owl, flammulated owl, fisher, great gray owl, northern goshawk, American three-toed woodpecker)
- Current and predicted sustainability outcome for Family 3 and associated ESA

[9] In this analysis, “old-forest habitat” could not be specifically defined because not all components of old-forest habitat (e.g., species composition, snags, coarse woody debris) were available with the mid-scale data. Consequently, “old-forest macrovegetation” was used as an indicator of potential old-forest habitat. For the purposes of the analysis, “old-forest habitat” and “old-forest macrovegetation” are used interchangeably.

threatened species and Region 4 sensitive species (Canada lynx and wolverine)

- Current and predicted sustainability outcome for Family 4

Effect #5: Management activities allowed under the Forest Plan may affect Management Indicator Species (MIS) species habitat and subsequently their population trends

Measures:

- MIS species source habitat trends and sustainability outcomes for the species and associated habitat families

The affected area for direct and indirect effects to terrestrial wildlife resources is the NFS land within the Forest's administrative boundary. This area was selected because the direct and indirect effects of the alternatives to source habitats and environments would generally be confined to this area. The cumulative effects area addresses both habitats within the context of the State of Idaho and wildlife conservation strategies reflected in the *Idaho Comprehensive Wildlife Conservation Strategy* (Idaho CWCS) (IDFG 2005), as well as the Interior Columbia Basin and strategies identified in the *2003 Interior Columbia Basin Ecosystem Management Project Memorandum of Understanding* and *Interior Columbia Basin Ecosystem Management Project Strategy* (USDA Forest Service 2003a, b).

3.3.3 Methods

The following discussion describes the basic methodologies used to assess terrestrial vertebrate wildlife species in this EA. Further details of the models developed, the processes used to run them, and the analysis methods conducted to analyze the data are disclosed in the Methods section of the *Wildlife Technical Report for the 2011 Sawtooth National Forest Plan Amendment to Implement a Forest Wildlife Conservation Strategy* (Filbert et al. 2011).

Habitats in decline were identified and summarized into habitat families that aligned with the analysis completed by Wisdom et al. (2000). For each family, focal species were identified to represent the landscape attributes and functions for each habitat family[10]. A nested hierarchical system was used to evaluate habitats and species at the Forest level (midscale) and relate those findings to the broad-scale and finer scales. This system was used to facilitate understanding of the relationships between source habitat needs at multiple temporal and spatial scales.

Both coarse- and fine-filter approaches were used to determine if the needs for focal wildlife species and their habitats would be met. A coarse-filter approach assesses the conservation value of ecosystems and landscapes to maintain and, where needed, restore representative ecosystems and their inherent disturbance processes in order to conserve the majority of species without needing to consider them individually. The coarse-filter approach compares habitat families and desired vegetative conditions under the Forest Plan to determine how well source habitats are being met at the family level and detects dominant trends common to most species in each habitat family. A habitat family is a

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Further discussion on the focal species concept can be found in Appendix 4.

collection of focal species that share similarities in source habitats, with the similarities arranged along major vegetative themes.

A fine-filter approach focuses on individual species that are assumed to be inadequately protected under the coarse filter approach. Typically these include threatened or endangered species or those considered sensitive by the Regional Forester. The fine-filter approach is used to assess ecological functions and habitat elements important to focal species within a habitat family and to validate whether the coarse-filter approach would accommodate the habitat needs of all species or if additional management direction was needed. By using this coarse- and fine-filter approach, species, or groupings of species (i.e., habitat families), that require management attention would be less likely overlooked.

From 345 terrestrial vertebrate species that occur—or are suspected to occur—on the Forest, 207 species of birds, mammals, amphibians, and reptiles have been highlighted in broad-scale assessments as being either a species of conservation concern or a species of interest. This list includes all Region 4 sensitive species, all Threatened, Endangered, Potential, and Candidate (TEPC) species, and all terrestrial wildlife MIS on the Forest. It also includes species of conservation concern or interest as identified by other Federal agencies, the Idaho Department of Fish and Game (IDFG), the Utah Division of Wildlife Resources, the Northwest Power Planning Council sub basin assessments, and Partners in Flight. The Forest Service assumed species used in broad-scale assessments were selected for reasons that would typically be applicable to the Forest. These species were grouped by habitat family as defined by Wisdom et al. (2000) for the Interior Columbia Basin (ICB) project. Wisdom et al. (2000) assigned most species to habitat families using a combination of cluster analysis and empirical knowledge. The remaining species were assigned a habitat family by Wisdom et al. (2000) based on empirical knowledge after reviewing available literature. Species not assigned a habitat family in the Wisdom et al. (2000) analysis were assigned a habitat family based on habitat information from NatureServe (2005, 2009) and other species accounts. This method was a coarse, but consistent, means of assigning the few remaining species out of the 207 total species to habitat families.

There are four habitat families in Suite 1—the forest-only suite. Of the 207 species in the WCS assessment, 47 are in Suite 1 and 17 of those were selected as focal species for the analysis in this Forest Plan amendment; these 17 species were assigned to habitat families under the Wisdom et al. (2000) analysis. For this EA, threatened, endangered, Forest sensitive and management indicator species were analyzed in detail (Table 3-33).

Source habitats and species relationships were determined for each of the 17 focal species using the best available science[11]. Source habitat models for each species were created, and a species account was developed for each to establish an environmental baseline. Focal species habitats were aggregated to form a source habitat description for each

[11]Best available science means scientific information of appropriate content, rigor, and applicability has been considered, evaluated, and synthesized in the documents that underlie and that implement this land management decision. The definition was developed by WCS team members based on the concepts used in the September 29, 2003, Science Consistency Report for the Draft Supplemental EIS for the Sierra Nevada Forest Plan Amendment.

habitat family.

A spatial assessment of source habitats was then conducted for each habitat family and all focal species using 30-meter resolution Landsat data updated to include wildfire events, and insect and disease outbreaks occurring since 2000. Methodology comparable to the broad-scale assessment completed by Wisdom et al. (2000) was followed. The spatial assessment was based on the historical composition and structural conditions of PVGs in forested habitats as compared to current conditions. Current source habitat estimates were compared to historical source habitat estimates to determine changes in habitats. Although historical source habitat would naturally be represented as a range to account for variability, a range could not be represented with the model; therefore, a midpoint was selected to compare current source habitat conditions. A key assumption for this analysis was that historical source habitat contributed to sustainable populations of species.

Risk factors that negatively affect habitat families or focal species and could be modeled at a coarse scale were identified. These risks included susceptibility to invasive weeds, road density, winter recreation, and grazing.

A matrix was developed to qualitatively assess sustainability of individual focal species relative to the six conservation principles. Five sustainability outcomes—ranging from well-distributed habitat with interacting populations to uncharacteristically isolated habitats with little-to-no interaction of individuals likely—were defined as described below (Raphael et al. 2001):

- **Outcome A**—Suitable environments are either broadly distributed or of high abundance compared to their historical distribution. The combination of distribution and abundance of environmental conditions provides opportunity for continuous or nearly continuous intraspecific interactions for the focal species. Species with this outcome are likely well distributed throughout the planning area.
- **Outcome B**—Suitable environments are either broadly distributed or of high abundance compared to their historical distribution, but gaps exist where suitable environments are absent or only present in low abundance. However, the disjunct areas of suitable environments are typically large enough and close enough to permit dispersal among subpopulations and to allow the species to potentially interact as a metapopulation. Species with this outcome are likely well distributed throughout most of the planning area.
- **Outcome C**—Suitable environments are distributed frequently as patches and/or exist at low abundance. Gaps where suitable environments are either absent or present in low abundance are large enough such that some subpopulations are isolated, limiting opportunity for intraspecific interactions. Opportunity exists for subpopulations in most of the planning area to interact, but some subpopulations are so disjunct or of such low density that they are essentially isolated from other populations. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. Species with this outcome are likely well distributed in only a portion of the planning area.
- **Outcome D**—Suitable environments are frequently isolated and/or exist at very low abundance. While some of the subpopulations associated with these environments may be self-sustaining, limited opportunity exists for population interactions among

many of the suitable environmental patches. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. These species are likely not well distributed in the planning area.

- **Outcome E—**Suitable environments are highly isolated and exist at very low abundance, with little or no possibility of population interactions among suitable environmental patches, resulting in strong potential for extirpations within many of the patches and little likelihood of recolonization of such patches. There has likely been a reduction in the species' historical range, except for some rare, local endemics that may have persisted in this condition since the historical time period. Species with this outcome are not well distributed throughout much of the planning area.

Each focal species was assessed and a sustainability outcome determined. Sustainability outcomes for habitat families were derived from the aggregation of species outcomes. A family outcome could be no higher than the lowest focal species outcome within the family. Habitat families of greatest concern were defined through this process. This analysis identified issues that were then used to define the purpose and need and Proposed Action, develop alternatives for the amendment, and identify the need for additional management direction.

The analysis in this EA focuses on Threatened, endangered, proposed/petitioned, candidate, and sensitive (TEPCS) or MIS focal species. These species are organized in association with their respective habitat family. Current sustainability analyses for remaining focal species are included in the planning record. These species include Lewis' woodpecker (*Melanerpes lewis)* (Family 1); dusky grouse (Dendragapus obscurus) (winter) (Family 2), northern flying squirrel (*Glaucomys sabrinus)* (Family 2), and silver-haired bat (*Lasionycteris noctivagans*) (Family 2); and dusky grouse (summer) (Family 3). Because Family 4 does not have a TEPC, Sensitive species, or MIS associated with it, only the family discussion is included.

Table 3-33 displays the sustainability outcomes by alternative for the TEPC, Sensitive, and MIS focal species, and the four habitat families analyzed in this EA. This table also displays effects determinations for the proposed action for those focal species that are also TEPC or Sensitive species. A biological assessment/biological evaluation was completed for the proposed action that documents the effects analysis used to reach these.

Table 3-33. Sustainability Outcome and Effects Determination for Sawtooth National Forest Habitat Suite 1 Focal Species

Family No. and Name	Source Habitats Dominated By:	Habitat Family Sustainability Outcome (Current and Projected under Alternatives)	Species	ESA Listed	R4 Sensitive	MIS	Sustainability Outcome (Current and Projected under Alts)	Effects Determination[a]
1—Low-elevation old-forest	Old-forest stages, low elevation	D (Current) C (Alternatives A and B)	White-headed woodpecker (*Picoides albolarvatus*)		X		D (Current) C (Alternatives A and B)	MIIH
2—Broad-elevation old-forest	Old-forest stages, broad elevation	B	Boreal owl (*Aegolius funereus)*		X		B	MIIH
			Fisher (*Martes pennant*)		X		B	MIIH
			Flammulated owl (*Otus flammeolus*)		X		B	MIIH
			Great gray owl (*Strix nebulosa]*)		X		B	MIIH
			Northern goshawk (*Accipiter gentilis*)		X		B	MIIH
			Pileated woodpecker (*Dryocopus pileatus*)			X	B	N/A
			American three-toed woodpecker (*Picoides tridactylus*)		X		B	MIIH
3—Forest mosaic	Broad range of structural stages	C	Canada lynx (*Lynx canadensis*)	X			B	LAA
			Wolverine (*Gulo gulo*)		X		C	MIIH
4—Early seral montane and lower montane	Forest stand-initiation stage (early seral)	A	N/A				A	N/A

[a]LAA is Likely to Adversely Affect; MIIH is May Impact Individuals and/or Habitat.

3.3.4 Habitat and Species Assessments

Source habitats for many families have become increasingly fragmented, simplified in structure, and influenced by non-native plants. Habitat decline in three of the four habitat families in Suite 1 have primarily been caused by loss of fine-scale features, such as snags and logs; the disruption of historical fire processes due to fire suppression and exclusion; and habitat fragmentation caused by human disturbance (e.g., roads, off-highway motorized recreation). A general loss of source habitat, including large trees and old forest, also contributes to overall habitat decline.

Various human factors negatively affect habitats or populations of most focal species across each of the families. These factors can influence habitat quality as well as quantity, sometimes causing species to avoid or underuse source habitats. Effects may include displacement of individuals or populations or increased risk of mortality in populations. The families with the most dramatic decline in habitat quality and/or quantity in Suite 1 are Families 1 and 3. Family 1 source habitat is primarily associated with low-elevation ponderosa pine forest that historically was not well distributed on the Forest. Habitat Family 3 may be at risk due to habitat disturbance during critical periods, but these effects are difficult to quantify. Family 2 has experienced habitat declines, although source habitat remains within the HRV. Family 4 source habitat has increased from historical quantities due to wildfires, insect epidemics, and management activities that have generated extensive acres of GFSS habitat.

The direct and indirect effects of the alternatives are described below. Effects to habitat elements common to one or more habitat families include vegetative desired conditions and wildlife habitats; a restoration and prioritization strategy for wildlife habitat; and retention of large-diameter snag habitat. For Families 1 and 2, the trend in old-forest and large-tree habitat is discussed. Each family and its associated species are then discussed in terms of current conditions and direct and indirect environmental consequences anticipated under each of the three alternatives. The Family discussions are followed by a discussion of cumulative effects and a description of two MIS, the rationale for their selection, and a discussion of remaining TEPC and Sensitive species associated with other biological communities.

3.3.4.1 Effects on Habitat Elements Common to One or More Habitat Families

3.3.4.1.1 Vegetative Desired Conditions and Wildlife Habitats—All Habitat Families

The desired condition for wildlife habitats is to remain within, or be moving toward, the HRV that was present prior to Euro-American settlement disturbance regimes. The rationale for using the HRV for this purpose is that biodiversity is assumed to persist, though with fluctuations in populations, through centuries or millennia of disturbance and recovery cycles (Aplet and Keeton 1999). Further, this concept assumes that, as contemporary conditions depart from historical processes due to human activities, the risk of losing species, both known and unknown, increases. Until we improve our understanding of ecosystem dynamics, knowledge of past ecosystem function may be one of the best means for predicting impacts to ecological systems (Landres et al.1999). The risk of losing species, processes, or genetic diversity within populations is estimated to increase as the departure from the HRV increases (Figure 3-7) (McComb and Duncan

2007). While it is logical that the level of risk becomes increasingly uncertain as the distance from the HRV increases, the shape of the relationship and the confidence intervals depicted are not well understood (McComb and Duncan 2007).

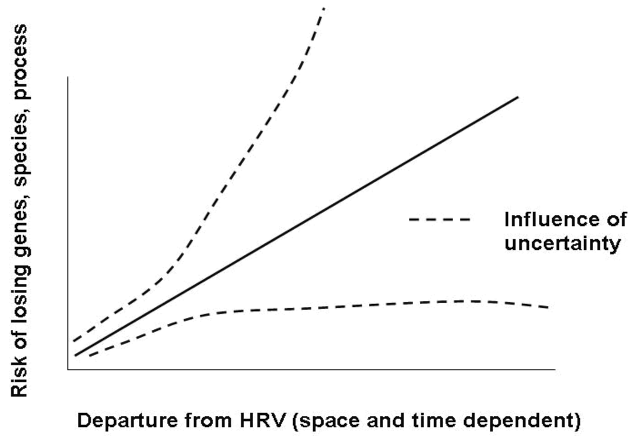

Figure 3-7. Risk of Species Loss Relative to Departure from the Historical Range of Variability (HRV) (McComb and Duncan 2007)

Actions designed to achieve desired vegetative conditions as in Appendix A of the Forest Plan (see Appendix 2) result in long-term terrestrial wildlife source habitat conditions within the predicted HRV. Wildlife species evolved with source habitats within their HRV. Approximating historical conditions for source habitats provide a management strategy likely to sustain diverse focal species, even for those about which we know little (Hunter et al. 1988; Swanson et al. 1994; Landres et al. 1999). Similarly, because of limited understanding about ecosystems, approximating past conditions offers one of the best means for predicting and reducing impacts to current ecosystems (Kaufmann et al. 1994). Therefore, if the amount and structure of source habitats are within their HRV, associated wildlife species will have a greater likelihood of sustainability than if the amount and structure of source habitats are outside their HRV (Raphael et al. 2001; Spies et al. 2006).

3.3.4.1.1.1 Environmental Consequences of Alternative A and B

Under Alternative A and B, all MPCs have desired conditions that fall within the estimated HRV. The desired conditions range from the low end of the HRV to the midpoint. With desired conditions set within the HRV, both alternatives have the capability to maintain conditions already within the HRV or move them toward or within the HRV. Where landscapes are operating within the HRV, a greater likelihood exists that habitat components contributing to source habitat for wildlife species are being provided for, and a lower risk exists that sustainable habitats and/or species are not being maintained. Sustainability is more likely to be achieved when desired conditions are defined within the HRV.

3.3.4.1.2 A Restoration and Prioritization Strategy and Wildlife Habitat—All Habitat Families

The Forest Plan provides an umbrella of guidance to restore ecosystems and their disturbance processes in a way that provides well-distributed habitat of the appropriate patch sizes and juxtaposition that can contribute to viable populations of wildlife species. Identifying important source habitat watersheds on the Forest through a restoration and prioritization strategy provides an opportunity to build on existing resource actions; to focus efforts on areas where management actions can best help restore specific habitats in decline; to help develop a program of work that clearly progresses toward desired conditions; and to successfully obtain funding to implement that work.

The 2003 Forest Plan does not include a wildlife habitat restoration and prioritization strategy but provides direction to develop one (WIOB03). Effective restoration strategies identify the primary habitats to be restored, and the areas where restorative actions will be emphasized, according to **long-term** goals and **short-term** objectives. A **long-term** goal provides an overall blueprint to maintain or effectively restore a representative, resilient, and redundant network of habitats across the Forest, while a **short-term** objective focuses efforts during the next 10–15 years on those habitats and species with the greatest needs, due to the extent of change from historical conditions.

3.3.4.1.2.1 Environmental Consequences of Alternative A

No restoration or prioritization strategy exists under Alternative A. Little measurable progress on habitat re-patterning would be expected since no prioritization strategy exists to strategically organize efforts.

Under Alternative A, improving trends for departed habitats would result in larger quantities of habitat on the Forest, but without a short- or long-term restoration strategy, interconnectedness of this habitat across the landscape would be coincidental and unlikely to support Conservation Principles 2, 4, and 5. Developing appropriate patch sizes and ensuring their distribution relative to wildlife needs would occur at fine or site scales without the context of a spatial or temporal plan for re-patterning these habitat patches across the landscape at larger scales.

3.3.4.1.2.2 Environmental Consequences of Alternatives B

Under Alternative B, the Forest Plan goal of restoring ecosystems and their disturbance processes would be expanded with specific Forest-wide, MPC, and Management Area (MA) direction. This direction would correlate vegetative desired conditions with terrestrial wildlife desired conditions; prioritize source habitats in greatest need, with reference to historical conditions (e.g., patch size, location and species composition); and address source environment conditions. In this alternative, opportunities to re-pattern habitats are identified at the midscale, and a strategy on how to approach expansion of the geographic extent and connectivity of source habitats that have declined would be identified, effectively setting up the ability of fine- and site-scale projects to apply Conservation Principles 1–6. Desired conditions as described in Appendix A of the Forest Plan (e.g., species composition, vegetation structure, snags, and logs) are correlated with important habitat characteristics used by terrestrial species to survive and reproduce (e.g., old-forest snags, logs, and legacy trees) as described in Appendix E of the Forest Plan.

The prioritization strategy would focus development of restorative projects on the Forest, fostering collaboration between wildlife, fuels, and vegetation management activities.

Measurable progress toward achieving restoration objectives of re-patterning habitats would occur, increasing patch sizes for habitats that have declined. Species associated with degraded habitats would benefit from larger patch sizes and improved connectivity across the landscape. Resiliency of both species and habitats to stochastic events would strengthen as the short- and long-term restoration and prioritization strategies are implemented.

Under Alternative B, a source environment strategy would be developed to address non-vegetative factors influencing species distribution and abundance. This strategy would focus on habitat connectivity and the needs of species with large home ranges and those species particularly sensitive to human disturbance. The source environment strategy would guide the Forest Service to consistently plan and apply specific criteria to ensure these special requirements are being met.

3.3.4.1.3 Retaining Large-diameter Snag Habitat—All Habitat Families

3.3.4.1.3.1 Environmental Consequences of Alternative A

For many wildlife species, large-diameter snags (standing dead trees greater than or equal to 20 inches diameter at breast-height d.b.h) are an important habitat component on the Forest. Whether large-diameter snag distribution is within the HRV, especially in low- and moderate elevation forests, is unknown; however, large-diameter snag numbers[12] are within the HRV on the Forest and medium-diameter snag numbers are above the HRV. Desired conditions discussed in Appendix A provide for retaining large-diameter snags under both alternatives. These desired conditions were developed for green tree stands and fall within the HRV. However, without additional emphasis on retaining large diameter snags, Alternative A would likely be less capable of conserving large-diameter snags across the landscape because it lacks direction to address conserving large diameter snags in salvage and mechanical vegetation treatment areas. Under Alternative A, at least the minimum number of desired large-diameter snags per acre would be retained in areas salvaged after a disturbance, which means fewer snags would be available to persist through time while the surrounding forest regenerates and grows.

Although direction exists in some MAs to retain snags and coarse woody debris by designating fuelwood cutting areas and restricting fuelwood cutting in riparian areas, this fuelwood direction does not emphasize retaining large-diameter snags. Under Alternative A, large-diameter snags near roads would continue to be vulnerable to personal use fuelwood removal in some management areas. Overall, the snag retention direction under Alternative A would be less capable of conserving large-diameter snags, and restoring

[12] Table 3-18 in the Forested Vegetation Diversity and Fire Regime Condition Class section shows most PVGs are within desired conditions for large-diameter snags. However, these PVG data may be skewed due to factors that affect total numbers such as plots within burned areas of the Forest with higher numbers of snags compiled with plots in unburned areas; plots in unmanaged areas of the Forest included with plots in managed areas; and lastly, by including snags in decay classes that do not count toward desired conditions. Therefore, though the numbers indicate the Forest is within desired conditions for large-diameter snags, these contributing factors must be recognized.

this key habitat component would take longer than under Alternative B.

3.3.4.1.3.2 Environmental Consequences of Alternatives B

Alternative B includes proposed direction to improve the quantity and distribution of large-diameter snags across the landscape. The proposed direction would be more comprehensive than the existing direction under Alternative A. By focusing on retaining large-diameter snags, Alternative B would more quickly develop this important habitat component across the Forest. Large-diameter snags would be recruited in green stands and, over time, would reflect the distribution and patchiness expected to have occurred historically. Overall, loss from salvage sales and personal use fuelwood would be reduced.

The first 5 years following an event that has killed large numbers of trees is generally the most productive period for wildlife species adapted to post-fire landscapes or species associated with insect or disease outbreaks. Wood-boring beetle larvae in particular show dramatic increases in numbers within the first few years after trees die, peaking at around 3 years. The 5 year post disturbance time period also coincides with the period when salvage logging is most likely to occur. Additional direction under Alternative B would better provide for wildlife species that rely on high snag densities for foraging and reproduction.

Similar to Alternative A, vegetation management activities under Alternative B would retain snags in the size and numbers within desired conditions for green tree management (see Appendix A in Appendix 2 of this EA).

Unlike Alternative A, Alternative B includes a standard for MPCs 4.2, 5.1, and 6.1 to retain large-diameter snags in salvage sale activity areas at the high end of the desired condition range since dead trees play an important ecological role in soil development, forest regeneration, and wildlife habitat for fire-dependent species. Where insufficient numbers of large snags exist to meet that level, the direction allows for snags >10 inches d.b.h. to count toward that total. This direction acknowledges that the Alternative B desired condition table (see Appendix 2 of this EA) for green stands may not sufficiently address snag-retention needs in burned stands. Alternative B also includes a standard for MPCs 3.1, 3.2, and 4.1c (about 970,000 acres or 44 percent of the Forest) to retain all large-diameter snags (>20 inches d.b.h.) for all vegetation activities, including salvage. Where insufficient numbers of large snags exist to meet that level, the direction allows for snags >10 inches d.b.h. to count toward that total.

A new guideline under Alternative B (WIGU18) provides a hazardous fuel reduction exemption to these standards when wildlife and fuels objectives are in conflict, primarily in the WUI. The WUI represents a 1.5 mile buffer surrounding communities and private land at risk from wildland fire. Other exemptions included under Alternative B allow Authorized Officers to provide for the protection of life and property during emergency events, meet tribal rights, address other human health and safety concerns, and manage the personal fuelwood program.

It is unknown how often, or to what extent, the exemptions described above may be used. The WUI overlaps both MPC 3.1 and 4.1c; there are 16,000 WUI acres in MPC 3.1 (13 percent of MPC 3.1 acres and 1 percent of the Forest) and 72,000 WUI acres in MPC

4.1c (15 percent of 4.1c acres and 3 percent of the Forest). Existing management standards in these MPCs prevent terrestrial habitat degradation and passive management is emphasized over mechanical vegetation treatment, which would conserve large snags. Additionally, these MPCs are in areas with very little past or current timber and fuel management activities and the lack of road infrastructure would limit the risk from personal use fuelwood collection.

MPC 3.2 remains an area where the hazardous fuel reduction exemption is most likely to be used; this MPC contains 100,000 WUI acres (27 percent of MPC 3.2 acres and 5 percent of the Forest). Although WUI areas were based on buffers of at-risk communities and private land, a more realistic treatment zone for this exemption is within a 500 foot buffer zone, or defensible space zone, surrounding communities and private land at risk. On the Forest, MPC 3.2 is consistently found in moderate-to-high elevations where forests primarily consist of lodgepole pine stands; 34 percent of WUI acres in MPC 3.2 are PVG 10 (e.g., persistent lodgepole pine). Trees in lodgepole pine stands rarely exceed 12 inches d.b.h.. Forest fuels reduction treatments in MPC 3.2 outside of the 500-foot defensible space zone have maintained the high end of the desired condition for snags for all size classes. This practice would likely continue under the new standard and exemption.

MPCs 4.2, 5.1, and 6.1 are in areas that typically have active forest management, when compared to other MPCs. These MPCs contain 62,000 acres of WUI, which is a very small percentage of the Forest (3 percent), where the WUI exemption may be used. Additionally, these MPCs are often in areas containing more developed road systems. This correlation is a result of past management activities, developed recreation, and/or current management activities. These MPCs tend to overlay the lower and moderate elevation habitat that is most in need of restoration; however, similar areas in need of restoration occur in other MPCs as well. To prevent further loss of large diameter snags in these MPCs, Forest-wide direction (VEGU11) states the personal use fuelwood program should be managed to retain snags >20 inches d.b.h. through signage, public education, permit size restrictions, or area closures. This new guideline would provide some measure of conservation in the more heavily roaded areas where there is a heightened concern for continued loss of large snags.

3.3.4.1.4 Trend in Old-forest and Large-Tree Habitat—Families 1 and 2

Old-forest habitat is an important source habitat condition that provides essential denning, nesting, foraging, and cover habitat for many wildlife species. Old forests are distinguished by old trees and related structural attributes, which may include large tree size, signs of decadence, large snags and logs, canopy gaps, and understory patchiness (USDA Forest Service 2003a; Van Pelt 2007, 2008).

Old forest habitat can develop in nonlethal, mixed1 and mixed2 fire regimes. Due to differences in forest/habitat types, site quality, climate, and disturbance patterns, these habitats may vary extensively in tree size, age class, and presence and abundance of structural elements (Helms 1998). Fire regimes influence old-forest characteristics, such as species composition, structure, as well as patch size and distribution on the landscape:

3.3.4.1.5 Environmental Consequences of Alternative A

Upward trends for the large tree size class (see Table 3-27, in section 3.2 -"Forested Vegetation Diversity and Fire Regime Condition Class") and old-forest habitat (Table 3-34) are projected under Alternative A and are generally very similar to those predicted under Alternative B. Although the trend in large tree size class increases under Alternative A, it does not reach the low end of the HRV for nearly 10 decades for PVGs 1–3 or for 2 decades for PVGs 4 and 7.

Alternative A does not include direction to consider old-forest habitat when planning management activities. The existing Forest-wide standard (WIST01) requires maintaining at least 20 percent of acres within each forested PVG found in a watershed in the large tree size class. This direction allows large tree, and therefore old-forest habitat, to be maintained below the HRV for PVGs 1–4, resulting in increased uncertainty as to whether habitat conditions are providing for sustainable wildlife populations in these vegetative communities.

Habitat for Families 1 and 2 in more intensively managed forests stands (e.g., WUI areas) may remain or become of lesser quality (e.g., lack of presence of large-diameter snags and logs) than habitat in remote areas. It is important to note that intensively managed forest areas are not widespread on the Forest and restoration is a primary element of the current Forest Plan direction. Under Alternative A, natural disturbance regimes are allowed to play a role on most acres of the Forest. Still, Alternative A lacks specific direction to guide maintenance and restoration of old-forest habitat and large-diameter snags. Achieving mid- or large-scale objectives of old-forest habitat restoration would be challenging due to the lack of a prioritization strategy or direction to address temporary or short-term loss of habitat under Alternative A.

3.3.4.1.5.1 Environmental Consequences of Alternative B

Upward trends for the large tree size class (Table 3-27) and old-forest habitat (Table 3-24) are projected for Alternative B. While both alternatives would be capable of restoring disturbance processes and rebuilding habitat patches and juxtaposition on the landscape, Alternative B would retain existing old-forest habitats, identify and retain large tree stands with remnant old-forest attributes, and prioritize restoration and development of large tree stands with old-forest components to expedite old-forest development. Proposed direction for old-forest and large tree stands under Alternative B would likely create a more contiguous distribution of habitat on the landscape (habitat networks) representative of historical conditions, and fire would remain an appropriate and desirable tool for maintenance of large tree and old forest habitat.

Table 3-34 and Table 3-35 display the trends in old-forest habitat on the Forest over the next 10 decades based on the management alternatives. Forest wide, both alternatives increase the number of acres in old-forest habitat in the nonlethal and mixed1 fire regimes (PVGs 1–4) over time.

Additionally, old forest was modeled for WUI and non-WUI areas on the Forest: WUIs represent areas where the majority of fuels and timber management occur on the Forest. Over the next five decades, old-forest acreage in the non-lethal and mixed1 fire regimes more than triple within the WUI under both alternatives. Alternative B remains the alternative that creates the most old-forest habitat over time in the non-lethal and mixed1 fire regimes in the WUI; although total numbers are very similar between alternatives and are likely indistinguishable (Table 3-34).

Approximately half of the forested acres on the Forest occur in the mixed2 fire regime (Table 3-34). For this fire regime, Alternative B would increase old-forest acres over time and create the most old-forest acres by Decade 5 and Decade 10 on the Forest (Table 3-34). The mixed2 fire regime includes PVG 7 (Warm-Dry Subalpine Fir and High Elevation Subalpine Fir groups; Table 3-35) and occurs at higher elevations, where relatively little active management occurs. In WUI areas, old-forest acreage would increase four-fold by Decade 10 under Alternative B; similar increases also occur under Alternative A (Table 3-34).

Old-forest habitat was not identified for the lethal fire regime (PVG 10, Persistent Lodgepole Pine). Based on the definition of old-forest habitat, old-forest characteristics (large trees, decadence, large logs, multiple canopies, and understory patchiness) are not typical of this fire regime or vegetation type.

Table 3-34. Trend in Old-forest Habitat on the Sawtooth National Forest for Habitat Families 1 and 2 by Analysis Area and Alternative

Fire Regime	Analysis Area	Alt.	Total Acres	Current Old-forest (Acres)	Decade 1 (Acres)	Decade 5 (Acres)	Decade 10 (Acres)
Nonlethal	Total	A	49,590	3,840	4,300	9,330	12,130
		B			4,320	9,280	13,020
	Non-WUI	A	45,800	3,670	4,040	8,640	11,200
		B			4,040	8,460	11,850
	WUI	A	3,790	170	260	690	930
		B			280	820	1,170
Mixed1	Total	A	245,790	21,830	27,190	77,730	131,630
		B			27,250	80,380	132,770
	Non-WUI	A	197,867	18,640	23,180	64,370	105,840
		B			23,210	66,500	107,060
	WUI	A	47,930	3,190	4,010	13,360	25,790
		B			4,040	13,880	25,710
Mixed2	Total	A	541,210	55,710	58,930	91,780	133,640
		B			59,500	97,010	139,850
	Non-WUI	A	487,650	51,670	54,180	81,460	117,220
		B			54,680	86,210	122,890
	WUI	A	53,560	4,040	4,750	10,320	16,420
		B			4,820	10,800	16,960
Lethal	Total	A	203,140				
		B					

Table 3-35. Trend in Old-forest Habitat on the Sawtooth National Forest for Habitat Families 1 and 2 by PVG and Alternative

Fire Regime	Analysis Area	Alt.	Total Acres	Current Old-forest (Acres)	Decade 1 (Acres)	Decade 5 (Acres)	Decade 10 (Acres)
Nonlethal	PVG1	A	38,610	3,160	3,480	7,140	8,860
		B			3,400	6,530	8,520
	PVG2	A	10,980	680	820	2,200	3,280
		B			916	2,750	4,490
Mixed1	PVG4	A	208,410	18,030	23,000	71,570	122,170
		B			23,000	73,300	122,590
	PVG3	A	37,390	3,800	4,190	6,160	9,460
		B			4,250	7,080	10,180
Mixed2	PVG7	A	330,100	34,530	37,240	63,030	95,050
		B			37,670	67,410	100,670
	PVG11	A	211,110	21,180	21,700	28,750	38,590
		B			21,830	29,600	39,170
Lethal	PVG 10	A	203,140				
		B					

Trends for the large tree size class in all fire regimes in the WUI and non-WUI analysis area would increase under Alternative B (Table Veg-Fire 26). The large tree size class provides important habitat for various wildlife species and can provide a starting point for restoring old-forest source habitat, particularly for large tree stands that have experienced little-to-no past forest management or disruption of disturbance processes. These stands likely include large snags and logs, making them desirable for focusing efforts to restore old-forest habitats. Under Alternative B the rate of developing acres with large tree structure would be faster than under Alternative A, although differences between Alternative A and B are generally very small. Under Alternative B, total acres on the Forest would move into the HRV by Decade 2 or 10, depending on the PVG.

New direction under Alternative B would address maintaining and restoring large-tree and old forest habitat, including important old-forest components, such as legacy trees and large diameter snags. Direction that would focus maintenance and restoration activities on these structural stages and habitat components include WIOB13, WIST08, WIST09, and WIGU15. In addition, standards have been proposed in the vegetation section of the Forest Plan (VEST03 and VEST04) that require retaining stands in the large tree size class. Guidance has been proposed or strengthened under Alternative B to retain ponderosa pine legacy trees and to re-create patch dynamics and patterns of green and dead trees (VEGU07, VEGU08, VEGU09, VEGU10, and VEGU11). Together, this direction would facilitate re-building a network of old forest habitat on the landscape with proper patch size, juxtaposition, and distribution.

Under Alternative B, treatments in the WUI would not be required to meet the new wildlife and vegetation standards where they are not consistent with the WUI hazardous fuel reduction objectives (WIGU18). Exemptions for all new standards would also give priority to the protection of life and property during an emergency, human health and safety concerns, reserved or outstanding mineral rights, or tribal rights or statutes. On the Forest, 105,460 acres (5 percent of the Forest) exist in WUIs in fire regimes that provide old-forest habitat (nonlethal, mixed1, and mixed2), and most of those acres (101,670) occur in mixed1 and mixed2 fire regimes (Table 3-34) (see also section 3.4 "Fire Management"). The hazardous fuel reduction exemption could affect restoration and maintenance on approximately 8 percent of Family 1 and/or 10 percent of Family 2 habitat across the Forest. The hazardous fuel reduction exemption would likely have a much smaller affect across the Forest. Eighty percent of the WUI acres on the Forest and 70 percent of the total Forest acres are located in MPCs 1.1, 1.2, 2.2, 3.1, 3.2, and 4.1c, which offer more restrictive management criteria that provides for wildlife habitat protection. Wildlife habitat protection criteria is not as strong when WUI areas overlay MPCs 4.2, 5.1, and 6.1; WUI acres in these MPCs represent 20 percent of the WUI acres on the Forest and 30 percent of the total acres on the Forest. The Forest typically treats fuels aggressively within the first 500 feet of structures and private land (not 1.5 miles as is used to define WUI), which would indicate a much smaller potential affected area of old-forest habitat on the Forest.

Actions that reduce the risk of fire in the WUIs, such as reducing vegetation density and managing for larger trees, may be compatible with wildlife habitat needs, but these actions may also reduce canopy cover, snags, and downed wood below that necessary to maintain old-forest and source habitat in some areas. The impact of managing these WUI acres in a manner inconsistent with Family 1 and Family 2 source habitat could result in localized effects to some species; however, these actions are unlikely to greatly impact the restoration and maintenance for Family 1 and Family 2 habitat since WUI acres represent a small amount of Family 1 and Family 2 habitat overall on the Forest.

In summary, Alternative B would generally produce the most large tree size class and old-forest habitat in all fire regimes, both inside and outside the WUI, although trends between alternatives are very similar. The number of acres in the large tree size class and of old-forest habitat (Families 1 and 2) would steadily increase, restoring the extent and distribution of these habitats across the Forest. Species dependent on the large tree size class and old-forest habitat would benefit from increasing patch sizes.

3.3.5 Family 1—Low-Elevation, Old-forest Habitat

3.3.5.1 Family 1 Source Habitat

Family 1 species depend on low-elevation, old-forest habitats within non-lethal fire regimes. Watersheds in the western portion of the Forest, particularly on the Fairfield Ranger District and the Sawtooth National Recreation Area (NRA), historically were key watersheds for providing Family 1 source habitat and currently exhibit the greatest departures. Overall, Family 1 habitat represents a small percentage of the Forest, much of which is found in the Sawtooth Wilderness and recommended wilderness in the Little Wood drainage. Large declines in habitat quantity have occurred for species dependent on these habitats, resulting in a need to maintain and restore Family 1 source habitat. Restoration opportunities may be limited in some areas on the Forest based on MPC prescriptions (i.e., MPC 1.1 and 1.2, existing wilderness and recommended wilderness), MA direction and access; however, Family 1 is of high conservation concern on the Forest.

Focal species for the Family 1 analysis are the white-headed woodpecker and Lewis' woodpecker. Family 1 species depend on lower-elevation, old forests with low-to-moderate canopies as source habitats (Wisdom et al. 2000). Family 1 species use PVGs 1 and 2 in the nonlethal fire regime. The white-headed woodpecker may also use drier habitat types in PVG 3 classified in the mixed 1 fire regime, and Lewis' woodpecker may use cottonwood (*Populus* spp.) riparian and aspen habitat types. Special features of Family 1 source habitat are large-diameter (>20 inches d.b.h.) snags and live trees.

Source habitats for Family 1 occur in many watersheds on the Forest (Figure 3-8), however low elevation pine habitats, which are critical for this family, primarily occur on the western side of the Forest, on the Fairfield Ranger District and the Sawtooth NRA. Historically, 20 of 68 watersheds on the Forest provided Family 1 source habitat. All 20 watersheds had <25 percent source habitat present at any one point in time (Filbert et al. 2011). Although Figure 3-8 identifies additional watersheds with Family 1 source habitat, these watersheds historically offered very small quantities of source habitat and were therefore eliminated from the analysis (Filbert et al. 2011).

Current source habitat for Family 1 is well below the HRV (Filbert et al. 2011). Family 1 species do not take advantage of departed conditions—as stands become denser due to management, fire exclusion or uncharacteristic fire disturbances, these species continue to lose habitat. Strong declines in Family 1 source habitat (>60 percent) have occurred in 11 of 20 watersheds; all on the northern districts of the Forest. Watersheds on the Minidoka Ranger District had increasing source habitat trends for Family 1, however these watersheds currently and historically provided very small quantities of Family 1 source habitat and do not provide low elevation ponderosa pine habitat required by white-headed woodpecker.

Past timber harvest practices have also caused declines in Family 1 source habitats. These management activities have resulted in the replacement of late-seral, low-density source habitats with higher density mid-seral forests. Fewer acres today represent the historical ponderosa pine forest, where large-tree forests dominated the landscapes. Past timber management practices favored removing large-diameter, early-seral species and reduced the abundance of large-diameter ponderosa pines in some locations on the Forest. Remnant forests with large-diameter ponderosa pine lack the habitat components present in old-forest habitats, such as large-diameter snags and logs, canopy gaps, signs of decadence, legacy trees, and understory patchiness (USDA Forest Service 2003a).

Past timber harvest also created road networks in some watersheds that persist today and facilitate removal of remnant large snags and logs by personal use fuelwood cutters. Hann et al. (1997) and Wisdom and Bate (2008) found lower densities of large-diameter trees, snags, and logs were associated with roaded areas than unroaded areas. High road densities (>1.7 miles per square mile) only occur in a few of the watersheds that provide Family 1 source habitat (Filbert et al. 2011). However, some watersheds that currently have high road densities also have a high weed susceptibility risk. Though the spread of invasive species is not a direct threat to Family 1 source habitat, it does contribute to further degradation of source habitat quality and can affect how fire acts on the

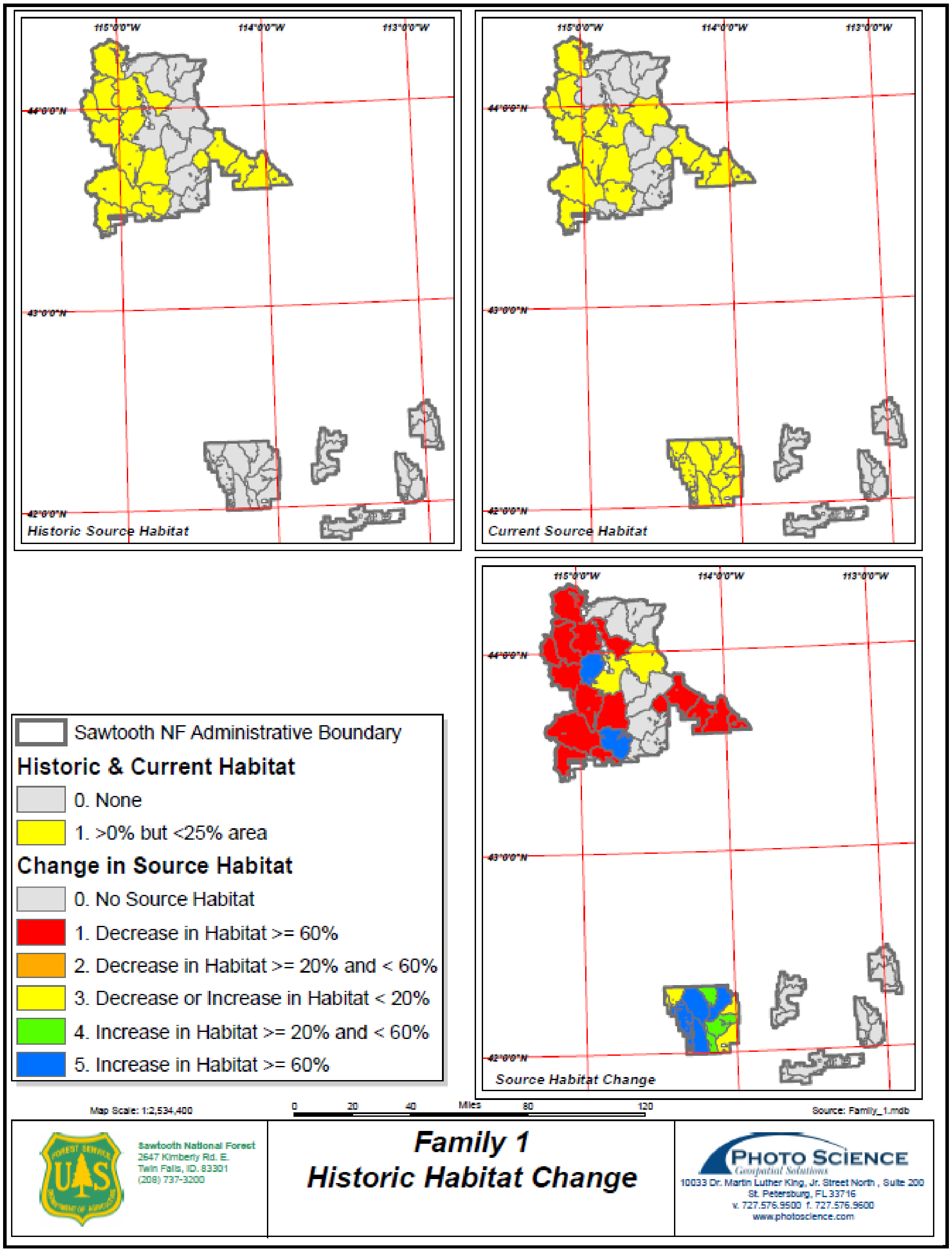

Figure 3-8. Historical, Current, and Relative Change in Source Habitat for Family 1 on the Sawtooth National Forest

landscape. High road densities in source habitat and on soils susceptible to invasive species increase the risk of noxious weed spread on the landscape. High road density and high weed susceptibility coincide in one watershed on the Fairfield Ranger District, which provides some of the best Family 1 source habitat on the Forest (Filbert et al. 2011).

Historically, low-elevation forests were subject to more frequent, nonlethal fire events; today, nonlethal and mixed1 fires that contribute to stand structure and patch dynamics occur at much lower levels (Filbert et al. 2011). Long-term fire exclusion has resulted in a gradual shift in stand composition from shade-intolerant tree species, such as ponderosa pine, to shade-tolerant species, such as Douglas-fir. In particular, PVGs 1 and 2 have experienced greater departures in vegetative composition than other PVGs in Family 1, moving from early-seral to mid-seral and climax species. In addition, Habitat Family 1 PVGs have experienced an increase in stand densities in the large and medium tree size classes, resulting in an increased risk of uncharacteristic wildfire and a loss of the large tree size class. In the past 20 years, stand-replacing fires have occurred across large areas, resulting in large patches of GFSS and sapling tree size classes with fragmented patches of large tree size class. This is a different patch dynamic than occurred historically in PVGs associated with Family 1 and has skewed the distribution of tree size classes toward smaller-sized trees.

Large-diameter snags are an important habitat feature in source habitat for species in Habitat Family 1. Though snag numbers appear to be at or above the HRV Forest-wide, snag distributions may be different than historical distributions. Areas with recent large-scale fires may have an abundance of snags, while more highly managed areas of the Forest are likely limited. The assumption was made for this analysis that the number of snags in areas without past timber management and changes in fire regimes are probably within historical levels and the number of snags in areas adjacent to roads are probably below historical levels (due to fuelwood cutting, timber harvest, and snag removal for safety concerns). The ability to create appropriate snag patches has been altered in areas where the past emphasis was on timber production.

The current lack of a strategy to prioritize and implement restoration opportunities for Habitat Family 1 reduces the Forest’s ability to support sustainable populations of species found in this family. A strategy that prioritizes restoration, inhibits activities that may preclude development of habitat, and identifies opportunities to reconnect habitat is necessary to avoid further degradation and to re-pattern Family 1 source habitat The strategy would also need to identify that the range of desired vegetative conditions outlined in Appendix A may be different than those needed for individual species.

Few acres of historical large-tree ponderosa pine forest remain today. Low-elevation, old forest habitat (Family 1) has undergone some of the largest declines of any habitat family on the Forest and has been identified as being of high conservation concern. Restoring Family 1 source habitat is a challenging task due to the substantial departure from historical conditions; some areas require active management to restore more desirable forest structure and composition, while other areas simply need time to allow new forests to develop. Additionally, many acres of Family 1 source habitat lie in restrictive MPCs (i.e., MPC 1.1 or 1.2, existing wilderness or recommended wilderness) where active restoration is not compatible with more restrictive MPC or MA direction.

3.3.5.1.1 Current Sustainability Outcome for Family 1 Habitat

The sustainability outcome for Habitat Family 1 is Outcome D (see section 3.3.3 for sustainability outcome definitions).

3.3.5.2 Environmental Consequences for Family 1 Habitat

Effects to old-forest habitat or large-diameter snags relative to Family 1 are discussed in the "General Effects to Families 1 and 2" section and are generally not repeated below.

3.3.5.2.1 Environmental Consequences of Alternative A

Wildlife habitat management under Alternative A would generally result from coordinating Forest activities and by implementing management activities targeted at improving habitat for wildlife needs. Under Alternative A, prescribed fire and wildland fire are available tools for maintaining ecosystem processes and vegetation components.

Alternative A includes MA direction to maintain or restore white-headed woodpecker habitat by 1) retaining or restoring the large ponderosa pine live tree and snag components in the *Dry Ponderosa/Xeric Douglas-fir* vegetation group (PVG 1); 2) using wildland fire to restore or maintain desired vegetation conditions and to reduce fuel loadings; and 3) implementing various noxious weed prevention and treatment. This MA direction, while not as encompassing as the direction under the proposed action alternative, would result in habitat benefits to a key species in Family 1, with subsequent benefits to other species in the family.

Currently, the large tree size class is below the HRV in all Family 1 PVGs, stand densities are greater than historical levels, and there are fewer acres in the low canopy class than would be expected under historical conditions. Both Alternative A and B have similar trends in large tree size class for Family 1 PVGs; however, Alternative B trends slightly higher, providing more acres in the large tree size class with time (see Table 3-26 and Table 3-27 in section 3.2, "Forested Vegetation Diversity and Fire Regime Condition Class"). Both alternatives reach the low end of the HRV in the low canopy cover class for PVG 1 by Decade 5. PVG 3 currently exceeds the HRV in the low canopy cover class by a few percentage points and will fall into the HRV by Decade 5. However, PVG 2 trends downward with time for either alternative, reducing the amount of the large tree size class in low canopy cover. PVG 2 does not reach the low end of the HRV in low canopy cover by Decade 10, likely because this PVG is found in management areas that restrict treatment options and favor passive restoration over active management. Also, given the Forest's small vegetation management program, the Forest would not likely be able to treat enough acres annually to prevent or reduce in-growth of understory trees in these stands, which would lead to an increase in canopy cover. In summary, both alternatives maintain very similar trends and percentages in the large tree size class and low canopy cover class over time.

Alternative A would provide for less old-forest habitat and does not have direction to maintain old-forest habitat. Old-forest habitat is an important source habitat condition that provides essential denning, nesting, foraging, and cover habitat for many wildlife species. Without direction to consider old-forest habitat, Alternative A would be less likely to foster development and distribution of this habitat on the landscape.

Wildlife species negatively affected by roads or road-associated factors—such as snag removal, fragmentation, displacement, or increased risk of mortality—would primarily be addressed via project-by-project mitigations under Alternative A. In MPC 5.1 and 6.1, direction currently regulates road development (i.e., construction or reconstruction), however it does not regulate public use of newly developed roads for vegetation management activities nor does it emphasize reclaiming temporary roads when vegetation activities are completed. Under Alternative A, mitigations would generally temporarily reduce risks from roads or road-associated factors but would be less likely to address the risks in a comprehensive or short- or long-term manner beneficial to terrestrial habitat. Alternative A also provides limited direction for the personal-use fuelwood program. The risk from continued loss of large-diameter snags near roads would remain.

Under Alternative A, vegetative species composition and structure would move toward desired conditions; however, important habitat components, such as old-forest and legacy trees, would not be expected to occur as often across the landscape. The ability to achieve mid- or large-scale objectives of Family 1 source habitat would be difficult under Alternative A due to the lack of a comprehensive strategy that emphasizes restoration and maintenance of critical habitat elements for Family 1.

3.3.5.2.1.1 Predicted Sustainability Outcome under Alternative A

Continued management would meet some of Family 1 species' needs. However, further loss of vegetative components, such as legacy trees and large-diameter snags, would continue without comprehensive planning. The sustainability outcome is predicted to move toward Outcome C (see section 3.3.3 for sustainability outcome definitions).

3.3.5.2.2 Environmental Consequences of Alternative B

Under Alternative B, restoration and maintenance within desired vegetative conditions is intended to provide a diverse habitat and reduce the risk from disturbance events. Approximating historical vegetation conditions provides a management strategy that is likely to sustain diverse focal species, even for those which we know little about (Hunter et al. 1988; Swanson et al. 1994; Landres et al. 1999). Restoration would be focused on those components of the ecosystem that are not functioning properly or are outside the range of desired conditions, while maintenance would work to preserve those components that are functioning properly. Similar to Alternative A, prescribed fire and wildland fire are available tools for maintaining ecosystem processes and vegetation components.

Family 1 source habitat (low elevation, old forest) has been identified as a habitat of high conservation concern given its large declines on the Forest. Development of a restoration strategy in Alternative B would emphasize conserving and restoring this habitat in order to move it toward the extent, distribution, and species compositions that existed historically. Combinations of treatments—mechanical, fire, and natural succession—would continue to be used to mimic historical disturbance processes and to restore forested areas and wildlife habitats.

Under Alternative B, Forest-wide direction has been proposed to minimize further loss of Family 1 source habitat and emphasize restoration. Direction has been proposed to focus maintenance and restoration activities in priority wildlife habitats, emphasize the importance of conserving and restoring old-forest habitat, and use a common set of conservation principles and indicators to identify and assess wildlife habitat at the project scale (WIOB13, WIST08, WIST09, and WIGU15). In addition, standards have been proposed (VEST03 and VEST04) that would require retaining forested stands in the large tree size class. Management actions would be permitted within these stands as long as the stands continued to meet the definition of a large tree size class. Management direction to retain ponderosa pine and Douglas-fir legacy trees and to re-create patch dynamics and patterns of green and dead trees would also be added or strengthened (VEGU07, VEGU08, VEGU09, and VEGU10).

Under Alternative B, treatments in the WUI may not meet wildlife habitat objective where the restoration goal would not be consistent with the WUI hazardous fuel reduction objective.[13] WUI acres in the nonlethal fire regime total 3,790 acres, which could be impacted under this exemption. However, hazardous fuel reduction objectives in the WUI would likely be compatible with old-forest restoration objectives.

High road densities are a concern in Family 1 source habitat in some MAs. A new objective in MA 8, where road densities are high, is included to reduce impacts of roads through road relocation, reconstruction, and obliteration in low-elevation pine habitats. A new guideline in MPCs 5.1 and 6.1 restricts public access to new roads developed for vegetation management purposes and states that these new roads should be reclaimed if not needed to meet future management objectives. Outside of wilderness, most of Family 1 source habitat falls within MPC 5.1. Additionally, a new objective (WIOB16) would emphasize reducing road-related effects on sensitive wildlife species and their habitats.

As with Alternative A, 55 percent of Family 1 habitat remains within passive management MPCs (1.2 and 4.1c) and existing wilderness (MPC 1.1). Fire would be used as a tool to maintain source habitats. Mechanical restoration treatments would not be compatible with management direction and therefore would not be used to restore Family 1 habitat in these MPCs.

As restorative management activities occur on the Forest, large tree and old-forest habitat would be maintained and additional acres would develop. Stands with structural attributes of the large tree size class or old-forest habitat would be managed to enhance those attributes and/or develop missing components—such as old forest, legacy trees, large-diameter snags, and logs.

3.3.5.2.2.1 Predicted Sustainability Outcome under Alternative B

Proposed direction and development of a restoration and prioritization strategy are expected to improve source habitats for Family 1 and associated species—building upon habitat patches, developing connectivity between patches, and retaining important source habitat attributes across the landscape. The sustainability outcome is predicted to improve to Outcome C (see section 3.3.3 for sustainability outcome definitions).

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[13] Proposed direction contains an exemption for all standards that gives priority to the protection of life and property during an emergency, human health and safety concerns, hazardous fuels objectives in WUIs, reserved or outstanding mineral rights, or tribal rights or statutes.

3.3.5.3 Species Associated with Habitat Family 1—White-headed Woodpecker

3.3.5.3.1 Current Condition

White-headed woodpeckers are a Forest Sensitive species and State of Idaho Species of Greatest Conservation Need. They are found mainly in open and mature ponderosa pine and mixed ponderosa pine/Douglas-fir forests in Idaho (Frederick and Moore 1991; Wisdom et al. 2000). A strong correlation exists between white-headed woodpecker presence and large-diameter (>20 inches d.b.h.) live and dead ponderosa pines snags (Frederick and Moore 1991; Blair and Servheen 1995; Dixon 1995a, 1995b, 1998). Densities of white-headed woodpeckers have been shown to increase relative to the presence of old-forest ponderosa pine (Dixon 1995b). Important source habitat components are an abundance of large-diameter ponderosa pine trees with prolific seed production, a relatively open canopy, and availability of snags for nest cavities (Garrett et al. 1996). On the Forest, PVGs 1 and 2 with a historically nonlethal fire regime develop large ponderosa pine tree size classes and open canopy cover associated with this species. PVG 3 can also develop habitat cover types with ponderosa pine in the large tree size class and an open canopy, but the low canopy cover condition is not as common.

Living and dead ponderosa pine trees in the largest diameter classes are typically used by the white-headed woodpecker for nesting, roosting, and foraging, either for insect gleaning or seed collection from cones. White-headed woodpeckers feed on conifer seeds during the fall and winter. Cone crops are different from year to year, and large trees usually produce more cones than small trees. During other times of the year, flying insects are important food sources (Blair and Servheen 1995). Nests are usually excavated in large-diameter snags with a moderate degree of decay (Bull et al. 1986; Bull et al. 1997). Nesting snags are typically >20 inches d.b.h. (Frederick and Moore 1991; Dixon 1995a).

White-headed woodpeckers are considered a year-round resident, primarily on the far western portion of the Fairfield Ranger District and Sawtooth NRA. On the Forest, white-headed woodpeckers have recently been identified in Abbot and Barker gulches in the South Fork Boise River. No reliable trend data exist for white-headed woodpeckers in Idaho (Sauer et al. 2008). Occurrence data from targeted Forest surveys, incidental Forest observations, and IDFG databases show 13 records of white-headed woodpecker observations on the Forest since 1994 (Filbert et al. 2011). Wisdom et al. (2000) estimate a 62 percent reduction in source habitat from historical to current times for the white-headed woodpecker within the Central Idaho Mountains Ecological Reporting Unit (ERU), which includes the northern districts of the Forest and the Sawtooth NRA. Similar declines have been shown on the Forest (Figure 3-9); however, the Forest historically did not provide large quantities of white-headed woodpecker habitat and no watershed provided more than 25 percent source habitat (Figure 3-10). White headed woodpecker source habitat occurs in 10 percent (7 out of 68) of the watersheds on the Forest. Declines in source habitat >60 percent from historical conditions have occurred in all watersheds on the Forest that provide source habitat (Figure 3-9).

Human activities have been a primary agent of change for white-headed woodpecker habitat during the last 100 years (Garrett et al. 1996; Sloan 1998; Morgan and Parsons 2001). Changes in source habitat have occurred on the Forest from selective harvesting of

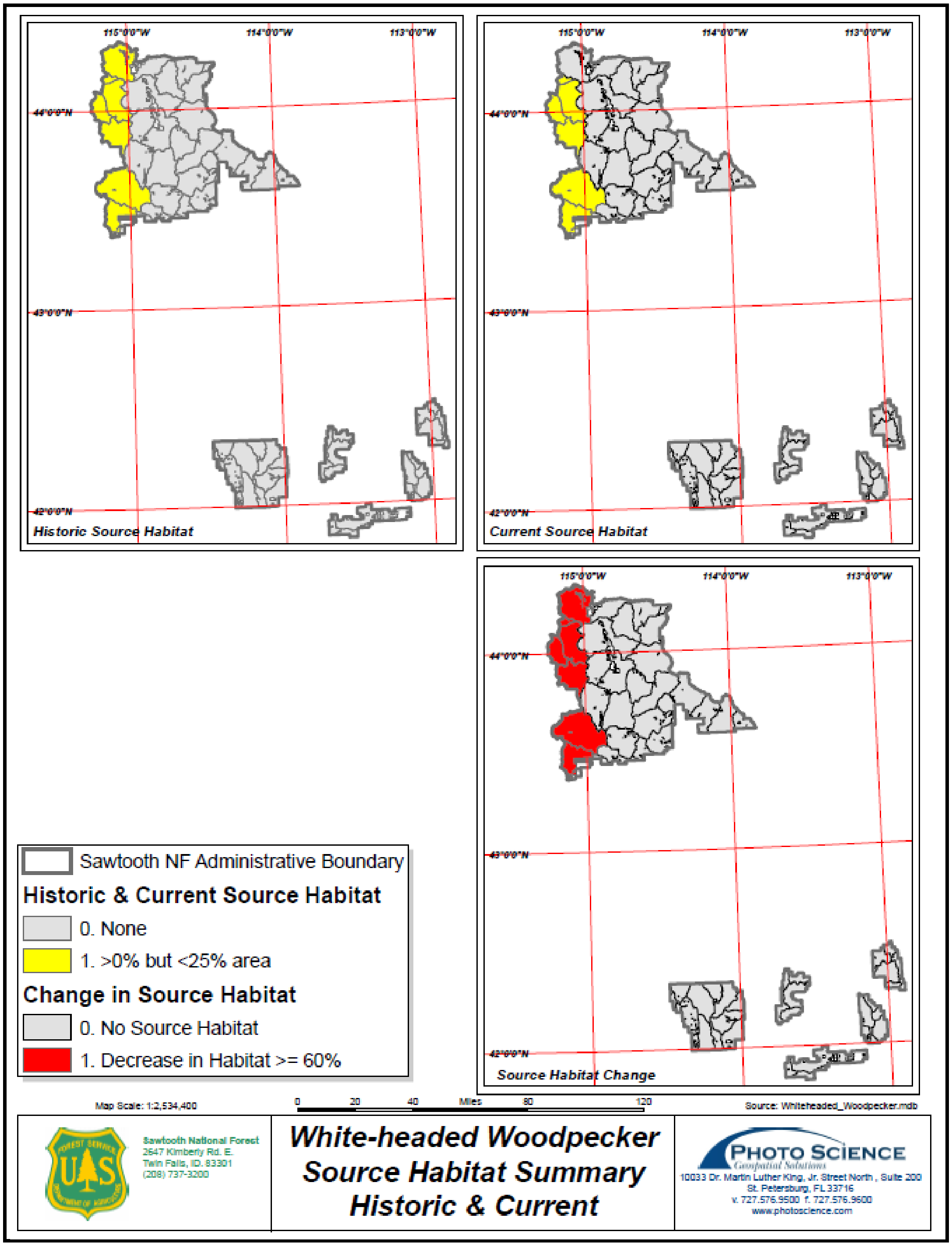

Figure 3-9. Historical, Current, and Relative Change in White-headed Woodpecker Source Habitat on the Sawtooth National Forest

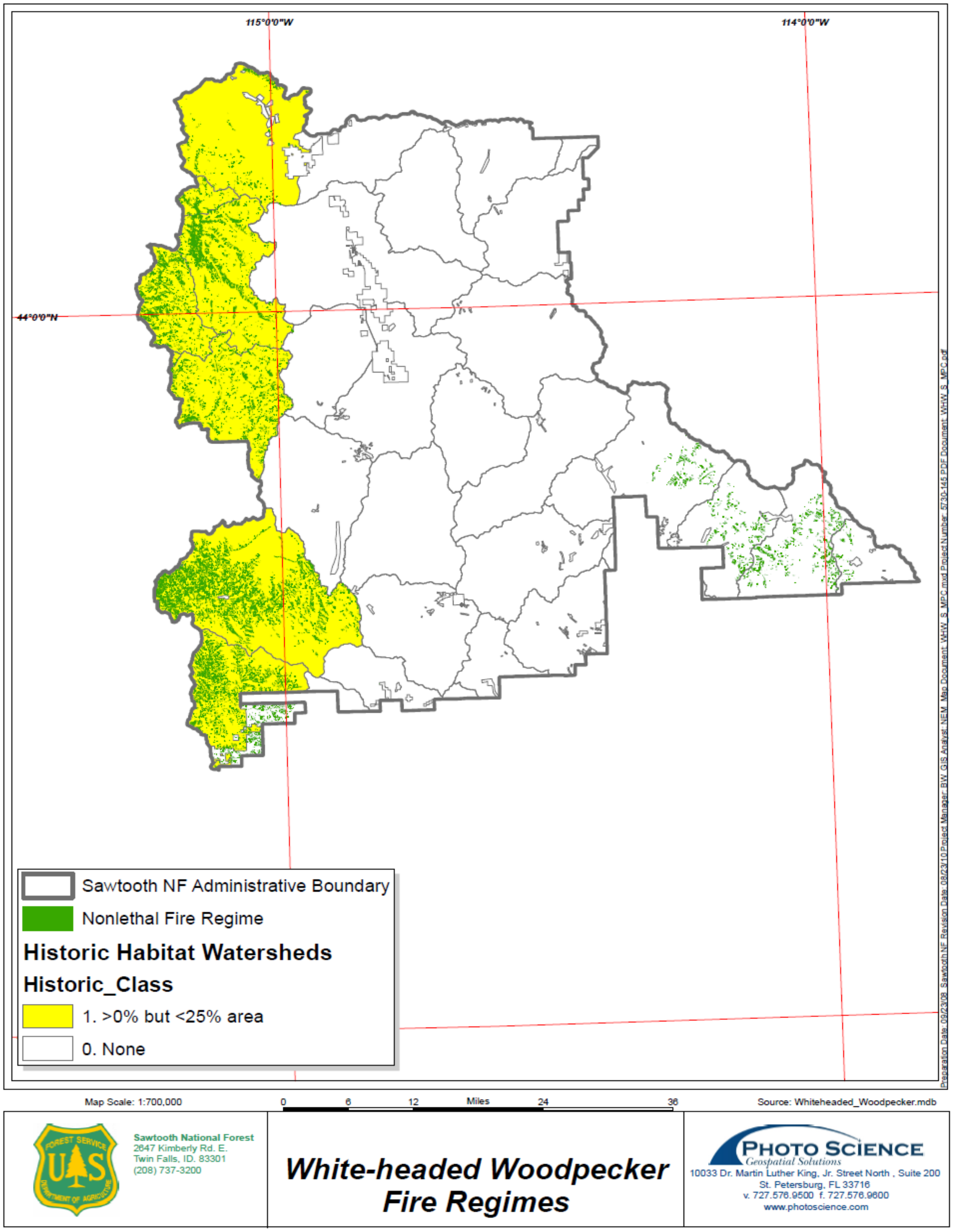

Figure 3-10. Watersheds Providing Historical White-headed Woodpecker Source Habitat and Fire Regimes Capable of Providing White-headed Woodpecker Source Habitat on the Sawtooth National Forest

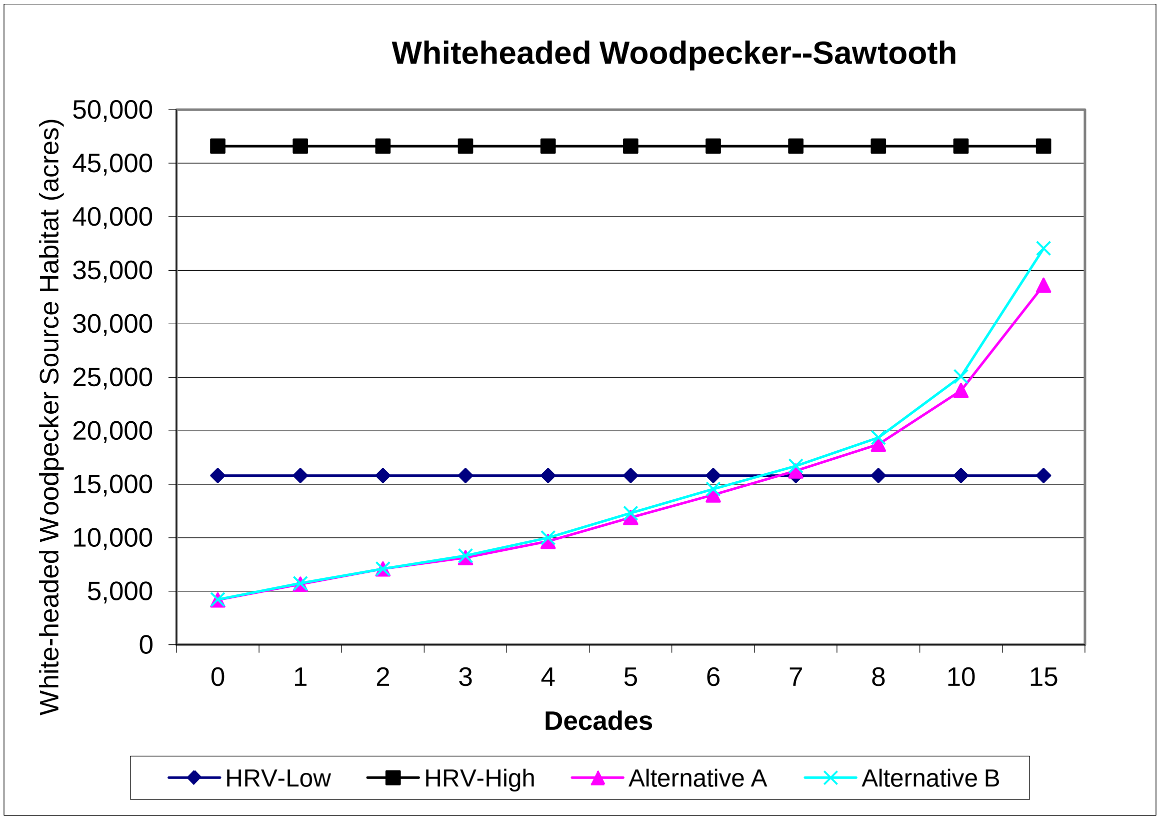

Figure 3-11. White-headed Woodpecker Source Habitat Trend on the Sawtooth National Forest by Alternative

large-diameter ponderosa pines, snag removal in harvest areas, uncharacteristic stand-replacing wildfires during the last 20 years, and a change in composition and density of remaining stands because of fire exclusion. [14]

Source habitat conditions for the white-headed woodpecker are greatly departed from the HRV. There is currently an estimated 4,180 acres of source habitat, which is below the low end of the HRV by more than 60 percent (Figure 11). In addition, habitat patches on the Forest are isolated (Figure 12). The area required to support white-headed woodpeckers in fragmented landscapes is larger than in landscapes with contiguous habitat (Dixon 1995a). Median sizes of home ranges in fragmented mixed-conifer habitat have been documented as 845 acres (342 ha), compared with 523 acres (212 ha) in contiguous ponderosa pine habitat (Dixon 1995a). White-headed woodpecker current source habitat (Figure 3-12) does not reflect a patch dynamic of extensive source habitat patches with inclusions of non-source habitat as would be expected under the nonlethal and mixed1 fire regimes. Instead, source habitat patches are isolated across a landscape of non-source habitat. White-headed woodpecker source habitat patches should be relatively homogenous with inclusions generally <1 acre in non-lethal fire regimes or ranging from 1 to 600 acres in mixed1 fire regimes. Figure 3-10 shows the extent of the

[14] The types and causes of source habitat changes are those described in section 3.3.5.1, Family 1 Source Habitat.

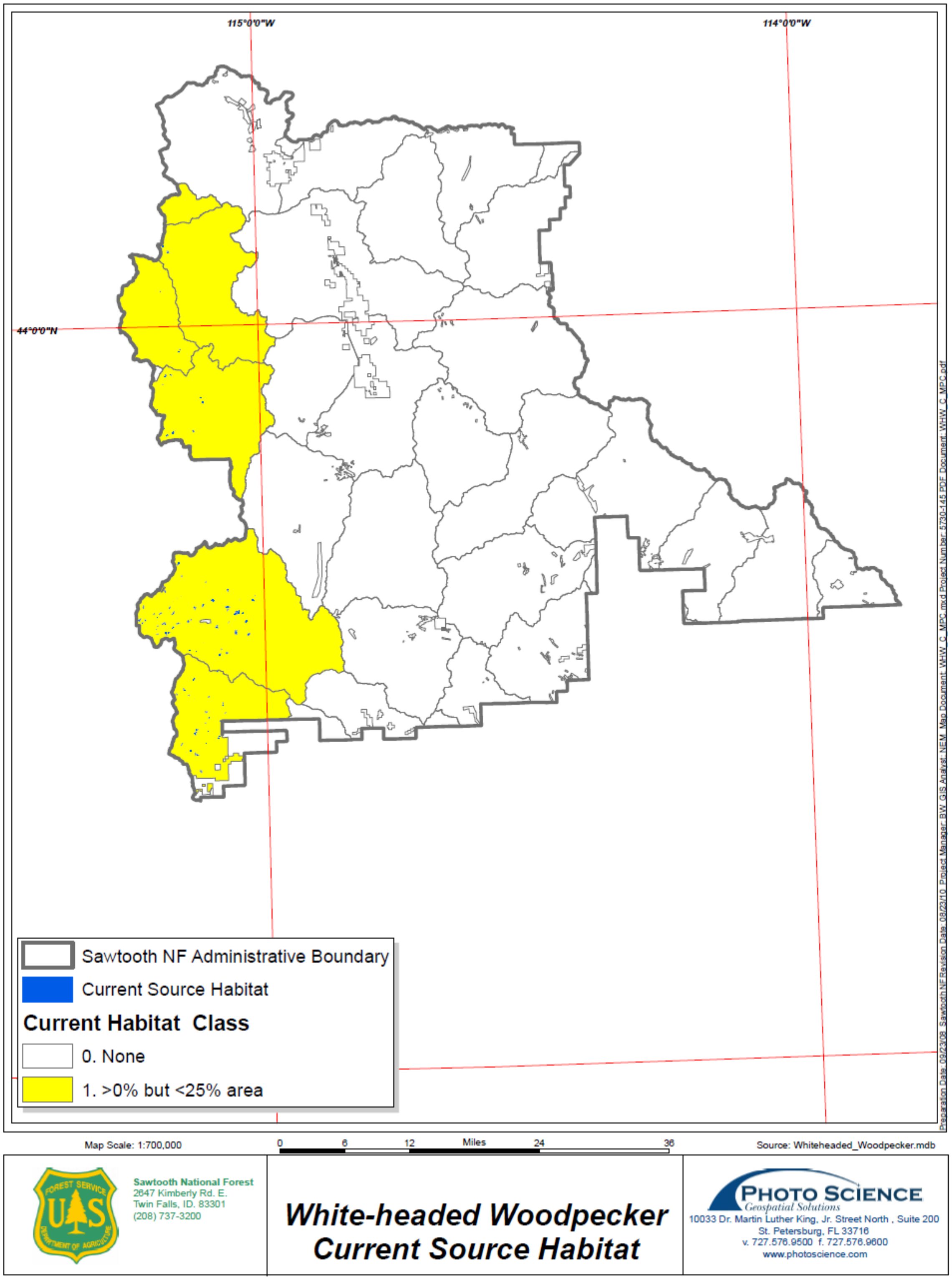

Figure 3-12. Current White-headed Woodpecker Source Habitat on the Sawtooth National Forest

nonlethal fire regime (PVGs 1 and 2) that can develop source habitat. While not all structural conditions exhibited by these PVGs (in the nonlethal fire regime) provide source habitat at any one time, given the dominant tree species in these vegetation groups and the associated fire regimes, conditions were historically in larger size classes with more open canopy conditions and at much greater extent than occurs today.

3.3.5.3.1.1 Current White-headed Woodpecker Sustainability Outcome

The sustainability outcome for the white-headed woodpecker is Outcome D (see section 3.3.3 for sustainability outcome definitions).

3.3.5.3.2 Environmental Consequences

3.3.5.3.2.1 Environmental Consequences of Alternative A

Environmental consequences of Alternative A to the white-headed woodpecker would be the same as those discussed for Habitat Family 1 (section 3.3.5.2). Much of the white-headed woodpecker source habitat occurs in the Sawtooth Wilderness which is managed under strict wilderness standards; active restoration treatments would not be consistent with wilderness management direction. The existing Forest-wide standard WIST01 requires maintenance of at least 20 percent of acres within each forested PVG found in a watershed in the large tree size class; however this direction does not account for the source habitat needs of white-headed woodpecker.

Other Forest direction (MA 8), identifies the need to retain or restore habitat by retaining or restoring ponderosa pine large live tree and snag components. However, Alternative A would not provide new direction to address retaining forest stands identified as old forest, ponderosa pine legacy trees, or large-tree stands.

Under Alternative A, the increasing trend in source habitat as shown in Figure 3-11 would improve conditions for the white-headed woodpecker; however, the low end of the HRV would not be reached for at least 70 years. Because Alternative A lacks a restoration strategy, networks of connected habitat would be less likely to develop. Given the trajectory and lack of Forest Plan direction on how best to spatially re-pattern patches to benefit the species, white-headed woodpecker distribution of may remain patchy and uncertain.

<u>Predicted White-headed Woodpecker Sustainability Outcome for Alternative A</u>

Over time, this alternate would trend this species in a positive direction. The sustainability outcome for Alternative A is Outcome C (see section 3.3.3 for sustainability outcome definitions).

3.3.5.3.2.2 Environmental Consequences for Alternative B

Environmental consequences of Alternative B to the white-headed woodpecker would be the same as those discussed for Habitat Family 1 (section 3.3.5.2). Under Alternative B the low end of the HRV is entered in Decade 6, approximately 5 years before Alternative A (Figure 3-11), which may be negligible in terms of time. Both alternatives would develop more source habitat acres and result in movement into the low end of the HRV. Alternative B would increase source habitat under the guidance of a short- and long-term restoration strategy, thereby better addressing source habitat patch size and distribution rather than just habitat quantity. Although both alternatives display similar trends, Alternative B would address the immediate concerns of habitat loss and reduce risk factors that may impede restoration goals.

Predicted White-headed Woodpecker Sustainability Outcome for Alternative B

Under this alternative, the current sustainability outcome would be Outcome C (see section 3.3.3 for sustainability outcome definitions).

3.3.6 Family 2—Broad-elevation Old-forest Habitat

Habitat Family 2 species depend on broad-elevation, old-forest habitats. Broad-elevation, old forest habitat has declined on the Forest; however, source habitat for most focal species associated with this family remains within the HRV. Fewer large tree acres exist and habitats are generally denser than they were historically. Restoration actions required for Family 2 source habitat are similar to those for Family 1 (see section 3.3.5.1); however, Family 2 species primarily use moderate canopy cover conditions.

Habitat Family 2 contains numerous focal species, most of which are Forest sensitive species or MIS. Family 2 species have experienced large declines in source habitat, although total quantities of source habitat for most species remain within or near the HRV (Filbert et al. 2011). Boreal owl and flammulated owl are two species whose source habitat is below the HRV. When departed habitat conditions that these species use are included, boreal owl source habitat moves into the HRV; flammulated owls do not utilize departed habitat conditions and their source habitat remains within 20 percent of the HRV.

The array of PVGs and structural classes that provide source habitat for Family 2 species is broader than for species in Family 1. All 11 focal species associated with Family 2 favor either large or medium tree size classes, and most species (10 of 11) utilize moderate density canopy cover conditions. This broader association with tree sizes and canopy covers is advantageous for these species when disturbance processes are disrupted and certain habitat components, such as large tree, fall below the HRV. Family 2 species more readily utilize departed landscape conditions than species in Family 1.

Many Family 2 source habitat components (e.g., old-forest conditions, large snags, and logs) have been identified as being of conservation concern and remain a priority for restoration on the Forest. Restoring fire disturbance regimes, large tree size class, and moderate canopy cover class, as well as retaining large-diameter snags and logs, would help retain source habitat attributes and maintain distribution and abundance of species associated with Family 2 (Filbert et al. 2011). Restoring Family 1 source habitat could reduce the quality and quantity of habitat for Family 2 species; however, broad-elevation forests are widespread and would continue to mature and develop attributes that would provide Family 2 source habitat on the Forest. Management objectives for Families 1 and 2 are often compatible; still, managers would need to ensure Family 2 habitat connectivity and distribution are maintained.

3.3.6.1 Family 2 Source Habitat

Family 2 species use late-seral, multi- and single-storied montane forests as source habitat (Wisdom et al. 2000). Family 2 source habitats overlap those of Family 1 but encompass a broader array of cover types and elevations. Special features of Family 1 source habitats are snags, often large-diameter snags (>15 inches d.b.h.), and logs. Some species depend on juxtaposition of certain seral stages, while others express a negative response to older forest structural stages adjacent to younger structural stages.

Source habitats for Family 2 occur throughout the Forest (Figure 3-13). Historically, watersheds dominated by nonforest habitats tended to have <25 percent source habitat for Family 2. These watersheds are mainly located on the south end of the Forest on the Minidoka Ranger District. The remainder of the watersheds, on the north end of the Forest, historically had ≥25 percent source habitat, however many of these watersheds have a large representation of nonforest habitats as well. Family 2 source habitat has been in decline, especially on the north end of the Forest; however, most source habitats for species associated with Family 2 remain within the HRV. Unlike with Family 1, numerous watersheds have neutral or increasing trends and most Family 2 species can utilize departed habitat conditions.

As described in section 3.2, "Forested Vegetation Diversity and Fire Regime Condition Class," fire exclusion, changes in insect and disease infestation dynamics, and other uses including timber harvest activities have affected Family 2 source habitats. These factors have changed the community structure and spatial distribution of old-forest habitat patches, particularly in the interface between early-seral stages such as GFSS and other communities in lower elevations.

Past timber harvest activities on the Forest have altered the stand conditions in some areas on the Forest, including understory communities (Steele and Geier-Hayes 1993). Timber and personal fuelwood gathering also created a road network that persists today and facilitates the removal of remnant snags and logs. High road densities (>1.7 miles per square mile) do not occur in any of the watersheds that historically had ≥25 percent Family 2 source habitat; high road densities occur in many of the watersheds in the Cassia Division of the Minidoka Ranger District on the south end of the Forest.

Fire exclusion is another cause for Family 2 source habitat declines. Fire suppression has limited the number and extent of fire over the past century. Altered fire regimes have resulted in increased stand density and changed species composition. Recent large fires (in the past 20 years) have also affected the distribution of Family 2 source habitats. Although larger fires are more typical of the mixed2 and lethal fire regimes, recent large fires have reduced source habitat and created large snag patches in the watersheds where they have occurred.

Changes in insect and disease infestation dynamics have impacted Family 2 source habitats. Recent mountain pine beetle and other insect infestations have reduced the amount of medium and large trees stands on the Forest. Although these outbreaks have been widespread across the northern watersheds on the Forest, snags and logs remain numerous in these areas.

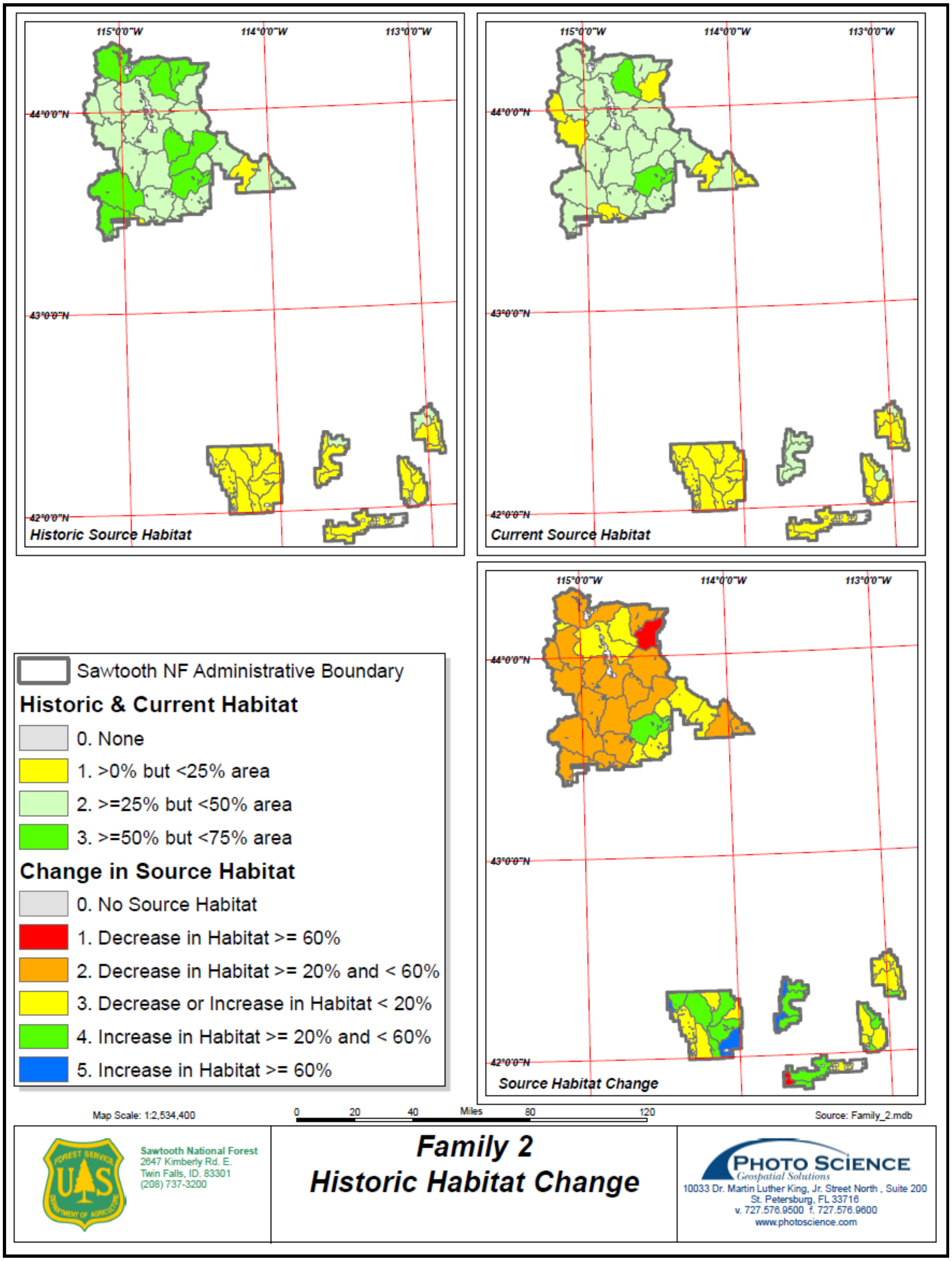

Figure 3-13. Historical, Current, and Relative Change in Family 2 Source Habitat on the Sawtooth National Forest

Snags, especially large-diameter snags, are an important source habitat feature for Family 2 species. Though snag numbers appear to be at or above the HRV Forest wide, snag distributions may be different than historical levels (Filbert et al. 2011). Snag densities on the Forest are difficult to determine and data usually reflect specific activity areas and/or disturbance areas rather than a comprehensive Forest-wide assessment. An assumption of this analysis is that snags numbers are below historical levels in roaded areas due to fuelwood cutting and past timber management and above historical levels in large fire areas within nonlethal and mixed1 fire regimes. Snags are likely also below historical numbers in WUI areas that are more intensely managed.

3.3.6.1.1 Current Sustainability Outcome for Family 2

Most species in Family 2 rank a sustainability outcome of B, although a few have a sustainability outcome of A. Because any family outcome could be no higher than the lowest focal species outcome within the family, the sustainability outcome for Family 2 is Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.2 Environmental Consequences for Family 2 Habitat

3.3.6.2.1 Environmental Consequences of Alternative A

Wildlife habitat management under Alternative A would generally result from coordinating Forest activities and by implementing management activities targeted at improving habitat for wildlife needs. Under Alternative A, prescribed fire and wildland fire are available tools for maintaining ecosystem processes and vegetation components.

Effects regarding the management of snags, old forest, roads, and road improvement would be similar to those for Family 1 in Alternative A. No new direction would be proposed to address these or other concerns. Without direction to consider old-forest habitat and large snags, Alternative A would be unlikely to foster development of this habitat on the landscape, even as the extent of the large tree size class increases.

More acres of the Forest are aging and increasing in size class and density than can be managed with silvicultural or fire tools. The extent and quantity of broad-elevation, old-forest habitat would likely develop despite management activities rather than from them. Those acres in uncharacteristically dense conditions would likely become vulnerable to wildfires. Broad elevation, old-forest habitat in the mixed2 and lethal fire regimes are adapted to these kinds of processes and would continue to cycle through early, mid-, and late-seral stages.

Family 2 habitat on low-elevation and/or more intensively managed acres (typical of WUI areas) may remain of lesser quality (e.g., large-diameter snags and logs would be absent) than more remote areas. This difference would result from of a lack of direction under Alternative A to guide maintenance and restoration of old-forest habitat and retention of large diameter snags and to address risk factors such as roads in Family 2 source habitat.

3.3.6.2.1.1 Predicted Sustainability Outcome under Alternative A

Continued management would broadly meet Family 2 species needs. Forest wide, the sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.2.2 Environmental Consequences of Alternative B

As described in section 3.3.4.1.4, direction has been proposed under Alternative B to maintain existing old-forest and large tree habitat and minimize further loss of these habitat components. The large tree size class provides important habitat for a variety of species and can provide a starting point for restoring old-forest source habitat and augmenting patches across the landscape. Direction to retain ponderosa pine and Douglas-fir legacy trees, to re-create patch dynamics and patterns of green and dead trees and to manage the personal use fuelwood program in order to retain important habitat attributes (e.g., larger logs and snags), has also been proposed (WIGU15, VEGU07, VEGU08, VEGU09, VEGU10, and VEGU11).

As management activities are implemented under Alternative B, large tree and old-forest habitat would be maintained and developed. Stands with structural attributes of the large tree size class or old forest would be managed to enhance those attributes and/or develop missing components, such as large-diameter snags, understory heterogeneity, or the appropriate species composition. Prescribed fire and wildland fire are available tools for maintaining ecosystem processes and vegetation components under Alternative B.

Proposed direction in Alternative B provides for a WUI exemption, in order to meet hazardous fuel objectives in these areas. Approximately 105,000 acres of Family 2 source habitat (10 percent of total forested acres) exist in WUIs (as defined by the 1.5 mile buffer) where fuel management activities may result in outcomes inconsistent with Family 2 habitat conservation. WUI projects that occur in the mixed2 fire regime (approximately 53,500 acres or 5 percent of total forested acres) would likely be the least compatible with restoration or maintenance of old-forest habitat, since density and canopy cover could be reduced below what historically occurred. As stated in section 3.3.4.1.4, WUI treatments that may be incompatible with habitat conservation are primarily located in the defensible space zone, which typically is defined as a 500-foot buffer from structures and other values at risk. Therefore, any application of the WUI exemption would affect much less Family 2 source habitat than identified above. Additionally, a new guideline (WIGU18), which would require project design to meet wildlife conservation and restoration objectives where resource objectives are compatible, would help reduce overall negative impacts to source habitat.

Road–related effects for Family 2 source habitat are similar to those described for Family 1 (section 3.3.5.2.2).

Family 2 wildlife species habitat would benefit from the incorporation of a spatial restoration and prioritization strategy, new forest management direction, and application of the six conservation principles to guide project analyses under Alternative B. The risk to species sustainability would be lower than under Alternative A.

3.3.6.2.2.1 Predicted Sustainability Outcome under Alternative B

Proposed direction is expected to provide for Family 2 species and their habitats in a well distributed pattern that would allow for the interaction of individuals across the landscape. Habitats are expected to continue to fluctuate within the HRV. The sustainability outcome is predicted to remain in Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.3 Species Associated with Habitat Family 2—Boreal Owl

3.3.6.3.1 Current Condition

Boreal owls are a Forest sensitive species and state of Idaho species of greatest conservation need. Boreal owls are found year-round in high-elevation (generally above 5,000 feet) spruce–fir, mixed conifer, and aspen forests in Idaho. Source habitat includes old-forest and unmanaged young-forest stages of subalpine and montane forests and riparian woodlands (Wisdom et al. 2000). Special habitat features for boreal owl source habitat are snags with cavities for nesting habitat and logs for prey habitat. Logs support abundant lichens and fungal sporocarps and provide important food and cover habitat for southern red-backed voles (*Clethrionomys gapperi*), the principal prey of boreal owls (Hayward 1994).

Boreal owls are sensitive to heat stress and utilize roost sites with high canopy cover and a high basal area for thermoregulation (Hayward 1997). Voles are the preferred prey of boreal owls and may comprise as much as 75 percent of the boreal owl's diet (Palmer 1986; Hayward et al. 1993). Prey availability may regulate owl abundance in portions of its range and influence seasonal movements and fluctuations in reproductive success (Hayward and Hayward 1993). Boreal owls are secondary cavity nesters that use old woodpecker cavities in live trees and snags. Seasonality of home range use affects size of the territory.

Since 1992, 61 records of boreal owl exist on the Forest; primarily from the Ketchum Ranger District and the Sawtooth NRA (Filbert et al. 2011). No reliable population trends are available for this species.

Like many Family 2 species, the boreal owl can take advantage of departed vegetative conditions (Filbert et al. 2011). Habitat for this species is generally within the mixed2 and lethal fire regimes where disturbance intervals may be long (70–300 and 100–400 years, respectively).

Vegetative communities that could provide source habitat conditions include PVGs 3, 4, 7, and 11 above 5,000 feet (Filbert et al. 2011). Historical fire regimes in these PVGs include mixed1, mixed2, and lethal. Boreal owls utilize both the medium and large tree size classes and moderate and high canopy cover class (Filbert et al. 2011).

Source habitat conditions for the boreal owl were modeled and include departed vegetative conditions. Source habitat is found throughout the Forest but is most concentrated on the north end (Figure 3-14). Total quantity of source habitat is above the low end of the HRV (Figure 3-15). Because departed conditions are structurally and compositionally similar to historical habitat, including departed conditions better represents the total quantity of source habitat on the Forest for the boreal owl.

Watersheds with the most abundant boreal owl habitat historically occurred on the east side of the Sawtooth NRA and on the Fairfield and Ketchum Ranger Districts (Filbert et al. 2011, Figure 3-14). Boreal owl habitat declines of >60 percent have occurred in most watersheds on the Sawtooth NRA. All but one watershed on the Ketchum and Fairfield districts have habitat declines between 20 and 60 percent (Figure 3-14). Limited source habitat historically existed on the south end of the Forest (Minidoka Ranger District); however, habitat has generally declined in these watersheds as well (Figure 3-14) (Filbert et al. 2011). Even with an overall downward trend, boreal owl source habitat remains within the HRV when departed conditions are included in the model (Figure 3-15). Source habitat patches remain large and continuous enough to provide boreal owl territories and interaction between individuals (Filbert et al. 2011).

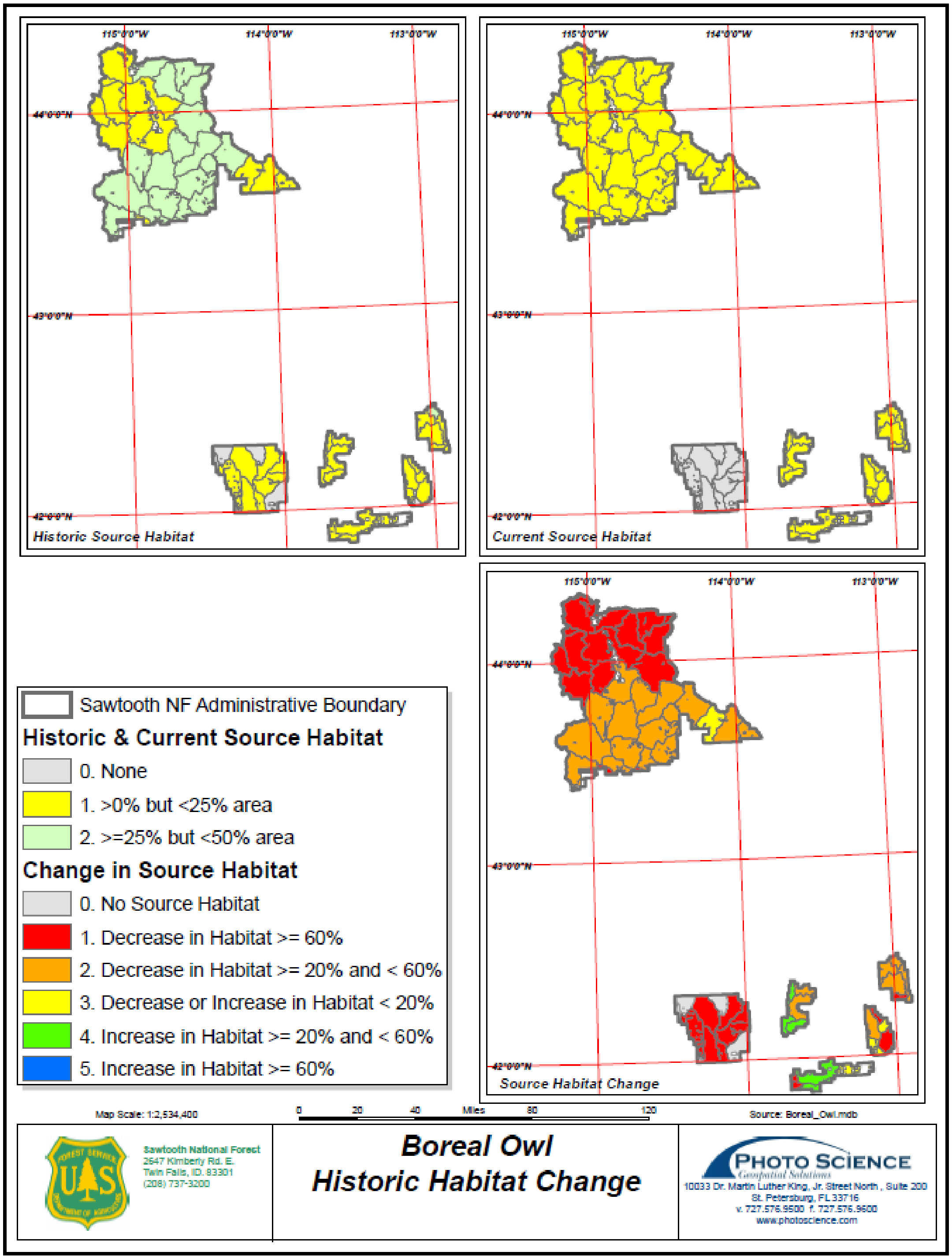

Figure 3-14. Historical, Current, and Relative Change in Boreal Owl Source Habitat on the Sawtooth National Forest

Forest management activities that affect the abundance of large snags and logs, such as fuel management and timber harvest, can affect boreal owl habitat quality. A lack of large cavities can eliminate areas available for nesting, yet these areas may be capable of providing roosting and/or foraging habitat, particularly if sufficient logs are present for prey habitat. Forest management activities, such as fuel management and timber harvest, do not appear to be limiting boreal owl source habitat on the Forest (Filbert et al. 2011).

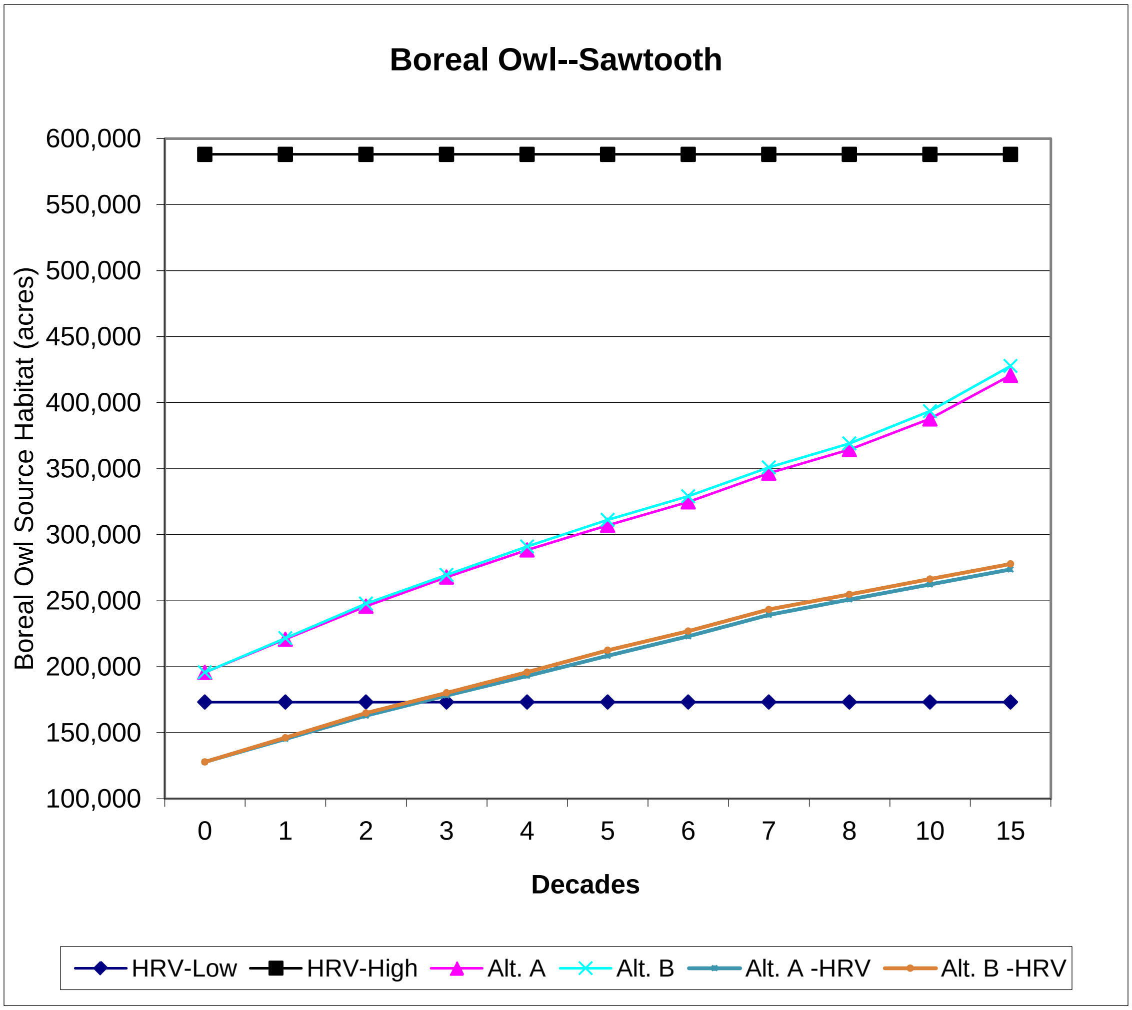

Figure 3-15. Boreal Owl Source Habitat Trend by Alternative with and without Departed Conditions on the Sawtooth National Forest

Fire and insect epidemics can influence boreal owl source habitat quantity and distribution. Recent large wildfires and beetle epidemics in forests on the Sawtooth NRA have contributed to the declining trend in source habitat by reducing large and medium sized trees and moderate and high canopy covers. Conversely, snags in these areas have increased. For the boreal owl, which depends on snags for nest sites, road-associated factors, such as snag removal, may be a concern at finer scales but do not appear to be a mid-scale concern. Road density remains either low or moderate in source habitat across the Forest and much of the affected areas occur in the lodgepole pine community, which provides limited and marginal habitat opportunities for boreal owl (Filbert et al. 2011).

3.3.6.3.1.1 Current Sustainability Outcome for Boreal Owl

The sustainability outcome for boreal owl is Outcome B (sustainability outcomes are defined in section 3.3.3).

3.3.6.3.2 Environmental Consequences

3.3.6.3.2.1 Environmental Consequences of Alternative A

Alternative A does not include direction to retain large-tree stands, legacy trees, or old-forest habitat as described in section 3.3.6.2.1. A lack of direction addressing the need to retain and promote development of these habitat components could affect development and availability of nesting habitat and characteristics conducive to quality prey habitat. Although forested stands would continue to move into the larger tree size class over time, without direction to consider old-forest habitat, Alternative A would be less likely to actively foster development of this habitat on the landscape. Boreal owls can also use the medium tree size class in the moderate and high canopy cover, as long as trees are large enough for primary excavators to create cavities. The absence of specific large tree direction would affect the boreal owl less than other species.

Limited timber and fuels management occurs on the Forest, especially in high-elevation PVGs typical of boreal owl source habitat. Old-forest and large-tree conditions would likely develop regardless of Forest Plan direction and the quantity of source habitat is predicted to increase across the Forest over the next 10 decades (Figure 3-15). Alternative A is unable to fully account for the presence of characteristics such as snags, logs, and legacy trees. In addition, as evidenced by the current condition of habitat across the Forest, wildfire will likely continue to affect boreal owl habitat and could offset projected modeled increases.

While snag numbers are within or exceeding the HRV across the Forest (primarily due to fire and insect and disease events) snags vary across time and space (see section 3.2, “Forested Vegetation Diversity and Fire Regime Condition Class”), and distribution in green stands may be below desired conditions. Roaded, managed, and wildfire areas are examples of where existing snag and log numbers may be quite different than those reported Forest wide. Desired conditions for snags and logs are expected to provide for the needs of wildlife species dependent on these structures in the long term. Without additional emphasis on retaining large diameter snags, Alternative A would likely be less capable of conserving existing large-diameter snags across the landscape, and restoring this habitat component would take longer than under Alternative B.

Alternative A is predicted to maintain source habitat within the HRV over time (Figure 3-15). Disturbance events are expected to continue influencing the spatial distribution of habitats. Boreal owl habitat in the mixed2 and lethal fire regimes would continue to cycle through early, mid-, and late-seral stages.

<u>Predicted Boreal Owl Sustainability Outcome for Alternative A</u>

Continued management is expected to meet boreal owl source habitat needs and maintain source habitat amounts within the HRV. The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.3.2.2 Environmental Consequences for Alternative B

Under Alternative B, source habitat (including departed conditions) remains within the HRV and continues on a positive trend over the next 10 decades, which is similar to Alternative A trends (Figure 3-15). While differences between alternatives are not apparent in the projections, Alternative B would maintain and move slightly more acres into large tree and old-forest habitat than Alternative A.

In Alternative B there are approximately 53,000 acres in the mixed2 fire regime within WUI areas. These areas would likely be the least compatible with restoration or maintenance of old forest conditions. However, important wildlife habitat attributes are typically maintained outside of the 500-foot buffer zone of communities and developments, and few old-forest acres are included within the buffer zone. A new guideline (WIGU18) has been proposed that would require projects to be designed to meet wildlife conservation and restoration objectives where resource objectives are compatible.

New direction would maintain late-seral multilayer forest attributes in managed areas, including large trees, large snags, and large logs (see section 3.3.6.2.2). Most importantly, Alternative B would increase source habitat under the guidance of a long-term restoration strategy, thereby better addressing source habitat quality concerns (patch size and distribution) rather than just the quantity, although such benefits would not solely be focused in boreal owl source habitats.

<u>Predicted Boreal Owl Sustainability Outcome for Alternative B</u>

Under this action alternative, source habitat would remain within the HRV and important attributes of boreal owl source habitat would be maintained. The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.4 Species Associated with Habitat Family 2—Fisher

3.3.6.4.1 Current Condition

The diverse diet of the fisher probably requires a mix of forest habitat types to provide optimal foraging conditions (Arthur et al. 1989). In the Rocky Mountains, fishers show a preference for late-seral coniferous forests (Jones and Garton 1994). Late-seral forests are used preferentially during summer months while early or late-seral forests may be used in winter (Jones 1991). In Idaho and Montana, mesic forest habitats at low or mid elevations are important fisher habitat (Jones 1991; Heinemeyer 1993). Deep snow accumulation appears to limit fisher movement and distribution (Arthur et al. 1989; Aubry and Houston 1992; Heinemeyer 1993). Fishers tend to select forested stands within a relatively high canopy cover class although tree cover may be discontinuous (Aubry and Houston 1992; Buskirk and Powell 1994). Riparian corridors provide import travel routes and prey patches for fisher. The high canopy cover class and structural complexity of riparian habitat support relatively abundant and diverse populations of prey (small mammals and birds). Natal dens have been located in pileated woodpecker cavities and natural cavities in live, large-diameter trees (Thompson et al. 2007).

The fisher is a Forest Sensitive Species and a Species of Greatest Conservation Need in Idaho. Since 1966, ten records of fisher exist on the Forest although some are records from trapper accounts with unknown observation dates. Records are primarily from the northwestern part of the Forest on the Sawtooth NRA. Additionally, detection studies conducted on the Sawtooth NRA during the past four winters have not resulted in conclusive fisher observations (Filbert et al. 2011). Given the deep winter snow pack on most of the Forest, the rarity of this species throughout Idaho, and the Forest's location within the species' range, this species was likely never common on the Forest.

On the Forest, vegetative communities that could provide source habitat conditions include PVGs 3 and 10, and PVG 7 on the Sawtooth NRA only (Filbert et al. 2011). Historical fire regimes in these PVGs include mixed1, mixed 2, and lethal. These PVGs can develop mesic, old-forest, multilayer conditions with moderate and high canopy cover classes that would provide the structural diversity characteristic of fisher source habitat. Special habitat features of fisher source habitat include riparian corridors (for travel and prey patches) and snags and logs (for resting and den sites).

Fisher source habitat is found throughout most of the northern districts on the Forest with the exception of the southeastern portion of the Ketchum Ranger District (Figure 3-16). Habitat does not occur on the southern portion of the Forest (Minidoka Ranger District). The amount of current source habitat on the Forest is projected to be approximately 245,000 acres (Figure 3-17), which includes approximately 42,000 acres of departed conditions that provide habitat. Historically, most watersheds on the Forest had <25 percent source habitat (Figure 3-16), likely because most of the Forest resides at the southern end of the species' range in Idaho. Habitat trends across the Forest are generally in decline (Figure 3-16). Reduced canopy closure conditions from recent wildfires and insect and disease outbreaks are the likely cause of the downward trend in fisher source habitat on the Forest.

Available data suggest that fishers are weak dispersers relative to other forest carnivores. Fishers typically avoid broad expanses without dense overhead cover and rarely disperse across long distances (Jones and Garton 1994; Powell and Zielinski 1994). Maintaining patches of mature forest connected by closed-canopy forest across the landscape should facilitate travel between patches. Source habitat remains within the HRV (Figure 3-17) and source habitat patches on the Forest remain within a matrix of closed canopy forest that could provide for interaction of individuals across the landscape (Filbert et al. 2011). This species has benefitted from current management that retains canopy conditions along perennial and intermittent streams to meet temperature needs for aquatic species and retains live and dead trees along streams for large log recruitment or other riparian processes.

Although stand age may not be important, road-associated factors can cause loss of the legacy components preferred by fisher—such as large live trees, large snags, and large logs. Other negative effects of road-associated factors include displacement, increased risk of mortality from collisions with vehicles, or hunting and trapping (Filbert et al. 2011). Since the 1990–1991 trapping season, 20 fisher have been accidentally trapped in northern Idaho and turned in to the IDFG; this number does not include roadkills or fisher killed by other factors (IDFG 2008). Though the effect of these factors on fisher numbers in Idaho is unknown, no recent mortalities in the vicinity of the Forest have been documented (Filbert et al. 2011). Only one watershed within fisher source habitat on the Forest has high road densities (>1.7 miles per square mile).

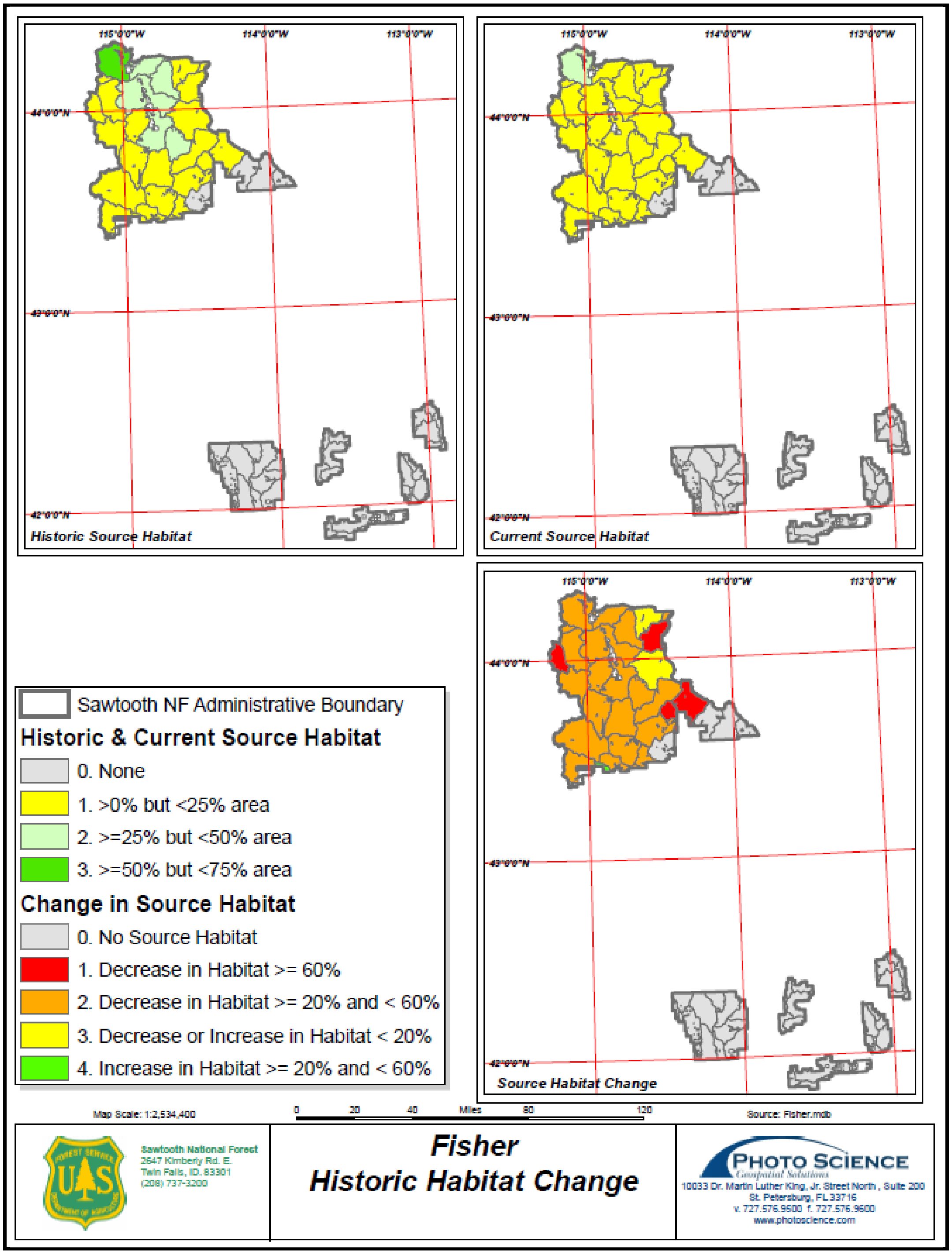

Figure 3-16. Historical, Current, and Relative Change in Fisher Source Habitat on the Sawtooth National Forest

3.3.6.4.1.1 Current Sustainability Outcome for Fisher

Although fishers are considered rare, fisher habitat on the Forest remains within the HRV. Based on observation records and historical habitat preferences, fishers do not appear to be distributed throughout the planning area, although these animals are wide-ranging and the Sawtooth is likely at the edge of their range. Current source habitat on the Forest provides the attributes and connectedness required by the species. Other factors on and off the Forest, including trapping and vehicle collisions, may influence fisher presence on the Forest; the effects of these activities are unknown. The sustainability outcome for fisher is Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.4.2 Environmental Consequences

3.3.6.4.2.1 Environmental Consequences of Alternative A

Alternative A would not include direction to retain large tree stands, legacy trees, or old-forest habitat as described in detail in section 3.3.4.1. This lack of direction could affect development and availability of fisher denning habitat and characteristics that are conducive to quality prey habitat. Although the fisher does not depend exclusively on old-forest habitat, it does prefer large trees, large snags and large logs, and similar habitat components associated with old forest habitat. Higher elevations, wilderness, and proposed wilderness would likely develop large tree and old-forest conditions over time due to limited management that occurs in these areas.

Large snags and logs are important components of fisher habitat. While snag numbers are within or above the HRV across the Forest, snag distribution varies across time and space (see section 3.2, “Forested Vegetation Diversity and Fire Regime Condition Class”). Snag and log numbers may be quite different in roaded, managed, and wildfire areas than Forest wide. Under Alternative A, desired conditions for snags and large logs would be expected to provide for wildlife species in the long term. Alternative A, however, would not include any additional direction limiting the removal of large-diameter snags and would therefore be less capable of conserving existing large-diameter snags than Alternatives B. Management under Alternative A may lead to declines in this habitat component and a decrease in quality fisher source habitat.

Source habitat in Alternative A is projected to remain in the HRV (Figure 3-17). The quantity of source habitat is predicted to increase (Figure 3-17), but this trend is unable to fully account for the presence of habitat components such as snags, large logs, and legacy trees.

Fisher habitat on more intensively managed acres (e.g., WUI areas) may remain of lesser quality (e.g., absence of large-diameter snags and logs) than in more remote areas since Alternative A provides no new direction that would guide maintaining or restoring old-forest habitat and large-diameter snags or addresses risk factors in source habitat. However, current direction requires management of vegetative desired conditions within the HRV, which should continue to provide for fisher source habitat on the Forest.

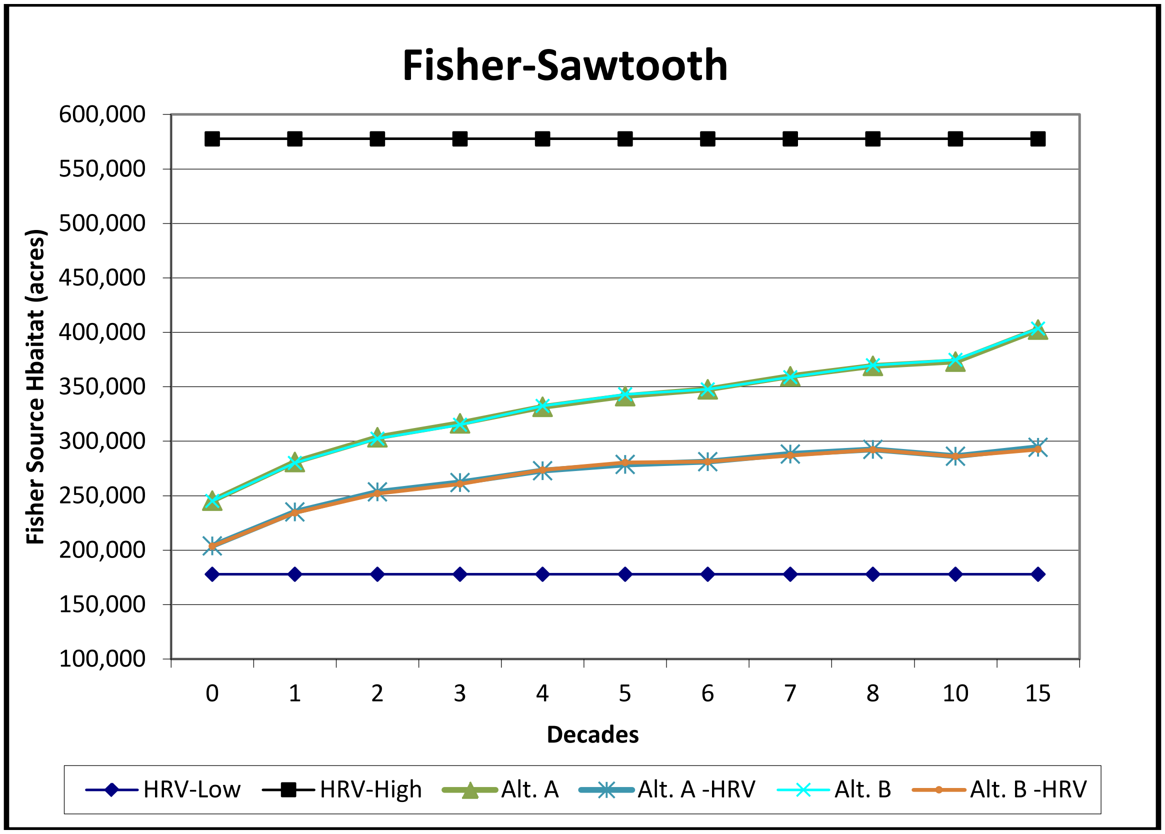

Figure 3-17. Fisher Source Habitat Trend by Alternative with and without Departed Conditions Included on the Sawtooth National Forest

<u>Predicted Fisher Sustainability Outcome for Alternative A</u>

Continued management is expected to meet this species' source habitat needs, and the sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.4.2.2 Environmental Consequences of Alternative B

Under Alternative B, predicted trends for fisher source habitat would remain in the HRV. The long-term trend is similar to that identified under Alternative A (Figure 3-17). While differences between alternatives are not apparent in the projections, Alternative B would increase source habitat under the guidance of a long-term restoration strategy and better address the quality concerns of source habitat (regarding patch size and distribution) rather than just the quantity. New Forest-wide direction under Alternative B (WIST08, WIST09, WIGU15, VEST03, and VEST04) would retain existing old-forest habitats, retain large tree stands with remnant old-forest attributes, and prioritize restoration and development of large tree stands with old-forest characteristics to expedite old-forest development. Over time, this direction would likely create a more contiguous distribution of old-forest habitat (habitat networks) on the landscape connected via riparian corridors, which would benefit fisher.

Alternative B also provides new direction to retain large snags on the landscape. The proposed direction is expected to restore the distribution and extent of this component on the landscape more quickly than Alternative A and better provide for wildlife needs (see section 3.3.4.1.3). Direction to conserve large snags would provide for future recruitment of large logs, a special habitat feature of fisher source habitat.

Under Alternative B, habitat within the WUI would be managed in a manner that would prioritize hazardous fuel reduction needs. Important wildlife habitat attributes would be maintained outside of the 500-foot buffer zone of communities and developments. A new guideline (WIGU18) has been proposed that would require projects to be designed to meet wildlife conservation and restoration objectives where resource objectives are compatible.

Road-associated issues for fisher include vulnerability to collisions, displacement or avoidance of roaded areas, and increased susceptibility to incidental trapping. Although the Forest does not have many watersheds with high road densities in fisher source habitat, reducing road densities would decrease these risks. Additional direction regarding new or existing road development or reconstruction associated with MPCs 5.1 and 6.1 is discussed under “Direct, Indirect, and Cumulative Effects to Habitat Families” (section 3.3.4.1) and “Family 2, Alternative B” (section 3.3.6). This direction would likely provide some further assurance that road densities could be reduced over time.

Under both alternatives, natural disturbances, such as fire, are allowed to occur and vegetative conditions are managed within the HRV. Additionally, both alternatives prioritize conserving and restoring riparian habitats, which would provide for well-distributed, connected habitat.

<u>Predicted Fisher Sustainability Outcome for Alternative B</u>

The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.5 Species Associated with Habitat Family 2—Flammulated Owl

3.3.6.5.1 Current Condition

Flammulated owls are a Forest Sensitive Species and Species of Greatest Conservation Need in Idaho.

Breeding habitat for flammulated owls combines open, mature montane pine forests for nesting; scattered thickets of saplings or shrubs for roosting and calling; and grassland edge habitat for foraging (Goggans 1986; Reynolds and Linkhart 1987; IDFG 2005). All habitat types are necessary across multiple spatial scales (e.g., microhabitat, home range, landscape) (Wright 1996). In Idaho, flammulated owls have been documented occupying mid-elevation, old growth, or mature stands of open ponderosa pine, Douglas-fir, or stands co-dominated by both species (Groves et al. 1997). Old forests of ponderosa pine and Douglas-fir are key components of home ranges for flammulated owl (Reynolds and Linkhart 1990), as these forest types apparently support a particular abundance of favored butterfly and moth prey (McCallum 1994). Flammulated owls nest in cavities that have been previously excavated in snags and live, large-diameter trees (McCallum and Gehlback 1988; Bull et al. 1990). Snags are considered a special habitat feature. Habitat is strongly associated with the upper slopes of ridges (Bull et al. 1990; Groves et al. 1997; Barnes 2007). Flammulated owls can take advantage of insect irruptions, such as spruce budworm outbreaks (McCallum 1994; Marcot 1997; O'Neil et al. 2001).

Forest vegetative communities capable of providing source habitat conditions include PVGs 1, 2, 3, 4, and 7 (Filbert et al. 2011). These PVGs are those most likely to have habitat types that develop late-seral stages of open forest with stands dominated by ponderosa pine, Douglas-fir, or both. Historical fire regimes in these PVGs include nonlethal, mixed1, and mixed2. Flammulated owls use the medium and large tree size classes and moderate canopy cover class. Unlike most species in Family 2, the flammulated owl uses a narrower range of vegetation conditions and does not readily use departed habitat conditions (Filbert et al. 2011).

Approximately 113,000 acres of flammulated owl source habitat currently exist on the Forest. Source habitat can be found in most watersheds on the Forest, although historically it was concentrated in watersheds on the south end of the northern portion of the Forest (Figure 3-18). Forest-wide, source habitat for the flammulated owl is slightly below the HRV (Figure 3-19). The quantity of source habitat on the Forest does not provide for adequate amounts of snags and microsite conditions that are important to the flammulated owl or mitigate for the influences of roads on the quality of this habitat. Since 1994, 83 records of flammulated owls were recorded on the Forest. Reliable population trend data does not exist for this species in Idaho (Filbert et al. 2011).

Strong fidelity to territories has been documented with adult males in particular, returning to the same or nearby territories year after year (Arsenault et al. 2005; Linkhart and Reynolds 2006; Reynolds and Linkhart 1990). Dispersal of young owls from birthing sites primarily facilitates gene flow between populations. Generally, habitat patches across the Forest appear well-connected (Figure 3-20). The flammulated owls' ability to move across habitat patches on the Forest is likely only constrained by their strong fidelity to breeding areas. Home range territories for this species are approximately 36 acres (14.5 ha) (McCallum 1994); a review of modeled habitat patch size found that source habitat patches on the Forest are capable of accommodating the mean home range size of the flammulated owl. PVGs 1, 2, 3, 4, and 7 in the medium and large tree size classes create a matrix of habitat around source habitat patches and provide the interconnectedness needed to support dispersal of young owls from birthing sites. The analysis found the medium and large tree size class habitat patches on the Forest fill in gaps and improve connectivity across the landscape between source habitat blocks (Figure 3-20).

Watersheds on the Forest with the greatest historical amount of source habitat (≥25 percent) historically occurred along the south end of the northern portion of the Forest (Figure 3-18); this distribution remains essentially the same today (Filbert et al. 2011). Changes in source habitat in watersheds across the Forest have mostly been downward (Figure 3-18), although some watersheds on the south end of the forest (Minidoka Ranger District) show positive trends in source habitat. Positive trends in these watersheds are a reflection of current climax aspen distribution, which was mapped using Landfire vegetation categories. Unfortunately, Landfire categories were not available in the historical context; therefore, positive trends are likely misleading, since climax aspen historically occurred in these watersheds (Filbert et al. 2011).

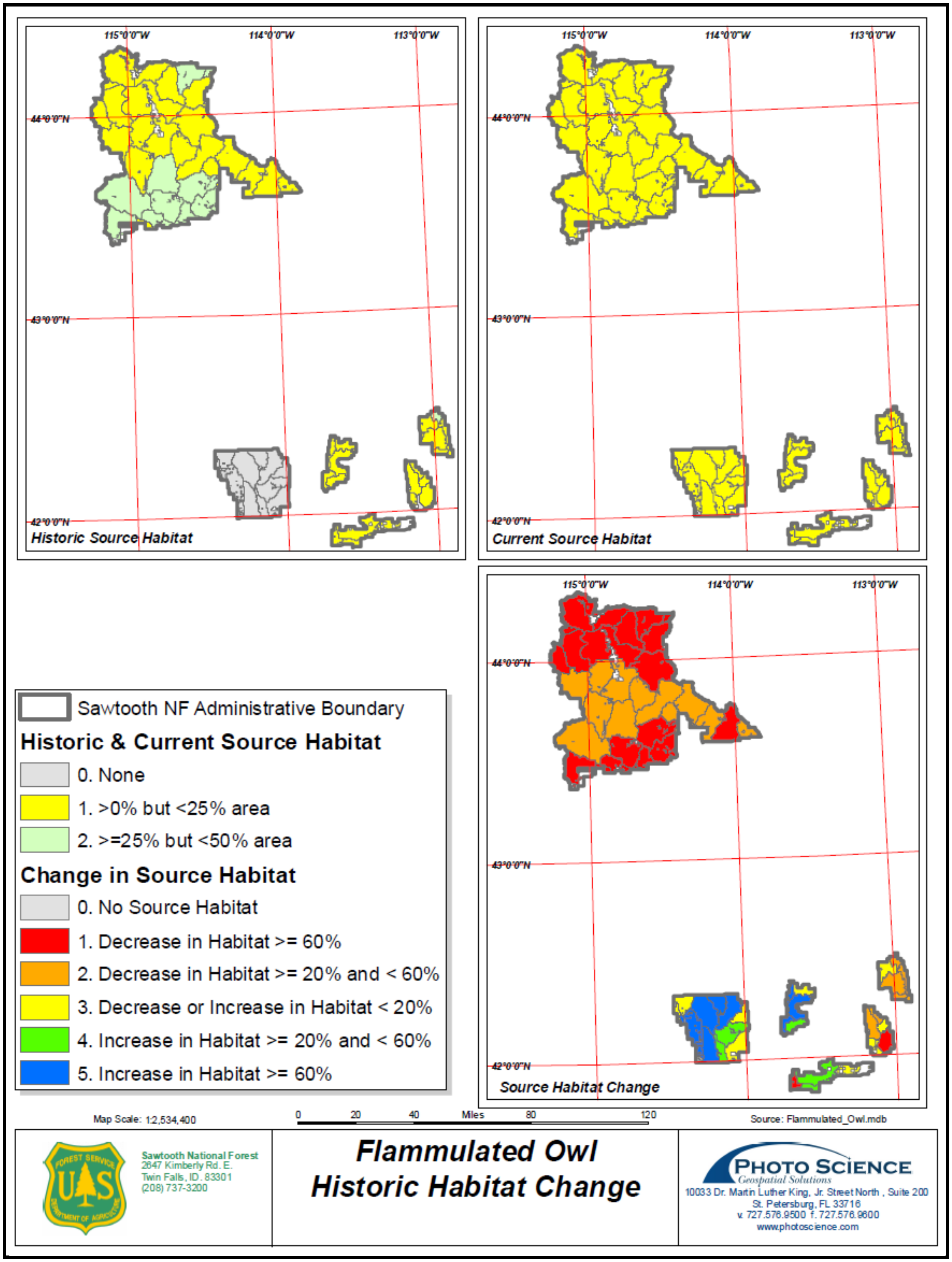

Figure 3-18. Historical, Current, and Relative Change of Flammulated Owl Source Habitat on the Sawtooth National Forest

Risk factors for this species relevant to the Forest include modification of habitat, including loss of large snags, loss of large-diameter ponderosa pine and Douglas-fir trees, and an increase in vegetation density due to fire exclusion. Other risk factors include disturbance during the breeding period, use of insecticides, high road densities in source habitat, and livestock grazing (Filbert et al. 2011). Broad-scale departures from historical landscape patterns and processes have also contributed to declines in the extent of aspen and old-forest habitat on the landscape. High road densities may be indicative of habitats low in snag numbers and may increase the risk of disturbance. Seven watersheds on the Forest have high road densities in flammulated owl source habitat watersheds, primarily on the Minidoka Ranger District (Filbert et al. 2011); however, only one of these watersheds historically had >25 percent source habitat. Extensive livestock grazing has reduced ground vegetation and degraded composition and structure of upland deciduous forest habitats, which reduced foraging and nesting opportunities for flammulated owl. Seven watersheds, all on the south end of the Forest (Minidoka Ranger District) currently have source habitat coincident with ≥50 percent range suitability (Filbert et al. 2011).

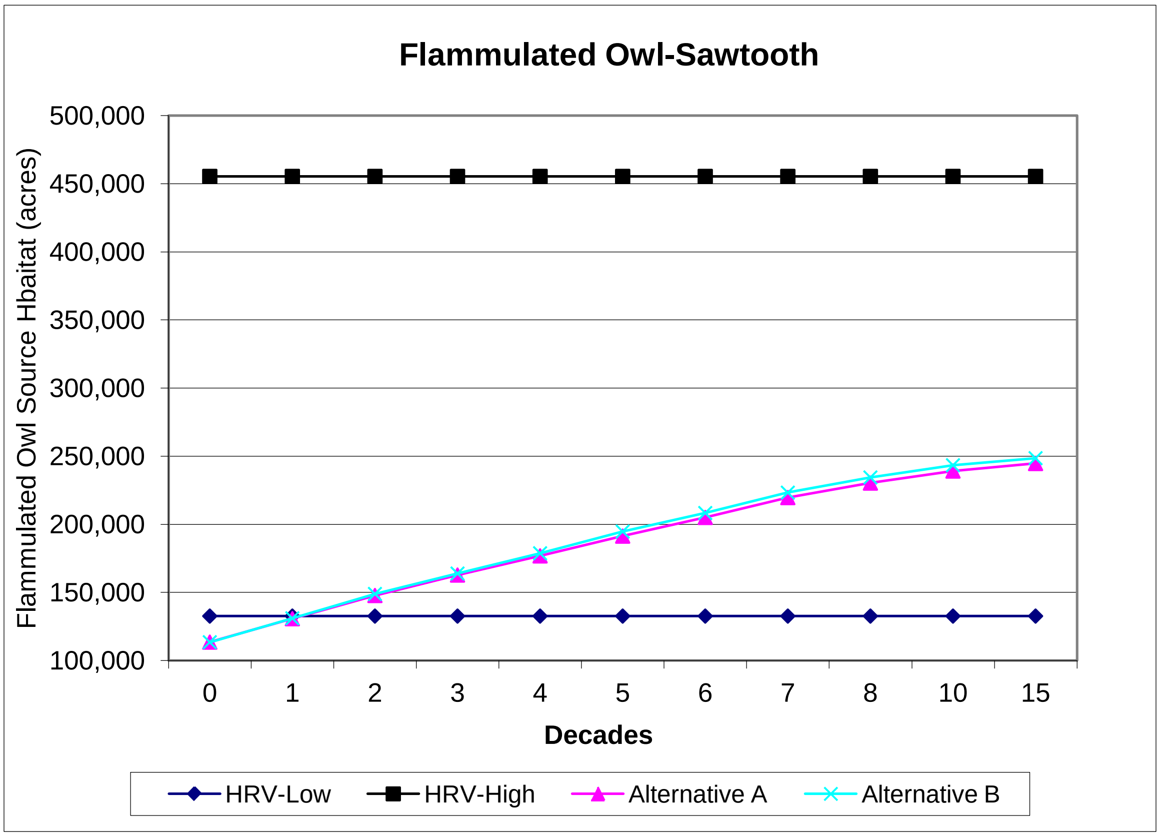

Figure 3-19. Forest-wide Flammulated Owl Source Habitat Trend by Alternative on the Sawtooth National Forest

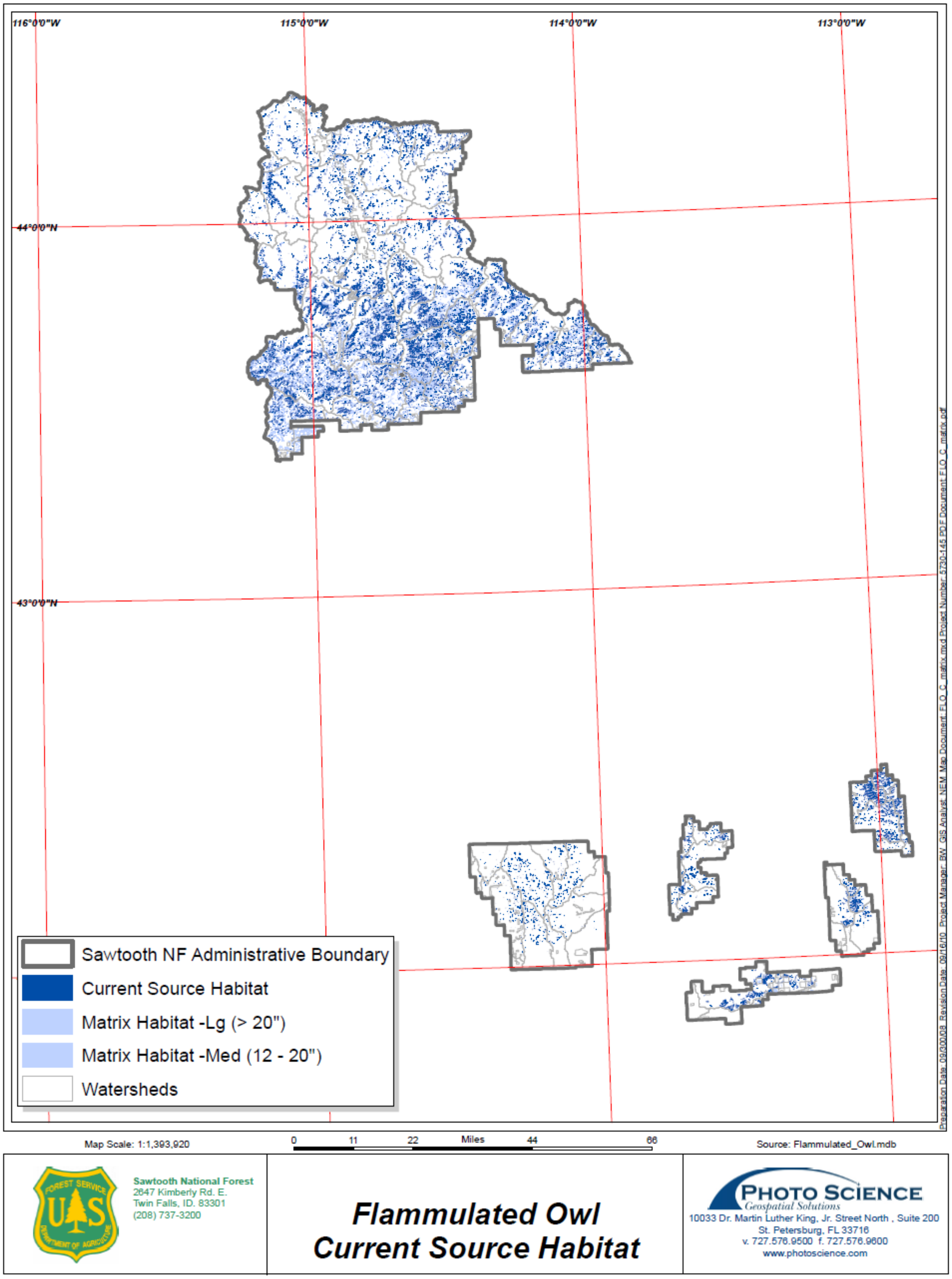

Figure 3-20. Flammulated Owl Current Source Habitat Patches and Structurally Similar Habitat on the Sawtooth National Forest

3.3.6.5.1.1 Current Sustainability Outcome for Flammulated Owl

The sustainability outcome for flammulated owl is B (see section 3.3.3 for sustainability outcome definitions). Although habitat is currently below the low end of the HRV, it will be at the low end of the HRV by the end of Decade 1. Source habitat remains broadly distributed and interconnected patches allow for flammulated owl interactions.

3.3.6.5.2 Environmental Consequences

3.3.6.5.2.1 Environmental Consequences of Alternative A

Alternative A does not include Forest-wide direction to retain large tree stands, legacy trees, or old-forest habitat as described under section 3.3.4.1 and would be less likely to foster the development of this habitat on the landscape. However, Alternative A does include Forest direction to prioritize aspen restoration, retain and restore the large ponderosa pine live tree and snag component, and to use wildland fire to restore and maintain desired vegetative conditions and to reduce fuel loading. This direction, while not as encompassing as direction under the proposed action alternative, would result in habitat benefits to this species.

Under Alternative A, source habitat is predicted to reach the low end of the HRV within 10 years and maintain an upward trend (Figure 3-13). Old-forest and large-tree size conditions would likely continue to develop, regardless of management direction, as the forest community matures. However, this increasing trend in source habitat is unable to fully account for the presence of habitat components such as snags, down wood, and legacy trees.

Desired conditions for snags under Alternative A, as with Alternative B, would remain within the HRV, although the number of snags would continue to vary across time and space. Desired conditions for snags and down wood are expected to provide for the long-term needs of wildlife species dependent on these structures. However, Alternative A provides little direction for retaining large diameter snags in the short term, which may influence nest creation by primary cavity excavators upon which flammulated owls depend.

Flammulated owl habitat occurring on lower elevation, more intensively managed acres (e.g., WUI) may remain of lesser quality than habitat in more remote areas since Alternative A provides no new direction to guide maintenance or restoration of old-forest habitat or address roads or other risk factors in source habitat. Under Alternative A, vegetative conditions would continue to be managed within the HRV and management activities in flammulated owl habitat would address the needs of this species as required by existing Forest Plan direction (WIOB09).

<u>Predicted Flammulated Owl Sustainability Outcome for Alternative A</u>

Under Alternative A, continued management is expected to meet flammulated owl source habitat needs and maintain source habitat connectedness and amounts in the HRV. The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.5.2.2 Environmental Consequences of Alternative B

Under Alternative B, new direction would focus efforts on maintaining and restoring large tree and old-forest habitat and important components of old-forest, including ponderosa pine and Douglas-fir legacy trees and large-diameter snags, and to re-create patch dynamics and patterns of green and dead trees. This direction would provide opportunities for rebuilding a network of old-forest on the landscape by improving patch size, juxtaposition, and distribution. Alternative B would move more acres into large tree and old-forest habitat than Alternative A, although trends are very similar between the two alternatives (see section 3.3.4.1.4). The direction for increasing old-forest and large tree stands in Alternative B would likely create a more contiguous distribution of source habitat on the landscape representative of historical conditions, which would benefit the flammulated owl.

Alternative B includes proposed direction to increase the numbers of large snags retained on the landscape. The proposed direction is expected to maintain a more even distribution of this habitat element on the landscape than direction under Alternative A, which would benefit flammulated owl source habitat. (A more detailed discussion of the way in which Alternative B would address conservation of large-diameter snags is found in section 3.3.4.1.3.)

Under Alternative B, WUI areas would likely be the least compatible with restoration or maintenance of old forest. WUI treatments on the Forest typically maintain important wildlife habitat attributes outside of a 500-foot buffer zone of communities and developments. A new guideline (WIGU18) would require projects to be designed to meet wildlife conservation and restoration objectives where resource objectives are compatible.

Alternative B includes direction to reduce road densities Forest wide (WIOB16) and in MAs that exhibit high road densities (> 1.7 miles per square mile) and have some overlap with flammulated owl source habitat. Alternative B also includes new MPC direction to restrict road development when implementing vegetation management activities (see discussion in section 3.3.6). Reducing impacts from roads would benefit flammulated owl source habitat.

While differences between alternatives are not apparent in the projections (Figure 3-19), Alternative B would increase source habitat under the guidance of a long-term restoration strategy and better address the quality concerns of source habitat (i.e., patch size and distribution) rather than just the quantity.

<u>Predicted Flammulated Owl Sustainability Outcome for Alternative B</u>

The sustainability outcome is for Alternative B is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions). Restoring vegetative and structural conditions would provide for well-connected source habitat.

3.3.6.6 Species Associated with Habitat Family 2—Great Gray Owl

3.3.6.6.1 Current Condition

Great gray owls are year-round residents on the Forest and a Forest sensitive species. Great gray owls are a contrast species associated with forested habitats near meadows, marshes, bogs, open forests, and herbaceous habitats (Duncan and Hayward 1994). Source habitat consists of multi-storied young and old forests and stand-initiation stages of subalpine and montane forests. Habitat components considered most important for this species include suitable nesting sites, such as stick nests built by other large birds; broken top snags or natural platforms formed by dwarf mistletoe brooms (Marcot 1997 and O'Neil et al. 2001); and suitable foraging areas that include nonstocked and seedling forests, meadows, and open riparian habitats that are adjacent to meadows. Large-diameter trees or snags are also special habitat features for the great gray owl.

Great gray owls hunt from perches and capture their prey, usually small rodents, on the ground (Groves et al. 1997). They use existing nests built by other species, debris platforms, or broken topped trees and snags (Duncan and Hayward 1994; Bull et al. 1997; Marcot 1997; O'Neil et al. 2001). Nests are typically found in mature stands with larger diameter, decadent trees, and snags present.

Juvenile great gray owls are flightless and depend on leaning and deformed trees to navigate from forest floors to tree canopies (Bull et al. 1988; Franklin 1988). Dense cover near nests is important for fledgling protection. After leaving the nest, fledglings generally stay within forested stands with >60 percent canopy closure (Bull et al. 1988).

Since 1989, 45 records exist for this species on the Forest (Filbert et al. 2011), all from the Sawtooth Valley and Stanley Basin on the Sawtooth NRA. Population trend data does not exist for this species.

On the Forest, vegetative communities capable of providing source habitat conditions for the great gray owl include PVGs 3, 7, 10, and 11 (Filbert et al. 2011). PVG 3 is likely a minor contributor to source habitat, but it does have the capability to achieve nesting and foraging conditions suitable for great gray owls. Most of these PVGs historically had mixed2 and lethal fire regimes, which can create the juxtaposition of open and forested habitats used by the owls.

Great gray owl source habitat exists primarily on the north end of the Forest, in the Sawtooth NRA (Figure 3-21). Approximately 300,000 acres of current source habitat (without departed conditions) exists on the Forest, which is slightly below the HRV. When departed habitat is included, the amount of current source habitat exceeds 380,000 acres (Figure 3-22). However, the modeled amount of source habitat is likely overestimated because the model could not be restricted to only those areas within PVGs near open meadows or other foraging habitat.

Habitat connectivity is important for foraging movement and dispersal of young. Source habitat patches are within great gray owl young dispersal distances of <33 km. Dispersal of young is likely important for maintaining gene flow over large geographic areas as breeding adults often nest in the same general area year-to-year. Source habitat patches appear to be interconnected enough to provide for gene flow across the Forest (Filbert et al. 2011).

Due to the wide array of PVGs and canopy covers included in the model for this species, most watersheds that provide source habitat historically contained ≥25 percent source habitat (Figure 3-21). Currently, watersheds maintain <50 percent source habitat, and several maintain <25 percent habitat. Declines in great gray owl source habitat are likely

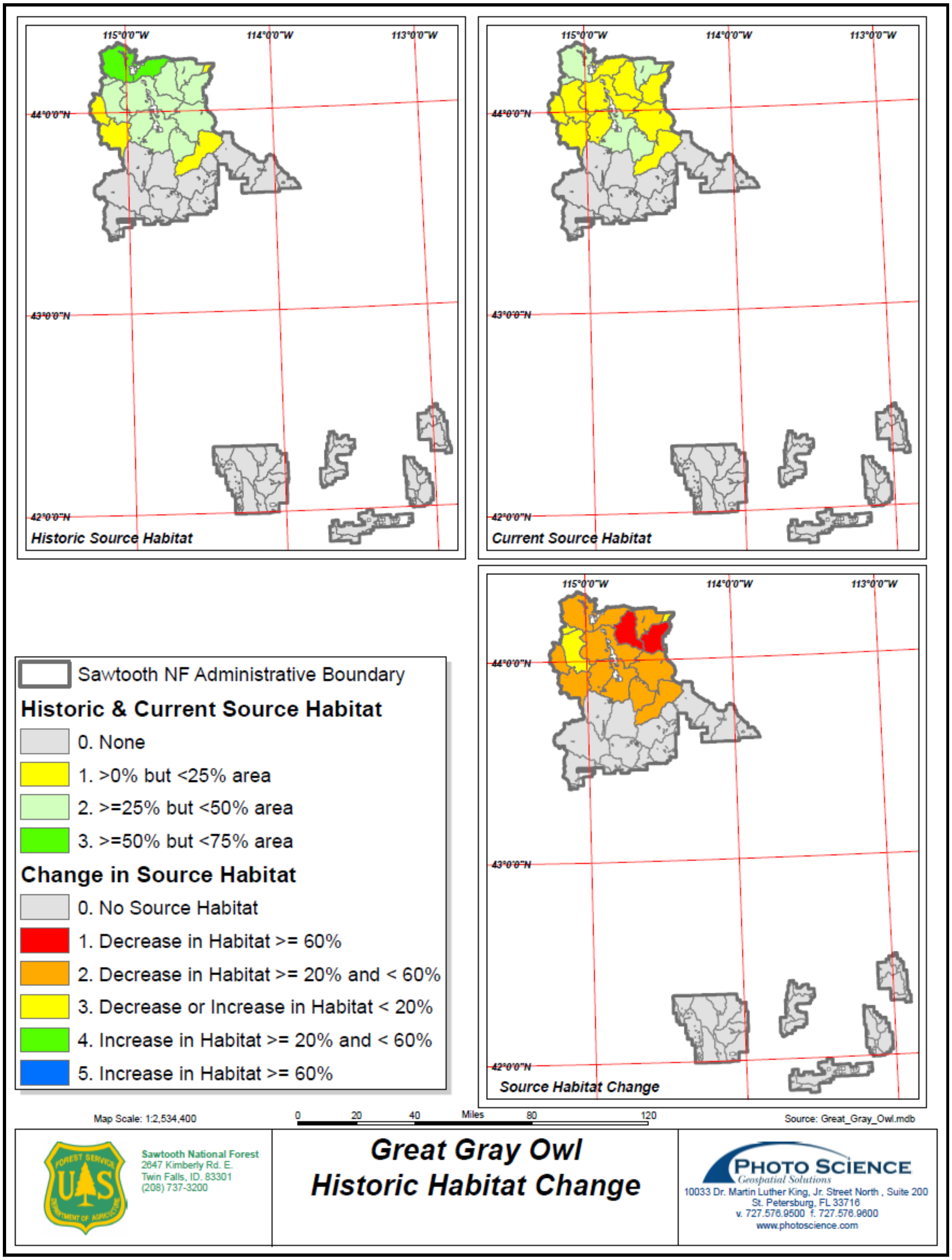

Figure 3-21. Historical, Current, and Relative Change in Great Gray Owl Source Habitat on the Sawtooth National Forest

due to recent wildfires and outbreaks of insects and disease (e.g., mountain pine beetle), which have occurred throughout numerous watersheds on the Forest. The dominant trend for great gray owl source habitat on the Forest has been moderately downward (Figure 3-21).

Risk factors for the great gray owl relevant to the Forest include a reduction of nesting habitat and loss of potential nest sites due to the removal of large trees, diseased trees, snags, and leaning trees (used by juveniles); recent large wildfires and mountain pine beetle epidemics; fire exclusion; and localized livestock grazing effects (Filbert et al. 2011). Related issues include a decline in late-seral forest communities and their associated attributes such as larger trees, snags, and logs. Changes in patch dynamics have affected the size and juxtaposition of stands with larger diameter trees and high canopy covers used for nest sites compared to stands with variable seral stages and canopy covers conducive to foraging. Conifer encroachment into aspen and meadow habitats also affects foraging habitat quality. Lastly, livestock grazing can damage wet meadow and grassland areas within forested landscapes and can affect small mammal populations associated with these habitats.

3.3.6.6.1.1 Current Sustainability Outcome for Great Gray Owl

The sustainability outcome for great gray owl is B (sustainability outcomes are defined in section 3.3.3). Source habitat is within the HRV. Although source habitat has decreased, habitat patches are generally broadly distributed within historical source habitat watersheds and remain well within dispersal distances of young owls.

3.3.6.6.2 Environmental Consequences

3.3.6.6.2.1 Environmental Consequences of Alternative A

The effects of Alternative A on retaining large-tree stands, legacy trees, or old-forest habitat are the same as described above for Family 2 source habitat (section 3.3.6.1). Old-forest and large tree conditions in the higher elevation PVGs would likely develop, regardless of management direction, as the forested community matures. The absence of direction to manage for old forests or legacy trees under Alternative A would have some effect on the great gray owl and its habitat quality; however, the owl's ability to use medium and large tree size classes in moderate and high canopy cover class conditions would reduce this effect.

Forest Plan direction (WIST02, WIST03, WIGU06) requires projects be designed to mitigate disturbances during critical periods and prevent the great gray owl from trending toward listing. Current direction does not promote conservation of source habitat attributes nor facilitate repatterning of habitat networks for great gray owls.

Larger diameter snags (>15 inches) are a special habitat feature for the great gray owl. Desired conditions for snags in Alternative A appear to be within the HRV. However, current Forest-wide estimates of large diameter snags may be skewed by the large number of snags created by recent wildfires and insect epidemics, and snag distribution in green stands may not be consistent with what historically occurred. Additionally, snags in roaded or heavily managed areas (e.g., WUIs) may be below historical distribution.

Retaining large diameter snags is important as they are future sources of large-diameter down wood, which is important for some prey species of the great gray owl. No new direction is proposed under Alternative A to address removing large diameter snags. Continued declines in this habitat component would likely affect prey base habitats and possibly perch or nest site availability for the great gray owl.

Conifer encroachment in meadows remains problematic in great gray owl source habitat and reduces the quality of foraging habitat. Under current Forest direction, fire and mechanical tools can be used to treat conifer encroachment in all MPCs within great gray owl source habitat.

Livestock grazing, especially when excessive, reduces foraging habitat quality for great gray owls. Livestock grazing has been removed from numerous meadows in the Stanley Basin, which provide source habitat. Direction to address livestock grazing can be found in the Forest Plan (RAOB03, RAST01).

Great gray owl source habitat, modeled both with and without departed conditions, under Alternative A is within the HRV (Figure 3-22). The quantity of source habitat is predicted to increase over time (Figure 3-21), but this trend is unable to fully account for the presence of habitat components such as snags, down wood, and legacy trees or proximity to open foraging habitat.

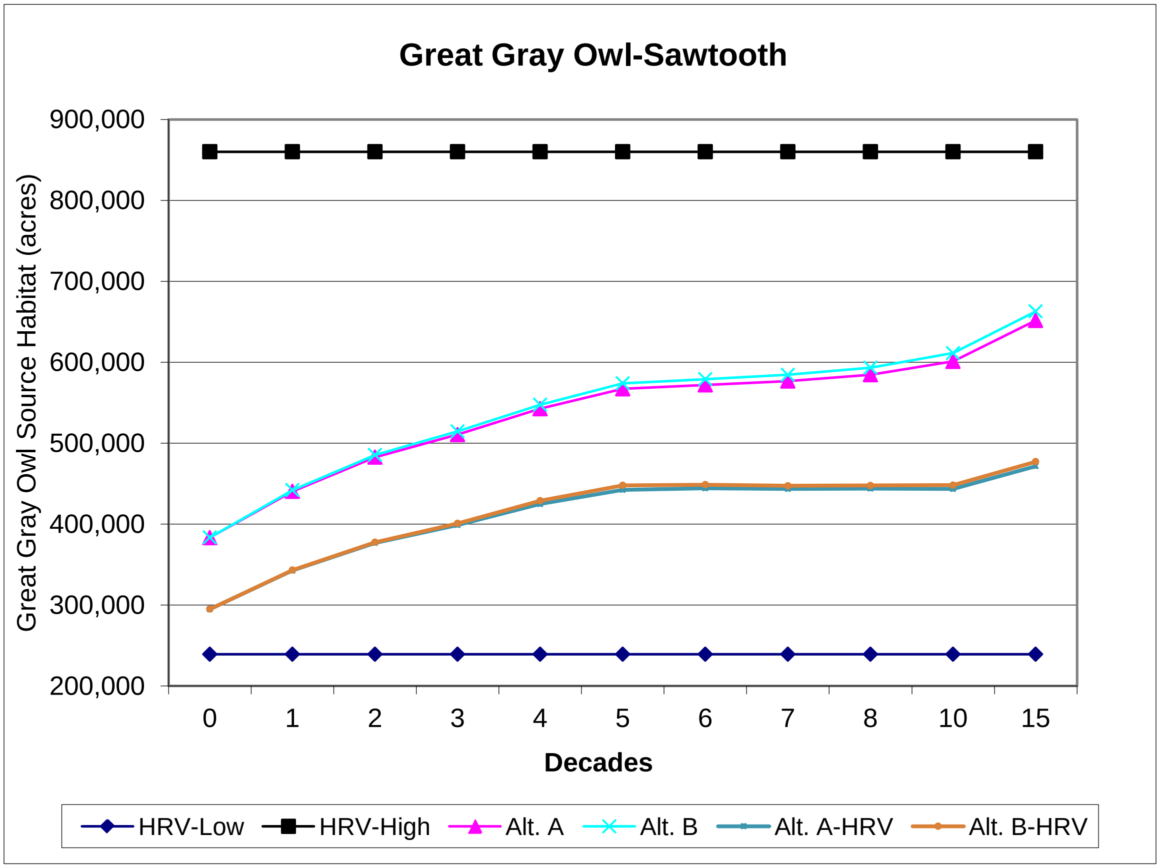

Figure 3-22. Great Gray Owl Forest-wide Source Habitat Trend by Alternative with and without Departed Habitat Conditions on the Sawtooth National Forest

Predicted Great Gray Owl Sustainability Outcome for Alternative A

Continued management is expected to meet this species' source habitat needs and maintain source habitat amounts within the HRV. The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.6.2.2 Environmental Consequences of Alternative B

Habitat trends for Alternatives A and B are similar; both increase over time and remain within the HRV (Figure 3-22). While differences between alternatives are not apparent in the projections, source habitat would increase under the guidance of a long-term restoration strategy and source habitat quality concerns (i.e., patch size and distribution) rather than just the quantity would be better addressed under Alternative B.

New direction under Alternative B would help maintain and restore large-tree and old-forest habitat and important components of old forest, including legacy trees and large-diameter snags; would require retaining forested stands in the large tree size class; would retain ponderosa pine legacy trees; and would re-create patch dynamics and patterns of green and dead trees. This new direction would likely create a more contiguous distribution of old-forest habitat on the landscape (habitat networks) reflective of historical patch dynamics.

Alternative B provides new direction to retain large snags on the landscape. This direction would likely restore this component on the landscape more quickly than Alternative A and better provide for wildlife needs until conditions more closely resemble historical conditions (see section 3.3.4.1.3 for a discussion of how Alternative B conserves large snags).

Under Alternative B, great gray owl source habitat in WUI areas would likely be the least compatible with restoring or maintaining old forest. WUI treatments on the Forest typically maintain important wildlife habitat attributes outside of a 500-foot buffer zone of communities and developments. A new guideline (WIGU18) has been proposed under Alternative B that would require projects to be designed to meet wildlife conservation and restoration objectives where resource objectives are compatible.

Conifer encroachment in meadows and livestock grazing will continue to be managed under current Forest direction, and no new direction is proposed under Alternative B. As with Alternative A, Alternative B would allow natural disturbance processes, such as fire, to occur and vegetative conditions would be managed toward desired conditions within their HRV. Restoring vegetative structural conditions and disturbance processes would provide for well distributed, connected habitat.

Predicted Great Gray Owl Sustainability Outcome for Alternative B

Management under Alternative B is expected to meet great gray owl source habitat needs and maintain source habitat amounts within the HRV. The sustainability outcome for the great gray owl is predicted to remain in Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.7 Species Associated with Habitat Family 2—Northern Goshawk (Summer)

3.3.6.7.1 Current Condition

Northern goshawk, which occurs on all ranger districts within the Forest including the Sawtooth NRA, is a Forest sensitive species. This species has been proposed as a new MIS under Alternative B. Northern goshawks use a variety of forest ages, structural conditions, and successional stages (Griffith 1993) and are associated with shrubland and grassland habitats. Nests are found in a variety of habitat types that range from open, park like stands of aspen (Younk and Bechard 1994) to multi-storied old-forest habitat (Wisdom et al. 2000). Nest sites are typically located next to the trunk of large-diameter trees and in older stands where trees are widely spaced (Hayward and Escano 1989). Deformities (e.g., multiple trunks and mistletoe [Arceuthobium spp.]), especially in smaller-diameter trees, are also used as nest site substrates. Data from nests on the Sawtooth NRA show that goshawks will successfully nest in smaller trees and lower canopy cover than has been generally reported (Filbert et al. 2011). Goshawks tend to use mature forests (and forest edges) for foraging but also need other habitat elements, such as snags, logs, small openings, and herbaceous and shrubby understories, which provide necessary requirements for their prey (Reynolds et al. 1992). Snags are often used as plucking posts. Mosaics of forested and open areas and riparian zones are equally important to the northern goshawk (Griffith 1993). The nesting home range for northern goshawks is estimated at more than 5,900 acres and includes three components: nesting, foraging, and post-fledging family areas (Reynolds et al. 1992).

Since 1985, 163 records of goshawk exist on the Forest; most are from northern watersheds on the Forest (Filbert et al. 2011). No reliable population trends exist for this species in Idaho. In 2009, 14 active nests were located on the Forest; however, not all known territories were monitored.

Source habitat for goshawks occurs in PVGs 3, 4, 7, and 10 on the Forest (Filbert et al. 2011). These PVGs are capable of developing multilayered, mature and late-seral stands with a dense canopy. Aspen communities can provide goshawk source habitat but predominantly occur as a seral tree species within other PVGs, such as in PVGs 3, 4 and 7. The south end of the Forest (Minidoka Ranger District) supports climax aspen stands that provide source habitat.

Source habitat exists in most watersheds across the Forest (Figure 3-23). Source habitat is currently within the HRV (Figure 3-24) and approximately 310,000 acres of current source habitat exist on the Forest when departed habitat conditions are included (Figure 3-24).

The greatest amount of modeled source habitat (≥25 percent) historically occurred in watersheds across the northern portion of the Forest (Figure 3-23). The overall trend in habitat on the Forest has been downward, although many watersheds on the Minidoka Ranger Districts are showing neutral or modest increases in goshawk source habitat. Currently, relatively few watersheds on the Forest maintain ≥25 percent source habitat (Figure 3-23). Recent wildfire and epidemic-level insect infestations have changed habitat conditions on the Forest, decreasing the amount of multistory old-forest habitats.

Risk factors for the northern goshawk relevant to the Forest include nest tree removal

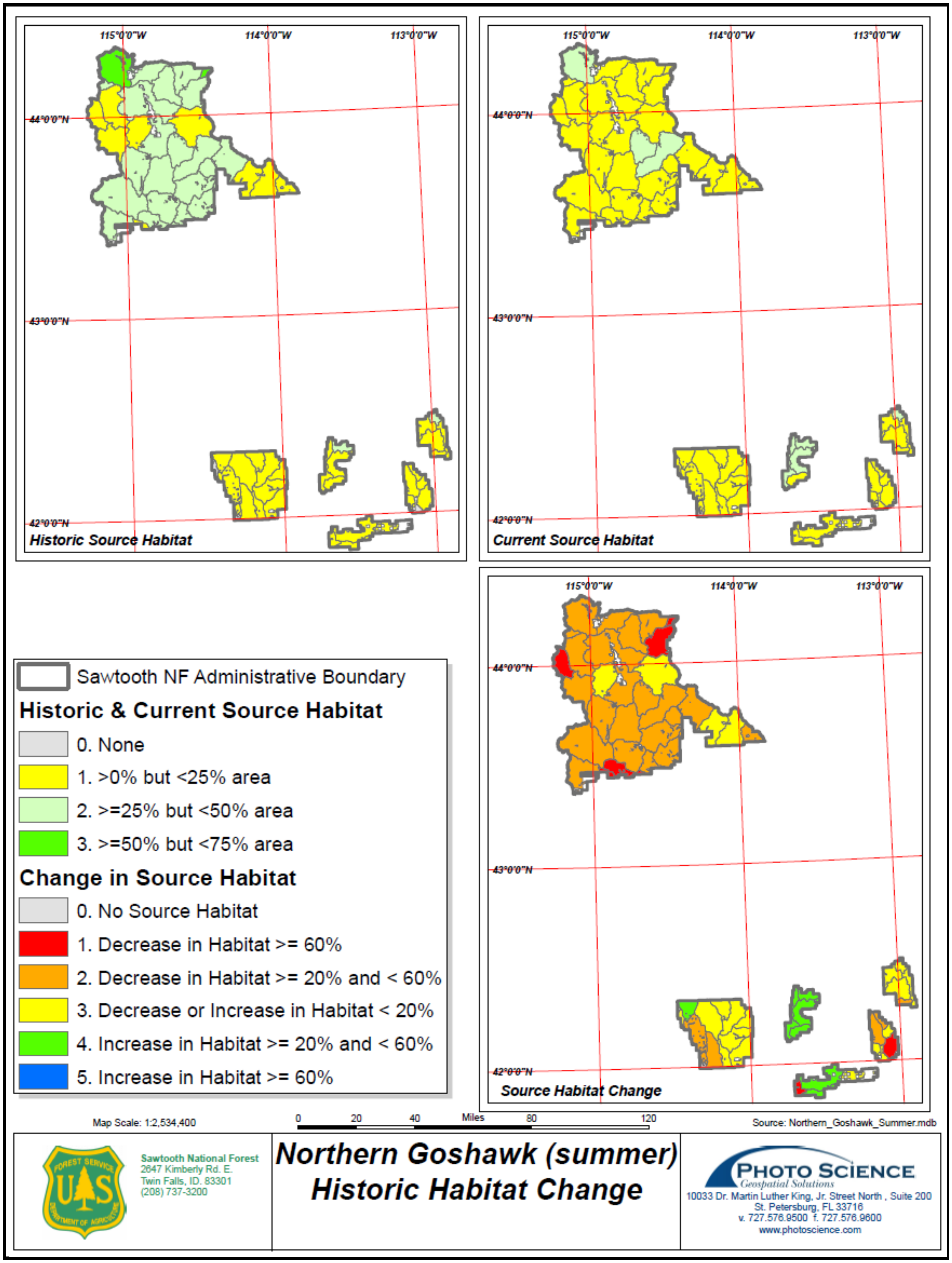

Figure 3-23. Historical, Current, and Relative Change in Northern Goshawk (Summer) Source Habitat on the Sawtooth National Forest

and/or habitat modification from timber and fuels management activities; alteration of prey base habitats through vegetation management; denser stand conditions as a result of fire exclusion, which reduces foraging habitat quality and increases the risk for uncharacteristic wildfires; and disturbance from human activities during the breeding season (Filbert et al. 2011). Other risk factors include a decline in late-seral forest communities and their associated components, such as large trees, snags, and logs, particularly in mid- and lower elevation communities; and high road densities in some watersheds that may increase human disturbance during nesting periods.

3.3.6.7.1.1 Current Sustainability Outcome for Northern Goshawk

The sustainability outcome for northern goshawk is Outcome B (see section 3.3.3 for sustainability outcome definitions). Goshawk source habitat remains within the HRV and habitats remain broadly distributed across the Forest, allowing for species' interaction

3.3.6.7.2 Environmental Consequences

3.3.6.7.2.1 Environmental Consequences of Alternative A

Current Forest Plan direction provides specific direction for managing goshawk nesting and post fledging areas (WIST05, WIGU07) and other direction intended to protect nesting individuals (WIST03). Although the absence of direction under Alternative A to manage for old forests or legacy trees would have an effect on goshawk habitat quality, current Forest Plan direction and the goshawk's ability to use medium and large tree size classes in moderate and high canopy cover class conditions would reduce the risk to this species. The effects of Alternative A on retaining large-tree stands, legacy trees, or old-forest habitat are the similar to those described for other Family 2 species.

Large-diameter snags and logs are important habitat components for some goshawk prey species. Desired conditions for snags would remain within the HRV for both alternatives; however, lack of direction to retain large snags under Alternative A may result in reduced habitat quality for prey species.

Habitat loss and degradation, including habitat fragmentation from roads and timber harvest, are main threats to northern goshawks (Squires and Reynolds 1997, Squires and Kennedy 2006). The northern goshawk is also known to be sensitive to disturbance, primarily during the breeding season, and repeated disturbance may cause nest failure (Squires and Reynolds 1997). Minimal direction currently addresses road development or density and their effects on wildlife. Existing Forest Plan direction would most often reduce risks from roads or road-associated factors for specific management actions in the temporary timeframe, such as restricting activity during breeding periods. Without further direction to focus on road removal, relocation, or restricted use, Alternative A could result in more short- and/or long-term effects to habitat quality for the northern goshawk than the proposed action alternative.

Forest-wide source habitat under Alternative A, with and without departed conditions, remains within the HRV and continues on an upward trend (Figure 3-24). The quantity of source habitat is predicted to increase as old-forest and large-tree conditions, especially in the higher elevation PVGs, would likely develop as the forested community matures, regardless of management direction. This trend, however, is unable to fully account for the presence of habitat components such as snags, down wood, and legacy trees or the influence of factors such as roads.

Northern goshawk habitat on more intensively managed acres (e.g., WUI areas) may remain of lesser quality (e.g., lack of presence of large-diameter snags and logs) than in more remote areas since no new direction is proposed under Alternative A that would guide maintenance and restoration of old-forest habitat and large snags or address risk factors such as roads in goshawk source habitat on the Forest.

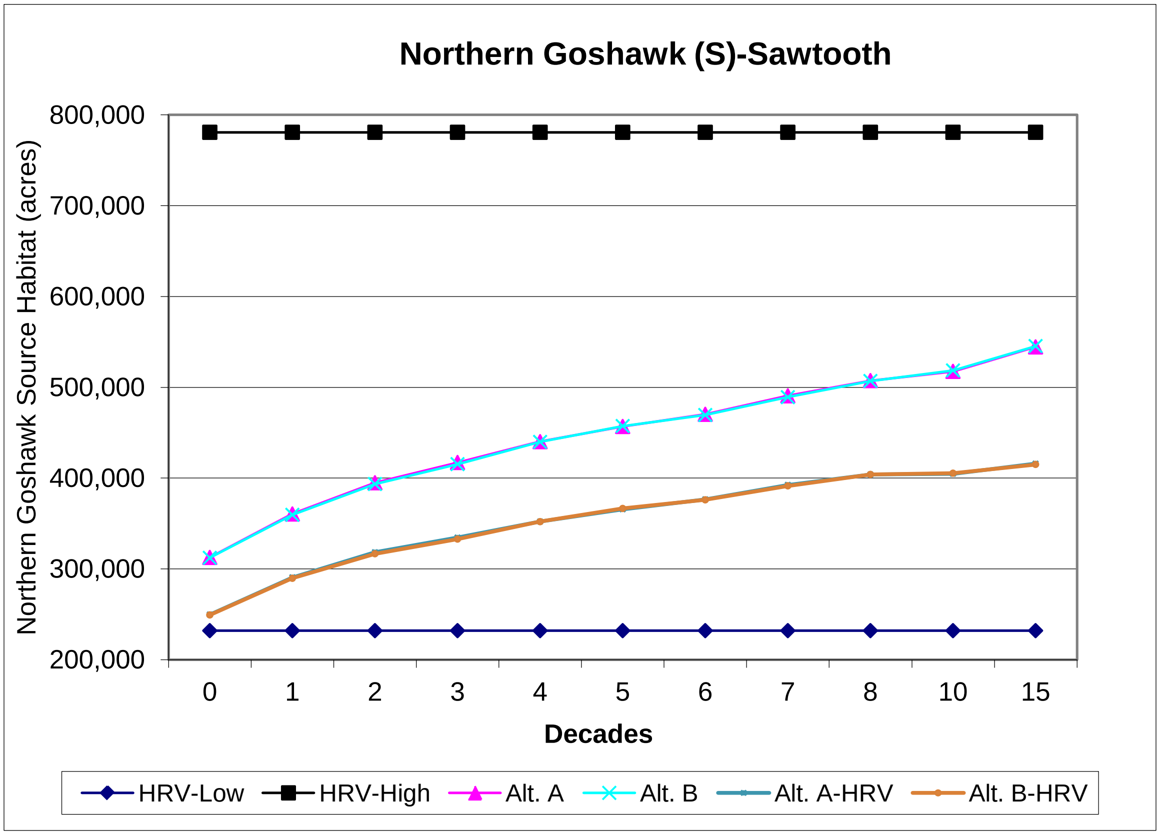

Figure 3-24. Northern Goshawk Forest-wide Summer Source Habitat Trend by Alternative with and without Departed Habitat Conditions on the Sawtooth National Forest

<u>Predicted Northern Goshawk Sustainability Outcome for Alternative A</u>

Continued management is expected to meet northern goshawk source habitat needs and maintain source habitat within the HRV. Habitat would remain well distributed across the range of the species on the Forest under Alternative A. The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.7.2.2 Environmental Consequences of Alternative B

As with Alternative A, northern goshawk source habitat would continue on an upward trend and remain within the HRV in the long term (Figure 3-24). New direction (WIST08, WIST09, WIGU15, VEST03, and VEST04) would retain existing old-forest habitats and ensure that late-seral multilayer forest components such as large trees, snags, and logs, are also retained in managed areas. New direction would likely create a more contiguous distribution of old-forest habitat on the landscape that would benefit both goshawks and their prey. Although northern goshawks are not exclusively dependent on a contiguous distribution of old-forest habitat, and variability in stand canopy cover and seral stages across the landscape is conducive to northern goshawk habitat, territories with large, contiguous forest patches have been occupied more consistently than fragmented stands (Woodbridge and Detrich 1994). Northern goshawks would be expected to benefit from this proposed direction.

Alternative B includes direction to retain large snags on the landscape. This direction is expected to restore a more even distribution of this component on the landscape more quickly than Alternative A and better provide for wildlife needs until conditions more closely resemble historical conditions. For a detailed discussion of how Alternative B would address conservation of large-diameter snags, see section 3.3.4.1.3. Direction to conserve large-diameter snags would also provide for future recruitment of large logs; both habitat components provide habitat for northern goshawk prey species.

Under Alternative B, northern goshawk summer source habitat in WUI areas would likely be the least compatible with restoration or maintenance of old forest. WUI treatments on the Forest typically maintain important wildlife habitat attributes outside of a 500-foot buffer zone of communities and developments. A new guideline (WIGU18) has been proposed that would require projects to be designed to meet wildlife conservation and restoration objectives where resource objectives are compatible. Additionally, direction already provided in the Forest Plan would continue to protect nesting and fledgling habitat (WIST05, WIST03, and WIGU07).

Direction regarding new road development, road reconstruction, and existing road density is discussed in sections 3.3.4.1 and 3.3.6 (Habitat Family 2, Alternative B). This direction, both Forest-wide and MA specific, would likely provide some further assurance that effects related to road development and density would be reduced over time. Decreasing road densities would reduce disturbance and habitat fragmentation and benefit the northern goshawk.

While differences between alternatives are not apparent in the projections, Alternative B would increase source habitat under the guidance of a long-term restoration strategy and better address the quality concerns of source habitat (i.e., patch size and distribution) rather than just the quantity. As with Alternative A, Alternative B would allow natural disturbance processes, such as fire, to occur and vegetative conditions would be managed toward desired conditions within their HRV. Restoring vegetative structural conditions and disturbance processes would provide for well-distributed, connected habitat.

Predicted Northern Goshawk Sustainability Outcome for Alternative B

Management under Alternative B is expected to meet northern goshawk source habitat needs and maintain source habitat within the HRV. Habitat would continue to be well distributed across the Forest within the range of the species. The sustainability outcome for northern goshawk is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.6.8 Species Associated with Habitat Family 2—American Three-toed Woodpecker

3.3.6.8.1 Current Condition

American three-toed woodpeckers are a Forest sensitive species. This species inhabits mature and over-mature stands containing bark beetles, disease, and heart rot (Goggans et al. 1988) and recent stand-replacing burns with abundant wood-boring insects (Hutto 1995; Caton 1996). Trees with heart rot may be necessary for nest sites (Lester 1980, Goggans et al. 1988), and the presence of trees affected by insects and diseases is important for a sufficient prey base (Goggans et al. 1988). Nest trees generally are within the diameter range of 9–20 inches d.b.h. (Bull 1980; Lester 1980; Goggans et al. 1988), and lodgepole pine trees are most often selected for nesting (Lester 1980; Goggans et al. 1988). American three-toed woodpeckers forage on dead trees averaging 9 inches d.b.h. (Bull et al. 1986) and 15.5 inches d.b.h. (Goggans et al. 1989). Although these tree sizes are not in the large diameter class, foraging does occur in large tree size stands (Goggans et al. 1988). Mature and over-mature forests, typical of American three-toed woodpecker source habitat, would be expected to include the large tree size stands and also have higher incidences of heart rot, disease, or the early stages of decay present (Bull et al. 1986; Goggans et al. 1988).

American three-toed woodpeckers are strongly associated with areas that have experienced insect or disease outbreaks or wildfire and have high snag densities. Large burns and beetle infested stands are strongly favored over unburned or noninfested stands (Goggans et al. 1988; Caton 1996), particularly in the first 5 years before snags dry out when beetles are active (Bull 1980). American three-toed woodpecker population levels often coincide with insect outbreaks and the birds' targeted feeding can often depress such outbreaks (Marcot 1997; O'Neil et al. 2001). Populations typically peak during the first 3–5 years after a fire or beetle epidemic in response to the increased foraging opportunities.

Occurrence data on the Forest identify 124 cumulative three-toed woodpecker observation records since 1987; however, the majority of these observations were recorded after 2001, coincident with the recent mountain pine beetle epidemic affecting the Sawtooth Valley and Stanley Basin.

On the Forest, vegetative communities capable of providing source habitat conditions include PVGs 7, 10, and 11 in the small, medium, and large tree size classes (Filbert et al. 2011). These PVGs are associated with mixed2 and lethal fire regimes. Mountain pine beetle infestations and/or high-intensity fire events are primary recycling agents in these PVGs; both of these agents are disturbances associated with American three-toed woodpecker habitat and population irruptions. Snags are a special habitat feature for American three-toed woodpeckers and provide nesting, roosting, and foraging opportunities.

Most watersheds on the north end of the Forest are capable of providing three-toed woodpecker source habitat (Figure 3-25); the south end of the Forest (the Minidoka Ranger District) does not provide source habitat. Figure 3-36 displays trend data for unburned or "green" three-toed woodpecker source habitat on the Forest. Currently, 226,000 acres of unburned ("green") source habitat exists on the Forest, which is within the HRV. Approximately 130,000 acres of recently (since 2005) burned habitat exists on the Forest, however this habitat is not factored in to the trend data, at Decade 0, in Figure 3-26. Because these acres burned in various intensities, it is unlikely that all are now three-toed woodpecker source habitat. However, much habitat likely exists beyond that identified at Decade 0 in Figure 3-26. Similarly, the model used to portray habitat trend incorporated disturbance events over time, which likely created “black” (burned) source habitat, but only “green” (unburned) source habitat is portrayed in the trend. Thus, more source habitat over time would be expected than the trend for Alternative A shows (Figure 3-26).

Watersheds with <25 percent source habitat historically were distributed across the south and western edge of the northern portion of the Forest (Figure 3-25). However, key periodic disturbance events that created source habitat could not be spatially portrayed when modeling historical habitat. While watersheds across the Forest appear to fall within one class, historically, watersheds probably fluctuated in amount of habitat as disturbances occurred across the landscape. Most recently, source habitat has been concentrated in the northern half of the Forest where fire disturbances and insect and disease outbreaks have occurred within the last decade. However, source habitat is currently portrayed as decreasing in many of these watersheds due to the waning of the mountain pine beetle epidemic (Figure 3-25). Mountain pine beetles have returned to endemic levels and the extensive lodgepole pine community now remains in an early seral condition, although with numerous snags and logs present.

The greatest risk factors for the American three-toed woodpecker relative to the Forest are fuels treatments, salvage logging, fuelwood cutting, and declines in mature forest habitats (Filbert et al. 2011). It is important to note that the Forest currently maintains a small timber management program, although fuels management and fuelwood cutting has increased over the past decade with the occurrence of the mountain pine beetle epidemic. Related issues include removal of beetle-infested trees and a decline in late-seral forest communities and their associated components, such as mature trees, snags (>9 inches d.b.h.), and logs. Departures from historical landscape patterns and processes can temporarily benefit the three-toed woodpecker in the short term but may not provide a long-term continuous flow of habitat if landscape patches vulnerable to uncharacteristic disturbances (i.e., fire, insects, and disease) are much larger than would be historically expected. Uncharacteristic disturbances could then contribute to much larger pulses of habitat (temporary or short-term benefit) and result in longer periods of nonhabitat. Salvage logging can reduce the numbers of dead or dying trees and reduce the occurrence of wood-boring beetles. Snags in a clumped pattern provide more efficient foraging habitat than individual trees and higher numbers of snags support greater numbers of wood-boring beetles.

3.3.6.8.1.1 Current Sustainability Outcome for American Three-toed Woodpecker

The sustainability outcome for the three-toed woodpecker is B (see section 3.3.3 for sustainability outcome definitions). Source habitat for American three-toed woodpecker is within the HRV and this amount increases substantially when recent large wildfires are included in the analysis. Overall source habitat for this species is well connected (Filbert et al. 2011).

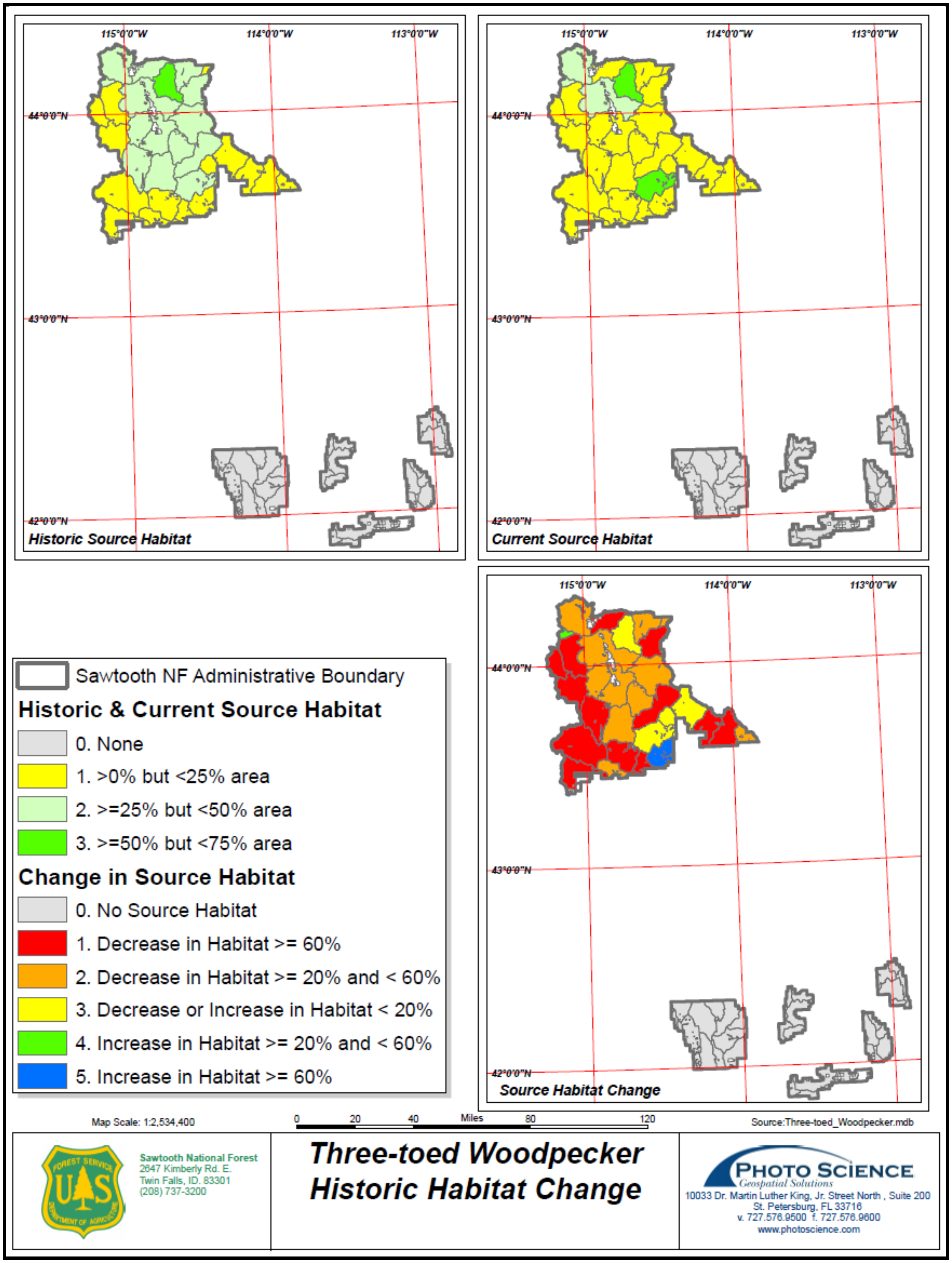

Figure 3-25. Historical, Current, and Relative Change in American Three-toed Woodpecker Source Habitat on the Sawtooth National Forest

3.3.6.8.2 Environmental Consequences

3.3.6.8.2.1 Environmental Consequences of Alternative A

The effects of Alternative A on retaining large-tree stands, legacy trees, or old-forest habitat are the same as described above for other Family 2 members and in section 3.3.4.1; although the American three-toed woodpecker does not depend exclusively on old-forest habitat and large tree stands. While a lack of direction to manage for old-forests or legacy trees would have some effect on the species and its habitat quality, the three toed woodpeckers' ability to use the both the moderate and the large tree size classes, in addition to the larger end of the small tree size class, and provides a cushion against loss or declines in this one structural stage. However, late-seral, old-forests are expected to have higher incidences of heart rot and disease or early stages of decay present, increasing their value for nesting and foraging (Bull et al. 1986; Goggans et al. 1989).

Desired conditions for snags are within the HRV under either alternative. Unlike other species in Family 2 that prefer large-diameter snags, the American three-toed woodpecker uses snags in the small and medium tree size class for nesting and foraging (Filbert et al. 2011). Although these preferred snags are not the larger-diameter classes typically found in late-seral old forests, studies have found that these 9 to 15 inch d.b.h. snags in late-seral forests are used, often where dead and dying trees in the 9 to 15-inch d.b.h. range occur within a matrix of larger trees. Alternative A would not include any new direction to maintain or promote old forest habitat or its attributes.

In Alternative A, areas salvaged after a disturbance would retain at least the minimum number of desired snags per acre. However, the minimum number of desired snags per acre was established based on the HRV for "green" stands not disturbed stands. Alternative A would not propose any new direction to address snags in salvage areas, which would decrease the amount of habitat capable of supporting wood-boring beetles and be unlikely to satisfy the needs for the three-toed woodpecker and other species that benefit from these source habitat "pulses."

American three toed woodpecker source habitat is projected to remain in the HRV under Alternative A (Figure 3-26). The quantity of source habitat is predicted to increase, although the trend would be unable to fully account for habitat components such as snags.

All source habitats occur in areas where disturbance processes, such as fire, are allowed to occur and vegetative conditions are managed toward desired conditions within their HRV. American three-toed woodpecker habitat on more intensively managed acres (e.g., WUI areas) may remain of lesser quality (e.g., reduced presence of snags) than acres in more remote areas since no direction is included under Alternative A to guide maintenance and restoration of old-forest habitat, snags, and other components. Old-forest and large-tree conditions in most areas would likely develop regardless of management direction as the forested community matures.

Predicted Three-toed Woodpecker Sustainability Outcome for Alternative A

Continued management is expected to meet this species' source habitat needs, and the sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions). Habitat would remain well connected on the Forest and is projected to remain within the HRV.

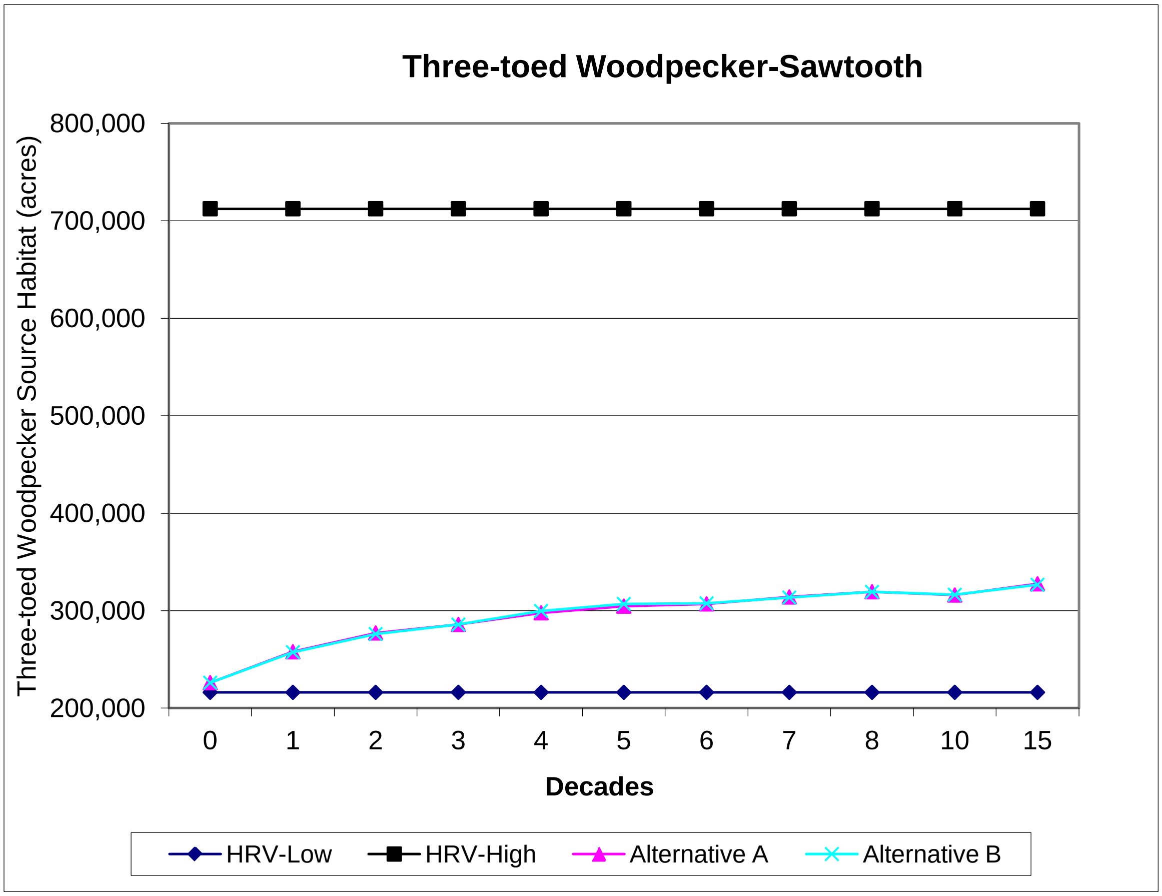

Figure 3-26. American Three-toed Woodpecker Forest-wide Source Habitat Trend on the Sawtooth National Forest

3.3.6.8.2.2 Environmental Consequences of Alternative B

Source habitat under Alternative B, as with Alternative A, is predicted to remain within the HRV for the long term (Figure 3-26). New Forest direction under Alternative B (WIST08, WIST09, WIGU15, VEST03 and VEST04) would help ensure large trees, snags, logs, and other late-seral multilayer forest components are retained in managed areas. New direction for old-forest and large-tree stands would likely provide for the unburned source habitat conditions used by this species.

Under Alternative B, areas salvaged after a disturbance would retain at least the maximum number of desired snags per acre. The new direction to manage for a minimum of the uppermost end of snag numbers would retain a greater number of snags on disturbed landscapes and would attempt to more closely meet the needs of this species. Additionally, where larger diameter snags are not available, additional snags in the next available size classes would be retained to meet the maximum total number of snags per acre under desired conditions. This guidance further promotes retaining snags in the size classes preferred by the American three-toed woodpecker.

As with Alternative A, all source habitats would occur in areas where disturbance processes, such as fire, would be allowed and vegetative conditions would be managed toward desired conditions under Alternative B. Additional direction would be included under Alternative B to address salvage logging in source habitats.

Predicted Three-toed Woodpecker Sustainability Outcome for Alternative B

The sustainability outcome is predicted to remain within Outcome B (see section 3.3.3 for sustainability outcome definitions). Source habitat would remain within the HRV and trend upward under Alternative B. Restoring vegetative structural conditions would provide for well-distributed, connected habitat.

3.3.7 Habitat Family 3—Forest Mosaic Family

Habitats in Habitat Family 3, much like those in Families 1 and 2, exhibit declines in the large tree size class and large tree canopy cover class (Filbert et al. 2011). Timber harvest activities, fire exclusion, and insect and disease infestation dynamics are likely primary causes for declining trends in Family 3 source habitats. Climate change may also be contributing to source habitat declines for Family 3.

Family 3 species tend to be habitat generalists in montane forests (Filbert et al. 2011). Although models show source habitat is outside historical habitat levels for some species associated with Family 3, results indicate that source habitat is within or above the HRV for other Family 3 species. While source habitat attributes have declined for some Family 3 species, it is not the sole reason for overall declines in Family 3 species. Instead, source environments, including vegetative and nonvegetative factors, may be more important in providing for Family 3 species' sustainability. Human presence and disturbance are examples of non-vegetative parameters. Source environments can influence the relative abundance of species and their distribution throughout available source habitat.

Focal species for Habitat Family 3 are wolverine, Canada lynx, and dusky grouse. Since only focal species that are threatened, endangered, sensitive or MIS are presented in this EA, the dusky grouse is not included in this EA. Discussion and sustainability outcome for the dusky grouse is disclosed in the project record.

The wolverine is a species that is sensitive to human activity during winter (Krebs et al. 2007). Of special concern is wolverine denning habitat. As interest and participation in backcountry winter recreation grows, the likelihood of humans coming into contact with wolverine during the late winter denning period increases. Of particular concern is winter recreation in high-elevation cirque basins where talus areas associated with these basins are often used as den sites. Winter recreational activity may affect reproduction and recruitment of wolverines by displacing animals at den sites during this sensitive time in their life-cycle. Currently, 74 percent of watersheds with wolverine source habitat are designated for Semi Primitive Motorized (SPM) winter recreation under the winter Recreation Opportunity Spectrum (ROS).[15] These areas are also frequently used by

[15] The ROS for the Forest provides a framework for defining the types of outdoor recreational opportunities and experiences available to meet the desires of the public. The continuum ranges from primitive to concentrated experiences, and in winter most areas on the Forest are designated SPM. SPM areas can offer a variety of experiences but most often these are in the form of cross-country snowmobile travel. While

backcountry skiers and heli-skiers. The strong overlap between wolverine source habitat and areas available for motorized and other winter recreation raises concerns as to whether winter recreation may be affecting reproductive success of wolverines on the Forest. Production of young at denning sites is considered a primary factor limiting wolverine population growth (Copeland 1996). Successful reproduction and interaction with other individuals are important factors for wolverine sustainability.

The Forest Plan provides direction for addressing conflicts in MAs within wolverine range, but it does not identify priority watersheds for maintaining connectivity of source habitat areas. Current direction includes a Recreation Objective to "provide reproductive denning habitat security for wolverine" or to "provide winter recreation opportunities outside of wolverine denning areas" (MA 2-8). A Recreation Standard in MA 2-5 instructs the Forest to "restrict or modify winter recreation activities where conflicts exist with wolverine." Additionally, MA 1 (Sawtooth Wilderness) provides direction to manage the area to "ensure the preservation and protection of …fish and wildlife values."

Canada lynx may also be sensitive to human presence or habitat disturbance resulting from human presence. The lynx is listed as a threatened species under the ESA and existing Forest Plan direction to address human influence is extensive (TEOB03, TEOB05, TEOB07, TEOB27-TEOB32, TEST06, TEST12, TEST15, TEST34, TEGU06).

Although there have been reports of lynx crossing roads (Squires and Oakleaf 2005), lynx are typically reluctant to cross roads with high traffic volume and may avoid roaded areas (Boutin et al. 2008; Squires and Oakleaf 2005). Some studies have found lynx occupancy was lower in areas with high road densities; although others noted that lynx distribution did not correlate with low road densities as strongly as correlations found in other carnivores (Wisdom et al. 2000). Recent advances in snowmobile technology and performance, along with increased trail grooming programs, have increased human activity and the amount of snow compaction in deep snow areas of the Intermountain West, coinciding with a decrease in lynx populations (Bunnell et al. 2006; Buskirk et al. 2000; Knight and Cole 1995; Ruediger et al. 2000). Other studies have stated that limiting compacted snowmobile trails is unlikely to significantly reduce exploitation and competition between other predators and lynx during winter (Buskirk et al. 2000; Kolbe et al. 2007).

Successful restoration and maintenance of Family 3 habitats needs to reflect both habitat restoration needs and consequences of human influence. Of the focal species in Family 3 affected by human influence, only the wolverine reliably occurs on the Forest today. Therefore, wolverine is the foundation of the Family 3 analysis and restoration strategy for human influence on the Forest.

3.3.7.1 Family 3 Source Habitat

Family 3 source habitats include the full spectrum of forest communities and structural stages. Species within this family tend to be habitat generalists, using montane forests,

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non-motorized recreational opportunities may also be present, they are expected to be influenced by motorized use (USDA Forest Service 2003a).

riparian woodlands, and subalpine forests (Wisdom et al. 2000). Two of the three focal species in Habitat Family 3 have low or isolated populations (Filbert et al. 2011), indicating that factors other than source habitat quantity are inhibiting these populations. Special habitat features are variable due to the varied species in this family but include logs for resting or denning sites; talus for denning; riparian and forest community shrub-herb vegetation for cover, forage, and nesting; and the juxtaposition of forest and nonforest communities for cover, forage, and nesting.

The overall extent and quantity of Family 3 source habitat is above what historically occurred on the Forest (Figure 3-27); however, the distribution and extent of structural stages and species composition within that habitat has shifted. For example, the GFSS and large tree size classes that comprise lower elevation Family 3 source habitat on the Forest are out of the HRV (Filbert et al. 2011), with too many acres in the GFSS and smaller size classes and too few acres in the large tree size class. The greatest changes are in PVGs 1, 2, 3, and 4, which provide source habitat for dusky grouse summer habitat. The increase in GFSS in these lower elevation PVGs is primarily due to large fires that have occurred in the last two decades (Filbert et al. 2011). Family 3 source habitats in the upper elevations, including PVGs 7 and 11, are in or are relatively close to the HRV in terms of tree size class (Filbert et al. 2011). However, departures from the HRV can be found in all Family 3 PVGs with regard to canopy cover, which has become denser in all PVGs, thereby altering the structure within source habitats (Filbert et al. 2011).

Human influences also affect source habitat for Family 3 species. Motorized access via roads or cross-country travel increases the possibility of human contact. Of 64 Forest watersheds that provide Family 3 source habitat, all but 9 are roaded; however, only 5 are in the highest road density class (>1.7 miles per square mile) and all of these are on the Minidoka Ranger District, which does not provide source habitat for either wolverine or lynx. Still, unmanaged off-highway vehicles (OHVs) and dispersed recreation use has resulted in unplanned roads and trails, erosion, and the spread of invasive weeds, all of which contribute to habitat degradation. Recent implementation of the Travel Management Rule (36 CFR 212, 251, 261, and 295) has begun to address the extent of OHV use and nonsystem travel routes on the Forest and officially restricts use to designated routes. In winter months, roads provide snow-covered routes across the landscape, facilitating access by skiers, snowshoers, and snowmobilers.

Wolverine and lynx may be particularly vulnerable to human disturbance at critical times of the year, and roads increase the potential for interactions with humans. For these two species, physiological and behavioral adaptations provide an advantage to living in high-elevation, snow covered habitats. Still, harsh environmental conditions and limited food narrow the range within which these species can deal with added survival and reproduction stressors. Widespread backcountry winter recreation by snowmobilers, skiers, or heli-skiers can increase the potential for human interaction during this critical period. Effects from human interaction can result in displacement or potential reductions in productivity (Wisdom et al. 2000). Winter recreational use, particularly snowmobile and heli-skiing, may have localized impacts on wolverine denning habitat (Heinemeyer et al. 2001). Negative associations have been reported between wolverine occurrence and areas where helicopter and backcountry skiing occur (Krebs et al. 2007).

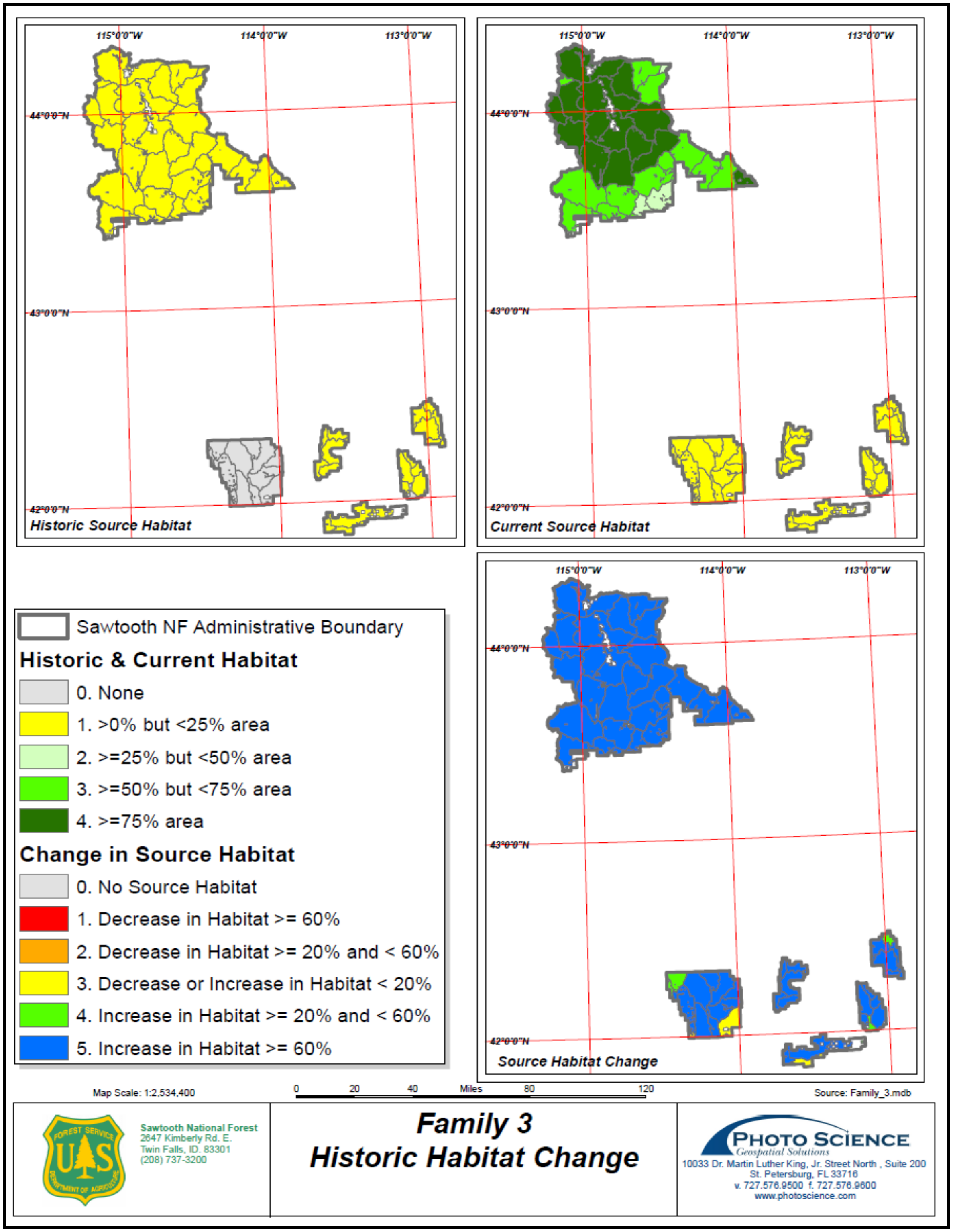

Figure 3-27. Historical, Current, and Relative Change in Family 3 Source Habitat on the Sawtooth National Forest

Wolverine was selected as a focal species to evaluate the potential impact of human influence on source habitat. Wolverine distribution may be influenced by direct human disturbance or higher risk of human-caused mortality (Carroll et al. 2001; Hornocker and Hash 1981; May et al. 2006; Weaver et al. 1996). Studies show wolverine consistently occupy habitats throughout their range that are isolated or remote from human influence (Banci 1994; Carroll et al. 2003; Copeland et al. 2007; Hornocker and Hash 1981; Krebs et al. 2007; May et al. 2006; Rowland et al. 2003; Weaver et al. 1996); however, a preference for subalpine habitats rather than an avoidance of human-related features may partly explain this finding (Copeland et al. 2007). Still, human harassment has been reported to adversely affect wolverines, and the species is vulnerable to trapping (Hornocker and Hash 1981; Carroll et al. 2001). Currently, human presence in source habitat is possible year-round and occurs in numerous locations on the Forest that experience concentrated backcountry use year-round. Several human influences in wolverine source habitat exist on the Forest, including snowmobile routes, heli skiing, backcountry skiing routes, and roads and other recreation trails (Filbert et al. 2011).

Low human population density and low road density have been the most useful predictors for modeling wolverine observations (Carroll et al. 2001; Rowland et al. 2003). Although wolverines avoid roaded areas, most roads occur at lower elevations rather than higher elevations where wolverines tend to establish territories. This relationship may therefore be an artifact of unequal availability (Copeland et al. 2007; May et al. 2006). In general, road densities in Forest areas with persistent snow are <1.7 miles per square mile because few roads have been developed in steep, rugged, high-elevation terrain. Currently, no watersheds on the Forest with wolverine source habitat have >1.7 miles of road per square mile (Filbert et al. 2011). Interactions during the snow-free periods of the year are likely low given the limited overlap between source habitat and high road densities. However, many areas with persistent snow on the Forest are open to motorized winter recreation and/or heli-skiing and all areas on the forest are open to backcountry and cross-country skiing and trekking. Increasing numbers of winter recreationists, improving capabilities of over-the-snow equipment, and increasing interest in backcountry experiences are increasing the likelihood of human presence in or near occupied denning habitat. For the wolverine, the winter reproductive period may be the most critical time in its life cycle (Copeland 2006; Magoun and Copeland 1998). As more remote areas are accessed during the winter, less area is available as refuge from human influence and disturbance (Filbert et al. 2011).

Human influences must be considered to successfully restore and maintain Family 3 source habitat patches and connectivity on the landscape. Balancing human influences and species' requirements will be challenging and likely require coordination between managers and researchers to address questions of conflict.

3.3.7.1.1 Current Sustainability Outcome for Family 3

Family 3 source habitats appear to be sufficiently distributed and abundant but may be underused by some species in areas with high human use, which is resulting in displacement of individuals and reducing local distribution and abundance. The sustainability outcome for Habitat Family 3 is C (see section 3.3.3 for sustainability outcome definitions).

3.3.7.2 Environmental Consequences for Family 3 Habitat

3.3.7.2.1 Environmental Consequences of Alternative A

Habitat quantity is within the HRV and management actions are expected to maintain quantity within the HRV since Family 3 source habitats include the full spectrum of Forest communities and structural stages. Under Alternative A, management activities would continue to influence the proportions of these habitats but would not eliminate them.

Human influences on the landscape may affect the use of existing source habitat and, thus, the source environment. Source habitats for some species in Family 3 may include refugia or remote areas with low levels of human presence. Alternative A maintains current Forest Plan direction (WIST03) to "Mitigate management activities within known nesting or denning sites of MIS or sensitive species if those actions would disrupt the reproductive success of those sites during the nesting or denning period. Sites, periods, and mitigation measures shall be determined during project planning." Alternative A also contains MA direction to address wolverine reproductive denning habitat; however, this direction is not consistently applied across all MAs that contain denning habitat (refer to discussion in section 3.3.7). Currently, the Forest is cooperating in studies to understand the potential effects to denning sites and reproductive success and identify sites, periods, and potential mitigation measures in response to winter snow travel and use.

Under Alternative A, existing Forest Plan direction to address recreational and road-related impacts to resources would remain and be implemented project-by-project without the context of a larger-scale strategy. Although existing Forest Plan direction provides a basis for addressing recreation conflicts, it is unlikely that individual actions would apply guidance in a manner that effectively reduces risks and threats to the family. Pressures to increase transportation and recreational access on NFS lands are expected to continue affecting available options to manage a network of habitat patches across the landscape.

3.3.7.2.1.1 Predicted Sustainability Outcome under Alternative A

Alternative A maintains a sustainability outcome of C for Habitat Family 3 (see section 3.3.3 for sustainability outcome definitions).

3.3.7.2.2 Environmental Consequences of Alternative B

For Alternative B, as under Alternative A, habitat quantity is within the HRV and management actions are expected to maintain this status since Family 3 source habitats include the full spectrum of forest communities and structural stages. Management activities would continue to influence the proportions of these habitats but would not eliminate them.

Source habitats for some Family 3 species include refugia or remote areas with low levels of human presence. Alternative B expands existing management direction for wolverine and applies it consistently in MAs 2 through 8 in order to reduce recreation conflicts with wolverine and to protect wolverine denning habitat from disturbance. Under Alternative B, a new Forest-wide objective (WIOB14) would emphasize the need to cooperate with researchers to answer basic life history questions and management conflicts of species of conservation concern, which include wolverine and other species such as mountain quail (*Oreortyx pictus)*. Also, a new Forest-wide guideline (WIGU17) would strengthen the Forest's commitment to address the human disturbance impact during critical winter denning periods for wolverines. This guideline would stipulate monitoring of winter recreational use in high-elevation habitats characteristic of wolverine denning habitat and evaluating relationships between winter recreation activities and wolverine use. Other guidance included under Alternative B that strengthens current direction to minimize or avoid effects from human-related activities on wildlife resources include the modification of TEOB03, FROB12, and REGU07 and the addition of WIOB16. These objectives and guideline address the identification and management of degrading effects to wildlife from roads, facilities, and recreation. The addition of this Forest-wide direction would lay the groundwork to resolve source environment issues for the wolverine.

The prioritization strategy to address human influences on source habitat (see Appendix 3 of this EA) identifies areas on the Forest that are important for maintaining or re-establishing connectivity between relatively remote refugia (i.e., core areas). The strategy would be incorporated into the Forest Plan with the addition of the objectives in MA direction described above. MA and Forest-wide direction to mitigate management actions within known denning sites (WIST03) could address risk where winter recreation activities are determined to impact wolverine during the denning period if a den site is located, though the likelihood of locating a den site is low. There are <70 documented wolverine dens in North America, and only a small portion of those occur in the central Idaho mountains (Copeland et al. 2010). Forest-wide objective WIOB14 and guideline WIGU17 would increase the possibility that a den site or areas of risk are identified through monitoring and/or research and that data from these efforts could be used to support management decisions to reduce or address that risk.

3.3.7.2.2.1 Predicted Sustainability Outcome under Alternative B

Family 3 sustainability outcome is predicted to remain in Outcome C (see section 3.3.3 for sustainability outcome definitions). Even with efforts to identify human influence in wolverine denning habitat over the short term, ongoing advances in technology and interest in backcountry experiences are likely to establish human use in refugia before monitoring efforts can determine wolverine use and/or conflict.

3.3.7.3 Species Associated with Habitat Family 3—Canada Lynx

3.3.7.3.1 Current Condition

The Canada lynx is an ESA listed threatened species. In Idaho, Canada lynx typically inhabit montane and subalpine coniferous forests above 5,000 feet (McKelvey et al. 2000; Ruediger et al. 2000). In central Idaho, primary habitat has been identified as lodgepole pine, subalpine fir, and Engelmann spruce (*Picea engelmannii*) habitat types (Ruediger et al. 2000). Cool, moist Douglas fir, where interspersed with subalpine forest, also provides habitat (Ruediger et al. 2000).

Most coniferous forest structural stages provide lynx source habitats with the exception of old forest single-storied stands. Riparian woodlands and shrublands are also source habitats. Key components of lynx habitat include denning habitat, foraging habitat, and travel corridors provided by a mosaic of forest habitats (Ruggiero et al. 1994). Vegetative communities on the Forest capable of providing source habitat conditions include PVGs 3, 7, 10, and 11 above 5,000 feet (Filbert et al. 2011). Large logs and rootwads are special habitat features for lynx (Koehler 1990; Ruggiero et al. 1999; Wisdom et al. 2000) and provide important natal and maternal denning sites.

Source habitat for lynx was assessed within Lynx Analysis Units (LAU) on the Forest. LAUs are defined as units that approximate an area of source habitat sufficient to provide a home range for a female lynx. LAUs were identified through consultation with the FWS prior to the 2003 Forest Plan revision and continue to be used to evaluate lynx habitat and effects to lynx. LAUs occur across the northern districts on the Forest but do not occur on the Minidoka Ranger District to the south (Figure 3-28 and Figure 3-29).

Late-seral forests are used by the lynx for denning, rearing, and hunting alternative sources of prey (Ruggiero et al. 1999). Denning typically occurs from early to mid-March through June (Ruggiero et al. 1994). Relatively small patches of mature or old-forest are required for dens although these areas must be near and connected to high-quality foraging habitat (Koehler and Brittell 1990). Den sites typically occur on north-northeast slopes of the Forest and are often associated with large logs or rootwads, which provide escape and thermal cover for kittens. Denning habitat may be found in older mature forest of conifer or mixed conifer-deciduous types or in regenerating stands older than 20 years. Habitat quality, as measured by the availability of alternate den sites, appears to be an important factor in kitten survival when disturbance occurs (Ruggiero et al. 1994).

Foraging habitat supports primary prey (i.e., snowshoe hare [*Lepus americanus*]) and/or important alternate prey (especially red squirrels [*Tamiasciurus hudsonicus*]). Lynx primarily forage in early-seral forests and in some mid-seral forests that support high numbers of prey. The highest quality snowshoe hare habitats support a high density of young trees or shrubs, especially with branches that protrude above average snow levels. These conditions may occur in early successional stands, following some type of disturbance or in older forests with a substantial understory of shrubs and young conifer trees. Red squirrel densities tend to be highest in mature cone-bearing forests with substantial quantities of large logs (Ruediger et al. 2000). Although snowshoe hares are the primary food of lynx throughout its range, lynx also rely on mice, squirrels, and grouse, especially during summer months (Ruggiero et al. 1994).

Lynx are known to move long distances, but open areas, whether man-made or natural, will discourage lynx use and disrupt their movements (Ruggiero et al. 1994). Although lynx will cross openings <330 feet wide, they do not hunt in these areas (Koehler 1990). Travel cover allows lynx movement within their home ranges and provides access to denning sites and foraging habitats.

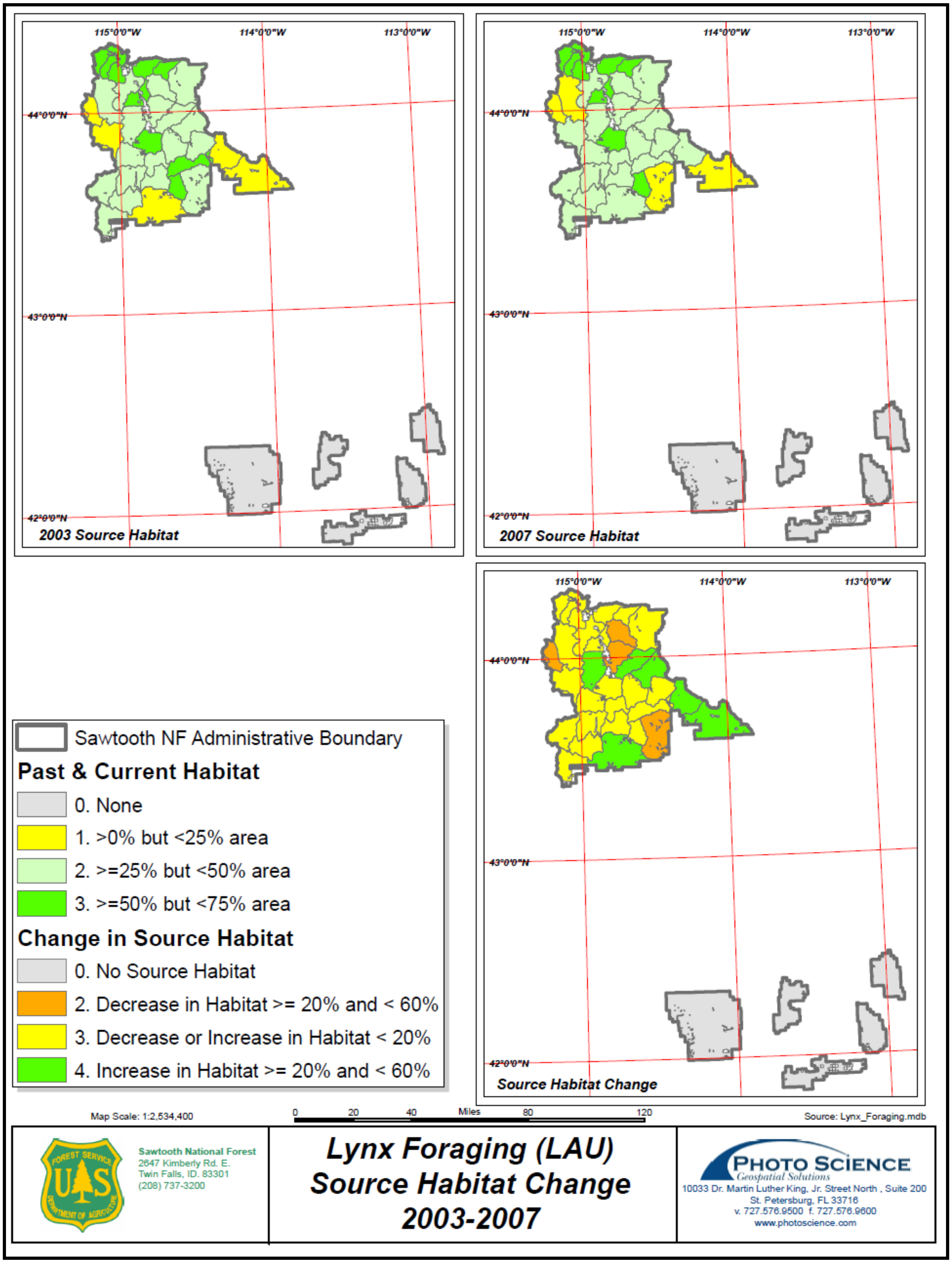

Figure 3-28. Canada Lynx Source Habitat, by Lynx Analysis Units (LAUs) on the Sawtooth National Forest

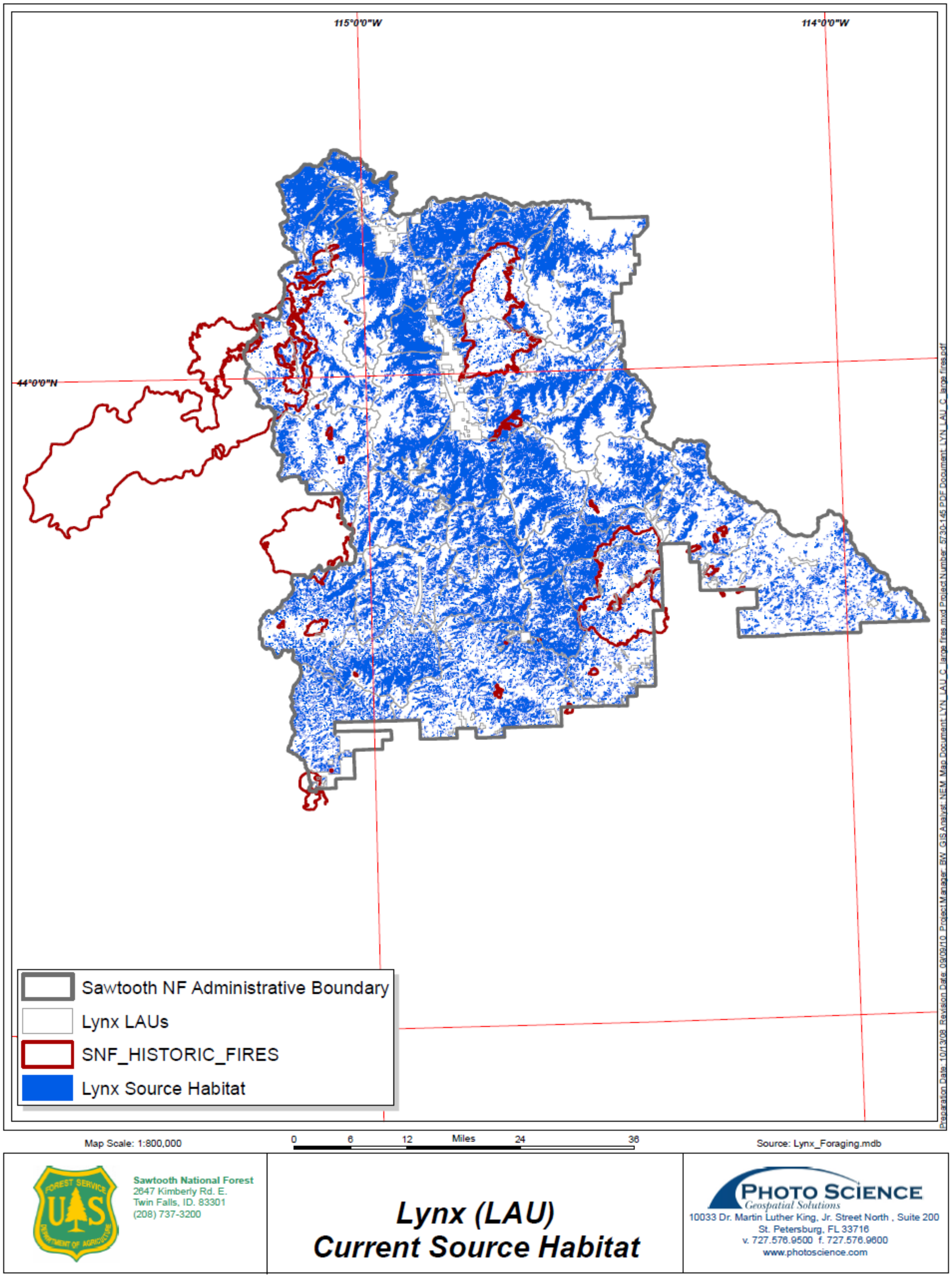

Figure 3-29. Canada Lynx Source Habitat Patches and Large Fires on the Sawtooth National Forest

Home range size varies considerably and usually depends on prey base availability. Typical home range territories across southern Canada and the lower 48 states vary from 15 to 147 square miles (Ruediger et al. 2000). Lynx movement and dispersal distances also vary greatly. Documented daily movement distances have ranged from 1.6 to 3.2 miles, depending on prey densities. Exploratory movements, usually in summer months and outside of identified home range boundaries, have varied between 9 and 25 miles. Both adults and subadults have been documented making long-distance movements (up to 600 miles) during periods of prey scarcity (Ruediger et al. 2000).

While several occurrences of Canada lynx have been recorded on the Forest, most were from trapping records dating from the mid-1970s and earlier within the Sawtooth Valley and Stanley Basin on the north end of the Forest (Filbert et al. 2011). Detection surveys occurred on the Forest in 2000 and 2001, but no lynx were found. The last recorded observations of lynx on the Forest were of tracks identified in the late 1990s on the Sawtooth NRA (Filbert et al. 2011). Lynx inhabiting southern montane forests are known to exist in low densities and for most of the Forest, it appears lynx were never common here as they are further north in their range.

Although the model used to determine lynx source habitat was not able to depict historical amounts, current lynx habitat was modeled for each LAU. Changes in habitat between the Forest Plan analysis in 2003 and the end of 2007 when the forested vegetation refresh occurred show habitat has declined in a few LAUs; however, overall habitat remains largely unchanged (Figure 3-28). Some LAUs on the on the Forest have experienced recent large wildfires, decreasing source habitat in those LAUs (Figure 3-28 and Figure 3-29). LAUs not meeting desired conditions (currently <70 percent of source habitat capacity) due to recent wildfire activity are Fisher-Taylor, Upper Warm Springs-Swimm-Martin, and Upper North Fork Boise-Johnson on the Sawtooth NRA; Lower Warm Springs-Greenhorn-Deer on the Ketchum Ranger District; and Willow-Abbot-Big Water-Kelly on the Fairfield Ranger District. Areas affected by large fires will require at least 5–15 years for shrub and early seral forest stages to re-grow and provide foraging opportunities for lynx. In time, standing dead trees will fall providing future denning habitat structure for lynx.

When comparing total current source habitat to source habitat capacity on the Forest, quantity of source habitat for lynx does not appear to be an issue (Filbert et al. 2011). However, population trends for snowshoe hare, the primary prey source for lynx, are unknown on the Forest, and it is unclear if current habitat conditions are providing needed levels of horizontal understory cover to support snowshoe hare and sustain a lynx population. Much of the Forest is composed of dry forest types (i.e., lodgepole pine, cool-dry Douglas fir) that may not support dense understory growth or provide optimal habitat conditions for snowshoe hare or lynx foraging.

Several studies describe lynx as being generally tolerant of human-related activities, including moderate levels of snowmobile traffic, lightly roaded habitat, and ski area activities (Ruediger et al. 2000). Roads in lynx source habitat present moderate influences. Most LAUs (20 of 32) have >0.7 mile per square mile of road in source habitat. Roads are not likely a major risk factor in lynx habitat modification or for indirect effects on lynx movement in source habitat on the Forest.

Research remains conflicted on whether snow compaction activities increase competition from carnivores by providing access into deep winter snow conditions and to snowshoe hares (Bunnell et al. 2006; Kolbe et al. 2007). Winter recreation use remains widespread on the Forest. The Winter ROS classification is motorized in more than 75 percent of LAUs on the Forest and winter trail grooming for cross-country skiing occurs in many LAUs as well (Filbert et al. 2011). Existing Forest Plan restrictions specifying "no net increase in groomed snowmobile trails or designated play areas" maintain current amounts of compaction but do not address cross-country (dispersed) snowmobile use. The large overlap between areas open to motorized winter use and areas of source habitat leaves fewer areas where the direct or indirect effects of winter human disturbance and use are low.

3.3.7.3.1.1 Current Sustainability Outcome for Lynx

The sustainability outcome for the Canada lynx is B (see section 3.3.3 for sustainability outcome definitions).

3.3.7.3.2 Environmental Consequences

3.3.7.3.2.1 Environmental Consequences for Alternative A

Although source habitat has declined, this decline has been a result of natural disturbance processes in the mixed2 and lethal fire regimes. Habitat for this species occurs at higher elevations and in plant communities that typically have limited management activities. The effects to lynx would be as described for Alternative 7[16] in the Final EIS for the 2003 Forest Plan.

<u>Predicted Sustainability Outcome under Alternative A</u>

Although wildfires would continue to shape lynx habitat, effects are predicted to remain within the HRV since vegetation conditions in lynx source habitat are considered to be only moderately departed if at all. Additionally, road density is low within source habitat and the effects of snow compacting activities remain undetermined. The predicted sustainability outcome for lynx would remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

3.3.7.3.2.2 Environmental Consequences for Alternative B

The effects analysis under the 2003 Forest Plan remains the same under Alternative B. Wildfire would continue to play a primary role in altering and developing lynx habitat on the Forest and management activities would continue to be minimal in lynx habitat. Current large patches of GFSS would mature over time and develop into large patches of habitat suitable for snowshoe hare.

<u>Predicted Sustainability Outcome under Alternatives B</u>

Similar to the discussion for Alternative A, the predicted sustainability outcome would remain within Outcome B (see section 3.3.3 for sustainability outcome definitions).

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[16] Alternative 7 was selected as the 2003 Forest Plan, and is Alternative A in this EA.

3.3.7.4 Species Associated with Habitat Family 3—Wolverine

3.3.7.4.1 Current Condition

Source habitat for wolverine includes all subalpine and montane forests. Within forest types, all structural stages, except the closed canopy stem exclusion stage, provide source habitat (Wisdom et al. 2000). Elevation is a key variable for distinguishing wolverine presence, and in central Idaho, wolverine almost always prefer higher elevations (>2400 meters) (Copeland 2006). Primary winter habitat in central Idaho is mid-elevation conifer forest that includes both Douglas-fir and lodgepole pine communities; summer habitat includes subalpine cover types, especially whitebark pine, and areas associated with montane parks and steep slopes (Copeland et al. 2007).

Wolverines require extensive tracts of land to accommodate large home ranges and wide-ranging movements (Banci 1994). The availability and distribution of food is likely the primary factor in determining wolverine movement and home range size (Hornocker and Hash 1981; Banci 1994). Home ranges of adult females in central Idaho averaged 148 square miles, while annual home ranges of adult males averaged 588 square miles (Copeland 1996).

Spring snow cover (April 15–May 14) is the best overall predictor of wolverine occurrence (Aubrey et al. 2007). Snow cover during the denning period is essential for successful wolverine reproduction range wide (Magoun and Copeland 1998; Inman et al. 2007). Wolverine dens tend to be in areas of deep snow and high structural diversity, such as areas with logs and boulders (Magoun and Copeland 1998; Inman et al. 2007).

Source habitat is well distributed on the northern districts of the Forest, although it is more limited within the southern watersheds of this area (Figure 3-30 and Figure 3-31). Areas that display source habitat are the higher-elevation terrain on the Forest that retains snow into mid-May. Since modeling used persistent snow as the source habitat parameter, no display of historical habitat is available for comparison. Continuous satellite measurements capture most of the earth's seasonal snow cover on land and reveal that although there is little change in autumn or early winter snow cover, Northern Hemisphere spring snow cover has declined by about 2 percent per decade since 1966 (Lemke et al. 2007), which is approximately an 8 percent decline in snow cover for the Northern Hemisphere. How snow cover on the Forest has changed within this context is unknown, but it has likely declined as well. For the Forest-level analysis, the spring snow cover/persistent snow layer was assumed to depict historic and current source habitat for wolverine even though there could be some decrease in extent since the mid-1960s.

Source habitat occurs in contiguous patches along much of the Forest (Figure 3-30). Habitat patches occur within dispersal distances described within the literature and overall, source habitat for this species is generally in connected blocks of habitat. Human influences on the landscape in and around source habitat patches are also considered when determining habitat interconnectedness. Human influences in wolverine source habitat on the Forest are displayed in Figure 3-32 and Figure 3-33, which provides additional context to conclude that habitat does not appear to be as well connected as when only considering source habitat (see section 3.3.7.1).

Special habitat features of wolverine source habitat are deep, persistent snow above timberline; talus slopes and boulder fields; beaver lodges; old bear dens; fallen logs; rootwads of large, fallen trees; log jams; and large cavities (Pulliainen 1968; Copeland 1996; Magoun and Copeland 1998). Den sites are often located in large boulder or talus fields in subalpine cirques. Denning habitat may be a factor limiting distribution and abundance (Copeland 1996), and wolverines may abandon dens in response to disturbance (Copeland 1996; Magoun and Copeland 1998).

Wolverines are a Forest Sensitive Species and a Species of Greatest Conservation Need in Idaho. Wolverine were recently petitioned for Federal protection under the ESA, but "precluded" from a listing because other species have a higher priority (75 FR 78030). Since 1981, 200 observations of wolverine have been recorded across the Forest (Filbert et al. 2011). Population trends for this species are unknown.

Risk factors for wolverine are predominantly related to human use of the landscape during the winter denning period. However, climate change may influence the persistence of spring snow, which in-turn would affect available denning habitat, as snowfall is predicted to decrease with warming temperatures and spring melt-off is predicted to occur earlier in the season (U.S. Climate Change Science Program 2009). Winter recreational use including backcountry skiing, snowmobiling and heli skiing continues, and in some locations is expanding, in remote high country locations and may have localized, or larger, detrimental impacts that could displace wolverines from suitable denning habitat. A consistent negative association has been reported between wolverine occurrence and areas where helicopter and backcountry skiing occur (Heinemeyer et al. 2001, Krebs et al. 2007). Approximately 75 percent of the northern districts on the Forest are open to motorized winter recreation (Figure 3-32) and all northern districts on the Forest are open to non-motorized winter recreation. Heli-skiing, which is focused in the southern watersheds away from rugged ridgetops identified as mountain goat habitat, and other winter groomed and designated trails continue to provide access and increased potential for wolverine displacement and disturbance during the critical winter denning period (Figure 3-33). The strong overlap between wolverine source habitat and availability for winter recreation indicates winter recreation may be influencing wolverine utilization of source habitat across the Forest.

3.3.7.4.1.1 Current Sustainability Outcome for Wolverine

The sustainability outcome for the wolverine is Outcome C (see section 3.3.3 for sustainability outcome definitions). Source habitat appears to be sufficiently distributed and abundant but may be underused by some species in areas with high human influence.

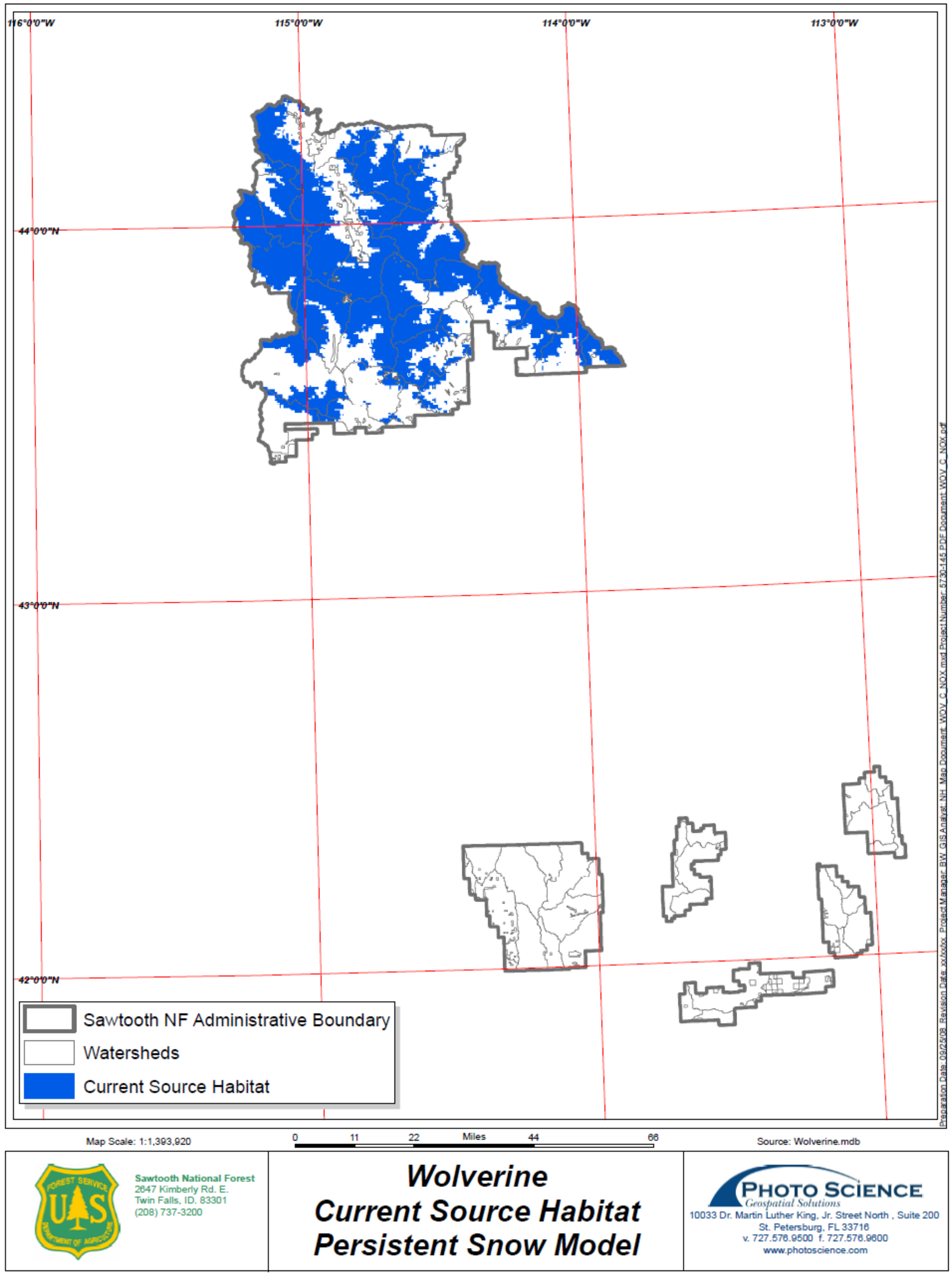

Figure 3-30. Wolverine Current Source Habitat Patches on the Sawtooth National Forest

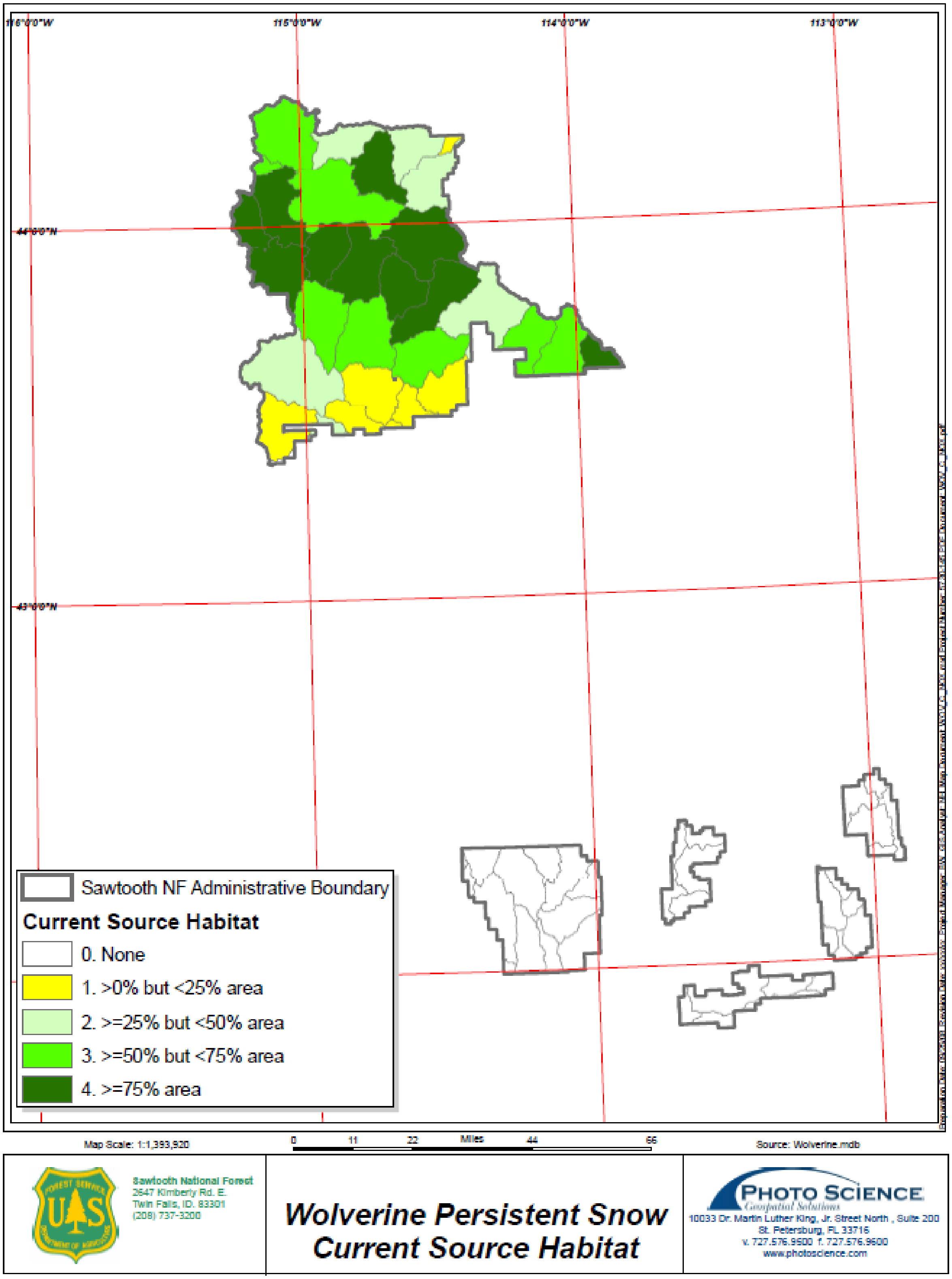

Figure 3-31. Wolverine Current Source Habitat on the Sawtooth National Forest

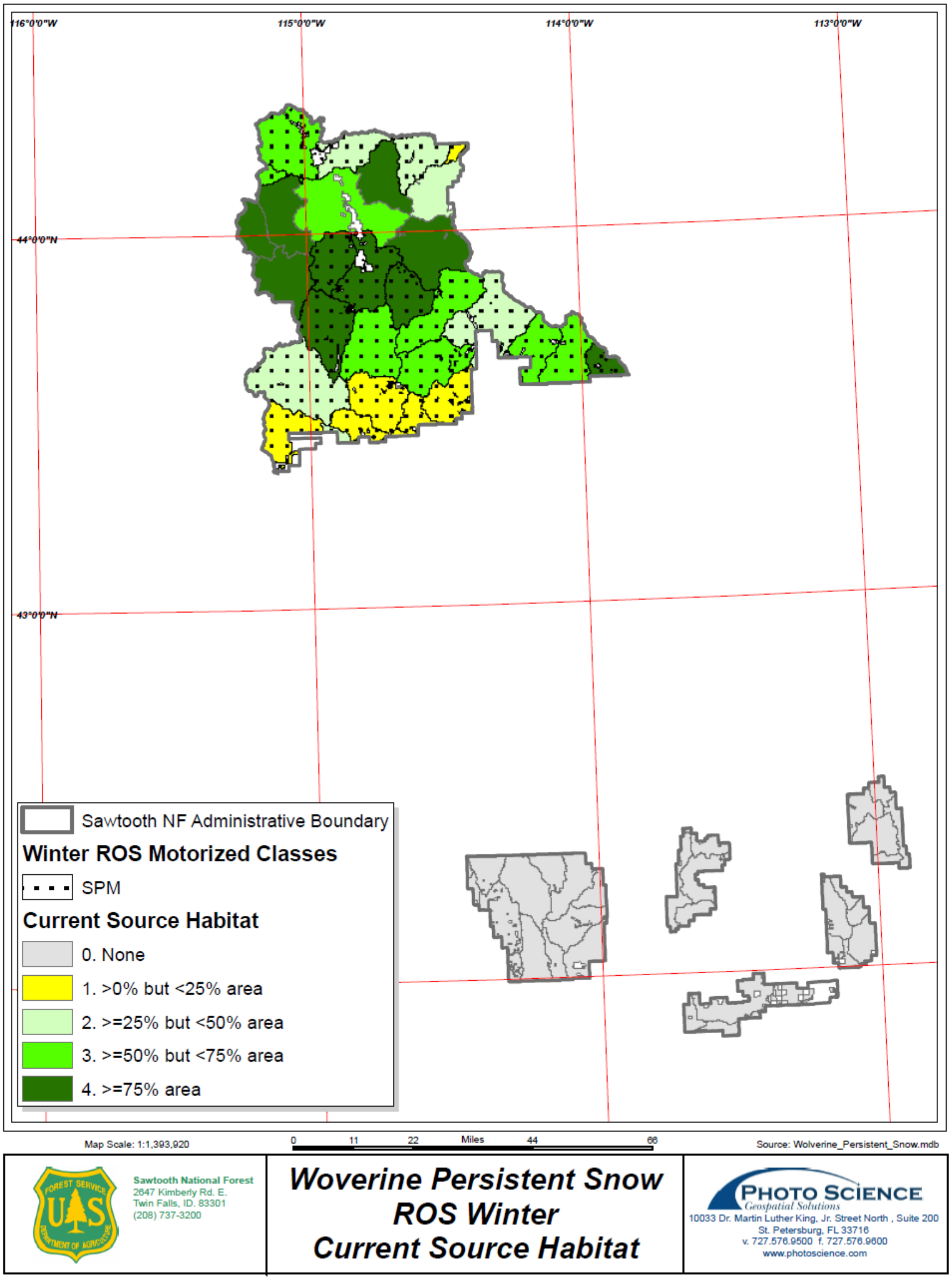

Figure 3-32. Wolverine Source Habitat with Motorized Winter Recreation Opportunity Spectrum (ROS) on the Sawtooth National Forest

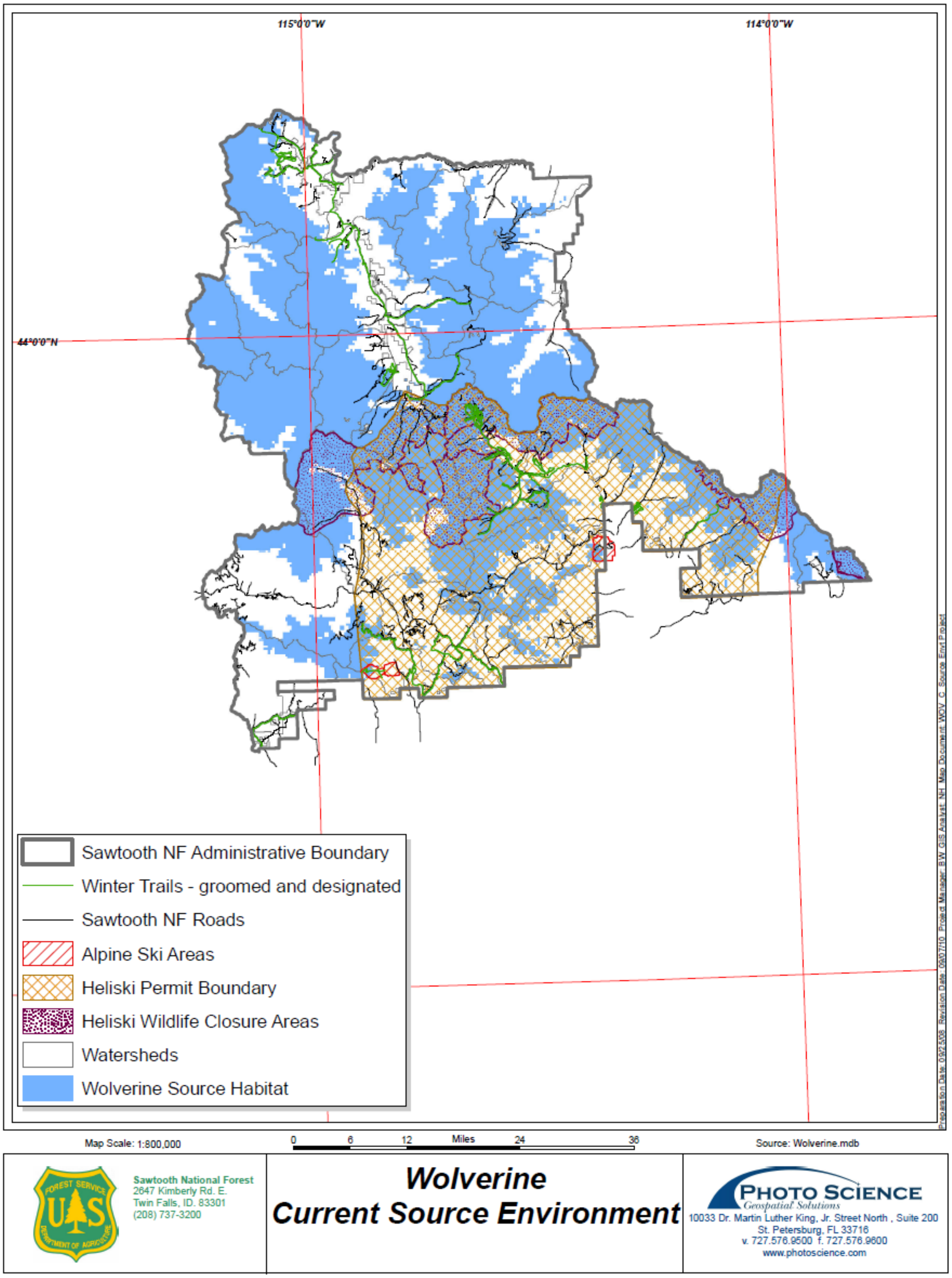

Figure 3-33. Wolverine Source Environment on the Sawtooth National Forest

3.3.7.4.2 Environmental Consequences

3.3.7.4.2.1 Environmental Consequences of Alternative A

Alternative A includes MA direction in the existing Forest Plan to provide reproductive denning habitat security by minimizing disturbance from winter recreation activities and restricting or modifying winter recreational activities where conflicts exist with wolverine (refer to section 3.3.7). However, this direction is not consistently applied across all wolverine habitat on the Forest and does not identify priority areas for habitat connectivity or source habitat restoration. It does address denning habitat security and protection of denning wolverines, which is a priority area concern for wolverine conservation.

The Forest Plan provides direction to mitigate recreational and road-related impacts to resources to be implemented on a project-by-project basis without the context of a larger-scale strategy on the Forest. Wolverine are wide-ranging animals, and without direction to guide maintenance of existing areas of low human influence and/or direct restoration of habitat patches to reduce human influences, habitat would not likely be prioritized and addressed at the appropriate scale for this species. Continued or increased recreational access on NFS lands would be expected, affecting options to manage a network of habitat patches with limited or no human disturbance.

<u>Predicted Wolverine Sustainability Outcome for Alternative A</u>

The sustainability outcome is predicted to remain within Outcome C (see section 3.3.3 for sustainability outcome definitions). Under Alternative A, Forest Plan direction would continue to provide reproductive denning habitat security; however, dens are difficult to locate due to their remoteness. Continued or increased recreational access on NFS lands would be expected under current direction, making managing for a network of habitat patches with limited or no human disturbance difficult.

3.3.7.4.2.2 Environmental Consequences of Alternative B

Alternative B would consistently apply wolverine direction within wolverine source habitat on the Forest. A wolverine denning objective would be applied in MAs 2 through 8 and a wolverine denning standard in MAs 2 through 6 and 8 to address winter recreation conflicts. A Forest-wide objective (WIOB14) has been added in Alternative B that would emphasize the need to cooperate with researchers to answer basic life history questions and management conflicts of species of conservation concern, which include wolverine as well as other species. In addition, a Forest-wide guideline (WIGU17) would strengthen the commitment of the Forest to address the human influence impact during the critical denning period of wolverines. This guideline would stipulate monitoring of winter recreational use in high-elevation habitat characteristic of wolverine denning habitat (approximately every 3 years) and evaluating relationships between winter recreational activities and wolverine use. The addition of this Forest-wide direction provides additional emphasis to address wolverine source environment issues in Habitat Family 3.

Other guidance included in Alternative B that strengthen current direction to minimize or avoid effects from human-related activities on wildlife resources includes the modification of TEOB03, FROB12, and REGU07 and the addition of WIOB16. These objectives and guideline address identifying and managing degrading effects to wildlife from roads, facilities, and recreation.

Where winter recreational activities are determined to impact wolverine during the denning period, existing Forest-wide direction to mitigate management actions within known denning sites (WIST03) could address this risk if a den site is located. The likelihood of locating a den site is low; there are <70 documented wolverine dens in North America, and only a small portion of those occur in the central Idaho mountains (Copeland et al. 2010). Under Alternative B, a proposed Forest-wide objective and guideline (WIOB14, WIGU17) would increase the likelihood that areas of risk may be identified through monitoring and/or research. Data from these efforts could be used to support management decisions to reduce or address that risk.

Given the reclusiveness of this wide-ranging species and the data that must be collected to trigger the mitigation guidance (WIST03 and MA standards), identifying wolverine-recreation conflicts or identifying den sites and demonstrating that human use during the critical denning period is altering resident wolverine behavior will likely be difficult. Pressure to increase recreational access on NFS lands is expected to continue, affecting options for managing a network of connected habitat patches and refugia with minimal or no human influence. Even with efforts to identify human influence in wolverine denning habitat over the short-term (3–15 years), ongoing advances in technology and interest in backcountry experiences might establish human use in refugia before monitoring efforts can determine wolverine use and/or any conflict.

<u>Predicted Wolverine Sustainability Outcome for Alternative B</u>

Continued management under Alternative B is expected to meet some of the wolverine’s source habitat needs, and the sustainability outcome is predicted to remain within Outcome C (see section 3.3.3 for sustainability outcome definitions). Source habitat would likely remain abundant but may be underused in areas of high human influence.

3.3.8 Habitat Family 4—Early-Seral Forest Family

Habitat Family 4 species depend on early-seral forest conditions and widespread increases in these conditions have occurred on the Forest. This trend is consistent with findings for the Central Idaho Mountains ERU, which overlays the Forest, but is contrary to the dominant decreasing trend reported for the ICB (Filbert et al. 2011).

The Lazuli bunting (*Passerina amoena*) is the only focal species in this habitat family. However, only those focal species that are threatened, endangered, sensitive or MIS are presented in this EA and the Lazuli bunting does not fit any of these categories. The sustainability outcome for the Lazuli bunting is provided in the project record.

Family 4 source habitat currently exceeds the HRV (Figure 3-34). This source habitat abundance is primarily a result of recent, large wildland fires. These large fires have occurred in various fire regimes (nonlethal, mixed, mixed2 and lethal) and resulted in both characteristic and uncharacteristic fire effects (i.e., patch size and burn severity).

The concern for Family 4 habitat management is to manage patch size and quality of habitat over time as the amount of early-seral habitat grows out of the GFSS stage and progresses through subsequent seral stages of development. Family 4 habitat quality depends on controlling invasive species; reducing soil disturbance (e.g., roads, dispersed recreation); and protecting willow riparian and forb communities (e.g., water diversions, intensive livestock grazing) (Filbert et al. 2011).

The Forest Plan does not provide guidance for habitat patterning for Family 4. A prioritization strategy would provide managers guidance to restore appropriate patch sizes of early seral habitat across the Forest and ensure future quality for early seral habitat at levels within the HRV.

3.3.8.1 Family 4 Source Habitat

Family 4 source habitat is defined as PVGs 1, 2, 3, and 4 in the GFSS stage, along with herbaceous and montane and riparian shrub areas. Historically, the Forest did not provide large quantities of Family 4 source habitat; none of the watersheds on the Forest contained >25 percent source habitat (Figure 3-34). Currently, approximately 53,000 acres of Family 4 source habitat occur on the Forest (Figure 3-35).

Figure 3-34 shows the historical and current Family 4 source habitat on the Forest. Family 4 source habitat is above the HRV on the Forest (Figure 3-35), and most watersheds have a dominant increasing trend. This trend is primarily due to large-scale wildfires during the past decade.

In general, Family 4 habitat quantity is not a concern on the Forest. Almost all PVGs historically believed to contain Family 4 source habitat are above the HRV for the GFSS stage and below the HRV for large and medium tree size classes (Filbert et al. 2011). Recent wildfires have resulted in large areas of early-seral GFSS. Over time, habitat quantity could be a concern as these large areas of early-seral habitat transition simultaneously into later-seral stages.

Habitat quality of Family 4 source habitat is a concern where nonnative invasive plants have displaced native species, altering species composition of early-seral communities and affecting successional development of early growth stages. Only a few watersheds on the Minidoka Ranger District have Family 4 source habitat that overlaps with weed susceptibility (Filbert et al. 2011). Still, noxious weed infestation is always a concern after a disturbance due to its impact on habitat quality.

Other impacts to Family 4 source habitat quality include livestock grazing, road development, and water diversions. Long-term grazing impacts include altered species composition and vegetation structure and spread of noxious weeds (Zimmerman and Neuenschwander 1984; Belsky and Blumenthal 1997). Grazing is widespread on the Forest and although only a few watersheds have range suitability consistent with Family 4 source habitat (Filbert et al. 2011), localized grazing impacts to riparian and herbaceous areas are common and reduce source habitat quality. Roads and water diversions affect willow riparian habitat. Only a few watersheds within Family 4 source habitat have high road densities (Filbert et al. 2011); however, roads occur in all source habitat watersheds on the Forest and roads often follow riparian courses, impacting habitat.

3.3.8.1.1 Current Sustainability Outcome for Habitat Family 4

Source habitats for Family 4 are well distributed and of high abundance compared to historical conditions and provide for continuous or nearly continuous interaction for this species. The sustainability outcome for Family 4 is Outcome A (see section 3.3.3 for sustainability outcome definitions).

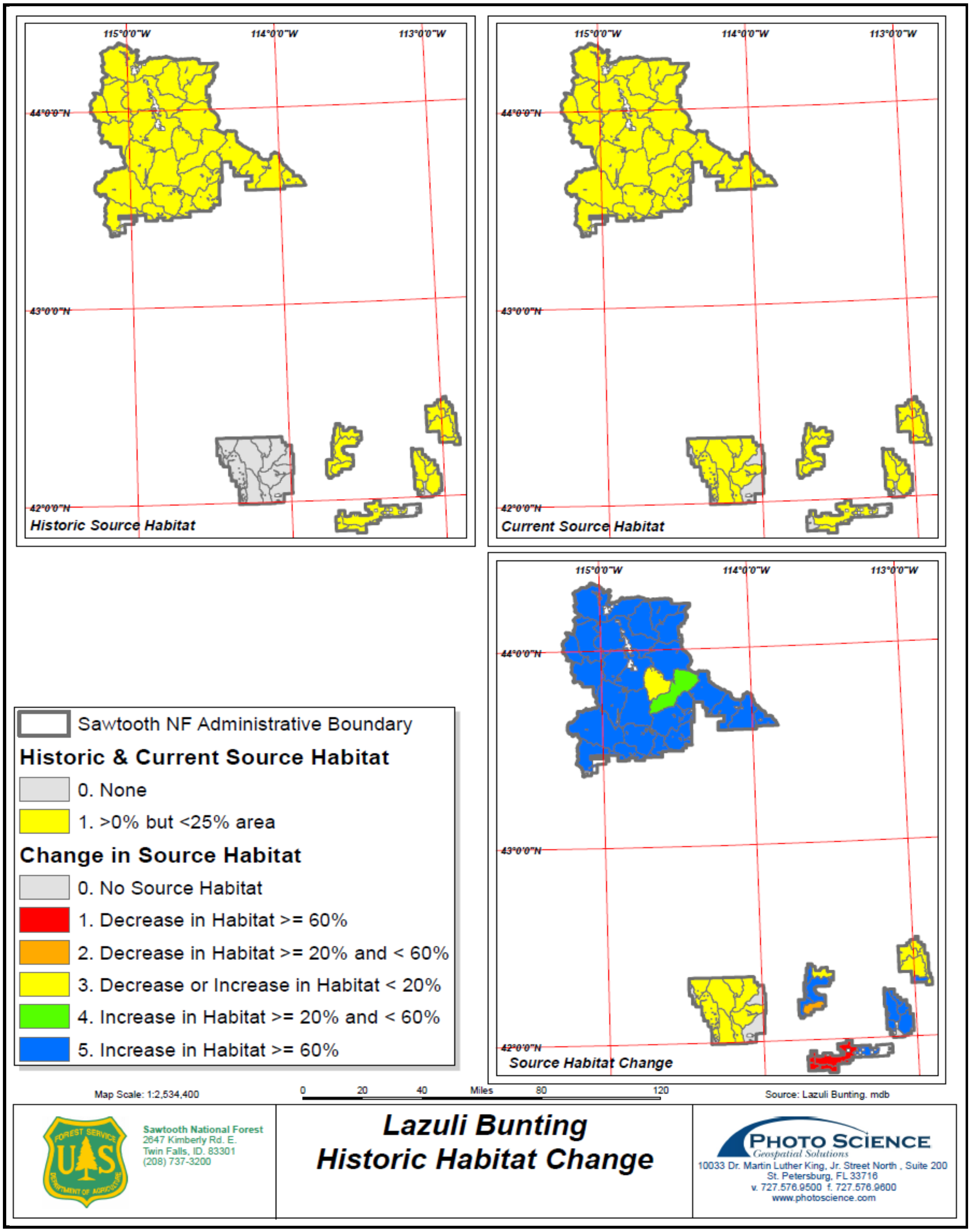

Figure 3-34. Historical, Current, and Relative Change in Family 4 Source Habitat on the Sawtooth National Forest

3.3.8.2 Environmental Consequences

3.3.8.2.1 Environmental Consequences of Alternative A

Under Alternative A, recognizing the role of fire as a disturbance process allows opportunities for new GFSS habitat to develop in areas where wildland fire use is permitted. Pulses of GFSS habitats, similar to what currently exists, would cycle through successional stages, creating a decrease in this habitat type until fire processes generate new habitat.

Existing Forest Plan direction to address invasive species; native herb, forb, shrub and riparian communities; livestock grazing; and reestablishment of plant communities with native seed sources provides guidance on restoring habitat quality in early-seral habitats.

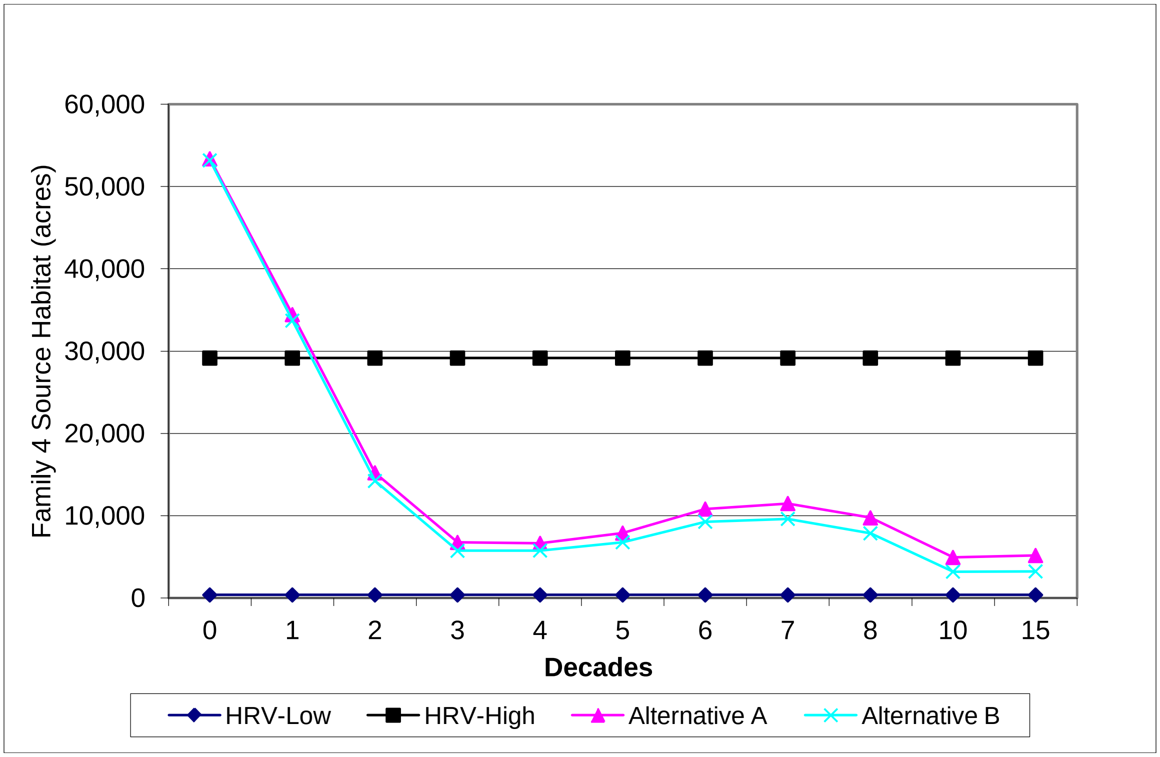

Figure 3-35. Family 4 –Source Habitat Trend by Alternative on the Sawtooth National Forest

3.3.8.2.1.1 Predicted Sustainability Outcome under Alternative A

All fire regimes would provide a fluctuating but continuous supply of habitat through time. Alternative A is expected to remain within Outcome A (see section 3.3.3 for sustainability outcome definitions).

3.3.8.2.2 Environmental Consequences of Alternative B

Under Alternative B, wildfire activity would likely remain the primary producer of new Family 4 source habitat on the Forest. Management for restoring low-elevation habitats in the nonlethal and mixed1 fire regimes would reduce their vulnerability to uncharacteristic wildfire. The overall emphasis on restoring ecological function and processes would begin to restore patch sizes and distribution of early-seral habitat to historical levels.

Pulses of extensive GFSS habitats would continue to occur and would cycle through successional stages creating a decrease in this habitat type until fire processes generate new habitat. All fire regimes, although to a lesser extent the nonlethal and mixed1fire regimes, would provide a fluctuating but continuous supply of habitat through time. Increased restoration of the nonlethal and mixed1 fire regimes would decrease the amount of GFSS habitat from low elevation dry pine habitats.

As with Alternative A, existing Forest Plan direction to address invasive species; native herb, forb, and shrub communities; livestock grazing; and reestablishment of plant communities with native seed sources provides guidance on restoring habitat quality in early-seral habitats.

3.3.8.2.2.1 Predicted Sustainability Outcome under Alternative B

Alternative B is expected to provide for sustainable habitats and species. As ecological processes are restored, including patch size and pattern, the sustainability outcome for Family 4 is expected to remain in Outcome A (see section 3.3.3 for sustainability outcome definitions).

3.3.8.3 Species Associated with Family 4

There are no Federally listed, TEPC, or Forest sensitive species in Family 4.

3.3.9 Cumulative Effects

Wildlife species do not recognize political or administrative boundaries. Effective wildlife management involves local, regional, State, and Federal agencies; public land users; industry; and private landowners. The IDFG brought all these stakeholders together to finalize the *Idaho CWCS* (IDFG 2005) and to coordinate the efforts of partners working toward conservation of wildlife and wildlife habitats across the state. The primary aim of the *Idaho CWCS* is to provide a common framework that will enable conservation partners to enact conservation at a landscape level for Species of Greatest Conservation Need in an ecological, habitat-based manner. The value of the plan is twofold: (1) to heighten the awareness of Species of Greatest Conservation Need and (2) to bring about greater statewide coordination, cooperation, and action that will successfully conserve these species and restore their habitats.

The *Idaho CWCS* provides baseline information on the status, distribution, risks, and management considerations for Idaho species of greatest conservation need that occur on the Forest. The information aggregated in the strategy has been useful in understanding the Forest’s role in restoration and recovery of habitats and species in Idaho. In addition to the *Idaho CWCS*, findings in local subbasin assessments, Partners in Flight products, and the ICBEMP have been reviewed for baseline information, ideas, and compatibility with conservation and restoration efforts proposed under Alternative B for the Forest. The ICBEMP Strategy (2003) in particular provides Interior Columbia Basin-scale guidance to ensure that programmatic land and resource management plans, such as this one, address a sustainable mix of terrestrial species habitats within the larger context of Interior Columbia Basin-scale science findings. An ecologically based habitat family account and species accounts for focal species selected in this Forest-level analysis were created to incorporate known information and address larger scales. These accounts are found in the *Wildlife Technical Report for the 2011 Sawtooth National Forest Plan Amendment to Implement a Forest Wildlife Conservation Strategy* (Filbert et al. 2011). From this work, a prioritized restoration strategy for habitats of greatest conservation need, or highest conservation concern, has been created for the Forest. This strategy is the blueprint for implementing actions at the Forest scale that will contribute toward goals and objectives identified for Idaho and the Interior Columbia Basin.

As a result of the restoration prioritization strategy implemented under the action alternative, the following trends can be expected on the Forest:

- Late-seral low-elevation and late-seral broad-elevation old-forest habitat is expected to increase in extent.
- Large-diameter snags are expected to increase in numbers and extent.
- Forested lands would be managed to move toward desired conditions within their HRV.
- Fire and mechanical tools would be used to restore and maintain vegetative communities in a manner similar to those maintained by historical disturbance processes.

As a result of the coordinated review of relevant mid- and broad-scale terrestrial wildlife assessments, Alternative B would provide operational guidance by stepping down the findings and recommendations from these other scales to the Forest. The direction under the proposed alternative would promote restorative actions for wildlife species and their habitats, with consideration of Idaho's Species of Greatest Conservation Need, that would contribute to higher-scale needs identified for the state, sub-basins, and Interior Columbia Basin.

3.3.10 Management Indicator Species for the Forested Biological Community

The habitat analyses found under the sections 3.3.4.1.3 and 3.3.4.1.4, as well as the specific discussions of Families 1 and 2, outline concerns over past and future management of snags; old forest habitat; and late-seral, or mature, forest areas. Many wildlife species depend on late seral forests and snags either directly for denning, nesting, or foraging habitat or indirectly for recruitment of logs, which are then used for denning, resting, or foraging habitat. These habitats and attributes remain of greatest interest due to current conditions and the dependence of numerous wildlife species, especially species of conservation concern, on these habitats.

3.3.10.1 Source Habitat Trends, Relationship to Management Activities and Sustainability Outcomes

3.3.10.1.1 Pileated Woodpecker

Pileated woodpeckers occur on the northern districts of the Forest and are considered a resident, nonmigratory, nongame species. Although this species is well documented on the Forest (Filbert et al. 2011), it is not well documented in the literature as extending south of the Salmon River on the eastern portion of the Sawtooth NRA, the eastern portion of the Fairfield Ranger District, or on most of the Ketchum Ranger District.

The pileated woodpecker prefers habitats with tall, closed canopies and high basal areas (Bull et al.1986; Bull 1987; Groves et al.1997). Preferred habitat provides opportunities for nesting, roosting, and foraging and includes the presence of large-diameter trees and snags; multiple canopy layers; decaying wood on the forest floor; and a somewhat moist environment that promotes fungal decay and ant, termite, and beetle foraging (NatureServe 2009). Source habitats for pileated woodpeckers are typically multilayer, late-seral stages of broad-elevation old forests (Bull 1987; Bull et al.1992; Bull and Holthausen 1993; Wisdom et al. 2000).

On the Forest, vegetative communities capable of providing source habitat conditions include PVGs 3, 4, 7, and 10 (Sawtooth NRA only) in moderate and large tree size classes and in moderate and high canopy cover conditions (Filbert et al. 2011). In addition, PVGs 1 and 2 provide habitat when in departed conditions. Special habitat features for pileated woodpecker include large diameter (>20 inches d.b.h.) snags and hollow live trees for nesting and roosting and large snags and logs for foraging.

The pileated woodpecker was selected as an MIS in the 2003 Forest Plan because it is believed to be functionally linked to other species that use large trees, snags and logs, and old-forest habitat (Aubry and Raley 2002). Key Ecological Functions (KEFs) performed by pileated woodpeckers include secondary consumers of terrestrial invertebrates and primary cavity excavators of snags and live trees. Habitat components, or Key Environmental Correlates (KECs), for this species include large-diameter (>20 inches d.b.h.) snags and living trees, logs, hollow living trees, and dead portions of live trees (Bull et al. 1992). This species typically uses portions of dying trees and snags in the hard and moderate decay classes (early-to-mid stages of decomposition).

Numerous other species of birds on the Forest depend on cavities that pileated woodpeckers excavate because they are not able to excavate their own cavities. In addition to birds, fisher bats and flying squirrels use the cavities for nesting, denning, and roosting sites (Thomas et al. 1979; Bull et al. 1997; Quigley and Arbelbide 1997; Wisdom et al. 2000).

Population trend data for the pileated woodpecker is limited although the species is considered secure globally and is apparently secure in Idaho. BBS analyses suggest that pileated woodpecker populations have increased throughout their range (Sauer et al. 2008). Western BBS Region data show a modest annual increase of 2.2 percent (n = 320 routes, p = 0.0017) between 1966 and 2007. Idaho data show an annual increase of 2.0 percent (n = 18 routes, p = 0.365) during the same period. Finer-scale BBS data are limited, and results should be interpreted with caution (Sauer et al. 2008). In 2004, 340 survey points were established on the Forest to monitor MIS woodpeckers. Surveys coincide with the pileated woodpecker breeding season (April to mid-May). Annual monitoring is ongoing; however, data are insufficient at this time to establish a Forest-wide population trend for the species (USDA Forest Service 2011).

In the ICB, source habitats for pileated woodpeckers showed strong declines in 30 percent of ERUs predominantly north of the Forest, while 60 percent showed moderate or strong increases (Wisdom et al. 2000). Within the Central Idaho Mountain ERU, which overlays most of the Forest, source habitats for pileated woodpeckers increased 21 percent relative to historical levels, despite ecologically significant declines in some late-seral forest cover types (e.g., interior Douglas-fir) (Wisdom et al. 2000). At the Forest scale, source habitat for this species has declined from historical levels although it is currently within the HRV (Figure 3-36). Pileated woodpeckers take advantage of departed conditions that develop in the absence of disturbance processes, such as fire. When source habitat is added with acres which develop similar structural conditions and the appropriate tree species as a result of disrupted disturbance processes (i.e., departed conditions), habitat quantities are also within the HRV (Figure 3-37).

The habitat requirements of this species, functional ecological role it plays, and occupancy of departed habitats identified for restoration indicate the pileated woodpecker remains a species whose fluctuations in population or habitat could help indicate the effects of Forest management. This wide-ranging species is considered common and can be monitored annually. As a nonmigratory resident species, population changes may result from management activities although natural events and the wide-ranging nature of the species also affect population dynamics.

Management activities, such as fire suppression, timber harvest, and fuelwood collection, can affect KEFs of the pileated woodpecker or KECs associated with this species, and therefore, its role as an MIS would allow the Forest to monitor and evaluate the effects of management activities on identified forest communities and wildlife species.

Effects to large diameter snags, large tree habitat, and old forest habitats under the two alternatives are discussed in sections 3.3.4.1.3 and 3.3.4.1.4. The pileated woodpecker is associated with Habitat Family 2; therefore, effects of current and proposed management direction for Family 2 discussed for Alternatives A and B in section 3.3.6 are also relevant.

Utilizing this species as an MIS allows Forest managers to assess trade-offs between retaining departed landscapes to meet short-term habitat needs for species like pileated woodpeckers, and restoring departed landscapes toward the HRV to address short- and long-term habitat needs of species such as white-headed woodpeckers. However, these trade-offs would occur on a relatively small area of the Forest since the Forest contains little white-headed woodpecker source habitat (Figure 3-9, Figure 3-10 and Figure 3-12).

Consistent with findings for Habitat Family 2, the current sustainability outcome for pileated woodpecker is Outcome B (see section 3.3.3 for sustainability outcome definitions). Temporary and/or short-term negative impacts to habitat quality or distribution might occur in order to progress toward desired long-term wildlife habitat needs for species such as the white-headed woodpecker and to address other multiple-use management objectives in the Forest Plan. However, long-term beneficial effects to source habitat would be anticipated. Under either Alternative A or B the sustainability outcome would be projected to remain within Outcome B (Filbert et al. 2011).

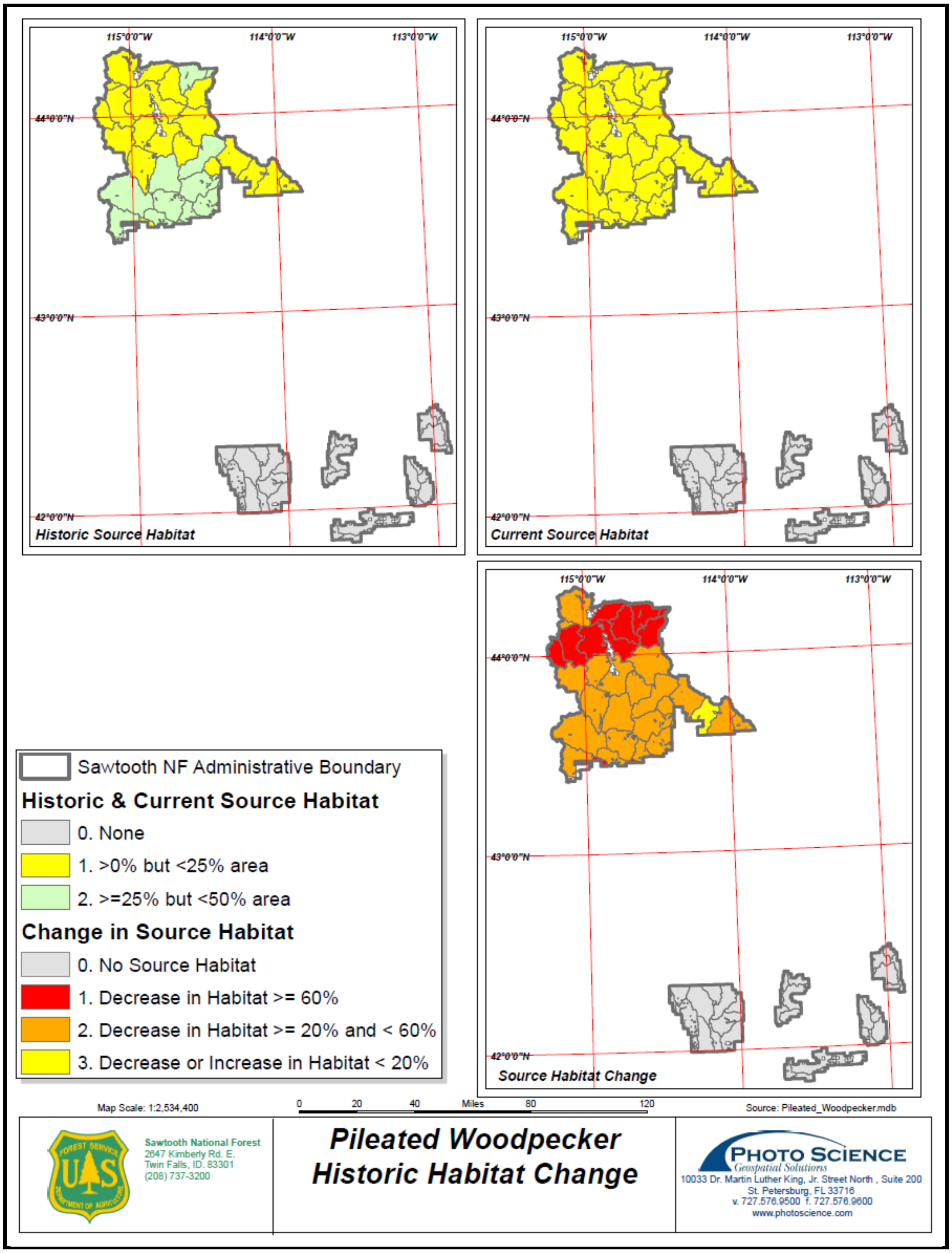

Figure 3-36. Historical, Current, and Relative Change in Pileated Woodpecker Source Habitat on the Sawtooth National Forest

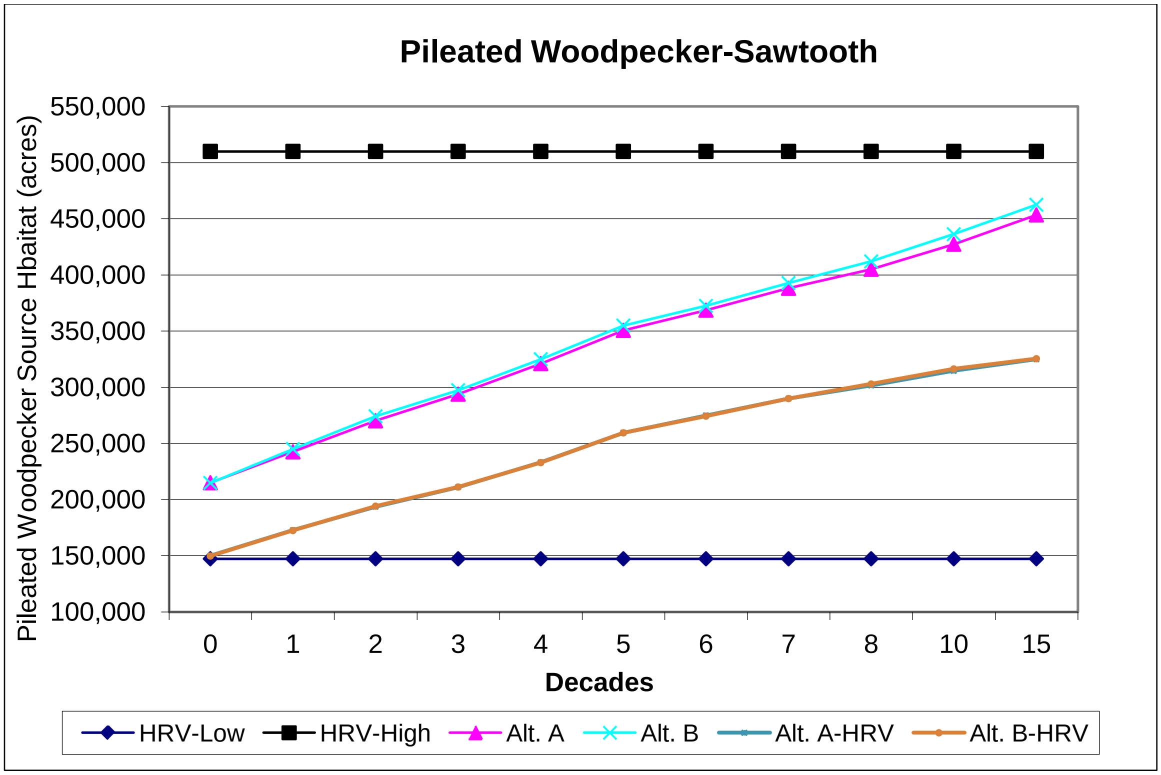

Figure 3-37. Pileated Woodpecker Source Habitat Trend by Alternative with and without Departed Conditions on the Sawtooth National Forest

3.3.10.1.2 Northern Goshawk

Northern goshawks occur on all districts of the Forest and are considered a resident, nongame species. This species is considered nonmigratory; however, local migrations are common. Based on discussions in the Forest's 5-year monitoring report, Alternative B proposes to add Northern goshawk as an MIS.

Source habitat for northern goshawk includes late-seral, montane forests dominated by Douglas fir, lodgepole pine, and aspen that developed under mixed1, mixed2, and lethal fire regimes. Nests are found in a variety of habitat types that range from open park-like stands of aspen (Younk and Bechard 1994) to multi-storied old-forests (Wisdom et al. 2000). Goshawks tend to use mature forests (and forest edges) for foraging but also need other habitat elements that provide the necessary requirements for their prey such as snags; logs; small openings; herbaceous, shrubby, and/or open understories (Reynolds et al. 1992). Mosaics of forested and open areas and riparian zones are equally important (Griffith 1993). [17]

The northern goshawk plays an ecological role as secondary and tertiary consumers of terrestrial herbivores and predators (Marcot 1997). According to Squires and Kennedy (2006), northern goshawks are prey generalists. The species influences terrestrial vertebrate populations through predation and/or displacement and builds nests that often

[17] See section 3.3.6.7.1 for a discussion of Northern Goshawk source habitat.

provide resources for other species. These KEFs influence habitat elements used by other species in the ecosystem. KECs, or important habitat elements, for northern goshawks are live trees in the range of 10 to >20 inches d.b.h., mistletoe brooms, coarse woody debris, and edge habitat (Squires and Ruggiero 1995; Marcot 1997; O'Neil et al. 2001). Deformities (i.e., multiple trunks and mistletoe), especially in smaller diameter trees, are also used as nest site substrates and snags are often used as plucking posts. Northern goshawks prefer transitional zones from forest to shrubland and bog to forest for hunting. Mosaics of forested and open areas and riparian zones are equally important (Griffith 1993).

On the Forest, vegetative communities capable of providing source habitat conditions include PVGs 3, 4, 7, and 10 (Filbert et al. 2011). These PVGs are capable of developing multilayered, mature and late-seral stands with a dense canopy. Aspen communities can provide source habitat but predominantly occur as a seral tree species within other PVGs. The south end of the forest (Minidoka Ranger District) supports climax aspen stands that provide source habitat.

Population trend data for northern goshawks are limited although the species is considered secure globally and is apparently secure in Idaho. According to Sauer et al. (2008) and Saab and Rich (1997), BBS data are insufficient to determine population trends for northern goshawks because of low detection throughout most of its range. Sauer et al. (2008) adds that no estimates are available for Idaho due to these same deficiencies (low sample size and low relative abundance) in the data sets. Should goshawk be added as an MIS, survey points would need to be established on the Forest to monitor them. Surveys would coincide with the northern goshawk breeding season (May–July) and monitoring protocol would follow that described in the *Northern Goshawk Inventory and Monitoring Technical Guide* (USDA 2006).

In the ICB, source habitats for northern goshawk showed moderate or strong declines in approximately 60 percent of ERUs, predominantly north of the Forest, and stable or increasing trends in approximately 40 percent of ERUs (Wisdom et al. 2000). Within the Central Idaho Mountain ERU, which overlays most of the Forest, source habitats for northern goshawk decreased 7 percent relative to historical levels, with ecologically significant declines occurring in late-seral forest cover types (i.e., interior Douglas-fir and lodgepole pine) (Wisdom et al. 2000). At the Forest scale, source habitat for this species has declined from historical levels although is currently within the HRV (Figure 3-23 and Figure 3-38). However, northern goshawks take advantage of departed conditions that develop in the absence of disturbance processes such as fire. When source habitat is added to acres that develop similar structural conditions and the appropriate tree species as a result of disrupted disturbance processes (i.e., departed conditions), habitat quantities are also within the HRV (Figure 3-38).

The habitat requirements of the northern goshawk, the functional ecological role it plays, and its association with climax aspen stands indicate the northern goshawk remains a species whose fluctuations in population or habitat could help indicate the effects of Forest management. Management activities, such as fire exclusion, timber harvest, fuel reduction in WUIs, and fuelwood collection can affect goshawk KEFs or KECs associated with this species. Northern goshawk's role as an MIS will allow the Forest to

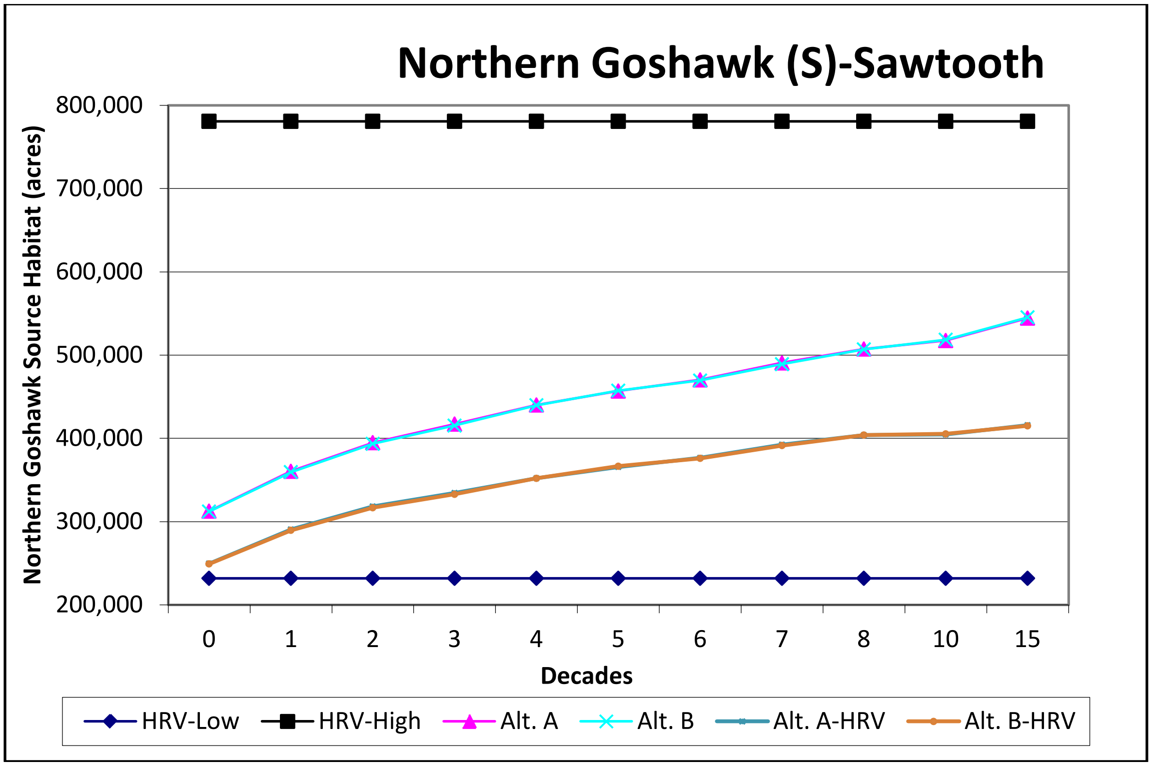

Figure 3-38. Northern Goshawk Source Habitat Trend by Alternative on the Sawtooth National Forest

monitor and evaluate the effects of management activities on identified forest communities, especially on the south end of the Forest, and on associated wildlife species. As a resident and wide-ranging species, northern goshawk could be monitored annually and population changes could be connected to management activities although natural events and the wide-ranging nature of the species also affect population dynamics.

While long-term beneficial effects to goshawk source habitat are anticipated (Figure 3-38), temporary and/or short-term negative impacts to habitat quality or distribution may occur as a result of progress toward desired long-term wildlife habitat conditions that support the needs of this species and when addressing the variety of other multiple-use management objectives in the Forest Plan. Effects to large diameter snags, large tree habitat, and old-forest habitat under the alternatives are discussed in sections 3.3.4.1.3 and 3.3.4.1.4. The northern goshawk is associated with Habitat Family 2; therefore, effects of current and proposed management direction for Family 2 discussed for Alternatives A and B in section 3.3.6 are also relevant.

Consistent with findings for Habitat Family 2, the current sustainability outcome for northern goshawk is Outcome B (see section 3.3.3 for sustainability outcome definitions). In addition, under either alternative, the sustainability outcome would be projected to remain within Outcome B (Filbert et al. 2011). Temporary and/or short-term negative impacts to habitat quality or distribution might occur in order to progress toward desired long-term wildlife habitat needs for species such as the white-headed woodpecker and to address other multiple-use management objectives in the Forest Plan. However, long-term beneficial effects to source habitat would be anticipated.

Forest Plan Monitoring for MIS species and its Purpose

Consistent with the new guideline, WIGU16, in Alternative B and monitoring elements identified in Chapter 4 (see Appendix 2), MIS and their habitat would continue to be monitored annually on the Forest. The purpose of this monitoring would be to build relationships between habitat changes and population trends for identified MIS. The 2003 Forest Plan selected one aquatic species - bull trout- and two terrestrial species - greater sage-grouse to represent rangeland vegetation dependent species and pileated woodpecker to represent forested vegetation dependent species - as MIS. The MIS were selected, in part, because their population changes were believed to indicate the effects of management activities on habitat features they are associated with as described above. While habitat for bull trout and pileated woodpecker are well represented on the north end of the Forest, neither species occurs on the south end of the Forest.

As described in the Appendix F of the 2003 FEIS, Yellowstone cutthroat trout was considered for designation as an MIS in the 2003 Plan. Yellowstone cutthroat historically occurred in the Goose Creek and Raft River subbasins on the south end of the Sawtooth, but many decades of stocking have extended some populations well out of their historical range. While the species is no longer stocked within its historic range, many of the populations are believed to be hybridized (2003 FES). Although the species met much of the MIS selection criteria, it ultimately was not selected as an MIS because of the inability to detect hybridized populations from native populations. Since implementation of the 2003 Plan, all Yellowstone cutthroat populations on the south end of the Forest have been genetically tested (Forest 5-year Monitoring and Evaluation Report, 2011). As a result of this testing, pure populations can be distinguished from hybridized populations. Given this, and the need to identify an aquatic species that can represent the effects of management activities on the south end of the Forest, Alternative B proposes to add Yellowstone cutthroat trout as an MIS. Should Yellowstone cutthroat trout be added as an MIS, a Forest monitoring strategy, including the establishment of monitoring points would need to be established

The Forest terrestrial wildlife species MIS monitoring strategy for pileated woodpeckers was established in 2004. This monitoring strategy has been modeled on standardized bird monitoring methods (Ralph et al. 1995; Hamel et al. 1996), which are also applied on National Forests in Idaho in Region 1 and the Boise and Payette National Forests in Region 4. The data collected from any one unit become not only relevant to its particular Forest but contribute to the larger data set that allows monitoring trends to be evaluated at multi-Forest scales, state-wide scales, or regional scales.

Hutto and Young (2002) stated that region wide, long-term trends in population abundance can be determined by sampling in a geographically stratified but otherwise random and unbiased manner using population-based monitoring designs. However, placing points in a purely random manner can become labor intensive, leading to implementation high costs, and may require some modification to effectively implement the strategy. While a completely random stratification provides a general view of bird populations in an area, rare habitats may be undersampled (Hutto and Young 2002). In addition, strict habitat-based monitoring designs can also bias population trend estimates since the sampling effort is concentrated only in habitats of interest. Consequently, it appears that a monitoring design that uses both geographically random stratification for transect identification and additional points to increase coverage in undersampled habitats would compensate for the weakness in either design alone (Howe et al. 1995). The Forest monitoring strategy is a population-based approach to bird monitoring that uses a geographically random stratification to distribute survey locations across the Forest and determine overall population trends.

The Forest survey design samples both potential and existing suitable habitat across the MIS historical range. Permanent monitoring points were established for pileated woodpecker on the northern Ranger Districts in 2003. Each year, all 34 transects, each consisting of 10 sampling points, are monitored across habitat suitable for this species (total monitoring of 340 points). If the points are sampled over a specified period of time, overall population trends are robust and relatively simple to calculate (Hutto and Young 2002).

Annual detection results for pileated woodpecker from 2004–2010 are included in the project record. Results have been reported in each annual monitoring report published from 2005 through 2010 (USDA Forest Service 2005, 2006, 2007, 2008, 2009, 2010). The five year monitoring report will provide information gained from this sampling and its implications for population trend and the relationship of those trends to habitat changes.

As previously discussed, Alternative B proposes to add Northern goshawk as a new MIS. This species is well represented across the Forest with occurrence data on the Forest identifying 163 northern goshawk observation records since 1985. As described in the Wildlife Technical Report for the 2011 Sawtooth National Forest Plan Amendment to Implement a Forest Wildlife Conservation Strategy, known breeding territories for this species have been consistently monitored across the Forest for over 10 years and this species is routinely surveyed in appropriate habitat during project level analysis on the Forest (USDA Forest Service May 2011). As new territories are identified, they are added to the Forest database. Should Northern goshawk be added as an MIS, a Forest monitoring strategy, including the establishment of monitoring points would need to be established.

3.3.11 Species Associated with Other Biological Communities (Region 4 Sensitive Species)

As stated in Chapter 1 of this EA, four major biological communities will be individually addressed over time:

- Phase 1: Forested Biological Community
- Phase 2: Rangeland Biological Community
- Phase 3: Unique Combinations of Forested and Rangeland Communities
- Phase 4: Riparian and Wetland Communities

These phases are analogous to the Suites of Biological Communities. Each suite has one or more habitat family associated within them. This EA addresses Suite 1—Forested

Biological Community only. "Terrestrial Wildlife," (section 3.3) therefore includes only those TEPC and Forest sensitive species associated with the Forested Biological Community. Other TEPC and Forest sensitive species are associated with habitat families within one of the other three communities. These species include the gray wolf, spotted bat (*Euderma maculatum*), Townsend's big-eared bat (*Corynorhinus townsendii*), greater sage grouse (*Centrocercus urophasianus*), Rocky Mountain bighorn sheep (*Ovis canadensis*), pygmy rabbit (*Brachylagus idahoensis*), peregrine falcon (*Falco peregrines anatum*), bald eagle, Columbia spotted frog (*Rana luteiventris*), yellow-billed cuckoo (*Coccyzus americanus*), Columbian sharp-tailed grouse (*T. phasianellus columbianus*),and the common loon (*Gavia immer*). The affected environment discussions and effects analyses for these remaining species are found in the 2003 Final EIS (USDA Forest Service 2003b, pp. 3-255 through 3-329), the 2003 Forest Plan Biological Assessment (USDA Forest Service 2003d, pp. V-1 through V-52), and/or the 2003 Forest Plan Biological Evaluation (USDA Forest Service 2003e, pp. 1–55).

3.4 Fire Management

Fire management encompasses several program areas, including prevention, education, fuels, and wildland fire management. Fire management terminology has been changing nationally since 2003. For example, the Forest Plan describes three kinds of fire: wildfire, wildland fire use, and prescribed fire (USDA Forest Service 2003a). Though still occurring in concept, wildland fire use is now managed under the umbrella of wildfire. However, changes in terminology do not affect how or where wildfire or wildland fire is managed under the Forest Plan. Any changes to the Fire Management Program described in this EA would result from the Forest Plan amendment proposed in Alternative B rather than from changes in terminology. Therefore, to maintain consistency with the Forest Plan and avoid confusion, amendment terminology will follow Forest Plan terminology.

Alternative B does not propose any changes to the areas designated for wildland fire use. In addition, Alternative B does not increase the amount of prescribed fire from what is intended under FMOB04. The changes proposed for Alternative B modify FMOB04 and adds FMOB08 to clarify the intent of FMOB04.

3.4.1 Introduction

3.4.1.1 The Role of Fire

Fire is a disturbance process that contributes to ecosystem structure, process, and function. However, unlike disturbance processes such as wind, insects, disease, and flood, fire is used as a tool to manage natural resources. Like all disturbance processes, fire effects are often highly variable and can result in a wide range of outcomes. Fire is most often used to modify fuels to reduce the risk of undesirable fire effects or to help achieve desired vegetative conditions. Fire is also used to contribute to ecosystem processes and functions.

In some areas on the Forest, the objective is to restore the historical role of fire, including the vegetative conditions that resulted from and contribute to how fire operated in the past. The basic premise of this goal is that ecosystems and the plants and animals using these ecosystems are most resilient and resistant to disturbance, including climate change, when they are in a condition closest to that under which they evolved (Larsen 1995).

However, it is neither possible nor desirable to restore the historical role of fire or historical conditions everywhere. In some cases, stand-replacing fire, which historically occurred in some ecosystems, may not be desirable, particularly in places like the WUI.

Fire regimes describe the type of fire effects that generally occur in ecosystems. Four fire regimes are defined for the Forest: nonlethal, mixed1, mixed2, and lethal. Fire regimes provide a context for describing the types of mortality, patch sizes, consumption of organics, and other changes that can result from fire (Table 3-36). Fire regimes for the forested vegetation were assigned to PVGs to characterize historical fire effects across the forest (Table 3-37). Most PVGs span a range of effects within and between fire regimes due to the variability of habitat types that comprise the PVGs. For this EA, PVGs were assigned to a single fire regime that best represents the historical disturbance processes based on the dominant habitat types within the PVGs.

Table 3-36. Characteristics of Fire Regimes Defined for the Sawtooth National Forest

Fire Regime	Fire Interval	Fire Intensity	Vegetation Patterns (Agee 1998)
Nonlethal	5–25 years	≤10% mortality	Relatively homogenous with small patches, generally less than 1 acre, of different seral stages, densities, and compositions
Mixed1	5–70 years	>10–50% mortality	Relative homogenous with patches created from mortality ranging in size from less than 1 to 600 acres of different seral stages, densities, and compositions
Mixed2	70–300 years	>50–90% mortality	Relatively diverse with patches created by mixes of mortality and unburned or underburned areas, ranging in size from less than 1 to 25,000 acres of different seral stages, densities, and compositions
Lethal	100–400 years	>90% mortality	Relatively homogenous with patches sometimes greater than 25,000 acres of similar seral stages, densities, and compositions; small inclusions of different seral stages, densities, and compositions, often resulting from unburned or underburned areas

Table 3-37. Potential Vegetation Group, Historical Fire Regime, Fire Regime Assignment for Analysis

Potential Vegetation Group	Historical Fire Regime Range	Fire Regime Assignment for Environmental Assessment
1	Nonlethal	Nonlethal
2	Nonlethal	Nonlethal
3	Mixed1 to Mixed2	Mixed1
4	Mixed1 to Mixed2	Mixed1
7	Mixed2	Mixed2
10	Mixed2 to lethal	Lethal
11	Mixed2	Mixed2

On the Forest, about 28 percent of the forested vegetation was historically in the nonlethal and mixed1 fire regimes; 72 percent was in the mixed2 and lethal fire regimes (Table 3-38; Map 3 in Appendix 3). The nonlethal fire regimes constitute the majority of the acres that support ponderosa pine as a major early seral species (Figure 3-39). Douglas-fir is the major component in the mixed1-to-mixed2 fire regimes, while the mixed2 and lethal fire regimes are primarily those vegetation types where lodgepole pine is a dominant early seral. Whitebark pine is also an important early seral species in the mixed2 fire regimes.

Figure 3-39. Example of Nonlethal Fire in a Ponderosa Pine Community (photograph credit: Don Sasse)

Table 3-38. Acres of Historical Forested Vegetation Fire Regimes and Percent of Total for the Sawtooth National Forest

	Nonlethal	Mixed1	Mixed2	Lethal	Total
Acres	49,660	245,950	541,520	203,230	1,040,360
Percent of Total	4	24	52	20	100

3.4.1.2 Wildland-Urban Interface

The WUI is the line, area, or zone where structures and other human developments meet or intermingle with wildland vegetative fuel. Population growth, particularly in the West, has led to an increase in WUIs. More people are living in small communities and commuting to work in metropolitan areas and isolated subdivisions adjacent to larger communities are being developed. Therefore, the number of communities threatened by wildfire has recently increased. To address these concerns and concerns about wildfire effects on natural resources, the Secretaries of Agriculture and Interior were directed to develop a strategy to address severe wildland fires, reduce fire impacts on rural communities, and ensure effective future firefighting capability. This strategy, which includes national, strategic, and implementation goals and plans; budget requests and appropriations; and local, state, and Federal action plans, is known collectively as the National Fire Plan.

The presence of a WUI within the landscape affects all fire management decisions in and adjacent to interface areas. While a wide range of fire management options are available by policy, these options are usually narrowed in interface areas due to the concern that the fire may move from Federal to private lands. Therefore, fire management costs are often higher adjacent to a WUI, and the ability to manage fuels, particularly vegetation that historically burned lethally, is sometimes reduced. Additionally, the risk of human-caused fires originating from the WUI and spreading to Federally protected land is increasing.

3.4.2 Effects Measures

3.4.2.1 Effect #1—The Role of Fire

3.4.2.1.1 Statement for Effect #1

The Forest Plan amendment may affect the ability to restore or maintain the historical role of fire.

3.4.2.1.1.1 Measure A for Effect #1

Acres of macrovegetation that burn in a manner similar to historical conditions at the landscape scale—the effects of fire vary depending on the vegetative condition. At the landscape scale, growth-stage distribution in part determines overall fire effects. Under the same burning conditions, landscapes dominated by small trees generally burn with more stand-replacing intensity; landscapes dominated with large trees often under-burn. Historically, fire determined the macrovegetation that, in turn, determined the fire regime. Current landscapes are generally not a product of historical disturbance process and are often comprised of macrovegetation that produces fire effects different from what occurred historically. This difference can lead to uncharacteristic or undesirable wildfire effects.

3.4.2.1.1.2 Methodology for Measure A

Each growth stage in each PVG was assigned a fire regime and corresponding numerical rating (Geier-Hayes 2011): nonlethal (1.0), mixed1 (2.0), mixed2 (3.0), and lethal (4.0). For each PVG, the number of acres in each growth stage was multiplied by the numerical assignment of the fire regime, summed, and divided by the total number of acres in the PVG (2010 0507 Sawtooth_FR_by_growth_stage_HRV.xls). The result crosswalks to a fire regime that defines the way fire operates on a landscape scale. The growth stage assignments and methodology were calibrated for each PVG using the historical fire regime as a guide. Numerical ratings closest to 1.0 are nonlethal, ratings closest to 4.0 are lethal. The resulting calibrated ratings for the historical fire regime for each PVG are shown in Table 3-39.

Table 3-39. Numerical Rating for Historical Fire Regimes by Potential Vegetation Group

Potential Vegetation Group	Historical Fire Regime	Numerical Rating
1	Nonlethal (1.0)	1.01
2	Nonlethal (1.0)	1.07
3	Mixed1 (2.0) to Mixed2 (3.0)	1.93
4	Mixed1 (2.0) to Mixed2 (3.0)	2.98
7	Mixed2 (3.0)	3.41
10	Mixed2 (3.0) to lethal (4.0)	3.85
11	Mixed2 (3.0)	2.83

3.4.2.1.1.3Measure B for Effect #1

Acres of macrovegetation where prescribed fire can be used to manage forested vegetation—the ability to use prescribed fire as a management tool depends on the MPC and macrovegetation. All but one MPC allows prescribed fire and fire use. MPC 4.3 allows only prescribed fire activity (Figure 3-40). However, not all macrovegetation is conducive to using prescribed fire. In general, smaller, higher-density growth stages are the most difficult to manage with prescribed fire because of the risk of undesirable outcomes or concerns about safely managing fires burning in these kinds of fuels. Therefore, changes in macrovegetation over time provide a measure of how much prescribed fire could be used.

Figure 3-40. Using Prescribed Fire to Treat Natural Fuels and Restore Ecological Processes in a Ponderosa Pine Stand (photograph credit: Kari Greer)

3.4.2.1.1.4 Methodology for Measure B

Fire management personnel reviewed the growth stages for each PVG and determined which would allow for the use of prescribed fire as an ecosystem restoration or maintenance tool based on the ability to manage the fire to achieve desirable outcomes, such as limiting the risk of escape and reducing stand mortality. This assessment did not include using prescribed fire to treat fuels generated by mechanical treatments since this activity is not for restoration or maintenance. Acres with growth stages that allowed using prescribed fire for ecosystem restoration were added together to determine changes in conditions over time. The following are the growth stages for each PVG in which prescribed fire was determined to be an appropriate restoration tool:

- PVG 1: Medium-Low, Medium-Moderate, Large-Low, Large-Moderate
- PVG 2: Medium-Low, Medium-Moderate, Large-Low, Large-Moderate
- PVG 3: Medium-Low, Large-Low
- PVG 4: Medium-Low, Medium-Moderate, Large-Low, Large-Moderate
- PVG 7: Large-Low
- PVG 10: Medium-Low, Medium-Moderate
- PVG 11: Medium-Low, Medium-Moderate, Large-Low, Large-Moderate

3.4.2.2 Effect #2—Wildland-Urban Interface

3.4.2.2.1 Statement for Effect #2

Alternative B may affect the amount of vegetation at risk to wildfire and at what rate hazardous conditions are reduced in areas where threats to life and private property exist.

3.4.2.2.1.1 Measure A for Effect #2

Rating of macrovegetation relative to a vegetative condition defined as the lowest WUI hazard within the WUI Analysis Area—certain vegetative conditions produce a lower risk of wildfire than others. In general, the most hazardous WUI conditions are those that produce the highest risk of lethal fire. For the analysis of potential affects to the WUI Analysis Area, the least hazardous WUI condition was defined as single-storied, large tree, low canopy cover. The most hazardous WUI condition was defined as small tree, high canopy cover. The single-storied, large tree, low canopy cover of early seral species, such as ponderosa pine or Douglas-fir, is considered the least hazardous because this condition, relative to all other types of stands, is most resistant to crown fire.

3.4.2.2.1.2 Methodology for Measure A

3.4.2.2.1.2.1 <u>Definition of the Wildland-Urban Interface Analysis Area</u>

Many different definitions exist for the WUI, including those found in the National Fire Plan (Grayzeck-Souter et al. 2009). In January and August 2001, a list of “Urban Wildland Interface Communities” was published in the Federal Register, identifying National Fire Plan communities of concern in each state. However, a map of the WUIs for these communities was not developed.

To define an area for this amendment, Forest personnel started with a product developed for the *Roadless Area Conservation, National Forest System Lands in the Idaho Final Environmental Impact Statement* (Roadless Area Conservation Final EIS). The year 2030 projections of housing density (Stein et al. 2007) were used to identify possible WUIs. Stein et al. (2007) developed their 2030 projections using the 2000 census statistics on housing density and population, road density data, past growth patterns, proximity to urban areas, and other factors. They defined three categories of housing density:

- Rural I—Lands with 16 or fewer housing units per square mile
- Rural II—Lands with 17 to 64 housing units per square mile
- Exurban/Urban—Lands with 65 or more housing units per square mile

The Roadless Area Conservation Final EIS analysis used the Rural II and Exurban/Urban categories. Census blocks identified as Rural II or Exurban/Urban were buffered with an area defined as the community protection zone (CPZ). For consistency across the state, the CPZ was mapped based on the definition from the Healthy Forest Restoration Act (HFRA), Section 101(16)(B) for determining the WUI for any areas where a community wildfire protection plan is not in place. Specifically, the HFRA states that the CPZ is comprised of the following:

> (i) an area extending ½-mile from the boundary of an at-risk community;
>
> (ii) an area within 1½ miles of the boundary of an at-risk community, including any land that:
>
> > (I) has sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;
> >
> > (II) has geographic feature that aids in creating an effective fire break, such as a road or ridge top; or
> >
> > (III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis.

Due to the complexities of attempting to identify and map parts I, II, and III, the Idaho Roadless Rule Final EIS used the 1½ mile area described in part ii. For the analysis, this area represents the greatest extent that could be treated. Actual treatment areas would most often be less, based on the conditions described in parts i and ii, within the ½ to 1½ mile zone.

HFRA states that an at-risk community is an area defined as follows:

> (A) that is comprised of
>
> > (i) an interface community as defined in the notice entitled “Wildland-Urban Interface Communities within the Vicinity of Federal Lands That Are at High Risk from Wildfire” issued by the Secretary of Agriculture and the Secretary of the Interior;
> >
> > (ii) a group of homes and other structures with basic infrastructure and services (such as utilities and

collectively maintained transportation routes) within or adjacent to federal land;

(B) in which conditions are conducive to a large-scale wildland fire disturbance event; and

(C) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

The Stein et al. (2007) product was assumed to capture the majority of areas that would meet the definition of at-risk communities defined by HFRA across the state, as well as the majority of areas that may be defined as WUI in Idaho County Wildfire Protection Plans (CWPPs). CWPPs will define the WUI for site-specific analysis and project implementation.

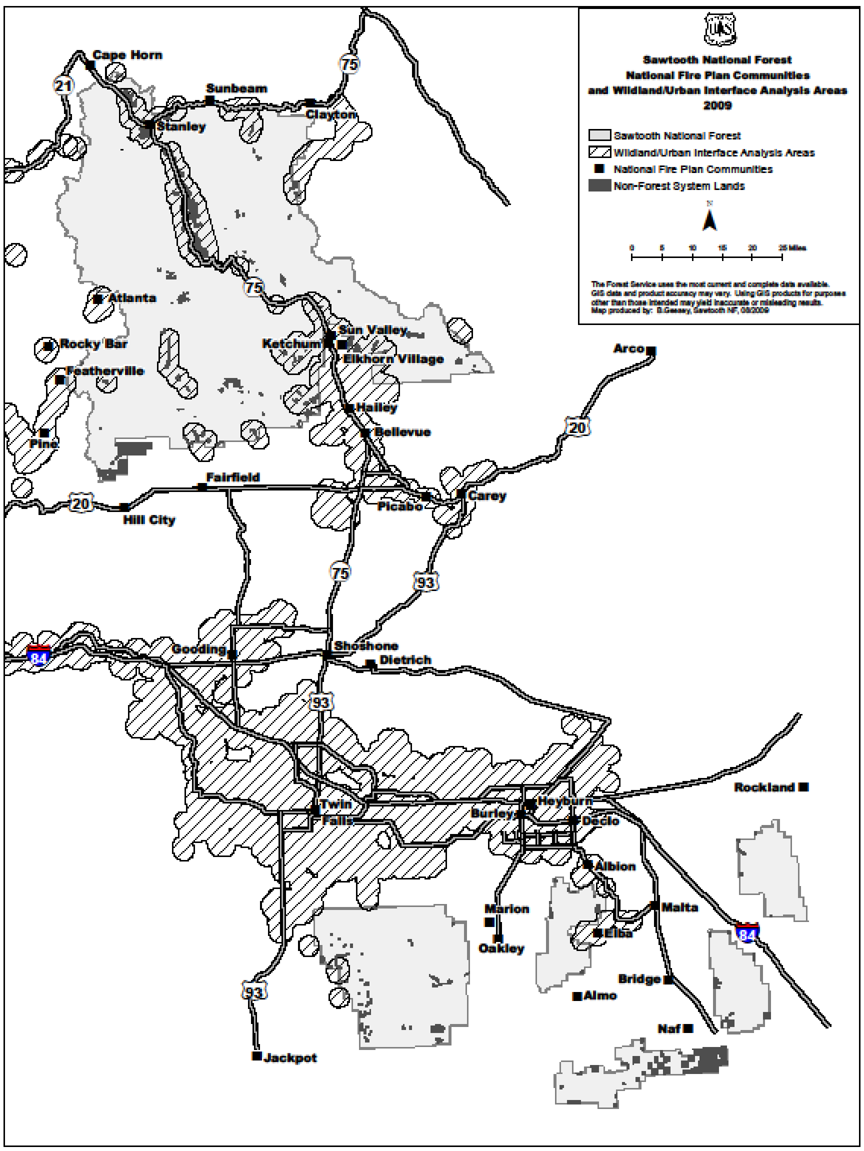

Figure 3-41. Wildland-Urban Interface Analysis Area for the Sawtooth National Forest

The CPZ layer was reviewed by Forest personnel and adjusted, as necessary, based on the following definition of a WUI (USDA Forest Service 2003b, page 3-637) (emphasis added):

- Wildland-Urban interface—developed areas with private residential structures where many structures border the wildland on a broad front
- Wildland rural interface—developed areas with private residential structures where developments are few in number, scattered over a large area surrounded by wildland
- Other developments not assigned above, such as administrative sites like guard stations or lookouts that are not privately owned, or privately owned structures that did not fit into categories 1 and 2 above (e.g., a single structure or organization camps)
- No structures

Approximately four CPZs were excluded and two added. Those excluded contained private non-residential structures, primarily inactive mine facilities, and those added were summer home areas that are private residences on NFS lands. The final product is the WUI Analysis Area (Figure 3-41). The current size of the WUI Analysis Area includes 255,030 acres of both forested and nonforested vegetation, with the majority (58 percent; 148,000 acres) comprised of forested vegetation (PVGs 1–11).

3.4.2.2.1.2.2 Wildland-Urban Interface Hazard Rating

Each growth stage was assigned a numerical value based on its relationship to the large tree size class–low canopy cover, which was assigned a value of 1.0, the lowest numerical value assigned to any stage. The greater the rating relative to the large tree size class–low canopy cover, the greater the potential hazard. Ratings were assigned as follows:

Large Low (1.0)
Medium-Low (2.0)
Small-Low (3.0)
Sapling-Low (4.0)
GFSS (5.0)
Large-Moderate (6.0)
Medium-Moderate (7.0)
Small-Moderate (8.0)
Sapling-Moderate (9.0)
Large-High (10.0)
Moderate-High (11.0)
Small-High (12.0)

The following assumptions were made when assigning the ratings:

- Low canopy cover stages are less hazardous than moderate canopy cover stages, which are less hazardous than high canopy cover stages.
- Smaller size classes are more hazardous than larger.
- GFSS, though generally a low-hazard condition in itself was rated as more hazardous than larger tree size classes with low canopy cover class, but was rated less hazardous

than larger tree size classes with moderate and high canopy cover classes. This rating was applied because GFSS is generally a short-lived stage (e.g., 10–30 years) that quickly transitions into more hazardous conditions.

The number of acres in each growth stage for each analysis (current condition, desired condition, and alternatives) was multiplied by the rating value and summed. The sum was divided by the total acres of growth stages (2010 0419 Sawtooth_WUI_Rating_Analysis.xls). The result is defined as the WUI Hazard Rating. The closer this rating is to 1.0, the closer the WUI Analysis Area is to the macrovegetation defined as least hazardous.

3.4.3 Current Conditions

Since 1940, about 318,740 acres have burned on the Forest, Ninety-two percent of these acres have burned since 1980, and the average number of acres burned per start (per decade) has also greatly increased since 1980 (Figure 3-42) (2009 0901 Sawtooth_wilderness_firestarts.xls; 2009 0425 snffirestarts_incpz.xls; 2009 0901 snffirestarts_outcpz.xls; 2010 0507 wildfires_by_decade.xls).

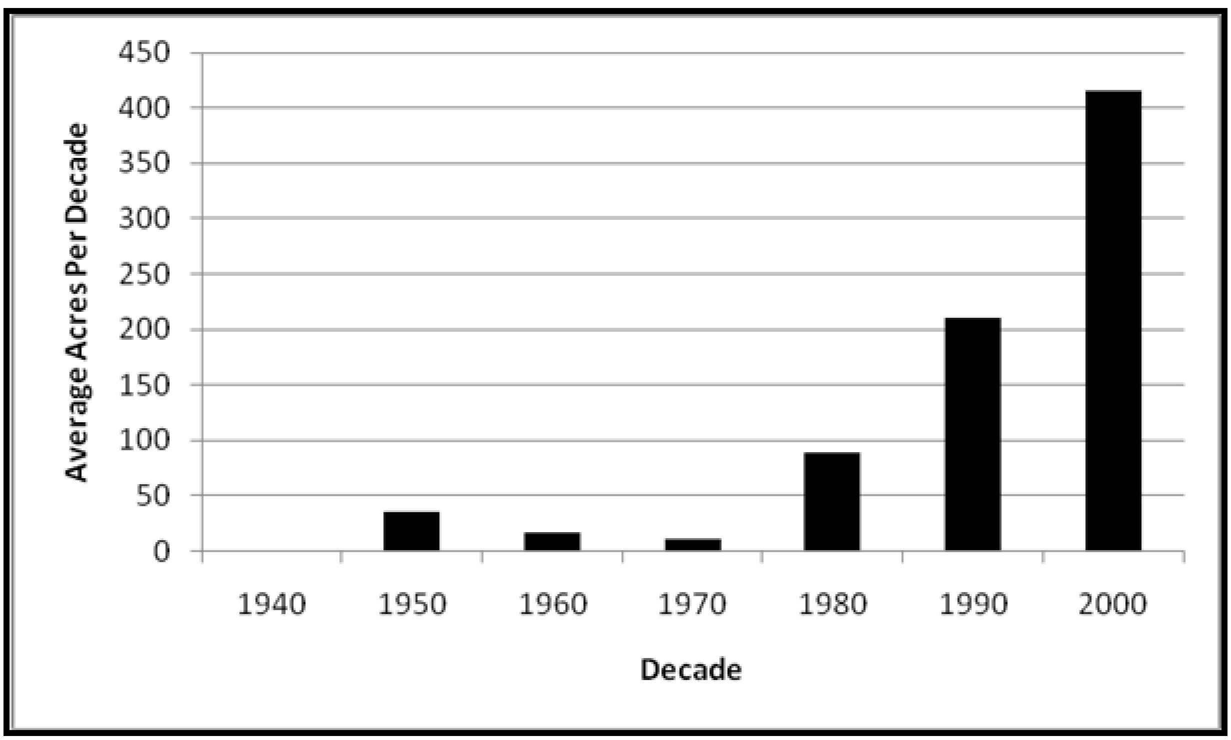

Figure 3-42. Average Acres Burned per Wildfire Start, by Decade, from 1940 through 2000 on the Sawtooth National Forest

The average number of wildfire ignitions from both human-caused and natural sources on the Forest is 42 per year from 1940 to 2000; of these, 54 percent are from lightning. From 1940 to 2000, the average number of wildfire ignitions from lightning in the WUI Analysis Area is 9 per year compared to 32 outside. However, during the same time period the WUI Analysis Area has more wildfire ignitions relative to area: on average, every 28,300 acres of WUI analysis area experiences one ignition, each year compared to one ignition per 51,100 acres outside the WUI. Therefore, the WUI Analysis Area has about 1.8 times more ignitions than the remainder of the Forest.

In the WUI Analysis Area from 1940 to 2000, the number of human-caused fires is also higher: 59 percent of the ignitions in the WUI Analysis Area are human caused compared to 42 percent outside. Also in the WUI Analysis Area during the same time period, the number of acres burned per wildfire ignition is higher: 150 acres per wildfire ignition in the WUI Analysis Area compared to 102 acres per wildfire ignition outside.

3.4.3.1 The Role of Fire

The historical numerical ratings for the fire regimes of most PVGs differ from current ratings. The greatest differences are for those PVGs that comprise the nonlethal and mixed1 fire regimes (Table 3-40). The most departed is PVG 2 followed by PVG 3. For both, the current numerical rating is higher (more towards lethal) than the historical rating, primarily because of an increase in smaller, denser growth stages relative to historical conditions. Numerical ratings are reduced in PVG 4, PVG 7, and PVG 11 due to an increase in GFSS, which is generally a less lethal condition than other size classes.

Table 3-40. Historical and Current Numerical Rating for Current Fire Regimes by Potential Vegetation Group (PVG)

PVG	Historical Numerical Rating for Fire Regime	Current Numerical Rating for Fire Regime (Departure)
Nonlethal		
1	1.01	1.17 (+16%)
2	1.07	1.30 (+21%)
Mixed1		
3	1.93	2.38 (+23%)
4	2.98	2.93 (–2%)
Mixed2		
7[a]	3.41	3.35 (–2%)
11	2.83	2.64 (–7%)
Lethal		
10	3.85	3.87 (+1%)

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.

3.4.3.2 Wildland-Urban Interface

The WUI Analysis Area comprises 255,030 acres or 13 percent of the Forest. Of this, 58 percent is forested vegetation comprising PVGs 1, 2, 3, 4, 7, 10, and 11 (2010 0507 Sawtooth_combo_wui_current_conditions.xls; 2010 0507 Sawtooth_WUI_Rating_Analysis.xls). Less than 1 percent is woodland vegetation (climax aspen or pinyon-juniper); 3 percent is not vegetated (e.g., water, and rock); and the remainder consists of other vegetation communities (e.g., grassland, shrubland, and riparian). Table 3-41 indicates the following:

- For PVGs 1 and 2, the WUI Hazard Rating is the lowest.
- For PVG 3, the WUI Hazard Rating is the highest.
- For PVG 1, medium tree with moderate canopy cover is the largest contributor to the WUI Hazard Rating.
- For PVGs 2 and 7, GFSS is the largest contributor to the WUI Hazard Rating. (Even though GFSS is rated relatively low compared to other classes, the growth stage represents the largest share of the landscape in these PVGs.)
- For PVGs 3 and 4, small tree class with high canopy cover is the largest contributor to the WUI Hazard Rating.
- For PVG 10, sapling tree with low canopy is the largest contributor to the WUI Hazard Rating.
- For PVG 11, small tree class with moderate canopy cover is the largest contributor to the WUI Hazard Rating.
- For PVGs 1 and 10, the next largest contributor to the WUI Hazard Rating is the small size class with moderate canopy cover.
- For PVGs 2, medium size class with moderate canopy cover is the next largest contributor to the WUI Hazard Rating.
- For PVG 3, medium size class with high canopy cover is the next largest contributor to the WUI Hazard Rating.
- For PVG 4, GFSS is the next largest contributor to the WUI Hazard Rating.
- For PVGs 7 and 11, the next largest contributor is the small size class with high canopy cover to the WUI Hazard Rating.

The overall WUI Hazard Rating is 6.02 for the entire WUI Analysis Area (Table 3-41).

Table 3-41. Current Condition of the Wildland-Urban Interface (WUI) Analysis Area and Class Producing the Largest and Next Largest Contribution to the WUI Hazard Rating By Potential Vegetation Group (PVG) for the Sawtooth National Forest

PVG	Current Condition Hazard Rating	Class Producing the Largest Contribution (Tree Size-Canopy Cover)	Class Producing the Next Largest Contribution (Tree Size-Canopy Cover)
1	5.03	Medium-Moderate	Small-Moderate
2	5.03	GFSS	Medium-Moderate
3	7.32	Small-High	Medium-High
4	6.25	Small-High	GFSS
7[a]	6.21	GFSS	Small-High
10	6.39	Sapling-Low	Small-Moderate
11	5.42	Small-Moderate	Small-High
Overall for WUI Analysis Area	**6.02**	**—**	**—**

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.

3.4.4 Effects Analysis

3.4.4.1 Effect #1—The Role of Fire

3.4.4.1.1 Measure A

Acres of macrovegetation where fire effects would be similar to historical conditions at the landscape scale. Currently, the lethal and mixed1 fire regimes are closest to the average historical rating and the nonlethal fire regime is the most departed (Table 3-42). However, the mixed2 fire regime is less lethal than historically due to the large amounts of GFSS. The nonlethal, mixed1, and lethal fire regimes are currently more lethal than historically primarily due to an overabundance of medium tree size class in moderate canopy cover class. By Decade 10 in the nonlethal, mixed2, and lethal fire regimes, both Alternative A and Alternative B are similar. Alternatives A and B are also similar to each other in the mixed1 fire regime. In the mixed1fire regime, the rating for Alternative A would remain slightly more lethal than Alternative B, while ratings for both Alternatives A and B would become less lethal than historically. In the nonlethal, mixed2, and lethal fire regimes, both alternatives would maintain ratings that are more lethal than the historically at similar levels.

Table 3-42. Average Historical Hazard Rating and Rating for Alternatives for Decade 1, Decade 5 and Decade 10 by Fire Regime

Nonlethal (Average Historical Rating = 1.02)				
Alternative	**Current Hazard Rating**	**Decade 1**	**Decade 5**	**Decade 10**
Alternative A	1.20 (+18%)	1.15 (+13%)	1.18 (+16%)	1.13 (+11%)
Alternative B	1.20 (+18%)	1.15 (+13%)	1.18 (+16%)	1.13 (+11%)
Mixed1 (Average Historical Hazard Rating = 2.82)				
Alternative A	2.85 (+1%)	2.85 (+1%)	2.83 (0%)	2.67 (–5%)
Alternative B	2.85 (+1%)	2.85 (+1%)	2.81 (0%)	2.65 (–6%)
Mixed2 (Average Historical Hazard Rating = 3.19)				
Alternative A	3.08 (–3%)	3.02 (–5%)	3.16 (–1%)	3.22 (+1%)
Alternative B	3.08 (–3%)	3.02 (–5%)	3.16 (–1%)	3.22 (+1%)
Lethal (Average Historical Hazard Rating = 3.85)				
Alternative A	3.87 (+1%)	3.85 (0%)	3.89 (+1%)	3.91 (+2%)
Alternative B	3.87 (+1%)	3.84 (0%)	3.89 (+1%)	3.91 (+2%)

3.4.4.1.2 Measure B

Acres of macrovegetation where prescribed fire can be used to manage forested vegetation—macrovegetation exists that would not be appropriate to manage with prescribed fire even if the landscape were within historical conditions. While most (92 percent) of the macrovegetation that occurred historically in the nonlethal fire regime could be managed with prescribed fire, less (59 percent) is in the mixed1 fire regime where prescribed fire would be a desirable tool (Table 3-43) (2010 0507 Sawtooth_all_alts_ability_rx_fire.xls). This difference is due to the tall shrub component that is common in the habitat types that comprise this fire regime. Achieving the often narrowly defined objectives for using prescribed fire on sites with tall shrubs is difficult because the prescription windows necessary to reduce risk of escape and limit stand-level mortality are very narrow. The least risky condition in these habitat types is low canopy cover size classes where potential effects across the stand are reduced. In the mixed2 and lethal fire regimes, prescribed burning can occur in more macrovegetation than in the mixed1, since tall shrub communities are less common.

For the nonlethal fire regime, macrovegetation where prescribed fire can be used is the same for the current condition and in Decade 1. In Decades 5 and 10, Alternative B would produce 2 percent more acres that could be treated with prescribed fire in Decade 5, and 3 percent more in Decade 10.

For the mixed1 fire regimes, both alternatives would produce the same current and decade macrovegetation conditions, with Alternative B producing1 percent more acres in Decade 10.

For mixed2 and lethal fire regimes, Alternatives A and B would produce the same current and Decade 1 macrovegetation with Alternative B again producing 1 percent more acres in Decade 10.

Table 3-43. Proportion of Acres Where Prescribed Fire Could be Historically Used, Percent of Fire Regime Acres where Prescribed Fire Could Be Currently Used (with Departure from Historical) for Two Selected Decades by Alternative

Alternative	Proportion of Historical Macrovegetation Where Prescribed Fire Could be Used (%)	Current	Decade 1	Decade 5	Decade 10
Nonlethal					
Alternative A	92	29 (–68%)	31 (–66%)	56 (–39%)	86 (–7%)
Alternative B	92	29 (–68%)	31 (–66%)	58 (–37%)	89 (–3%)
Mixed1					
Alternative A	59	26 (–56%)	28 (–53%)	52 (–12%)	70 (+19%)
Alternative B	59	26 (–56%)	28 (–53%)	52 (–12%)	71 (+20%)
Mixed2					
Alternative A	24	8 (–67%)	9 (–63%)	20 (–17%)	26 (+8%)
Alternative B	24	8 (–67%)	9 (–63%)	20 (–17%)	26 (+8%)
Lethal					
Alternative A	20	18 (–10%)	19 (–5%)	36 (+80%)	41 (+105%)
Alternative B	20	18 (–10%)	19 (–5%)	36 (+80%)	41 (+105%)

3.4.4.2 Wildland-Urban Interface

Separate desired conditions do not exist for the WUI; therefore, vegetative conditions in the WUI contribute to the Forest-wide desired conditions. Alternatives A and B exhibit the same WUI hazard rating for Forest-wide desired conditions. The current WUI Hazard Rating for the WUI Analysis Area is 6.02 (Table 3-44). Overall, and for individual PVGs, the current WUI Hazard Rating is greater than the rating for the desired condition for all PVGs except for PVGs 7, 10, and 11 for both alternatives. These three PVGs have a lower hazard than the desired condition because recent wildland fires and insect mortality have created a greater amount of lower hazard condition than the desired condition.

The condition with the lowest WUI hazard is large tree, low canopy cover, and since the condition in the WUI contributes to the Forest-wide desired conditions; the ability to provide this condition is based on the relationship between the number of WUI acres and the acres in large tree, low canopy cover desired condition.

Because the desired conditions for Alternatives A and B create a greater area of large tree size class, both alternatives provide more opportunity to create low hazard conditions in the WUI. Thus, the desired condition for the large tree size class is the same for both alternatives. However, the number of acres in the WUI Analysis Area creates the low-hazard condition over the entire WUI Analysis Area, which is in conflict with achieving the Forest-wide desired condition for some PVGs.

Table 3-44. Wildland-Urban Interface Hazard Rating for the Current Condition and Forest-wide Desired Condition for Alternatives A and B by Potential Vegetation Group (PVG) for the Sawtooth National Forest

PVG	Current	Alternative A (No Action)	Alternative B (Proposed Action)
1	5.03	2.70	2.70
2	5.03	2.89	2.89
3	7.32	5.83	5.83
4	6.25	5.84	5.84
7[a]	6.21	6.43	6.43
10	6.39	6.79	6.79
11	5.42	5.51	5.51
Overall	6.02	6.00	6.00

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.

For PVGs 3, 4, 7, and 10, in both alternatives more acres are in the WUI Analysis Area than there are of Forest-wide large tree size class, low canopy cover desired condition acres (Table 3-45). For example, there are 5,430 acres of PVG 3 in the WUI Analysis Area, but Forest-wide the desired condition for the lowest hazard condition is only 2,990 acres for both alternatives. Therefore, to provide the low hazard condition in the WUI Analysis Area, the Forest-wide desired conditions for the large tree, low canopy cover in PVG 3 would need to be 1.8 times larger for both alternatives. In other words, the Forest-wide desired conditions for both alternatives would need to provide for a much greater amount of large tree size class, low canopy cover. This condition would also assume the entire desired condition for this class occurs only in the WUI Analysis Area.

Table 3-45. Number of Additional Acres the Forest-wide Large Tree–Low Canopy Cover Desired Condition Would Need to be in the Wildland-Urban Interface (WUI) Analysis Area to Provide the Lowest WUI Hazard Rating by Fire Regime and Potential Vegetation Group (PVG) on the Sawtooth National Forest

Fire Regime	PVG	Existing PVG Acres in the WUI Analysis Area	Acres of Large Tree–Low Canopy Cover Needed to Meet the Forest-Wide Desired Condition	Number of Times Larger the Forest-wide Large Tree, Low Canopy Cover Desired Condition Would Need to be to Provide the Lowest Hazard rating for the WUI Analysis Area
Nonlethal	1	1,680	17,760	0
	2	2,110	4,940	0
Mixed1	3	5,430	2,990	(1.8)
	4	42,500	10,420	(4.1)
Mixed2	7[a]	43,790	3,300	(13.2)
	11	9,780	38,000	0
Lethal	10[b]	41,510	4,060	(10.2)
	Total	**146,800**	**81,470**	**(29.3)**

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.
[b]Medium tree size class in this PVG.

To provide this condition outside the WUI Analysis Area, the desired condition would need to be even greater than what meets the low hazard condition in the WUI. This scenario is also the case for PVGs 4, 7, and 10. For all alternatives in all PVGs, concentrating this much of the desired condition into the WUI Analysis Area reduces the opportunity to create desirable patch and pattern within other parts of the Forest.

In addition, for those PVGs where the large tree, low canopy cover desired condition is less than the number of acres in the WUI Analysis Area, some level of hazard could remain in the WUI depending on the mix of PVGs. Given the mix of PVGs in the WUI Analysis Area, the Forest-wide desired condition for large tree–low canopy cover would need to be 29.3 times greater for Alternatives A and B. (able 3-45) (2010 0507 Sawtooth_WUI_Rating_DC.xls).

For Alternatives A and B, no additional constraints exist for achieving the low hazard condition in WUIs. Alternative A does not contain direction to maintain all large tree stands, and Alternative B, the newly proposed large tree standard provides an exemption for WUIs and would not conflict with achieving the desired low hazard condition. Since large tree, low canopy cover is defined as the least hazardous condition, treatments that occur in those PVGs where old-forest habitat occurs in large tree, low canopy cover as well as large tree, moderate canopy cover, particularly if the resulting conditions are single-storied, would likely not conflict. Table 3-46 shows the proportion of each PVG in the WUI Analysis Area currently in macrovegetation that can provide old-forest habitat. PVGs 1 and 2 produce old-forest habitat in large tree size class, low canopy cover class; PVGs 3, 4, 7, and 11, provide old-forest habitat only in the moderate canopy cover class.

Table 3-46. Current Percentage for Growth Stages that Provide Old Forest Habitat by Fire Regime and Potential Vegetation Group (PVG) and Proportion of the Wildland-Urban Interface (WUI) Hazard Rating in Large Tree, Moderate Canopy Cover on the Sawtooth National Forest

Fire Regime	PVG	Large Tree, Low Canopy Cover (%)	Large Tree, Moderate Canopy Cover (%)	Proportion of PVG WUI Hazard Rating Contributed by Large Tree, Moderate Canopy Cover (%)
Nonlethal	1	3	6	7
	2	4	1	1
Mixed1	3	-	6	5
	4	-	5	5
Mixed2	7[a]	-	5	4
	11	-	11	12

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.

By Decade 10, Alternative B would produce the lowest hazard rating of the two alternatives. (Table 3-47) (2010 0416 Sawtooth_WUI_Rating_Analysis.xls). Neither alternative achieves the hazard rating of the desired condition, though some individual PVGs achieve the rating associated with their desired conditions (Table 3-48). Alternative B would produce the lowest overall hazard rating by Decade 10 in all fire regimes (Figure3-43).

Table 3-47. Wildand-Urban Interface Hazard Ratings for Desired Condition, Current Conditions of Alternatives A and B for Three Decadal Periods for the Sawtooth National Forest

Alternative	Desired Conditions	Current Conditions	Decade 1	Decade 5	Decade 10
Alternative A (No Action)	6.00	6.02	6.12	6.40	6.38
Alternative B (Proposed Action)	6.00	6.02	6.12	6.35	6.24

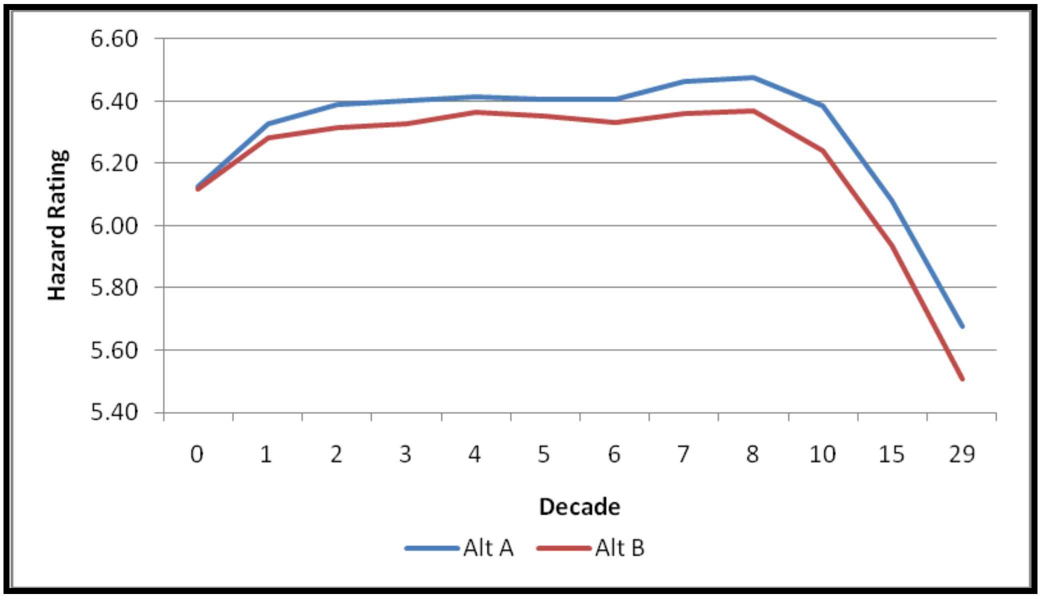

Figure 3-43 Wildland-Urban Interface Rating for Alternatives A and B on the Sawtooth National Forest

Table 3-48. Wildland-Urban Interface (WUI) Hazard Rating for Alternatives A and B and for Three Decadal Periods by Potential Vegetation Group (PVG) on the Sawtooth National Forest

PVG	WUI Hazard Rating of Forest-wide Desired Condition	Alternative A (No Action)			Alternative B (Proposed Action)		
		Decade 1	Decade 5	Decade 10	Decade 1	Decade 5	Decade 10
PVG 1	2.70	4.93	3.51	2.61	4.91	3.93	3.08
PVG 2	2.89	5.14	6.35	6.10	5.17	6.44	5.72
Total nonlethal	**2.81**	**5.05**	**5.09**	**4.56**	**5.05**	**5.34**	**4.55**
PVG 3	5.83	7.26	6.50	6.26	7.17	6.33	6.03
PVG 4	5.84	6.29	6.25	5.61	6.28	6.24	5.58
Total Mixed1	**5.84**	**6.40**	**6.27**	**5.68**	**6.38**	**6.25**	**5.63**
PVG 7[a]	6.43	6.22	6.31	7.00	6.22	6.28	6.83
PVG 11	5.51	6.33	5.68	5.45	6.33	5.57	5.11
Total Mixed2	**6.26**	**6.24**	**6.20**	**6.72**	**6.24**	**6.15**	**6.52**
PVG 10	6.79	5.77	6.94	6.93	5.75	6.83	6.74
Total All Fire Regimes	**6.00**	**6.12**	**6.40**	**6.38**	**6.12**	**6.35**	**6.24**

[a]PVG 9 acres have been combined with PVG 7, since only a few PVG 9 acres occur on the Forest.

3.4.5 Cumulative Effects

3.4.5.1 The Role of Fire

Landownership adjacent to or surrounded by lands administered by the Forest Service affects opportunities to use fire and, therefore, to emulate historical fire effects, particularly over landscapes. In general, private landowners use timber harvest rather than fire to manage their vegetation. Fire may be used to treat activity fuels, but treatments are often limited in extent and effect. The proximity to or inclusion of private lands can affect the ability to use prescribed fire and to restore or maintain the historical role of fire. However, prescribed fire can be coordinated with adjacent governmental landowners, such as the Idaho Department of Lands and BLM, or other Forests (Figure 3-44). In this case, effects could extend beyond lands administered by the Forest Service.

Figure 3-44. Coordinated Use of Prescribed Fire to Restore Vegetative Conditions on the Sawtooth National Forests

3.4.5.2 Wildland-Urban Interface

The WUI includes areas in which private lands are wholly surrounded by lands administered by the Forest and areas in which private lands adjoin the Forest as well as other ownerships (e.g., other private, State, or Federal). In cases where private lands are surrounded by lands administered by the Forest, vegetative conditions and treatments to reduce hazards may be more strategically placed within and adjacent to the WUI. However, the risk to structures located in the WUI also depends on the vegetative conditions found on private lands and other ownerships where structures are located relative to defensible space, the type of building materials, and other mitigations. The intent of the National Fire Plan is to develop strategies and treatments that are coordinated between various landowners, including Federal agencies, to address the variety of hazards and risks that occur to reduce undesirable wildfire effects on all lands. This coordination would extend the effects of treatments beyond lands administered by the Forest Service. Ultimately, however, structure protection on private property is the responsibility of the property owner.

3.5 TIMBERLAND RESOURCES

3.5.1 Introduction

The National Forest Management Act (NFMA) requires that NFS lands be classified as to their suitability and availability for timber harvest and production. NFS lands were reserved with the intent of providing goods and services that would contribute to public interest and needs over the long term, including a sustainable supply of timber and related forest products.

Three important considerations exist for classifying NFS lands as suitable for timber production and unsuitable for timber production but available for timber harvest:

1. Achieving and maintaining forest desired conditions using planned and regulated timber harvest
2. Restoring fire-adapted ecosystems and associated species habitats
3. Providing wood products that contribute to sustaining a wood products processing industry that is essential to continued forestland restoration and maintenance services in southwestern Idaho

To address these considerations, some level of regulated forest production is necessary and appropriate on forested lands within the administrative boundary of the Forest. Where biophysical, socio-economic, or legal constraints preclude scheduling planned and/or periodic harvests, some forested lands may not be deemed suitable for timber production even though they meet the definition of "forested lands." In other areas, lands that are classified as unsuitable for timber production could be made available for timber harvest where such harvests are implemented on an unregulated basis with the intent to achieve multiple-use resource management objectives associated with a specific management prescription or allocation unit (i.e., Forest Plan MPC units).

How mechanical vegetation treatments, including commercial timber harvest, contribute to achieving and maintaining forest desired conditions and restoring fire-adapted ecosystems is disclosed in section 3.2, "Forested Vegetation Diversity and Fire Regime Condition Class" of this EA (modeling groups 4, 5 and/or 6). How these activities contribute to restoring wildlife habitat is disclosed in section 3.3, "Terrestrial Wildlife," of this EA. This section of the EA will focus on how Alternative A (No Action) and Alternative B (Proposed Action) affect considerations listed above.

The affected area for direct and indirect effects to timberland resources is the NFS land within the Forest's administrative boundary. This area was selected because Alternative A (No Action) and Alternative B (Proposed Action) effects to timberland resources would generally be confined to this area.

3.5.2 Effects and Measures

Alternative B (Proposed Action) may affect timber harvest and production across the Forest and could affect, in turn, the wood products processing industry. The following effect will be assessed using the identified measures.

Effect #1: Alternative B (Proposed Action) may affect the decadal Allowable Sale Quantity (ASQ) and Total Sale Program Quantity (TSPQ).

Measures for Effect #1:

- Change in ASQ
- Change in TSPQ

The timberland resources discussion below focuses on changes in ASQ and TSPQ.

3.5.3 Methods for Assessing the Identified Measures

Calculation of Allowable Sale Quantity—The ASQ describes the maximum volume of timber that may be harvested from *suited forestlands* during a specified time period, usually a decade. The ASQ "ceiling" cannot be exceeded during a given decade, and this volume ceiling is not a guaranteed harvest volume but a potentially available volume. The actual volume offered is the aggregate of individual project proposals and depends on a number of factors, including annual budget and organizational capabilities. ASQ volume is also described as "chargeable volume" because it is applied toward the decadal ASQ ceiling.

The ASQ includes only those volumes that would be removed from lands designated as suited forestlands. Volume not in the ASQ ceiling includes unsound material, salvageable dead logs, fuelwood, biomass products, or any volume generated from harvest activities within unsuitable forestland. As described in Appendix B of the 2003 Final EIS (USDA 2003b, pp. B-15 to B-17), yield tables were developed using the Forest Vegetation Simulator (FVS) (enhanced Prognosis Growth Model [Wykoff 1982]) that is maintained by the Inventory and Monitoring Institute of the Forest Service in Fort Collins, Colorado. PVGs were used as the basis for yields, and of the 8 PVGs, yield tables were developed for 10. Though yields were developed for PVGs 8 and 9, these PVGs are rare on the Forest and were subsequently combined with PVG 7 for the analysis. Yields were assigned to the PVGs based on the growth stage (tree size class and canopy cover) and type of treatment (e.g., commercial thin, selection, and shelterwood). Separate yield estimates were developed for Alternative A versus Alternative B based on assumptions about the effects of management direction.

Mechanical activities that include harvest of commercial-size timber were assigned a volume estimate from the yield tables in million board feet (MMBF). Board feet yields were then multiplied by a conversion factor to calculate million cubic feet (MMCF). When a treatment type was selected in the model, the acres assigned this treatment type were multiplied by the volume per acre from the yield tables to accumulate volume.

The modeling platform used was the VDDT, which is discussed in the "Forested Vegetative Diversity and Fire Regime Condition Class" (section 3.2.3.4) and Appendix 4 of this EA. This is a different modeling platform from that used in 2003 (i.e., SPECTRUM) and provides an added benefit with its ability to represent stochastic disturbances such as wildfire and insects. Including these stochastic disturbances in the modeling effort supporting this EA provided a more realistic view of how these events would likely affect achievement of desired future conditions and wood product outputs contributing to ASQ.

The base schedule[18] of harvest activities generating volume that contributes to the ASQ reflects a constant or increasing level of future commercial timber sale activities consistent with the principle of nondeclining flow. The base schedule of treatment activities in the model reflects management intensities and the degree of timber utilization consistent with the goals, assumptions, and standards contained or used to develop a proposed alternative. Forest Plan management direction common to an MPC provides the management type and intensity foundation and constraints resulting from Forest-wide management direction. The effects of both alternatives are described in this analysis for the first five decades to reflect anticipated changes resulting from management intensities over time and to demonstrate consistency with the principle of nondeclining flow.

The long-term sustained yield capacity (LTSYC) for each alternative has also been calculated. LTSYC is calculated for suited forestlands only and is based on the determination of yield by prescription from regenerated stands, including, where appropriate, intermediate yields selected in the solution for a specific alternative. The decadal ASQ cannot exceed the LTSYC.

A need for departure from the base schedule has not been identified at this time and is not discussed in disclosures below. The purpose of analyzing departure is to determine if multiple-use objectives are better met by regulating the anticipated harvest of timber volume in a manner that deviates from the principle of nondeclining flow.

Calculation of Total Sale Program Quantity—TSPQ is the total volume of harvested timber anticipated from any forested lands. This volume includes timber harvest that constitutes the ASQ (from suited forestlands) and additional timber volume from harvest activities on unsuitable forestland. Unsuitable forestland is available for timber harvest activities where harvest will contribute to meeting restoration objectives and desired conditions found in MPCs 3.1, 3.2, or 4.1c, or removed from PVGs 1 or 11, which have also identified as unsuitable forestlands. Fuelwood was generally assumed to be included in TSPQ and not ASQ, regardless of whether it is removed from suitable or unsuitable forestland. The portion of the TSPQ volume removed that does not contribute to the ASQ volume is described as “non-chargeable volume” because it is not charged against the decadal ASQ ceiling. The non-chargeable volume is considered volume in addition to that planned as part of the ASQ volume.

Biomass volumes have not been included in current TSPQ estimates. While there is a continued emphasis on ecological restoration and WUI fuel reduction treatments that could generate biomass while meeting management objectives, markets for this product

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[18] The base schedule is a timber sale schedule formulated on the basis that the quantity of timber planned for sale and harvest (ASQ) for any future decade is equal to or greater than the planned sale and harvest for the preceding decade and that this planned sale and harvest for any decade is not greater than the LTSYC. This definition expresses the principle of nondeclining flow.

are still in the development phase. In southwestern Idaho, a growing interest in biomass exists, both as a renewable energy source and a component for the manufacture of other wood products (e.g., particle board). Although market interest is growing and could be high in the future, utilization is currently low and hampered by a lack of infrastructure. The Forest Service anticipates a developing market in southwestern Idaho in the next 5–10 years (Waite 2009). If this market is realized, adjustments in TSPQ, and ASQ will be made as appropriate at a future date.

3.5.4 Affected Environment

3.5.4.1 Allowable Sale Quantity and Total Sale Program Quantity

As stated previously, the ASQ represents a decadal volume "ceiling" that cannot be exceeded; however, this volume ceiling is not a guaranteed harvest volume and should be viewed as a potential.

While the Forest believes it can achieve the maximum level of TSPQ output shown in Table 3-49, this ability depends on resource and funding availability as well as outside factors, such as economic and market conditions and mill capacity. Based on the past 5 years of data, the Forest has not harvested or sold the total potential annual TSPQ allowed under the 2003 Forest Plan.

Table 3-49. Sawtooth National Forests Allowable Sale Quantity (ASQ) and Total Sale Program Quantity (TSPQ)

Harvest Type	Volume (million board feet [MMBF]/year)	
	Alternative A (No Action)	Alternative B (Proposed Action)
ASQ ceiling	6.0	5.4
TSPQ	9.4	8.1

The actual annual outputs from 2004–2008 ranged from 0 to 0.7 MMBF, with an overall 5-year average of <10 percent of the 6 MMBF ASQ ceiling identified in the 2003 Forest Plan.

The reason for the ASQ being so low over the 5-year timeframe is due to the Forest priority to treat lodgepole pine, which has been killed by the mountain pine beetle on the Sawtooth NRA. All timber harvested from the Sawtooth NRA has been on unsuitable lands.

The TPSQ also represents a decadal volume "ceiling" that cannot be exceeded. The Forest's annual outputs from 2004–2008 ranged from 3.8 to 6.9 MMBF, with an overall 5-year average of 52 percent of the 9.4 MMBF TPSQ ceiling identified in the 2003 Forest Plan.

3.5.5 Environmental Consequences

3.5.5.1 Effects Common to All Alternatives

Laws, Regulations, and Policies—Numerous laws, regulations, and policies govern the classification, use, and administration of timberland resources on NFS lands. Some of the more important ones are described in Appendix H of the 2003 Forest Plan (USDA Forest Service 2003a). National laws and regulations have also been interpreted for implementation through Forest Service manuals and handbooks. All timber management activities and the assessment of suited forestlands must comply with these laws, regulations, and policies, which provide general guidance for implementing vegetation management practices and protecting related resources.

Forest Plan Direction—Forest Plan management direction that may affect timberland resources varies by alternative. However, direction in all alternatives has been developed to maintain or restore forested vegetation within the desired conditions for the respective alternative. Direction occurs at the Forest-wide, MPC, and MA levels. Goals and objectives have been designed to achieve desired forest conditions over the long term and provide sustainable levels of timber harvest consistent with the emphasis of the mix of MPCs within an alternative. Timberland resources and other resource areas (e.g., TEPC, SWRA) in the Forest Plan provide standards and guidelines designed to conserve the various biological and physical resources that could be adversely affected by management activities that support removal of wood products.

Forest Plan Implementation—Proper timberland resource management depends on current and site-specific information about biological and physical resource conditions and the effects that management practices have on affected resources. Some of these factors are not appropriately addressed at the programmatic level. Developing stand-level silvicultural prescriptions addresses site-specific and related resource factors; thus, these site-specific factors are not addressed in this midscale analysis supporting Forest Plan amendments. These site-specific assessments, consistent with Forest Plan management direction, will inform adjustments in management practices as needed to address Forest Plan management direction (e.g., Forest-wide standards SWST01 and SWST04) in a timely, effective, and site-specific manner regardless of the alternative selected in this Forest Plan amendment process. Additionally, site-specific evaluations will be used to verify timberland suitability classification, especially to address sensitive resource areas such as Riparian Conservation Areas (RCAs) and landslide-prone, high-risk areas that are to be removed from the suited forestland base once field verified (Forest-wide standards TRST04 and 05, respectively).

3.5.5.1.1 Direct and Indirect Effects by Alternative

3.5.5.1.2 Allowable Sale Quantity

As discussed under the methodology section, the VDDT model was used to estimate ASQ ceilings for each of the alternatives based on the assumptions discussed.

As shown in Table 3-50, the decadal ASQ ceiling would be highest in Alternative A although ASQ would increase from Decade 1 to 5 under both alternatives. This increase is primarily due to growth of trees into the large tree size class under all alternatives. As discussed in section 3.2, "Forested Vegetation Diversity and Fire Regime Condition Class," most PVGs are below the desired range of conditions for large tree size class. As trees grow back into this size class over time, more volume becomes potentially available for removal, and thus ASQ increases.

Table 3-50. Decadal Allowable Sale Quantity by Alternative

Alternative	Decade 1		Decade 2		Decade 3		Decade 4		Decade 5	
	MMBF[1]	MMCF[2]	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
A (No Action)	59.5	10.4	65.9	11.6	68.0	11.9	71.2	12.5	73.4	12.9
B (Proposed Action)	53.6	9.4	59.2	10.4	65.8	11.5	67.8	11.9	68.5	12.0

[1]Million Board Feet
[2]Million Cubic Feet

The change in ASQ between the alternatives is primarily a function of treatment emphasis changes. Alternative A would provide somewhat greater yields because this alternative would not include Forest Plan direction for retaining old-forest habitat and includes fewer restrictions on removing large tree size class stands.

Under Alternative A, more acres are anticipated to be treated using higher yield, even-aged treatments, including regeneration harvest, when compared to Alternative B.

In addition to the old-forest habitat and large tree direction effects on yields, Alternative B would also include priorities to reduce hazardous fuel conditions within the WUI, and then maintain a low hazard condition. While WUI treatments should initially result in similar volume contributions to ASQ as treatments outside the WUI, the desire to maintain low fuel hazard conditions within the WUI would result in volume reductions under Alternative B over time compared to Alternative A. These reductions would be expected because the priority in these areas would be to sustain as many acres in a large tree, low canopy cover conditions (i.e., low hazard conditions) as the site can carry. The assumption is that these conditions would generally result in extending rotation ages within WUIs toward the upper end of the range for a PVG, which, as discussed in the methodology section, would further reduce yields over time compared to treatments under Alternative A.

Long-term Sustained Yield Capacity: As discussed under the methodology section above, the decadal ASQ cannot exceed the LTSYC. Under Alternative A, the LTSYC for the Forest would be 79.7 MMBF (14 MMCF) per decade; under Alternative B it would be 79.4 MMBF (13.9 MMCF). ASQs for Decades 1–5 (Table 3-50) for both alternatives would not exceed their respective LTSYC; thus, both alternatives would be consistent with requirements concerning LTSYC.

Nondeclining flow: In addition to the LTSYC requirements, the first decade ASQ must meet the nondeclining flow requirements unless departure from the base schedule is warranted. As discussed under the methodology section, the need for considering departures has not been identified at this time, so both alternatives are consistent with the nondeclining flow requirements (Figure 3-45 and Figure 3-46).

3.5.5.1.3 Total Sale Program Quantity

TSPQ is the total volume of timber outputs from the planning area calculated on a decadal basis. This volume includes timber harvest that constitutes the ASQ (from suited forestlands) and additional timber volume resulting from vegetation management actions that occur as part of restoration activities or harvesting designed to attain resource objectives and desired conditions on unsuitable forestlands. Timber harvested from unsuitable forestlands is part of the TSPQ but is not accounted for as part of the ASQ. Therefore, volume contributing to TSPQ may come from both suited and unsuitable forestlands.

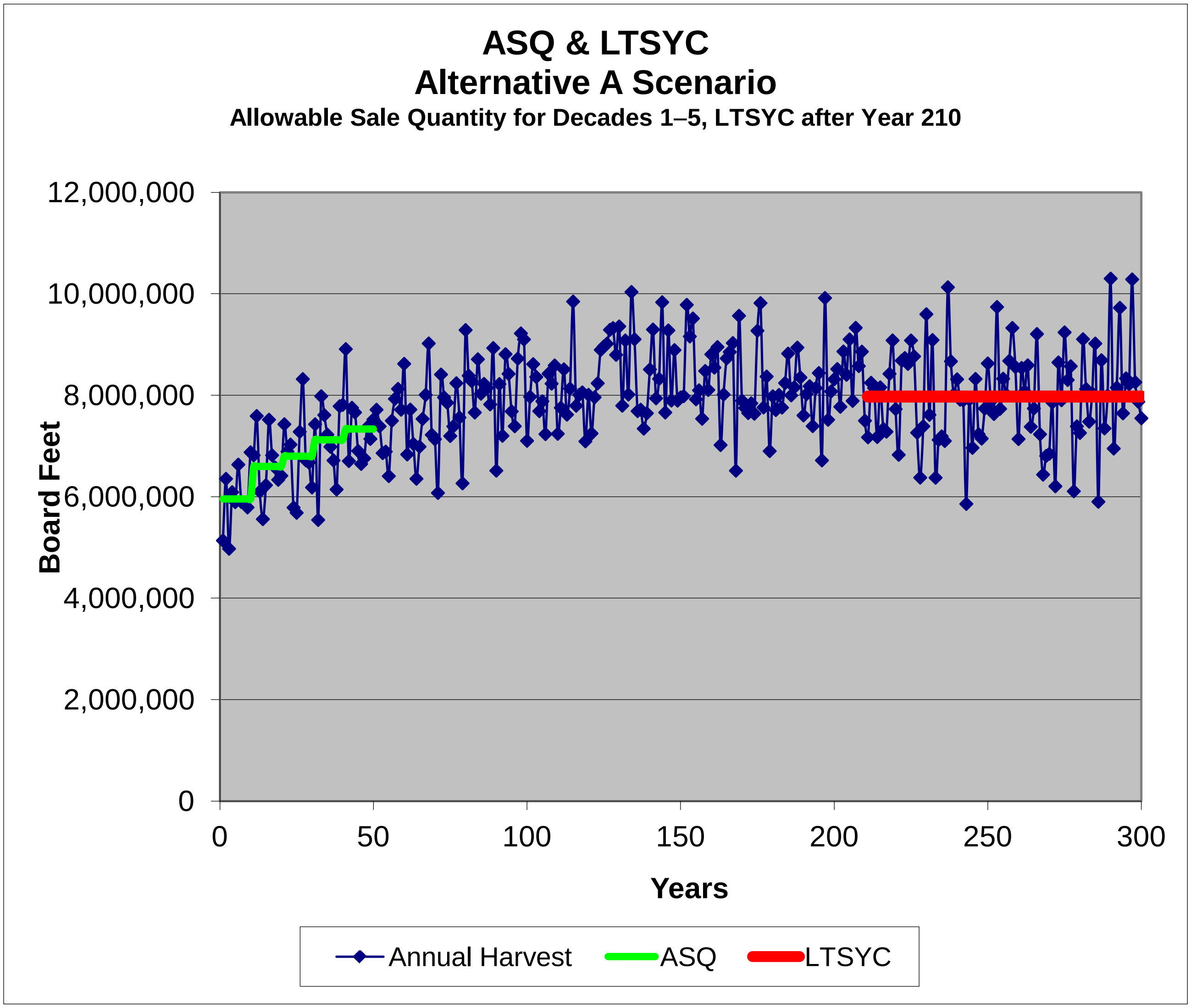

Figure 3-45. Alternative A Allowable Annual Sale Quantity (ASQ) Harvest over 30 Decades, 5 Decade Nondeclining Flow Trend Line (ASQ), and Long-Term Sustained Yield Capacity (LTSYC) after Year 2010

TSPQ volume is summarized for each alternative in Table 3-51. The volume for each alternative is shown as the total TSPQ volume (ASQ plus non-ASQ volume) per decade for each of the next 5 decades. As shown in Table 3-51, Alternative A would provide for the greatest potential TSPQ for all decades.

Table 3-51. Total Sale Program Quantity for the Next Five Decades, by Alternative

Alternative	Decade 1		Decade 2		Decade 3		Decade 4		Decade 5	
	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF	MMBF	MMCF
A (No Action)	95	16.7	107	18.9	114	20.0	119	20.9	123	21.6
B (Proposed Action)	80	14.0	93	16.3	106	18.6	108	19.0	109	19.2

Note: Although both million cubic feet (MMCF) and million board feet (MMBF) are shown, TSPQ is generally expressed in millions of board feet. These figures were derived from the VDDT model.

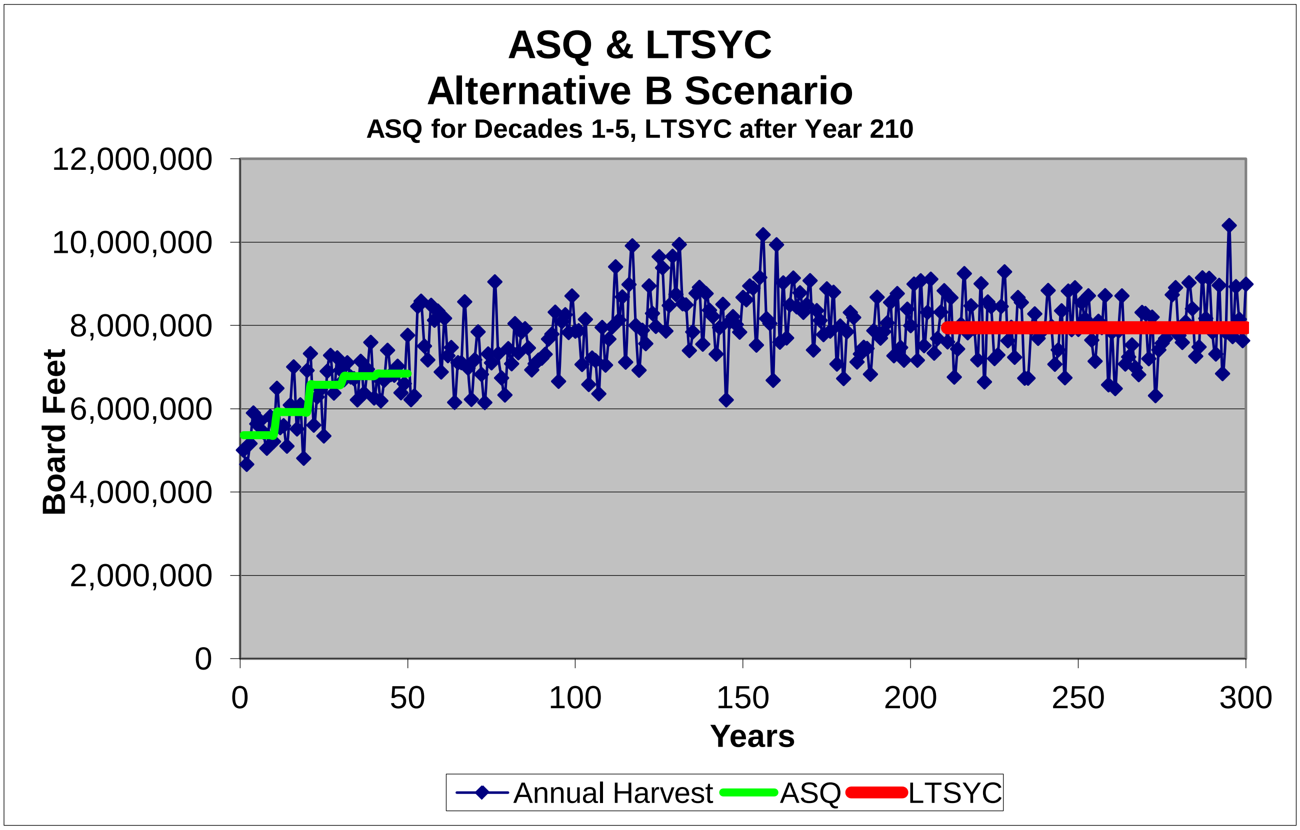

Figure 3-46. Alternative B Allowable Annual Sale Quantity Harvest over 30 Decades, 5 Decade Nondeclining Flow Trend Line (ASQ), and Long-Term Sustained Yield Capacity (LTSYC)

3.6 TRIBAL RIGHTS[19] AND INTERESTS

3.6.1 Introduction

This section describes the cultural history, legal context, and existing federal agency relations with the project area's affected American Indian tribes. The ways in which American Indians use Forest Service-administered lands is discussed in the context of their cultural, social, economic, religious, and governmental interests. The United States government has a unique responsibility to Indian tribes. Implications from this responsibility for Forest Service decision-makers are described as they relate to ecosystem-based management in the project area.

3.6.1.1 Federal Trust Responsibility[20]

The modern concept of trust responsibility grows out of the 1814 Treaty of Ghent, in Chief Justice Marshall's decision in *Cherokee Nation v. Georgia* 1831. Justice Marshall characterized American Indian tribes as "domestic dependent nations" involving (1) the government or nation-state status of tribes, and (2) a special tribal relationship with the United States (Cohen 1982). Marshall described the trust relationship as one that "resembles that of a ward to his guardian." This relationship has been consistently recognized by federal courts ever since and has been described as "special," "unique," "moral," and "solemn" (Indian Tribes 1981).

In addition, the rights reserved by the tribes in treaties and agreements, or which were not expressly terminated by the Congress, continue to this day. These governmental rights and authorities extend to any natural resources which are reserved by or protected in treaties, executive orders, and federal statutes. The courts have developed the Canons of Construction, guiding that treaties and other federal actions "should when possible be read as protecting Indian rights in a manner favorable to Indians (Cohen 1982)."

The primary focus of the federal trust responsibility is the protection of American Indian tribes' natural resources on reservations, and the rights and interests of tribes on off-reservation lands. In fulfilling the trust obligation, the Congress also adopted laws and policies that protect tribes' rights to self-determination, and promote the social well-being of tribes and their members. Under various laws and policies, agencies are responsible for implementing federal resource laws in a manner consistent with the tribes' ability to protect their members, to manage their own resources, and to maintain themselves as distinct cultural and political entities. Forest Service trust responsibilities apply to those actions under their authority. For example, they can undertake activities affecting plant and animal habitats on lands they administer.

The federal government's trust responsibility compels agencies to conduct their activities

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[19] The term "tribal rights" means those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and which give rise to legally enforceable remedies.

[20] The term "tribal trust resources" means those natural resources, either on or off Indian lands, retained by, or reserved by or for Indian tribes through treaties, statutes, judicial decisions, and executive orders, which are protected by a fiduciary obligation on the part of the United States.

consistent with rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, of which give rise to legally enforceable remedies. In carrying out their trust responsibilities, the Forest Service must assess proposed actions to determine potential impacts on treaty rights, treaty resources or other tribal rights and interests. Where potential impacts exist, the agencies must seek consultation with affected tribes and explicitly address those impacts in planning documents and final decisions. Consultation with the tribes is essential in carrying out that trust responsibility. A key issue is the federal government's trust obligation to ensure that tribal rights and interests will be reasonably protected.

Although the treaty-making era ended in 1871, negotiations with tribes continued and resulted in agreements ratified by both houses of the Congress. Like treaties, agreements and statutes result in rights and liabilities similar in many ways to those established by treaties.

3.6.1.2 Consultation

The intergovernmental consultation process serves as the primary means for the federal agencies to carry out their trust obligations. Consultation is not a single event, but instead is a process leading to a decision. Consultation means different things to different tribes. It can be either a formal process of negotiation, cooperation, and policy-level decision-making between tribal governments and the federal government, or a more informal process. Tribal rights and interests are discussed and considered or incorporated into the decision. Consultation can be viewed as an ongoing relationship between an agency(ies) and a tribe(s), characterized by consensus-seeking approaches to reach mutual understanding and resolve issues. It may concern issues and actions that could affect the government's trust responsibilities, or other tribal interests.

Consultation serves at least five purposes:

- to identify and clarify issues,
- to provide for an exchange of existing information and identify where information is needed,
- to identify and serve as a process for conflict resolution,
- to provide an opportunity to discuss and explain the decision, and
- to fulfill the core of the federal trust obligation.

Legal requirements for federal agencies to consult tribes and American Indian communities have their basis in federal law, court interpretations, and executive orders.

Both Plateau and Great Basin tribes had resource areas that drew groups together to share resources in particularly rich places. Within the administrative boundary of the Sawtooth National Forest, the Salmon River within the Sawtooth Valley and Salmon River Canyon areas and Valley Creek within the Stanley Basin area have premier fisheries. The Camas Prairie and other areas are well-known plant gathering places, and big game are abundant across the Forest. Many places throughout the Forest were also major meeting areas, trade centers, or habitation sites.

3.6.2 Tribes with Expressed Interest in the Sawtooth National Forest

The Nez Perce Tribe, Shoshone-Paiute Tribes of Duck Valley, and Shoshone-Bannock Tribes of Fort Hall, three federally recognized tribes, have expressed tribal interests and rights on NFS lands that fall within the Forest. An overview of these tribes is provided below. This overview was generated from multiple sources including an *Essay of the Nez Perce Tribe* (Walker and Jones undated); *Literature Review of the Shoshone-Paiute-Bannock Cultural/Natural Resources of the Middle Fork of the Boise River, Focusing on the Atlanta Gold Project Area* (Walker 2004); *The Northwest Power and Conservation Council's Directory of Columbia River Basin Tribes* (Council Document # 2007-05), Interior Columbia Basin Ecosystem Management Project documentation (1996–2001) and information provided by tribal representatives during formal consultation and/or informal discussions during this amendment process.

These overviews provide the contextual framework needed to better understand the federal government's trust responsibility that compels the Forest Service and other agencies to conduct their activities consistent with their federal trust responsibilities. In carrying out their trust responsibilities, the Forest Service must assess proposed actions, such as the one analyzed in this amendment process, to determine potential impacts of natural resource management decisions on treaty rights, treaty resources and other tribal rights and interests. An understanding of a tribe's historical subsistence and use patterns, social organization, treaty and reservation relationships, and basis for off-reservation rights is particularly important for managers in order to assess effects of management decisions concerning natural resource management.

3.6.2.1 Nez Perce Tribe (taken from Walker and Jones, undated essay)

The Nez Perce, who consider themselves *Iceye¢ yenm mama¢ yac*, i.e., children of Coyote, came to occupy approximately 13 million acres located in what is now north-central Idaho, southeastern Washington, and northeastern Oregon. Nez Perce territory centered on the Middle Snake and Clearwater rivers and the northern portion of the Salmon River basin in central Idaho. The Nez Perce territory was marked by diverse flora and fauna, as well as by temperature and precipitation patterns reflecting sharp variations in elevation. This area has many mountains, rivers, basins, and deep canyons that provided a wide variety of resources and protection from invaders.

In 1800, there were over 70 permanent villages ranging from 30 to 200 individuals, depending on the season and type of social grouping (Walker 1958-1964). About 300 total sites have been identified, including both camps and villages, showing a wide number of permanent and semi-permanent habitation areas. In 1805, the Nez Perce were the largest tribal grouping on the Plateau, with a population of about 6,000. However, by the beginning of the twentieth century the Nez Perce had declined to about 1,800 due to epidemics, conflicts with non-Indians, and other factors. Recently the Nez Perce population has been increasing.

Seasonal Round and Subsistence

The Nez Perce seasonally migrated throughout their territory in order to take advantage of various resources. Food animals included salmon and other fish, mountain goats and sheep, bear, moose, elk, deer, small game, and birds. Aboriginal food plants included camas bulbs, bitterroot, bark, pine nuts, moss, sunflower seeds, wild carrots, wild onions, and several varieties of berries. Additional resources were acquired on expeditions to what is now the southern Idaho, eastern Oregon and Washington area, down the Columbia River, and even into the northern Great Plains for buffalo. Mobility was greatly enhanced after the adoption of the horse in the 1700s, and the Nez Perce became greatly renowned for their large herds and selective breeding practices.

In the early spring when the cache pits had been emptied of stored food, the Nez Perce began their communal food drives in the river valleys, with snowshoe hunting in deep snow and trips by canoe down the Snake and Columbia rivers to intercept the early salmon runs. Although hunting was fundamental and continuous, it was of lesser importance during the seasons of salmon runs when all able-bodied adults turned to fishing, where many thousands of pounds of salmon were customarily caught and processed. Hook and line, spears, harpoons, dip nets, traps, and weirs were all used in various ways for fishing. As spring progressed, salmon began arriving in Nez Perce territory, and the early root crops were gathered at lower elevations.

By midsummer the Nez Perce were leaving their villages in the river valleys and moving into the highlands where later-growing crops were harvested, highland streams were fished, and hunting became more important. Women dug roots with crutch-handled digging sticks. Sundried pottery was made, but coiled basketry was the major form of container. The fall salmon runs, fall hunting, and gathering of late root and berry crops provided winter food stores, while brief and occasional bison hunting trips into Montana over the Lolo and other passes augmented winter supplies of meat. Some Nez Perce parties stayed in the Plains for several years at a time, and few winters passed that did not see some wintering with the Flathead in Montana. By November most travel had ceased and the Nez Perce were settled in their winter villages until the cycle began again in the spring (Walker 1973: 56).

Social Organization and Intertribal Relations

The Nez Perce lived primarily in small villages along the many streams and rivers that cut through their aboriginal territory. These small villages primarily consisted of 30 to 200 individuals, which were politically unified into bands that in turn were organized into composite bands. Villages were identified with the smaller feeder streams, bands with the larger tributaries, and composite bands with larger rivers. Aboriginal Nez Perce villages were usually comprised of several related, extended families and led by a headman. Generally, he was the eldest able man in the group and was often assisted by prominent younger men. The headman's duties were to demonstrate exemplary behavior, act as the village spokesman, mediate intravillage disputes, and attend to the general welfare of village members. Women did not speak in most council proceedings but normally influenced their male relatives to achieve their goals.

The Nez Perce were the most influential group in intertribal affairs in the Plateau. Together with their close allies the Cayuse, they were the main Plateau opponents of the Blackfoot, who dominated the western Plains and raided into the Plateau. Typically, Nez Perce and Cayuse warriors were in charge of the large (often more than 1,000 individuals), intertribal bison hunting and raiding parties that went to the Plains. They were also closely allied with the Flathead during such ventures; the Nez Perce with the

Cayuse were the major defending force against occasional Northern Shoshone-Bannock raiding parties who ventured north of the Great Basin. Indicative of their influence in the Plateau is that Nez Perce was rapidly becoming the language of trade and diplomacy throughout the region when Euro-Americans arrived shortly after 1800 (Walker 1998: 425). At that time the Cayuse language was already being lost in favor of Nez Perce.

Long before the first Euro-American contact occurred with the Nez Perce, aspects of the Euro-American's culture had reached the Nez Perce. By the mid-18th century, the horse, reintroduced by the Spanish into the New World, had become an integral and important part of Nez Perce society. The horse eased travel during the Nez Perce seasonal rounds, and facilitated their buffalo hunting in the east. Trappers were living in Nez Perce villages as early as 1811, and traders attempted to establish a post among them in 1812 (Josephy 1965: 45-47). By 1813, the Nez Perce were firmly engaged in trading with the North West Company post on the Upper Columbia, which led to substantial cultural changes.

A period of relative prosperity for the Nez Perce prevailed during the first half of the 19th century, supported by not only the fur trade but also an extensive trade in horses and other commodities with the fur traders and early immigrants to the Oregon Territory. However, epidemics during this period eroded the population, which declined to about 1,800 by the beginning of the twentieth century (ARCIA 1900: 363, 222).

The current day tribal government is based on the constitution of 1948. The constitution of 1948 established a council of all adult tribal members, but most of the power rests with the Nez Perce Tribal Executive Committee (NPTEC), which oversees a large array of programs. Tribally administered programs include the natural resource projects, legal affairs, law and order, economic development, education, health, and housing.

Treaty and Establishment of Reservations

The most fundamental developments of the second half of the 19th century were the treaties of 1855 and 1863, establishment of the Nez Perce Reservation, and political dominance of the reservation by Presbyterian Nez Perces (Walker 1985). With the treaty of 1855 negotiated by Gov. Isaac I. Stevens at Walla Walla, the Nez Perce secured ownership of a large 7.7 million-acre reservation, with guarantees of continued off-reservation rights of hunting, fishing, gathering, and travel (Stevens 1855, Doty 1855, 1978). In 1863 the reservation was reduced to 780,000 acres in western Idaho between the Snake and Clearwater rivers.

In 1895 the Dawes Severalty Act led to allotment of the reservation and its opening to non-Indian settlement. It resulted in the loss of most of the remaining land that the Christian Nez Perce had saved in the treaty of 1863. Federally sponsored, forced fee patenting of allotments and other land losses due to taxation reduced the land in Nez Perce hands even more. An original tribal land base of about 13 million acres in 1800 reached a point of less than 80,000 acres by 1975. Since 1980, a tribal land acquisition program has resulted in Nez Perce ownership of more than 100,000 acres.

Basis for Off-Reservation Interests/Rights

The basis for off-reservation interests and rights is inherent sovereignty, socio-economic well-being on reservations and reserved rights established in treaties. The Tribe’s primary area of interest on the Sawtooth National Forest lies within the Sawtooth Valley and Stanley Basin on the Sawtooth National Recreation Area and is tied to the salmonid fishery. This area falls within Forest Plan Management Areas 2 and 3.

Treaty with the Nez Perce of 1855 states in Article 3: *"The exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."*

Treaty with the Nez Perce of 1863 states in Article 8: *"The United States also agrees to reserve all springs or fountains not adjacent to, or directly connected with, the streams or rivers within the lands hereby relinquished, and to keep back from settlement or entry so much of the surrounding land as may be necessary to prevent the said springs or fountains being enclosed; and, further, to preserve a perpetual right of way to and from the same, as watering places, for the use in common of both whites and Indians."*

3.6.2.2 Shoshone-Paiute-Bannock Tribes (taken from Walker 2004)

The American Indian populations of southern Idaho include portions of the Northern and Western Shoshone, the Northern Paiute, and the Bannock now found on several reservations, including Fort Hall and Duck Valley. Although they are one people culturally and historically, the term "Northern Shoshone" is used as a general way of distinguishing Shoshones of the upper Columbia River drainage from the Western Shoshone of the Nevada and Utah and the Eastern Shoshone of western Wyoming. The Indians themselves did not recognize the Eastern, Northern, and Western distinction, and actual social units among the Northern Shoshone varied from composite, mounted bands to isolated families or small clusters of families uninvolved in larger political units. Consistent with this variety and fragmentation, there were no clear cultural boundaries, and the Northern Shoshone blended into and merged with the other Shoshones to the south and east (d'Azevedo 1986:284).

The Bannock are a group of horse-mounted hunters who moved eastward into the Snake River Plain as early as the 18th century (Lilgebald 1957:81). Murphy and Murphy (1986) note that the cultural differences of the Northern Shoshone and Bannock were very slight. Steward (1970) argues that the Bannock are Northern Paiute speakers who merged with Shoshone bands when an equestrian way of life was adopted. Since they merged, the Bannocks have retained their separate language and have remained a numerical minority among the Shoshone. Walker (1993) asserts that the Northern Shoshone and Bannock have constituted a single amalgamated culture since the historic period began, and perhaps earlier. Variation among local groups of Shoshone-Paiute-Bannock reflect varying degrees of influence from neighboring regions, with Fort Hall and Lemhi Shoshone-Paiute-Bannock exhibiting strong Plains Indian influences, and the Shoshone-Paiute-Bannock of Duck Valley in southwest Idaho exhibiting more of the Nevada Great Basin region.

Seasonal Round and Subsistence

The Shoshone-Paiute-Bannock practices the traditional subsistence methods seen throughout the Great Basin. They often relied on fishing and riparian resources found along rivers. The high mobility, subsistence strategy, and flexible social structure of Northern Great Basin groups generally precluded permanent settlements and rigid concepts of territorial ownership (Walker 1993b). However, winter camps were often more permanent settlements located in canyons and river valleys that offered shelter from high winds and colder temperatures. Due to the unpredictable availability of resources, families might winter in different localities from year to year; these sites were determined by convenience rather than custom, property concepts, or kinship relation. Seasonally abundant resource areas, such as the salmon fisheries found along the Salmon, Boise, and Payette rivers, were shared collectively by many Shoshone-Paiute-Bannock subgroups (Walker 1993b).

The differing ecological zones of the Shoshone-Paiute-Bannock homeland offered numerous subsistence resources that were used in an annual cycle requiring high mobility. Traditional food resources were gathered in season and from various well-known locations. Accessing resources in various locales during various seasons was a classic hunting and gathering strategy facilitated by extensive kinship and trade and exchange relationships. Traditionally, the Shoshone-Paiute-Bannock have subsisted on seasonally available fish, large game such as bison, roots and bulbs such as bitterroot and camas, on small game such as rabbits, and insects (Walker 1993b).

The annual subsistence cycle traditionally began in the spring with some groups going into the mountains for large game and roots and others going to favorite fishing locations. The principal vegetable foods were the camas bulb, yampa root, tobacco root, and the bitterroot. Salmon fishing was important on the Snake, Salmon, Owyhee and other tributaries of the region. Lowie (1909) describes Shoshone-Paiute-Bannock salmon fishing as extending from May to September, after which time they hunted bison east of the Rocky Mountains, returning as soon as enough dried meat was obtained. This phase continued until midsummer when some joined into large groups to hunt bison in Wyoming and Montana (Lowie 1909; Walker 1978).

The mid-summer period was also a time of large intertribal gatherings in areas such as Boise, Pocatello, Weiser, and the Lemhi country. Here fishing, hunting, and root digging supported large numbers who came from many directions to trade. Those with horses began hunting large game more often and dug camas and other roots in distant, well-watered regions such as Smith Prairie, Camas Prairie on the Wood River, and other places in southeastern Idaho (Liljeblad 1957; Plew 1990; Statham 1982). Traditional hunting of bison and other big game was undertaken individually or by groups of men who traditionally used bow and arrow, traps, corrals, drives, and dogs. After adoption of the horse, bison were hunted by mounted groups with bow and arrow. Bison remained in southern Idaho until the early 19th century.

Antelope, elk, mountain sheep, and deer have always been hunted and continue to provide a valuable resource for hunters and their families. Antelope were hunted by individuals as well as by mounted groups (Walker 1978). Elk, mountain sheep, and deer were hunted by individuals and small parties. In areas with little access to bison, small game such as rabbits, marmots, birds, and even insects were traditionally important food sources. Whenever available, rabbits have continued to be an especially important resource for contemporary tribal members. Certain areas continue to be favored for the customary rabbit drives that produce large amounts of meat and the associated hides used traditionally to make blankets (Murphy and Murphy 1986).

Preparation for winter began in late summer/early fall. Fall fish catches were preserved. Hunting parties traveled to the highlands and brought home meat to be dried and prepared for caching. Traditionally, multiple family groups spent the winter in small villages along the lower and middle reaches of Boise River. By late fall an intensive period of preparation was underway: meats and various plant foods were cached in protected, well-drained locations for use during winter (Meatte 1990; Pavesic and Meatte 1980). When necessary, some winter hunting was conducted, but in general the period from December through February was one of limited hunting and gathering. Winter residences along the Middle Snake River have been termed “village” by Murphy and Murphy (1960) and Steward (1938), a practice followed by others e.g. (Meatte 1990; Pavesic 1978; Pavesic and Meatte 1980). Of course, such settlements were part of larger political, social, and economic groupings (Walker 1993a).

As important as hunting was for Tribal ceremonies, economics, and subsistence, the traditional subsistence system was grounded in the use of numerous plant resources, the seasonal ripening and harvesting of which determined the family groups’ nomadic movements. In early spring, families moved up to the Camas Prairie (near present-day Fairfield) to harvest camas and other root crops and participate in trading activities and celebrations. Large intertribal gatherings of several hundred people were held near the lower Weiser, Boise, and Payette rivers. These gatherings continued well after Euro-American contact.

Social Organization and Intertribal Relations

All sources have described Shoshone-Paiute-Bannock social organization as flexible and largely dependent on the type of activity being pursued. This probably derives from the uneven distribution of subsistence resources typical in the region. Food resources were unpredictable from year to year, due mainly to rainfall variations. Many groups were often designated by food names, which seem to have demarcated ecological provinces more than political or kinship affiliations. Others were designated by geographic features or by names of prominent leaders. Larger bands were seasonally encountered, with mostly smaller groups apparent in the spring and summer. Excursions into the Plains bison country required an organized force, both for protection from enemies and for the numbers and organization necessary to support mounted bison hunting operations. Leaders of such groups had powers limited by band or camp councils, which took direct part in making decisions. There was no formal body of laws; personal conduct was regulated by public ridicule and disapproval. Other offenses and disputes were settled between the families involved (Liljeblad, 1968:41). All sources describe the office of chief as being non-hereditary, not firmly institutionalized, and having changeable followings. Changing leadership and shifting composition of groups were encountered throughout the early historic pre-reservation period.

Walker (1971) emphasizes the impact of the introduction of the horse on the Shoshone-Paiute-Bannock subsistence activities and social organization. Before the horse, the patrilocal[21] band was the more common social arrangement. With adoption of the equestrian lifestyle, mounted groups acquired large game more effectively and traveled to preferred gathering areas, thus becoming wealthier than the remaining unmounted groups. The greater mobility afforded by the horse increased the influence of the Plains cultural patterns, especially on the Shoshone and Bannock of eastern Idaho. Some bands remained unmounted and retained the simpler Great Basin type of social organization and reliance on small game and gathering, especially in southwestern Idaho where the climate is more arid.

The tribal government for the Shoshone-Paiute Tribes of Duck Valley is based on a constitution and by-laws approved on April 20, 1936. The constitution established a governing body consisting of a council known as the Business Council. This Council consists of a Chairman and six Council members duly elected for three years. There are several tribal administered programs including cultural, wildlife and parks, recreation and water and sanitation.

The tribal government of the Shoshone-Bannock Tribes of Fort Hall is based on a Constitution approved on April 30, 1936, and a charter ratified on April 17, 1937. The Constitution established the Fort Hall Business Council as the governing body of the Tribe. This Council consists of a Chairman and six Council member duly elected for two years. There are several tribal administered programs including the Heritage Tribal Office /cultural resources, environmental management, fish and wildlife, land use and water resources.

Treaty and Establishment of Reservations

In 1867, an executive order established the Fort Hall Indian Reservation in southeastern Idaho and the Fort Bridger Treaty of 1868 was signed by the Shoshone and Bannock headmen. The treaty stipulated a separate reservation for the Bannock but was never enacted, and they remained on the Fort Hall Reservation. In a separate action, an 1875 executive order confirmed the unratified treaty of September 24, 1868, which established the Lemhi Reserve for the Bannock, Sheepeater, and Shoshone bands. This reservation was approximately 100 acres and was later "surrendered" in 1907 when all reservation inhabitants were forced to move to the Fort Hall Reservation. As various bands of the Shoshone and Bannock throughout the different regions were displaced, they were all sent to the Fort Hall Reservation.

The 1867 executive order proclaimed 1.8 million acres for the reservation. However, in 1872 a survey error substantially reduced the original reservation by several thousand acres to 1.2 million acres. After a series of cessations of the original reservation boundaries, the current reservation comprises approximately 544,000 acres. Communities including Lava Hot Springs, McCammon, Inkom, and Pocatello all lie within ceded lands.

The Shoshone-Paiute Tribes Duck Valley Reservation was established by executive orders of April 1877, May 1886, and July 1910. The Reservation consists of approximately 289,800 acres located along the border of southern Idaho and northern

[21] **Patrilocal** refers to a social system in which a married couple resides with or near the husband's parents.

Nevada, with about 144,275 acres in Elko County, Nevada and 145,525 acres in Owyhee County, Idaho. The reservation is geographically diverse, ranging from the Owyhee River Valley in the north to high desert plateaus and mountains to the south. The reservation is in one of the most remote and sparsely populated areas of the lower 48 states. The entire reservation is held in trust status by the United States for the Tribe and never was allotted to tribal members.

The Duck Valley tribal headquarters are located in Owyhee, Nevada, 96 miles north of Elko, and 143 miles south of Boise. Partly because of its geographic isolation, the tribes were the first in the state of Nevada to push for more independence from the Bureau of Indian Affairs. Following the Indian Self-Determination Act of 1973 the Tribe took on several duties previously performed by the federal government, such as health, housing, and education.

Shoshone-Bannock Tribes of Fort Hall: Basis for Off-Reservation Interests/Rights

The basis for off-reservation interests and rights is inherent sovereignty and socioeconomic well-being on the reservation. The entire Sawtooth National Forest falls within the tribal area of interest.

The 1868 treaty with the Eastern Band Shoshoni and Bannock, states in Article 4: "... they shall have the right to hunt on the unoccupied lands of the United States so long as game may be found thereon, and so long as peace subsists among the whites and Indians on the borders of the hunting districts." Aboriginal rights reserved under the Fort Bridger Treaty of 1868 extended to unoccupied federal lands off-reservation

The agreement of February 5, 1898 that was ratified June 6, 1900, states in Article IV: *"As long as any of the lands ceded, granted, and relinquished under this treaty remain part of the public domain, Indians belonging to the above-mentioned tribes, and living on the reduced reservation, shall have the right, without any charge therefore, to cut timber for their own use, but not for sale, and to pasture their livestock on said public lands, and to hunt thereon and to fish in the streams thereof."*

This same agreement states in Article VIII: *"The water from streams on that portion of the reservation now sold which is necessary for irrigation on land actually cultivated and in use shall be reserved for the Indians now using the same, so long as said Indians remain where they now live."*

Shoshone-Paiute Tribes of Duck Valley: Basis for Off-Reservation Interests/Rights

The basis for off-reservation interests and rights is inherent sovereignty and socio-economic well-being on the reservation. The entire Sawtooth National Forest falls within the tribal area of interest.

The Shoshone-Paiute Tribes of Duck Valley do not have a ratified treaty or associated reserved treaty rights. However, these Tribes regard their off-reservation rights as confirmed by custom and by unratified treaties that they continue to honor. Because of conflicting claims with other Tribes, the Boise Valley and most of southwest Idaho were omitted from Indian Claims Commission decisions concerning Tribal ownership of the area. Therefore Tribes have continued to fish, hunt, and use the other cultural resources of their homeland well outside their reservation boundaries based on their unextinguished aboriginal rights. They believe that their title to the land excluded from the Indian Claims

Commission settlements in southwestern Idaho remains.

This interpretation of off-reservation interests and rights is supported for both treaty and non-treaty tribes by the Bureau of Indian Affairs policy. Since 1985, this policy has held that tribal off-reservation treaty-reserved rights are potentially exercisable on all federal lands within a tribe's ceded area, as well as on federal lands in other areas traditionally used for those activities, *unless* applicable treaties/executive orders state otherwise (Walker 2004).

3.6.3 Effects Measures

Tribal issues should be assessed relative to Forest Service effects on ceded lands, traditional homelands, areas of tribal interest, and areas of mutual interest with other tribes. Within these areas, tribal community health and well-being are based on factors reflected in management direction in several areas. Areas relevant to this Forest Plan amendment proposal include: 1) consultation and trust obligations, 2) cultural resource and cultural practices protection, 3) restoration of natural resources and 4) sensitive tribal species, and as applicable, their harvestability. As discussed below, only factors #3 and #4 will be analyzed in detail in this EA.

3.6.3.1 Consultation and Trust Obligations

No changes to the 2003 Forest Plan direction concerning Tribal Rights and Interests and associated goals, objectives, standards and guidelines concerning consultation and overall trust obligations are proposed in this amendment process (USDA Forest Service 2003a, pages III-71 to III-72). Therefore, this factor will not be carried forward into the effects analysis. The Forest remains committed to achieving goals identified within this section of the Forest Plan, including:

- Goal TRGO01 "Enhance relationships with American Indian tribes in order to better understand and incorporate tribal cultural resources, values, needs, interests, and expectations in Forest management and allow cooperative activities where there are shared goals."
- Goal TRGO02 "Facilitate the exercise of tribal rights to meet federal trust responsibilities."

3.6.3.2 Cultural Resource and Cultural Practices Protection

No changes to the 2003 Forest Plan direction concerning Heritage Resources or Tribal Rights and Interests and their associated goals, objectives, standards and guidelines concerning cultural resources and cultural practices protection are proposed in this amendment process (USDA Forest Service 2003a, pages III-71 to III-72). The Forest remains committed to protecting culture resources and practices. Therefore, this factor will not be discussed further in this EA.

3.6.3.3 Restoration of Natural Resources

Restoration of native species' habitats is central to many tribal interests. Federal trust responsibilities and statutes require development and adoption of a land management plan that allows for the recovery of damaged habitats and conservation of existing high quality habitat.

Restoration needs associated with the prevention and control of non-native plants or noxious weeds were addressed in the 2003 Forest Plan, and the current goals, objectives, standards and guidelines pertaining to this area will not change (USDA Forest Service 2003a, pages III-35 through III-37). The Forest will continue to manage noxious weeds with an integrated weed management approach that uses prevention, education, eradication, containment, and control strategies in a coordinated effort that includes potentially affected resources, users, funding sources and activities. The effects of noxious weeds on the ability to restore vegetation and habitat conditions is addressed in the Vegetative Diversity and Wildlife Resources sections of this EA, sections 3.2 and 3.3 respectively. As discussed in these sections, managing the noxious weeds program consistent with current Forest Plan direction will contribute to restoration objectives identified in the 2003 Forest Plan as well as alternatives considered in this amendment process.

The Tribes have identified concerns with degraded forestland conditions and the effect they have on meeting federal trust responsibilities. While this list is not intended to be all inclusive, the following tribal concerns or recommendations have been consistently identified through discussions during this *forestland phase* of the amendment process as well as through prior ICBEMP, 2003 Forest Plan or project-level consultations and discussions:

- Restore habitat conditions that likely existed before the treaty period (i.e., prior to 1879) in order to ensure that wildlife species populations are sustained at levels that will support tribal subsistence/harvestability interests.
- Restore and emphasize fire's role in improving watershed conditions.
- Limit salvage logging because it reduces wildlife habitat quantity and quality. To reduce impacts, Tribes recommend limiting salvage logging activities to small diameter trees located outside roadless and riparian areas. In addition, Tribes do not recommend developing new roads in connection with salvage logging activities.
- Stop timber harvests of older ponderosa pine due to their rarity on the Forest and importance to wildlife species.
- Limit hazardous fuel reduction within WUIs because activities may negatively impact sustainability of some habitats important to sensitive tribal species.

The effects analysis will focus on how the proposed Forest Plan amendments address these specific restoration items.

3.6.3.4 Sensitive Tribal Species, and as applicable, their harvestability

The availability of culturally significant species and access to socially and/or traditionally important habitats support the well-being of American Indian communities as many social, cultural, and economic activities rely upon the harvest, preparation, trade, and consumption of such resources. The occurrence of culturally significant species can be predicted through their known associations with different landscapes and habitats. The degree of access to resources and places can be assessed by examining the potential effects of physical obstacles, administrative barriers, and/or other constraints that may be imposed to reduce road-related impacts to wildlife habitat.

The tribes use "harvestable" species populations to define a desired level of harvest for subsistence, commercial, spiritual and cultural needs. “Harvestability” constitutes an important aspect of a tribe’s desired future condition. The Forest Service must provide for habitat that supports “viable populations” of existing native and nonnative vertebrate species which, in this analysis, is largely tied to determinations of habitat and species sustainability. The sustainability outcomes help define the level of escapement required for conservation purposes, which in turn will be used as a surrogate and measure for a sustainable “harvestable population” of wildlife species associated with the forested biological community.

Sustainability of salmonids and other fish were already addressed in assessments supporting the 2003 Forest Plan. Included in the 2003 Forest Plan is an Aquatic Restoration Strategy (ACS) that provides restoration priorities and direction for aquatic and riparian resources. No change is proposed to the 2003 Forest Plan direction for ESA listed anadromous or resident salmonid species and other fish species addressed in the soil, water, riparian and aquatic resources sections of the plan (USDA Forest Service 2003b, Appendix 6, Project Biological Assessment). Therefore, sensitive tribal fish species (e.g. salmon) will not be addressed further in this chapter.

No specific sensitive tribal species have been identified that are directly tied to the forested biological community (i.e., the subject of this EA). Many sensitive tribal species, such as deer, elk, wolves, Rocky Mountain bighorn sheep, black bear, eagles and waterfowl, are more habitat generalists, using combinations of forested and rangeland biological communities. These species will be addressed in Phases 2 through 4 of the Forest Plan amendment process, which is to be completed over the next 4-5 years. Consequently, for this Phase 1 amendment process, it is assumed that the overall condition of each habitat family assessed in section 3.3 of this document would be an overall indicator of habitat conditions and trends needed to support species of interest to tribes.

The Terrestrial Wildlife section, section 3.3, describes a matrix developed to qualitatively assess sustainability of individual focal species for each of the four habitat families addressed in this phase of the amendment process. This matrix relied on the six conservation principles identified in Chapter 1 of this EA. Five sustainability outcomes—ranging from well-distributed habitat with interacting populations to uncharacteristically isolated habitats with little-to-no interaction of individuals likely—were defined in section 3.3 (Methods). Sustainability rating outcomes for habitat families were derived from the aggregation of species outcomes. Generally, a habitat family rating outcome could be no higher than the lowest focal species outcome within the family.

3.6.4 Current Conditions

Current conditions are described Forest-wide to provide an overall context for the separate and more specific effects disclosure for the Nez Perce Tribe and the Shoshone-Paiute-Bannock Tribes.

1) Restore habitats on tribal areas of interest overlapping the Sawtooth National Forest

a. *Restore habitat conditions that likely existed before the treaty era (i.e., prior to 1879) in order to ensure that wildlife species populations are sustained at levels that will support tribal subsistence/harvestability interests.*

In many cases, tribal goals for restoration are to move conditions toward or within those that likely existed during the treaty making period. The timeframe from which estimates of HRV were derived and used in developing the WCS encompass the treaty making period between the U.S. Government and American Indian tribes. Thus, it was assumed that providing habitat within the range of HRV should result in sustaining wildlife species at levels important to harvestability, and should contribute to the community wellbeing of American Indian tribes.

As disclosed in the Forest Vegetation Diversity and Fire Regime Condition Class (section 3.2) and Terrestrial Wildlife (section 3.3) sections, promoting vegetative diversity and associated habitat conditions to within HRV over time will more fully address the needs of native vertebrate wildlife species and their habitats. The WCS was developed under the premise that risks to species persistence, ecosystem processes, and genetic diversity increase as source environments depart from the HRV (McComb and Duncan 2007). Thus, it was assumed that the more acres close to or within their HRV, the greater the likelihood of sustaining harvestability levels of culturally significant species important to a tribe's overall community well-being. Conversely, the more acres outside the HRV, the greater the risk that sustainable harvestability levels would not be provided.

Under the 2003 Forest Plan, all MPCs have desired conditions within the HRV.

b. *Restore and emphasize fire's role in improving watershed conditions.*

Fire is a disturbance process that contributes to ecosystem structure, process, and function. In all MPCs, where it can be done safely fire can be used to manage natural resources while contributing to ecological processes. Fire is most often used to modify fuels to reduce the risk of undesirable wildland fire effects or to help achieve desired vegetative conditions by restoring process and functions. The desired condition under all MPCs includes restoration of the historical role of fire, including the vegetative conditions that resulted from and contribute to how fire operated in the past. The basic premise of this goal is that ecosystems and the plants and animals using these ecosystems are most resilient and resistant to disturbance, including climate change, when they are in a condition closest to that under which they evolved (Larsen 1995).

c. *Limit salvage logging because it reduces wildlife habitat quantity and/or quality.*

To reduce impacts, Tribes recommend limiting salvage logging activities to small diameter trees located outside roadless and riparian areas. In addition, the Tribes do not recommend developing new roads in connection with salvage logging activities. Within the Forest administrative boundary there are approximately 2,104,000 acres of NFS lands allocated to ten different MPCs. Six of these MPCs allow mechanical management activities that may affect snag levels. Within these six MPCs, there are 1,625,000 acres; three MPCs (i.e., MPCs 4.2, 5.1, and 6.1) include suited forestland (i.e. for timber removal) and three MPCs (i.e., MPCs 3.1, 3.2, and 4.1c) include unsuitable forestland. Under the 2003 Forest Plan, snag numbers need to be retained anywhere within the range of desired conditions in Table A-6 of Appendix A of the Forest Plan (EA, Appendix 2).

Under the 2003 Forest Plan, salvage logging, including removal of large snags, within Idaho Roadless Area (IRAs) is allowed where the IRAs overlap MPCs 3.1, 3.2 and 4.1c. However, Forest Plan standards for new road development prohibit (MPC 4.1c) or substantially restrict road activity (MPCs 3.1 and 3.2).

Under the 2003 Forest Plan, salvage logging of small or large snags is allowed in riparian areas as long as it can be demonstrated that salvage does not impact riparian process and function, and all applicable direction concerning soil, water, riparian and aquatic (SWRA) resources and ESA listed species are followed. Since Forest Plan implementation began in 2003, very little salvage logging has occurred within these areas, in part because of the above stipulations.

d. *Stop timber harvests of older ponderosa pine due to their rarity on the Forest and importance to wildlife species.*

The 2003 Forest Plan provides no direction limiting harvest of older ponderosa pine trees ("legacy trees").

e. *Limit hazardous fuel reduction within WUIs because activities may negatively impact sustainability of some habitats important to sensitive tribal species.*

The 2003 Forest Plan does not provide specific direction distinguishing WUI treatments from those outside WUIs. The current Forest Plan also does not restrict treatment of large tree or old forest habitat, or snag removal within WUIs, except as needed to move toward overall desired conditions as described in Appendix A of the Forest Plan.

2) Sustainability of sensitive tribal species, and as applicable, their harvestability on ceded lands and lands within their broader area of interest overlapping the Sawtooth National Forest

a. *Sustainability of Family 1 habitats—low-elevation, old forest habitat*

The current sustainability rating outcome for Family 1 is D. Focal species assessed in detail in this EA include white-headed woodpecker. All watersheds within the project area have downward trends, and source habitats for Family 1 focal species are all greatly below HRV. However, it is important to note that the Sawtooth Forest historically provided only small amounts of Family 1 habitat, which is primarily limited to the ponderosa pine forests found on the westernmost watersheds of the Fairfield Ranger District and Sawtooth NRA. Restoring Family 1 sources habitats will be difficult because the existing composition and structure of vegetation represents a substantial departure from historical conditions. The current vegetation is either in an early seral condition due to recent large scale, high severity wildfires uncharacteristic of this vegetation type, or in a late seral, high density condition more susceptible to uncharacteristic stand replacing wildfires and increasingly vulnerable to insect- and disease-related tree mortality—these uncharacteristic disturbance processes do not promote the desirable forest structure that developed and maintain these habitats in the past.

Current conditions often require active management to restore more desirable forest structure and composition; however a good portion of Family 1 habitat resides within the Sawtooth Wilderness Area, which has a restrictive management plan that is based on passive management and conservation of wilderness values. Restorative actions needed in some areas include increasing the extent and quantity of old forest habitat (as defined in Appendix E of the Forest Plan), increasing the extent and quantity of the large tree size class, decreasing stand densities in PVGs in the nonlethal and mixed-1 fire regimes common in the habitat family, and providing for snags and down logs in the size classes and distribution appropriate for the disturbance regime. Terrestrial Wildlife, section 3.3.5.1, provides a more detailed discussion.

b. Sustainability of Family 2 habitats—broad-elevation, old forest habitat

The current sustainability rating outcome for Family 2 is B. Focal species assessed in detail in this EA include black-backed woodpecker (*Picoides arcticue*), boreal owl, fisher, flammulated owl, great gray owl, northern goshawk, pileated woodpecker and the American three-toed woodpecker. Although Family 2 trends are moderately down, source habitats for Family 2 focal species are either within HRV alone, or within HRV when source habitat from departed landscape conditions are considered. Terrestrial Wildlife, section 3.3.6.1, provides a more detailed discussion.

c. Sustainability of Family 3 habitats—forest mosaics

The current sustainability rating outcome for Family 3 is C. Focal species assessed in detail in the EA include lynx and wolverine. Source habitats appear sufficiently distributed and abundant but they may be underused by some species in areas with high human influence. Terrestrial Wildlife, section 3.3.7.1, provides a more detailed discussion.

d. Sustainability of Family 4 habitats—early seral forest

The current sustainability outcome for Family 4 is A. Source habitats are broadly distributed and more abundant than historical conditions, providing for continuous or nearly continuous interaction of associated terrestrial wildlife species.

e. Access to socially and/or traditionally important habitats needs to be maintained, while reducing road related impacts to wildlife habitat and associated species

The current Forest Plan provides direction to address road-related effects by realigning roads in poor locations, decommissioning roads not needed for future management or closing roads still needed for management but not needed to support general public uses such as motorized recreation. However, the 2003 Forest Plan direction also provides allowances for exercising valid existing rights, such as those associated with tribal interests and rights, to help insure that reasonable access to socially and/or traditionally important habitats is provided.

3.6.5 Environmental Consequences

Environmental consequences are described separately for the Nez Perce Tribe and the Shoshone-Paiute-Bannock Tribes.

3.6.5.1 Nez Perce Tribe

The effects disclosure analysis area for the Nez Perce Tribe includes discussions of factors 3.6.3.4 (*Restoration*) and 3.6.3.5 (*Sensitive Tribal Species, and as applicable, their harvestability*) within the planning unit that overlaps the Tribes ceded lands, as well as their broader area of interest that overlaps the Sawtooth National Forest. While the Nez Perce Tribe likely have interests throughout the northern districts of the Sawtooth National Forest, the area of primary interest to the Tribe was assumed to be the area on which they have historically focused their interest in management activities; namely, Forest Plan Management Areas 02 and 03 on the Sawtooth National Recreation Area

1) Restoration of habitats on lands within the broader area of interest that overlaps the Sawtooth National Forest

a. Restore habitat conditions that likely existed before the treaty era (i.e., prior to 1879)in order to ensure that wildlife species populations are sustained at levels that will support tribal subsistence/harvestability interests.

Under both Alternatives A and B, all NFS forested acres are allocated to a variety of MPCs with desired conditions within HRV. However, under Alternative B, a wildlife habitat restoration and prioritization strategy has been developed which will focus management actions and progress toward desired conditions in source habitat watersheds on the Forest identified as in decline and in greatest need (Terrestrial Wildlife, section 3.3). Alternative B would provide greater assurance that tribal goals for restoration and harvestability would be sustained over time.

b. Restore and emphasize fire's role in improving watershed conditions needs to be emphasized.

Fire is a disturbance process that contributes to ecosystem structure, process, and function. Current Forest Plan direction for MPCs, including MPCs 3.2 and 5.1, allow use of fire to manage natural resources while contributing to ecological processes, where it can be done safely. Fire is most often used to modify fuels to reduce the risk of undesirable wildland fire effects or to help restore ecosystem functions and processes that other restoration tools cannot achieve.

However, while it is desirable to restore its historical role, fire would not likely be used as extensively as would have occurred historically, due primarily to public health and safety concerns in the WUI, air quality conflicts and the need to balance use of fire with other restoration tools that address other multiple uses. Also, the effects of fire are highly variable and result in a wider range of outcomes than achieved with the use of mechanical tools. Where restoration activities require more control to reduce risk of further loss to vegetation and/or habitat in degraded landscapes, fire use would be limited in the short-term.

Alternatives A and B both allow fire-use to restore departed landscapes, where practical, and for fire to play its natural role on the landscape, again where determined practical. Alternative B allows for restoration of fire's role on as many acres as practical within public health and safety constraints, where risks to loss of vegetation or scarce habitat attributes are acceptable, and in a manner consistent with overall multiple use objectives.

c. *Limit salvage logging because it reduces habitat quantity and/or quality. To reduce impacts, Tribes recommend limiting salvage logging activities to small diameter trees located outside roadless and riparian areas. In addition, Tribes do not recommend developing new roads in connection with salvage logging activities.*

Within Management Areas 02 and 03 there are about 509,500 acres of NFS lands. These acres have been allocated to seven different MPCs (MPCs 1.2, 2.2, 3.1, 3.2, 4.1c, 4.2, 6.1). Only five of these MPCs allow mechanical management activities that may affect snag retention levels. Within these five MPCs, there are 306,600 acres; two MPCs (4.2 and 6.1) include suited forestland for timber removal and three MPCs (i.e., MPCs 3.1, 3.2, and 4.1c) include unsuited forestland.

A measurable difference between alternatives A and B pertains to management direction for retention of snags (Table 3-52). Under Alternative B, a total of 4,100 acres lie within MPCs with suited forestland (MPC 4.2 and 6.1). On suited forestland under Alternative A, snag numbers would need to be retained anywhere within the range of desired conditions in Table A-6 of Appendix A of the Forest Plan; e.g. within PVG 4 the range is 0.2 to 2.1 large snags (>20" d.b.h.) per acre (Appendix 2). Under Alternative B, a new standard for these MPCs would retain snags of all sizes at the high end of the desired range of conditions during all vegetation mechanical treatments (Table A-6, Forest Plan Appendix A; Appendix 2 of this EA).

Table 3-52. Summary of acres in Management Areas 02-03, by alternative, with snag retention requirements

Snag Retention Requirement Indicator	Unit	Alternative A No Action	Alternative B Proposed Action
MPC standard within MPCs with suited forestland to retain snag numbers in salvage operations at the high end of the range in Table A-5 (Appendix A in Appendix 2)	Acres	0	4,100
MPC standard within MPCs with unsuitable forestland retaining all snags >20 inches d.b.h. in mechanical vegetation management	Acres[a]	0	302,500

Under Alternative B, a total of 302,500 acres lie within MPCs with unsuitable forest timberlands (MPCs 3.1, 3.2 and 4.1c). Under Alternative A, snag numbers would need to be retained anywhere within the range of desired conditions in Table A-6 of Appendix A of the Forest Plan (Appendix 2). Under Alternative B, a new standard for these MPCs would retain all large snags during all mechanical vegetation treatments and total snags at the high end of the desired range of conditions in Table A-6, Appendix A; Appendix 2 of this EA. As discussed in Terrestrial Wildlife, section 3.3, the increase in large snag retention on suitable and unsuitable forestland should improve habitat conditions and consequently improve sustainability outcomes for habitat and associated species under Alternative B.

Salvage logging within IRAs would be allowed under all alternatives. However, new large snag retention requirements in Alternative B for MPCs 3.1, 3.2 and 4.1c, which overlap nearly all IRAs, would reduce the likelihood of salvage proposals as the snag retention requirements would restrict the size of snags that could be removed, and therefore the economic feasibility of removing this material. Forest Plan standards for new road development would remain unchanged, including prohibitions in MPC 4.1c and substantial restrictions on road activity in MPCs 3.1 and 3.2.

Under the 2003 Forest Plan, salvage logging of small or large snags is allowed in riparian areas as long as it can be demonstrated that salvage does not impact riparian process and function, and all applicable direction concerning soil, water, riparian and aquatic resources and ESA listed species are followed. However, because riparian areas are treated as unsuited forestland once identified (existing Forest Plan standard TRST04), new snag standards under Alternative B, requiring retention of large snags, would result in greater retention of large snags in riparian areas. Also, as discussed above, very little salvage logging has occurred within these areas since Forest Plan implementation began in 2003, in part because there is less emphasis to recover the economic value of wood products in these areas. Limitations on snag sizes that could be removed under Alternative B would make activities in these areas even less likely.

d. *Stop timber harvests of older ponderosa pine due to their rarity on the Forest and importance to wildlife species.*

Alternative A would have no limitation on removing older ponderosa pine. By contrast, Alternative B would include a new guideline requiring retention of these trees. As discussed in Terrestrial Wildlife, section 3.3, and Forested Vegetation Diversity, section 3.2, retaining these legacy trees provides additional wildlife restoration benefits and contributes to the overall restoration of vegetation diversity.

e. *Limit hazardous fuel reduction within WUIs because activities may negatively impact sustainability of some habitats important to sensitive tribal species.*

Table 3-53 summarizes the number of acres in MAs 02–03 with WUI exemptions for large tree, old forest and snag retention standards under Alternative B. No WUI exemptions would occur under Alternative A.

Table 3-53. Forested acres with a WUI exemption, by fire regime, within MAs 02-03

Indicator	Unit	Alternative A No Action	Alternative B Proposed Action
WUI exemption within the nonlethal and mixed1 fire regimes (low- to mid-elevation forests)	Total forest acres in nonlethal and mixed1	36,100	36,100
	Forest acres in nonlethal and mixed-1 within WUI exemption	0	11,400 (30% of total)
WUI exemption within the mixed-2 and lethal fire regimes	Total forest acres in mixed-2 and lethal	325,200	325,200
	Forest acres in mixed-2 and lethal within WUI exemption	0	68,700 (21% of total)

Under Alternative B, approximately 30 percent of the low- to mid-elevation forests and 21 percent of the upper elevation forests (i.e. mixed-2 and lethal) within Management Areas 02-03 could be exempt from meeting new large tree, old forest habitat and snag retention standards where in conflict with meeting hazardous fuel reduction objectives. As assessed in Terrestrial Wildlife (section 3.3) and Fire Management (section 3.4), treatments in the low to mid-elevation forests should be able to meet both wildlife and hazardous fuel objectives in a given location most of the time because both would be consistent with the HRV condition (i.e. large tree, low densities). Forest-wide guideline WIGU18 would require that the project's Responsible Official make a reasonable effort to meet both objectives.

However, it would be more difficult to meet both wildlife and hazardous fuel objectives in the 21 percent of upper elevation forests within the WUI analysis unit, because the low hazard condition for these forest types is not consistent with the HRV condition. Consequently, there is a high likelihood that more of the 68,700 acres in these areas may not meet wildlife objectives; however, the majority of these acres (45,100 acres) are in the persistent lodgepole pine community, which is not a priority vegetation type and does not develop a large tree size class or old forest conditions important to many wildlife species of concern. Additionally, the Forest typically alters the fuel profile to meet hazardous fuels objectives within a 500 foot defensible space zone surrounding homes, communities, and other values at risk, which is a much smaller footprint on the landscape than the WUI analysis unit.

Overall, the Terrestrial Wildlife analysis (section 3.3) indicated that application of the WUI exemption would not change the overall sustainability outcome for a habitat family (see discussion below). The rationale for this conclusion is, in part, based on the assumption that in the low- to mid-elevation forests, both hazardous fuel and wildlife objectives should be able to be met on most acres. In the upper elevation forests, WUI acres represent a small percentage of the total acres, much of which occurs in high elevation lodgepole pine, which is not identified as a habitat at risk or in decline. Thus, while there is a higher likelihood that hazardous fuel treatments on these acres might not be consistent with wildlife restoration goals, the 21 percent of acres impacted (most of which are in the lodgepole pine community) would not be enough to change the sustainability outcome for habitat families or wildlife species (section 3.3).

2) Sustainability of Sensitive Tribal Species, and as applicable, their harvestability on ceded lands and lands within the Nez Perce broader area of interest which overlaps the Sawtooth National Forest

a. Sustainability of Family 1 habitats—low-elevation, old forest habitat

The sustainability outcome for Family 1 habitat is predicted to move toward outcome C under Alternative A, but at a slower rate than for Alternative B (section 3.3.5). This alternative would be less effective at reversing current declining habitat trends than Alternative B and would result in forest structure and compositions more dissimilar to historical conditions than under Alternative B. Important habitat components, which are measured at finer scales, such as large snags, old forest, and legacy trees would likely occur less.

The sustainability outcome for Family 1 under Alternative B would be predicted to improve from D to C, and at a somewhat faster rate than Alternative B (section 3.3.5). Risk to species sustainability would be less under Alternative B than A. Over time, Alternative B would result in forest structure and composition more similar to historical conditions. Important habitat components such as old forest habitat, legacy trees, large diameter snags and logs would begin to appear more frequently, moving toward historical conditions.

Family 1 habitat would benefit more from Alternative B. Restoration projects would contribute to larger scale restoration efforts for Family 1 through implementation of a restoration prioritization strategy, strategically improving habitat redundancy, representation and resiliency. Alternative B's guideline WIGU18, which requires the project decision-maker to make reasonable efforts to meet both hazardous fuel and wildlife habitat objectives within WUIs, should minimize the need to employ the exemption for WUI treatments.

b. Sustainability of Family 2 habitats—broad-elevation, old forest habitat

The sustainability outcome for Family 2 under Alternative A would be expected to remain at B. Although Alternative A might not meet individual Family 2 species source habitat needs in some locations, continued management would be expected to broadly meet Family 2 species needs across the planning unit. Local areas of concern would result from lack of direction concerning large tree, old forest habitat and snag retention.

The sustainability outcome under Alternative B would also be expected to remain at outcome B. However, Alternative B's additional direction would be expected to provide for Family 2 species and their habitats in a well distributed pattern that would allow for individuals to interact better across landscapes compared to Alternative A. Habitats throughout the planning unit would fluctuate within the HRV, with the exception of the 21 percent of acres within the upper elevation forests, primarily in the lodgepole pine community type, that fall within the WUI analysis unit where hazardous fuel objectives might not be consistent with wildlife habitat restoration objectives.

c. *Sustainability of Family 3 habitats—forest mosaics*

The sustainability outcome under Alternative A would remain at C. Habitat quantity would remain within the HRV because Family 3 source habitats include the full spectrum of Forest communities and structural stages (section 3.3.7). The Forest Plan provides direction for providing denning security and addressing conflicts in most but not all MAs within wolverine range, but it does not identify priority watersheds for maintaining connectivity of source habitat areas or for reducing human influences to improve source habitat quality. It is unlikely that individual actions would apply guidance in a manner that effectively reduces risks and threats to this family. Over time this might increase uncertainties concerning sustainability compared to Alternative B. Further, ongoing advances in technology and interest in backcountry experiences might establish human use in refugia or areas currently with very little or no use. Without additional requirements to monitor for these potential impacts, uncertainties concerning sustainability may increase in some areas as human use conflicts go unrecognized.

The sustainability outcome under Alternative B would also remain in C. Alternative B expands existing management direction for wolverine and applies it consistently within its range on the Forest in order to reduce recreation conflicts and provide denning habitat security. Additional management direction would lay the groundwork to resolve source environment issues for species in this family such as wolverine (section 3.3.7). However, even with efforts to identify human influence in wolverine denning habitat over the short-term, ongoing advances in technology and interest in backcountry experiences might establish human use in refugia before monitoring efforts can determine wolverine use and/or conflicts. As a result, uncertainties concerning sustainability may increase in some areas until monitoring efforts are accomplished and, as needed, conflicts addressed for wolverine.

d. *Sustainability of Family 4 habitats—early seral forest*

The sustainability outcome under Alternative A would be expected to remain in A and habitat for species associated with Family 4 would continue to be widespread across the planning unit.

The sustainability outcome under Alternative B would be also expected to remain in A. However, unlike Alternative A, Alternative B would provide for more sustainable Family 4 habitat by moving conditions back within the range of HRV, and over time stay within HRV. This would provide a greater balance with habitats needed to sustain species associated with other habitat families.

e. *Access to socially and/or traditionally important habitats needs to be maintained, while reducing open road related impacts to wildlife habitat and associated species*

Direction would be added under Alternative B to strengthen current Forest-wide and Management Area direction. This direction would play a key role in addressing road related impacts to wildlife species during Forest Plan implementation.

Current Forest Plan direction concerning valid existing rights remain unchanged and specific exemptions to new Forest Plan direction (EA, Appendix 2) would help ensure that reasonable access to social and/or traditional habitats continue to be provided.

Exemptions to new direction for Alternative B would include:

An exemption to: 1) Wildlife Resource standards WIST08, WISTO9, 2) Vegetation standard VEST03 and VEST04 and guideline VEGU07, and 3) MPCs 4.2, 5.1 and 6.1 standards concerning snag retention would state:

> *"This standard [or guideline] shall not apply to activities that an authorized officer determines are needed for the protection of life and property during an emergency event, to reasonably address other human health and safety concerns, to meet hazardous fuel reduction objectives within WUIs, or to allow reserved or outstanding rights, tribal rights or statutes to be reasonably exercised or complied with."*

An exemption would also be included for MPCs 3.1, 3.2 and 4.1c standards concerning snag retention during mechanical vegetation management activities:

> *"This standard [or guideline] shall not apply to activities that an authorized officer determines are needed for the protection of life and property during an emergency event, to reasonably address other human health and safety concerns, to meet hazardous fuel reduction objectives within WUIs, to manage the personal use fuelwood program, or to allow reserved or outstanding rights, tribal rights or statutes to be reasonably exercised or complied with."*

A new Forest-wide guideline WIGU18 would require that the project's decision-maker make a reasonable effort to meet both objectives:

> *"Where possible, projects should be designed to meet both hazardous fuel reduction and wildlife habitat conservation/ restoration objectives. Standards WIST-08, WIST-09, VEST-03, VEST-04 and MPC specific standards concerning snag retention may be waived for management activities within the wildland urban interface ("WUI") where the authorized officer determines that adherence to these standards would impair achievement of hazardous fuel reduction objectives. The authorized officer has discretion to make this determination.*

3.6.5.2 Shoshone-Paiute -Bannock Tribes

The analysis area for direct and indirect effects to the Shoshone-Paiute-Bannock Tribes will include discussions of factors 3.6.3.4 and 3.6.3.5 described below within the entire planning unit. Historically these Tribes have expressed interest in management activities relatively equally across all districts on the Sawtooth National Forest.

1) Restoration of habitats across the Sawtooth National Forest

a. *Restore habitat conditions that likely existed before the treaty era ((i.e., prior to 1879) in order to ensure that wildlife species populations are sustained at levels that will support tribal subsistence/harvestability interests.*

   Under both Alternatives A and B, all NFS forested acres are allocated to a variety of MPCs with desired conditions within HRV. However, under Alternative B, a wildlife habitat restoration and prioritization strategy has been developed which will focus management actions, and progress toward desired conditions, in source habitat watersheds on the Forest identified as in decline and in greatest need (Terrestrial Wildlife, section 3.3). Alternative B would provide greater assurance that tribal goals for restoration and harvestability would be sustained over time.

b. *Restore and emphasize fire's role in improving watershed conditions.*

   Fire is a disturbance process that contributes to ecosystem structure, process, and function. Current Forest Plan direction for MPCs, including MPCs 3.2 and 5.1, allow use of fire to manage natural resources while contributing to ecological processes, where it can be done safely. Fire is most often used to modify fuels to reduce the risk of undesirable wildland fire effects or to help restore ecosystem functions and processes that other restoration tools cannot achieve.

   However, while it is desirable to restore its historical role, fire would not likely be used as extensively as would have occurred historically, due primarily to public health and safety concerns in the WUI, air quality conflicts and the need to balance use of fire with other restoration tools that address other multiple uses. Also, the effects of fire are highly variable and result in a wider range of outcomes than achieved with the use of mechanical tools. Where restoration activities require more control to reduce risk of further loss to vegetation and/or habitat in degraded landscapes, fire use would be limited in the short-term.

   Both Alternatives A and B allow fire-use to restore departed landscapes where practical, and for fire to play its natural role on the landscape, again where determined practical. Alternative B also allows for restoration of fire's role on as many acres as practical within public health and safety constraints, where risks to loss of vegetation or scarce habitat attributes are acceptable, and in a manner consistent with overall multiple use objectives.

c. *Concerns expressed that habitat will be lost through salvage logging. To reduce impacts, Tribes recommended that salvage logging be limited to small diameter trees, remain outside roadless and riparian areas, and not develop new roads.*

   There are approximately 2,104,000 acres of NFS lands on the Sawtooth Forest. These acres have been allocated to ten different MPCs (MPCs 1.1, 1.2, 2.2, 3.1, 3.2, 4.1c, 4.2, 4.3, 5.1, 6.1). Only six of the ten MPCs allow mechanical management activities that may affect snag retention levels. Within these 6 MPCs, there are 1,625,000 acres; three MPCs (i.e., MPCs 4.2, 5.1, and 6.1) include suited forestland for timber removal and three MPCs (i.e., MPCs 3.1, 3.2, and 4.1c) include unsuitable forest timberland.

   A measurable difference between alternatives pertains to management direction for retention of snags on suited versus unsuitable forest timberland (Table 3-54).

Under both Alternatives, a total of 656,000 acres would lie within MPCs with suited forest timberland. Under Alternative A, snag numbers would need to be retained anywhere within the range of desired conditions (Table A-6, Forest Plan Appendix A); e.g. within PVG 2 the range is 0.4 to 3.0 large snags (>20" dbh) per acre (EA, Appendix 2). Under Alternative B, a new standard for MPCs 4.2, 5.1 and 6.1 would retain all large snags during all vegetation mechanical treatments and total snags at the high end of the desired range of conditions (Table A-6, Forest Plan Appendix A; Appendix 2 of this EA).

Table 3-54. Summary of acres forest-wide, by alternative, with snag retention requirements.

Indicator	Unit	Alternative A No Action	Alternative B Proposed Action
MPC standard within MPCs with suited forestland to retain snag numbers in salvage operations at the high end of the range in Table A-6 (Appendix A in Appendix 2)	Acres	0	656,000
MPC standard within MPCs with unsuitable forestland retaining all snags >20 inches d.b.h. in mechanical vegetation management	Acres[a]	0	969,000

Under Alternatives B, a total of 969,000 acres would lie within MPCs with unsuitable forest timberland. Under Alternative A, snag numbers would need to be retained anywhere within the range of desired conditions in Table A-6 of Appendix A of the Forest Plan (Appendix 2). Under Alternative B a new standard for MPCs 3.1, 3.2 and 4.1c would retain all large snags during all vegetation mechanical treatments and total snags at the high end of the desired range of conditions (Table A-6, Forest Plan Appendix A; Appendix 2 of this EA). As discussed in Terrestrial Wildlife, section 3.3, the increase in large snag retention on suitable and unsuitable forestland should improve habitat conditions and consequently improve sustainability outcomes for habitat and associated species under Alternative B.

Salvage logging within IRAs would be allowed under all alternatives. However, new large snag retention requirements in Alternative B for MPCs 3.1, 3.2 and 4.1c, which overlap nearly all IRAs, would reduce the likelihood of salvage proposals as the snag retention requirements would restrict the size of snags that could be removed, and therefore the economic feasibility of removing this material. Forest Plan standards for new road development would remain unchanged, including prohibitions in MPC 4.1c and substantial restrictions on road activity in MPCs 3.1 and 3.2.

Under the 2003 Forest Plan, salvage logging of small or large snags is allowed in riparian areas as long as it can be demonstrated that salvage does not impact riparian process and function, and all applicable direction concerning soil, water, riparian and aquatic resources and ESA listed species are followed. However, because riparian areas are treated as unsuited forestland once identified (existing Forest Plan standard TRST04), new snag standards under Alternative B requiring retention of large snags would result in greater retention of large snags in riparian areas. Also, as discussed above, very little salvage logging has occurred within these areas since Forest Plan implementation began in 2003, in part because there is less emphasis to recover the economic value of wood products in these areas. Limitations on snag sizes that could be removed under Alternative B would make activities in these areas even less likely.

d. *No further cutting of older ponderosa pine should occur due to their rarity and importance to wildlife species.*

Alternative A would have no limitation on removing older ponderosa pine. By contrast, Alternative B would include a new guideline that requires the retention of these trees. As discussed in Terrestrial Wildlife, section 3.3, and Forested Vegetation Diversity, section 3.2, retaining these legacy trees provides additional wildlife restoration benefits and contributes to the overall restoration of vegetation diversity.

f. *Limit hazardous fuel reduction within WUIs because activities may negatively impact sustainability of some habitats important to sensitive tribal species.*

Table 3-55 summarizes the number of acres Forest-wide with WUI exemptions for large tree, old forest and snag retention standards proposed under Alternative B. No WUI exemptions would occur under Alternative A.

Table 3-55. Acres with a WUI exemption, by fire regime.

Indicator	Unit	Alternative A No Action	Alternative B Proposed Action
WUI exemption within the nonlethal and mixed-1 fire regimes(low- to mid-elevation forests)	Total forest acres in nonlethal and mixed-1	295,600	295,600
	Forest acres in nonlethal and mixed-1 within WUI exemption	0	51,800 (18% of total)
WUI exemption within the mixed-2 and lethal fire regimes	Total forest acres in mixed-2 and lethal	744,800	744,800
	Forest acres in mixed-2 and lethal within WUI exemption	0	95,100 (13% of total)

Under Alternative B, about 18 percent of the low- to mid-elevation pine forests and 13 percent of the upper elevation forests (i.e. mixed-2 and lethal) could be exempt from meeting new large tree, old forest habitat and snag retention standards where in conflict with meeting hazardous fuel reduction objectives. As assessed in Terrestrial Wildlife (section 3.3) and Fire Management (section 3.4), treatments in the low to mid-elevation pine forests should be able to meet both wildlife and hazardous fuel objectives in a given location most of the time because both would be consistent with the HRV condition (i.e. large tree, low densities). Forest-wide guideline WIGU18 would require that the project's decision-maker make a reasonable effort to meet both objectives.

However, it would be more difficult to meet both wildlife and hazardous fuel objectives in the 13 percent of upper elevation forests within the WUI analysis unit, because the low hazard condition for these forest types is not consistent with the HRV condition. Consequently, there is a high likelihood that more of these 51,300 acres may not meet wildlife objectives; however, the Forest typically alters the fuel profile to meet hazardous fuels objectives within a 500-foot defensible space zone surrounding homes, communities, and other values at risk, which is a much smaller footprint on the landscape than the WUI analysis unit. Additionally, the decision-maker must still achieve both wildlife and hazard objectives where possible (Forest-wide guideline WIGU18).

Overall, the Terrestrial Wildlife analysis (section 3.3) indicated that application of the WUI exemption would not change the overall sustainability outcome for a habitat family (see discussion below).

2) Sustainability of Sensitive Tribal Species, and as applicable, their harvestability on ceded lands and lands within their broader area of interest which overlaps the Sawtooth National Forest

a. Sustainability of Family 1 habitats—low-elevation, old forest habitat

The sustainability outcome for Family 1 habitat would be predicted to move toward Outcome C under Alternative A, but at a slower rate than for Alternative B (section 3.3.5). This alternative would be less effective at reversing current declining habitat trends than Alternative B and would result in forest structure and compositions more dissimilar to historical conditions than under Alternative B. Important habitat components, which are measured at finer scales, such as large snags, old forest, and legacy trees, would not be expected to occur very often.

The sustainability outcome for Family 1 under Alternative B would be predicted to improve from D to C, and at a somewhat faster rate than Alternative B (section 3.3.5). Over time, Alternative B would result in forest structure and composition similar to historical conditions. Important habitat components such as old forest habitat, legacy trees, large diameter snags and down logs would begin to appear more frequently, moving toward historical conditions.

Family 1 habitat would continue to improve and would benefit from Alternative B. Restoration projects would contribute to larger scale restoration efforts for Family 1 through implementation of a restoration prioritization strategy, strategically improving habitat redundancy, representation and resiliency. Alternative B’s guideline WIGU18, which requires the project decision-maker to make reasonable efforts to meet both hazardous fuel and wildlife habitat objectives within WUIs, should minimize the need to employ the exemption for WUI treatments.

b. Sustainability of Family 2 habitats—broad-elevation, old forest habitat

The sustainability outcome for Family 2 under Alternative A would be expected to remain at B. Although Alternative A might not meet individual Family 2 species source habitat needs in some locations, continued management would be expected to broadly meet Family 2 species needs across the planning unit. Local areas of concerns would result from continued WUI management and lack of direction concerning large tree, old forest habitat and snag retention.

The sustainability outcome under Alternative B would also be expected to remain at B. However, Alternative B's additional management direction would be expected to provide for Family 2 species and their habitats in a well distributed pattern that would allow individuals to interact better across landscapes compared to Alternative A. Habitats throughout the planning unit would fluctuate within the HRV, with the minor exception of the 13 percent of acres within the upper elevation forests that fall within the WUI analysis unit where hazardous fuel objectives must be met in a manner not consistent with wildlife habitat restoration objectives.

c. *Sustainability of Family 3 habitats—forest mosaics*

The sustainability outcome under Alternative A would remain at C. Habitat quantity would remain within the HRV because Family 3 source habitats include the full spectrum of Forest communities and structural stages (section 3.3.7). The Forest Plan provides direction for providing denning security and addressing conflicts in most but not all MAs within wolverine range, but it does not identify priority watersheds for maintaining connectivity of source habitat areas or for reducing human influences to improve source habitat quality. It is unlikely that individual actions would apply guidance in a manner that effectively reduces risks and threats to this family. Over time this might increase uncertainties concerning sustainability compared to Alternative B. Further, ongoing advances in technology and interest in backcountry experiences might establish human use in refugia. Without additional requirements to monitor for these potential impacts, uncertainties concerning sustainability may increase in some areas as human use conflicts go unrecognized.

The sustainability outcome under Alternative B would also remain in C. Alternative B expands existing management direction for wolverine and applies it consistently within its range on the Forest in order to reduce recreation conflicts and provide denning habitat security. Additional management direction would lay the groundwork to resolve source environment issues for species in this family such as wolverine (section 3.3.7). However, even with efforts to identify human influence in wolverine denning habitat over the short-term, ongoing advances in technology and interest in backcountry experiences might establish human use in refugia before monitoring efforts can determine wolverine use and/or conflicts. As a result, uncertainties concerning sustainability may increase in some areas until monitoring efforts are accomplished and, as needed, conflicts addressed for wolverine.

d. *Sustainability of Family 4 habitats—early seral forest*

The sustainability outcome under Alternative A is expected to remain A; and habitat for species associated with Family 4 would remain extensive across the planning unit.

The sustainability outcome under Alternative B would also be expected to remain in A. The greater emphasis on restoration of ecological processes, patch sizes and patterns of habitat across all forested acres would provide a greater balance with habitats needed to sustain species associated with other habitat families.

e. *Access to socially and/or traditionally important habitats needs to be maintained, while reducing open road related impacts to wildlife habitat and associated species*

Under Alternative B, direction would be added to strengthen both the Forest-wide and Management Area direction to address road related impacts to wildlife species. This direction would play a key role in Forest Plan implementation as the Forest completes development of its minimum road system per subpart A of the travel management rule.

Current Forest Plan direction concerning valid existing rights would remain unchanged and specific exemptions to new Forest Plan direction (EA Appendix 2) would help ensure that reasonable access to social and/or traditional habitats continue to be provided.

Exemptions to proposed direction for Alternative B include:

An exemption to: 1) Wildlife Resource standards WIST08, WISTO9, 2) Vegetation standard VEST03 and VEST04 and guideline VEGU07, and 3) MPCs 4.2, 5.1 and 6.1 standards concerning snag retention, which states:

> *"This standard [or guideline] shall not apply to activities that an authorized officer determines are needed for the protection of life and property during an emergency event, to reasonably address other human health and safety concerns, to meet hazardous fuel reduction objectives within WUIs, or to allow reserved or outstanding rights, tribal rights or statutes to be reasonably exercised or complied with."*

An exemption would also be included for MPCs 3.1, 3.2 and 4.1c standards concerning snag retention during mechanical vegetation management activities:

> *"This standard [or guideline] shall not apply to activities that an authorized officer determines are needed for the protection of life and property during an emergency event, to reasonably address other human health and safety concerns, to meet hazardous fuel reduction objectives within WUIs, to manage the personal use fuelwood program, or to allow reserved or outstanding rights, tribal rights or statutes to be reasonably exercised or complied with."*

A new Forest-wide guideline WIGU18 would require that the project's decision-maker make a reasonable effort to meet both objectives:

> *"Where possible, projects should be designed to meet both hazardous fuel reduction and wildlife habitat conservation/ restoration objectives. Standards WIST-08, WIST-09, VEST-03, VEST-04 and MPC specific standards concerning snag retention may be waived for management activities within the wildland urban interface ("WUI") where the authorized officer determines that adherence to these standards would impair achievement of hazardous fuel reduction objectives. The authorized officer has discretion to make this determination.*

3.6.5.3 Summary and Conclusions

The United States Government has a unique relationship with federally recognized

American Indian tribes. Decisions concerning management on federal lands can affect tribal community wellbeing. As federal agencies undertake activities that may affect tribes' rights, property interests or trust resources, care must be taken to implement agency policies, programs and projects in a knowledgeable and sensitive manner respectful of tribes' sovereignty and needs. The intergovernmental consultation process serves as the primary means for the federal agencies to carry out their tribal trust obligations.

Consultation efforts that informed decisions in the 2003 Forest Plan are incorporated by reference and helped inform development of the wildlife conservation strategy and associated amendments. There are several elements of the 2003 Forest Plan that directly responded to issues concerning tribal community identified through earlier consultations that remain unchanged and will continue to be implemented as part of Forest Plan direction following this decision. For example, Forest Plan direction pertaining to Tribal Rights and Interests (USDA Forest Service 2003a, pages III-71 through III-72), the Heritage Program (USDA Forest Service 2003a, pages III-69 through III-70) and Soil, Water, Riparian and Aquatic Resources (USDA Forest Service 2003a, pages III-18 through III-24) will continue to be used in forest plan implementation. Continuing forward with SWRA management direction and the associated Aquatic Conservation Strategy (ACS) adopted as part of the 2003 Forest Plan remain critical to achieving overall watershed health and addressing the sustainability of salmon, a culturally significant fish species to the tribes.

Tribal goals concerning restoration are to move conditions toward or within those likely to have existed during the treaty making era, or in this case HRV. The Forest believes that providing habitat within the range of HRV should result in sustaining wildlife species numbers at levels important to harvestability and associated community wellbeing. As disclosed in Forested Vegetation Diversity and Fire Regime Condition Class (section 3.2), Terrestrial Wildlife (section 3.3) and this section, maintaining vegetative diversity and associated wildlife habitat conditions within HRV over time would more fully address tribal rights and interests associated with native species and their habitats compared to the current 2003 Forest Plan. This in turn would improve the likelihood of sustaining harvestability levels of culturally significant species important to a tribe's overall community well-being. In addition, current Forest Plan direction discussed above and specific exemptions to new Forest Plan direction proposed under this amendment (EA Appendix 2) would help ensure that reasonable access to social and/or traditional habitats continue to be provided.

Chapter 4—List of Preparers

The following people made up the Core Team that developed the EA to facilitate implementation of the 2011 Plan-scale Wildlife Conservation Strategy for the Sawtooth National Forest. They are listed alphabetically by last name. Also included is the person's title, place of employment, education, work experience, and role in this planning process. Listed separately are those people who provided significant contributions to the Core Team through consultation, leadership, analysis or review.

4.1 Core Team Members

Dave Bassler

Position:	Fire Ecologist, Sawtooth National Forest
Education:	BA Forestry, Utah State University
Experience:	26 years USDA Forest Service
Contribution:	Fire Analysis, Wildlife Conservation Strategy

Bobbi Filbert

Position:	Wildlife Biologist, Sawtooth National Forest
Education:	BA Zoology, University of California Santa Barbara
Experience:	16 years USDA Forest Service
Contribution:	Wildlife Analysis, Wildlife Conservation Strategy

Karl Fuelling

Position:	Forester, Sawtooth National Forest
Education:	BS Forestry, Utah State University
Experience:	30 years USDA Forest Service
Contribution:	Timber Management and Vegetation Diversity analysis, Wildlife Conservation Strategy

Brenda Geesey

Position:	GIS Manager, Sawtooth National Forest
Education:	BS Forestry, University of Florida MS Forestry, Northern Arizona University
Experience:	20 years USDA Forest Service
Contribution:	Maps, analysis of wildlife habitat parameters, data calculations and summaries, GIS project record, Project Inspector for Photo Science contract

Sharon LaBrecque

Position:	Resources Staff Officer, Sawtooth National Forest
Education:	BS Wildlife Resources, New Mexico State University
Experience:	22 years USDA Forest Service
Contribution:	Forest Planner, Public Involvement, Team Leader

Johanna (Joey) Pearson

Position:	Administrative Management Assistant, Boise National Forest
Education:	Borah High School, Boise, Idaho
Experience:	18 years USDA Forest Service
Contribution:	Project Record Manager, Chapter 4, Literature Cited, Contracting Officer Representative for Peak Science Communications contract

4.2 SAWTOOTH NATIONAL FOREST

Rebecca Nourse	Forest Supervisor
Carol Brown	Assistant Forest Planner
Robin Garwood	Wildlife Biology
David Skinner	Wildlife Biology
Dena Santini	Wildlife Biology

4.3 BOISE NATIONAL FOREST

Randall Hayman	Forest Planner
Lisa Nutt	Wildlife Biology
Kathleen Geier-Hayes	Forest Vegetation
Terry Hardy	Soils/Hydrology
Carey Crist	GIS Manager

4.4 PAYETTE NATIONAL FOREST

Pattie Anderson-Soucek	Forest Planner
Ana Egnew	Wildlife Biology
Susan Miller	Fire/Vegetation Ecology
Chans O'Brien	GIS Specialist

4.5 INTERMOUNTAIN REGIONAL OFFICE

Glen Stein	Regional Planning Specialist
Clint McCarthy	Wildlife Ecology
Tom Martin	Forest Vegetation
Craig Morris	GIS/Modeling
Joy Roberts	Computer Programmer Analyst, Forest Health Protection, Boise Field Office
Carl Jorgensen	Entomologist, Forest Health Protection, Boise Field Office
Ken Paur	Office of General Counsel (OGC)

Elise Foster	Office of General Counsel (OGC)

4.6 Federal/State Agencies

Kevin Church	Idaho Department of Fish and Game
Bill Lind	National Oceanic and Atmospheric Administration (NOAA)
Mark Robertson	USDI Fish and Wildlife Service

4.7 Contractor Support

Nikole Pearson	Peak Science Communications, LLC, Boise, Idaho
Jeff Pearson	Peak Science Communications, LLC, Boise, Idaho
Sonia Larrabee	Peak Science Communications, LLC, Boise, Idaho
Loren Roberts	Peak Science Communications, LLC, Boise, Idaho
Kevin Church	Idaho Conservation Data Center, Boise, Idaho
Brad Weigel	Photo Science, St. Petersburg, Florida
Lowell Suring	Northern Ecologic, LLC, Boise, Idaho

4.8 GLOSSARY, ACRONYMS, AND SCIENTIFIC NAMES

4.8.1 Glossary

This glossary replaces the 2003 Southwest Idaho Ecogroup Land and Resource Management Plans, Environmental Impact Statement, Chapter 4, Glossary/Acronyms. It adds terms in Errata #4 dated July 2005, and adds new terms used in this Sawtooth National Forest Plan amendment.

abiotic

Non-living (refers to air, rocks, soil particles, etc.).

access management

See travel management.

activity area

The smallest logical land area where the effect that is being analyzed or monitored is expected to occur. The area may vary in size depending on the effect that is being analyzed or monitored, because some effects are quite localized and some occur across landscapes. Activity areas are to be specifically described when used in planning and project implementation documents.

- snags–The activity area for snags is the specific site affected by actions listed below, whether effects are positive or negative. Actions affecting activity areas that need to be assessed include timber harvest, site-preparation reforestation, timber stand improvement, and prescribed fire. The activity area reflects the scale at which to plan projects that provide for maintaining or improving trends in snag amounts.
- coarse woody debris–The activity area is the same as for snags above. However, this may also parallel the activity area for detrimental disturbance. See below.
- detrimental disturbance–The activity area is the specific area where proposed actions may have detrimental soil impacts, such as harvest units within a timber sale area, an individual pasture unit within a grazing allotment, or a burn block within a prescribed burn project area. Existing designated uses such as classified roads and trails, developed campgrounds, and buildings, are not considered detrimental disturbance within an activity area. See the definition for detrimental disturbance for more information.
- total soil resource commitment–Effects are generally measured across an all-inclusive activity area, like a timber sale area, a prescribed burn area, or a grazing allotment, where effects to soil commitment could occur or are occurring. Effects include both proposed actions and existing uses, such as roads (classified and non-classified), dedicated trails and landings, administrative sites, parking lots, and mine excavations. See the definition for total soil resource commitment for more information.

adaptive management

A type of natural resource management in which decisions are made as part of an ongoing process. Adaptive management involves testing, monitoring, evaluation, and incorporating new knowledge into management approaches based on scientific findings and the needs of society.

adfluvial fish

Fish that migrate between lake and river systems; such as land-locked kokanee salmon or some bull trout.

adverse effect

For Forest Plan revision, "adverse effect" is used in the context of the Endangered Species Act relative to effects on TEPC species. Definitions are from Final Endangered Species Consultation Handbook; NMFS/USFWS, 1998. They include both "likely to adversely affect" and "not likely to adversely affect". Both of these definitions are needed to clearly understand the intent of the phrase "adverse effect" when applied to Forest-wide and Management Area direction involving TEPC species. The definition of "take" is also included below to help clarify intent.

- Likely to adversely affect– the appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (see definition of "not likely to adversely affect"). In the event the overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, then the proposed action is "likely to adversely affect" the listed species. If incidental take is anticipated to occur as a result of the proposed action, an "is likely to adversely affect" determination should be made. A "likely to adversely affect" determination requires the initiation of formal Section 7 consultation.
- Not likely to adversely affect–the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those that are extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully detect, measure, or evaluate insignificant effects; or (2) expect discountable effects to occur.
- Take–to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct [ESA §3(19)]. Harm is further defined by FWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by FWS as actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering (50 CFR § 17.3).

air pollutant

Any substance in air that could, if in high enough concentration, harm humans, animals, vegetation, or material. Air pollutants may include almost any natural or artificial matter capable of being airborne in the form of solid particles, liquid droplets, gases, or a combination of these.

air quality

The composition of air with respect to quantities of pollution therein; used most frequently in connection with "standards" of maximum acceptable pollutant concentrations.

allelopathic

Growth inhibiting. Usually refers to chemicals produced by one species of plant to inhibit the growth of surrounding species, thus giving the chemical-producing plant a competitive edge.

allotment (grazing)

Area designated for the use of a certain number and kind of livestock for a prescribed period of time.

Allowable Sale Quantity (ASQ)

On a National Forest, the quantity of timber that may be sold from a designated area covered by the forest plan for a specified time period.

All Terrain Vehicle (ATV)

Any motorized, off-highway vehicle 50 inches or less in width, having a dry weight of 600 pounds or less that travels on three or more low-pressure tires with a seat designed to be straddled by the operator. Low-pressure tires are generally 6 inches or more in width and designed for use on wheel rim diameters of 12 inches or less, utilizing an operating pressure of 10 pounds per square inch (psi) or less.

alternative

In an Environmental Impact Statement (EIS), one of a number of possible options for responding to the purpose and need for action.

amenity

Resource use, object, feature, quality, or experience that is pleasing to the mind or senses; typically refers to resources for which monetary values are not or cannot be established, such as scenery or wilderness.

anadromous fish

Fish that hatch and rear in fresh water, migrate to the ocean, mature there, and return to fresh water to reproduce; for example, salmon and steelhead.

ancillary facilities

Auxiliary facilities or structures that do not serve the main purpose of the facility but rather provide for support needs. For example, for a hydroelectric dam, the dam, powerhouse, penstock, and spillway would not be considered ancillary facilities, but a tool storage shed would.

Animal Unit Month (AUM)

The amount of forage required by a 1,000-pound cow and its calf, or the equivalent, for 1 month.

Appropriate Management Response (AMR)

Actions taken in response to a wildland fire to implement protection and fire use objectives.

aquatic ecosystem

40 CFR 230.3 - Waters of the United States that serve as habitat for interrelated and interacting communities and populations of plants and animals. FSM 2526.05 - The stream channel, lake or estuary bed, water, biotic communities and the habitat features that occur therein.

aquatic integrity

Aquatic integrity is an assessment and comparison of existing fish habitat conditions with historical conditions that existed before Euro-American settlement. Habitat conditions are assessed to determine how their integrity and resilience may have changed due to effects from past or current human-caused (road construction, timber harvest, livestock grazing, etc.) or natural (wildfire, floods, etc.) disturbance. Conditions or values assessed include numerous habitat parameters found in Appendix B of the Forest Plan. Relative integrity ratings are assigned at the subwatershed scale and are based on the quality of habitat conditions and the presence, abundance, and distribution of key native fish species.

arterial road

A road serving a large land area and usually connecting with public highways or other Forest Service arterial roads to form an integrated network of primary travel routes. The location and standards are often determined by a demand for maximum mobility and travel efficiency rather than specific resource management service. Arterial roads are usually developed and operated for long-term land and resource management purposes and constant service.

attitudes, beliefs, and values

FSH 1909.17. Preferences, expectations, and opinions people have for forests and the management and use of particular areas. Differing values and expectations have resulted in polarized perceptions that a healthy environment requires protection of lands from human influence, or increased attention to environmental quality presents a threat to employment, economy, or life-style.

background (bg)

The visual distance zone relating to the distant part of a landscape, generally located from 3 to 5 miles to infinity from the viewer.

background wildfire

Average amount of wildfire that occurs annually from small-sized (a through d) fires.

bankfull stage

The bankfull stage corresponds to the discharge at which channel maintenance is the most effective, that is, the discharge at which moving sediment forms or changes bends and meanders, and generally results in the average morphologic characteristics of channels. This term generally describes the elevation on the stream bank where the stream begins to flow onto a flood plain; however, not all stream channels have distinct flood plains.

beneficial effect

Beneficial effects are contemporaneous positive effects to resource, social, or economic conditions.

Specific to ESA and TEPC species, beneficial effects are contemporaneous positive effects without any adverse effects to the species. The appropriate conclusion when effects on listed species are expected to be beneficial would be: "Is not likely to adversely affect".

beneficial use

Any of the various uses that may be made of the water of an area, including, but not limited to: (1) agricultural water supply; (2) industrial water supply; (3) domestic water supply; (4) cold water biota; (5) primary contact recreational use; (6) secondary contact recreational use; (7) salmonid spawning, overwintering, emergence, and rearing; and (8) warm water biota.

Best Management Practices (BMPs)

Practices determined by the State of Idaho Division of Environmental Quality to be the most effective and practical means of preventing or reducing the amount of pollution generated by non-point sources.

big game

Large wild animals that are hunted for sport and food. This hunting is controlled by state wildlife agencies. Big game animals found on this Forest include deer, elk, and moose.

bighorn sheep emphasis areas

Areas identified by state wildlife agencies as being important to bighorn sheep (winter and summer habitat).

biological diversity (or biodiversity)

The variety and abundance of life and its processes. Biological diversity includes all living organisms, the genetic differences among them, and the communities and ecosystems in which they occur. Biological diversity also refers to the compositions, structures, and functions of species and habitats and their interactions.

biophysical components

Refers to biological and/or physical components in an ecosystem.

biota

Living material. The flora and fauna of an area.

board foot

A measurement of wood equivalent to a board 1 foot square and 1 inch thick. Usually expressed in terms of thousand board feet (MBF) or million board feet (MMBF).

broad-scale

A regional land area that may include all or parts of several states; typically millions of acres or greater. An example of a broad-scale assessment is the Interior Columbia Basin (ICB) Ecosystem Management Project.

broadcast burning

Burning forest fuels as they are, with no piling or windrowing.

browse

Twigs, leaves, and shoots of trees and shrubs that animals eat.

Burned Area Emergency Response (BAER)

A procedure used by the federal government to restore watershed conditions following large wildfires. The objective of BAER is to provide for immediate rehabilitation by stabilizing soils, and controlling water, sediment, and debris movement.

candidate species

Plant and animal species being considered for listing as endangered or threatened, in the opinion of the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS). Category 1 candidate species are groups for which the FWS or NMFS has sufficient information to support listing proposals; category 2 candidate species are those for which available information indicates a possible problem, but that need further study to determine the need for listing.

canopy cover

Total non-overlapping cover of all trees in a vegetative unit excluding the seedling size class. Trees in the seedling size class are used to estimate canopy cover only when they represent the only structural layer on the site.

classified road

Roads, wholly or partially within or adjacent to national Forest System lands, that are determined to be needed for long-term motor vehicle access. Classified roads can include state roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service.

Clean Air Act

An Act of Congress established to protect and enhance the quality of the Nation's air through air pollution prevention and control.

Clean Water Act

An Act of Congress which establishes policy to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.

coarse filter (conservation) approach

Used to assess the conservation value of ecosystems and landscapes. The intent of this approach is to maintain and where needed restore representative ecosystems and their inherent disturbance processes in order to conserve the majority of species without the necessity of considering them individually.

coarse woody debris (CWD)

Pieces of woody material having a diameter of at least 3 inches. Logs are a subset of coarse woody debris.

Cohesive Strategy (Current) Condition Classes

The Cohesive Strategy for the National Fire Plan defines three current condition classes as follows:

Condition Class 1 - Fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.

Condition Class 2 - Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from their historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.

Condition Class 3 - Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

Cohesive Strategy (Historical Natural) Fire Regimes

The Cohesive Strategy for the National Fire Plan defines historical natural fire regimes as follows:

- Fire regime I 0-35-year frequency, nonlethal
- Fire regime II 0-35-year frequency, lethal
- Fire regime III 35-100+ year frequency, mixed
- Fire regime IV 35-100+ year frequency, lethal
- Fire regime V 200+ frequency, lethal

collaborative stewardship

Caring for the land and serving people by listening to all constituents and by living within the limits of the land. A commitment to healthy ecosystems and working with people on the land.

collector road

A road serving smaller land areas than an arterial road and usually connected to a Forest arterial road or public highway. These roads collect traffic from Forest local roads and/or terminal facilities. The location and standard are influenced by both long-term multi-resource service needs, as well as travel efficiency. These roads may be operated for either constant or intermittent service, depending on land use and resource management objectives for the area served by the facility.

common variety minerals

Minerals of sand, clay, cinders, roadside slough, fill dirt, etc., which have been specifically designated as common variety and are saleable under the discretion of the authorized officer.

communication sites

Areas designated for the operation of equipment, which reflect, transmit, and/or receive radio, microwave, and cellular telephone signals, for long-distance transmission or local pickup of programming.

components of ecosystem management

Biological diversity, physical diversity, social diversity, and economic diversity are the four components of the Southwest Idaho Ecosystem Management Framework.

composition (species)

The species that make up a plant or animal community, and their relative abundance.

connectivity

The arrangement of habitat that allows organisms and ecological processes to move across the landscape. Patches of similar habitats are either close together or connected by corridors of appropriate vegetation (or live stream channels). Opposite of fragmentation.

Sites in a landscape are "connected" if there are patterns or processes to link them in some way. These links arise either from static patterns (e.g., landforms, soil distributions, contiguous forest cover) or from dynamic processes (e.g., dispersal, fire). A particular landscape may have radically different degrees of connectivity with respect to different processes. Connectivity usually involves corridors and networks and describes how patches are connected in the landscape.

conservation strategy or conservation agreement

1. An active, affirmative process that (a) identifies issues and seeks input from appropriate American Indian governments, community groups, and individuals; and (b) considers their interests as a necessary an integral part of the BLM's and Forest Service's decision-making process.

2. Plans to remove or reduce threats to Candidate or Sensitive species of plants and animals so that a federal listing as Threatened or Endangered is unnecessary.

controlled burns

Are fires ignited by government agencies under less dangerous weather conditions.

controlled hunt area

An area designated by the Idaho Department of Fish and Game to manage species, usually big game such as elk or deer.

core area

A geographic area of land or water that is managed to promote and conserve specific features of biodiversity (target species, communities, or ecosystems) within the context of a broader landscape and network of core areas.

core area (for SWRA resources)

The combination of core habitat (i.e., habitat that could supply all elements for the long-term security of bull trout) and a core population (a group of one or more local bull trout populations that exist within core habitat) constitutes the basic unit for which to gauge recovery within a recovery unit. Core areas require both habitat and bull trout to function biologically, and the number (replication) and characteristics of local populations inhabiting a core area provide a relative indication of the core area's likelihood to persist. Core area boundaries are typically: (1) 4^{th} field hydrologic units (HUs), unless evidence of natural isolation (e.g., a natural barrier or presence of a lake supporting adfluvial bull trout) supports designation of a smaller core area; (2) conservative, i.e., the largest areas likely constituting a core area are considered a single core area when doubt exists about the extent of bull trout movement and use of habitats; and (3) non-overlapping (USDI FWS 2002).

corridor (landscape)

Landscape element that connect similar patches of habitat through an area with different characteristics. For example, streamside vegetation may create a corridor of willows and hardwoods between meadows or through a conifer forest.

cover type

The current or existing vegetation of an area, described by the dominant vegetation.

critical habitat

Endangered Species Act - Designated by the FWS or NMFS, specific areas, within a geographical area occupied by a threatened or endangered species, on which are found physical or biological features essential to conservation of the species. These areas may require special management consideration or protection, and can also include specific areas outside the occupied area that are deemed essential for conservation.

critical life stages

Animal life stages associated with the time of the year when reproduction, rearing young, and over-wintering occur.

crown, canopy, or aerial fires

Devour suspended material at the canopy level, such as tall trees, vines, and mosses. The ignition of a crown fire is dependent on the density of the suspended material, canopy height, canopy continuity, and sufficient surface and ladder fires in order to reach the tree crowns.

cultural resources

Cultural resources include sites, structures, or objects used by prehistoric and historic residents or travelers. They are non-renewable resources that tell of life-styles of prehistoric and historic people. Cultural resources within the Forests are diverse and include properties such as archaeological ruins, pictographs, early tools, burial sites, log cabins, mining structures, guard stations, and fire lookouts.

cumulative effects

Impacts on the environment that result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

decay classes[1] (for snags and coarse woody debris)

DECAY CLASS 1[2]	Snags	Snags that have recently died, typically have little decay, and retain their bark, branches, and top.
	Logs	Logs created by trees that have recently fallen over, and still have intact or loose bark, large branches present, a round shape, little to some wood decay, and are resting above or are in contact with the ground.
DECAY CLASS 2	Snags	Snags that show some evidence of decay and have lost some of their bark and branches and often a portion of the top.
	Logs	Logs with bark partially intact to sloughing, no fine branches, large branches present, wood largely hard to soft, may be round, log may be sagging.
DECAY CLASS 3	Snags	Snags that have extensive decay, are missing the bark and most of the branches, and have a broken top.
	Logs	Bark is absent, few branches present, wood is soft and powdery (when dry), shape is round, oval, or hard to see.

[1]From Bull et al. 1997
[2]Grand fir and Douglas-fir tend to retain their bark and therefore snags and coarse wood of these species may not meet the appropriate decay class bark description.

debris flow

A spatially continuous movement of mixed soil or rock in which surfaces of shear are short-lived, closely spaced, and usually not preserved. The distribution of velocities in the displacing mass resembles that in a viscous liquid. Debris slides may become extremely rapid as the material loses cohesion, gains water, or encounters steeper slopes.

defensible space

An area around a structure where fuels and vegetation are treated, cleared, or reduced to slow the spread of wildfire towards the structure. This space also reduces the chance of a structure fire moving from the building to the surrounding forest.

degradation

To degrade, or the act of degrading. Refer to the definition of “degrade” in this glossary.

degrade

To degrade is to measurably change a resource condition for the worse within an identified scale and time frame. Where existing conditions are within the range of desired conditions, “degrade” means to move the existing condition outside of the desired range. Where existing conditions are already outside the range of desired conditions, “degrade” means to change the existing condition to anything measurably worse. The term “degrade” can apply to any condition or condition indicator at any scale of size or time, but those scales need to be identified. This definition of “degrade” is not intended to define degradation for the State of Idaho as it applies to their Antidegradation Policy (IDAPA 16.01.02.051).

demographic

Related to the vital statistics of human populations (size, density, growth, distribution, etcetera).

denning habitat or sites

Habitat and locations used by mammals during reproduction and rearing of their young, when the young are highly dependent on adults for survival.

designated communication site

An area of National Forest System land, designated through the land and resource management planning process, for use as a communication site. These designations constitute a long-term allocation of National Forest System land. A communications site may be limited to a single communications facility, but often encompasses more than one.

designated utility corridor

A linear strip of National Forest System land, designated through the land and resource management planning process, for use as a utility corridor. These designations constitute a long-term allocation of National Forest System land. A utility corridor may be used to accommodate more than one utility use.

designee

Related to fire suppression, a designee is a person with delegated line officer authority.

Desired Condition (DC)

Also called Desired Future Condition, a portrayal of the land, resource, or social and economic conditions that are expected in 50-100 years for forested stands if management goals and objectives are achieved. A vision of the long-term conditions of the land.

Desired Future Condition (DFC)

Also called desired condition, a portrayal of the land, resource, or social and economic conditions that are expected in 50-100 years for forested stands if management goals and objectives are achieved. A vision of the long-term conditions of the land.

detrimental soil disturbance

Detrimental soil disturbance (DD) is the alteration of natural soil characteristics that results in immediate or prolonged loss of soil productivity and soil-hydrologic conditions. At least 85 percent of an activity area should be in a non-detrimentally disturbed condition. Stated another way, no more than 15 percent of an activity area should have detrimentally disturbed soil after the management activity is completed. DD can occur from soil that has been displaced, compacted, puddled or severely burned. Determination of DD excludes existing or planned classified transportation facilities, dedicated trails, and landings, mining dumps or excavations, parking areas, developed campgrounds, and other dedicated facilities. However, the impacts of these actions are considered total soil resource commitment (TSRC - see definition in this glossary). DD is represented by any or all of the four characteristics described below.

4. *Detrimental Soil Displacement.* Areas of 1 meter by 1 meter or larger that exhibit detrimentally displaced soil as described below:
   (a) The loss of either 5 cm or half of humus-enriched top soil (A horizon), whichever is less, or
   (b) The exceeding of the soil loss tolerance value for the specific soil type.
5. *Detrimental Soil Compaction.* Soil compaction is generally evaluated from 5 to 30 centimeters below the mineral soil surface. Specific depths for measurement are dependent upon soil type and management activities. Detrimental soil compaction is increased soil density (weight per unit volume) and strength that hampers root growth, reduces soil aeration, and inhibits water movement. Measurements of potential detrimental soil compaction may be qualitative or quantitative. Refer to the Region 4 Soil Quality Handbook for methods related to measuring/determining soil compaction.
6. *Detrimental Soil Puddling.* Puddling is generally evaluated at the mineral soil surface. Visual indicators of detrimental puddling include clearly identifiable ruts with berms in mineral soil, or in an Oa horizon of an organic soil. Detrimental puddling may occur in conjunction with detrimental compaction. The guidelines for soil compaction are to be used when this occurs. Detrimentally puddled soils are not always detrimentally compacted. Infiltration and permeability are affected by detrimental soil puddling. Puddling can also alter local groundwater hydrology and wetland function, and provide conduits for runoff.
7. *Severely Burned Soil.* Severely burned soil applies to prescribed fire and natural fires that are managed for resource benefits. Severely burned soils are identified by ratings of fire severity and the effects to the soil. A severely burned soil is generally soil that is within a High Fire Severity burn as defined by the Forest Service Burned Area Emergency Rehabilitation Program (FSH 2509.13) and Debano et al. (1998). An example of a High Fire Severity rating is provided below. Soil humus losses, structural changes, hydrophobic characteristics and sterilization are potential effects of severely burned soil.

<u>Example of High Fire Severity Rating</u>–High soil heating, or deep ground char occurs where the duff is completely consumed and the top of the mineral soil is visibly reddish or orange on severely burned sites. Color of the soil below 1 cm is darker or charred from organic material that has heated or burned. The char layer can extend to a depth of 10 cm or more. Logs can be consumed or deeply charred, and deep ground char can occur under slash concentrations or under burned logs. Soil textures in the surface layers are changed and fusion evidenced by clinkers that can be observed locally. All shrub stems are consumed and only the charred remains or large stubs may be visible. Soil temperatures at 1 cm are greater than 250 C. Lethal temperatures for soil organisms occur down to depths of 9 to 16 cm.

Standards for detrimentally disturbed soils are to be applied to existing or planned activities that are available for multiple uses. These standards do not apply to areas with dedicated uses such as mines, ski areas, campgrounds, and administrative sites.

developed recreation

Recreation that requires facilities that in turn result in concentrated use of an area; for example, a campground or ski resort.

discountable effect

A discountable effect is one that is highly unlikely to occur. Therefore, no change to a resource, social, or economic condition would be expected from a discountable effect. Determination of a discountable effect may be based on scientific analysis, professional judgment, experience, or logic. Specific to the ESA and effects on Threatened, Endangered, Proposed or Candidate species, the appropriate determination for discountable effects on these species would be: "Is not likely to adversely affect". Refer to the "adverse effect" definition in this glossary.

dispersed recreation

Recreation that does not occur in a developed recreation setting, such as hunting, scenic driving, or backpacking.

disturbance

Any event, such as wildfire or a timber, sale that alters the structure, composition, or function of an ecosystem.

disturbance regime

Any recurring event that influences succession, such as fire, insects, ice storms, blow down, drought, etc.

down log

A portion of a tree that has fallen or been cut and left on the forest floor.

easement

A special-use authorization for a right-of-way that conveys a conditioned interest in National Forest System land, and is compensable according to its terms.

ecological integrity

In general, ecological integrity refers to the degree to which the elements of biodiversity and the processes that link them together and sustain the entire system are complete and capable of performing desired functions. Exact definitions of integrity are somewhat relative and may differ depending on the type of ecosystem being described.

ecological function

The activity or role performed by an organism or element in relation to other organisms, elements, or the environment.

ecological health

The state of an ecosystem in which ecological processes, functions and structure are adequate to maintain diversity of biotic communities commensurate with those initially found there.

ecological processes

The actions or events that link organisms (including humans) and their environment such as disturbance, successional development, nutrient cycling, productivity, and decay.

Ecological Reporting Unit (ERU)

In the Upper Columbia River Basin DEIS, a geographic mapping unit developed by the Science Integration Team to report information on the description of biophysical environments, the characterization of ecological processes, the discussion of past management activities and their effects, and the identification of landscape management opportunities.

economic efficiency

Producing goods and services in areas best suited for that production based on natural biophysical advantage or an area's ability to best serve regional demands of people.

economic dependency

The degree to which a community is dependent upon National Forest resources for employment and income.

economic region

A group of communities and their surrounding rural areas that are linked together through trade.

ecosystem

A naturally occurring, self-maintained system of living and non-living interacting parts that are organized into biophysical and human dimension components that are linked by similar ecological processes, environmental features, environmental gradients and that form a cohesive and distinguishable unit.

ecosystem health

A condition where the components and functions of an ecosystem are sustained over time and where the system's capacity for self-repair is maintained, such that goals for ecosystem uses, values, and services are met.

ecosystem management

Scientifically based land and resource management that integrates ecological capabilities with social values and economic relationships, to produce, restore, or sustain ecosystem integrity and desired conditions, uses, products, values, and services over the long term.

effective ground cover

Effective ground cover consists of vegetation, litter, and rock fragments larger than three-fourths inch in diameter. It is expressed as the percentage of material, other than bare ground, covering the land surface. It may include live vegetation, standing dead vegetation, litter, cobble, gravel, stones, and bedrock. The minimum effective ground cover, following the cessation of disturbance in an activity area, should be sufficient to prevent detrimental erosion. Minimum amounts of ground cover necessary to protect the soil from erosion are a function of soil properties, slope gradient and length, and erosivity (precipitation factor), and must be determined locally. Rock fragments, litter, and canopy might be treated independently, depending on the model used to estimate erosion hazard ratings.

electronic sites

See communication sites.

elements of ecosystem management

Essential building blocks of the biophysical (i.e., historical range of variability) and human dimension (i.e., demographics; tribal) components for Southwest Idaho Ecosystem Management Framework.

eligibility

For Wild and Scenic Rivers, an evaluation of river features to determine which rivers qualify to be studied for possible addition to the WSR System. Two screening criteria are used for a river segment to be eligible for inclusion in the WSR system. The river must be free-flowing, and it must possess one or more outstandingly remarkable scenic, recreational, geological, fish and wildlife, historical, cultural, ecological, or other value.

elk site distance

Distance at which vegetation hides 90 percent of an elk from view.

encroachments

Improvements occupied or used on National Forest System lands without authorization.

encumbrance

A claim, lien, right to, liability, or interest attached to and binding real property.

endangered species

Designated by the FWS or NMFS, an animal or plant species that has been given federal protection status because it is in danger of extinction throughout all or a significant portion of its natural range.

Endangered Species Act (ESA)

An act passed by Congress in 1973 intended to protect species and subspecies of plants and animals that are of "aesthetic, ecological, educational, historical, recreational, and scientific value". It may also protect the listed species' critical habitat, the geographic area occupied by or essential to the species. The FWS (USFWS) and NMFS share authority to list endangered species, determine critical habitat, and develop species' recovery plans.

enhance

In a Recreation Opportunity Spectrum context, enhance means to address or resolve setting inconsistencies in the adopted ROS strategy classifications.

entrainment

The drawing in and transport by the flow of a fluid. For example, fish can be entrained into a canal as water is diverted into the canal, if the diversion is not screened.

entrapment

To catch in, as in a trap. For example, the entrainment of fish into a diversion canal may result in fish entrapment in the canal should they not be able to return to the stream they were diverted from.

ephemeral stream

A stream or portion of a stream that flows only in direct response to precipitation or run-off events, and that receives little or no continuous water from springs, snow, or other sources. Unlike intermittent streams, an ephemeral usually does not have a defined stream channel or banks, and its channel is at all times above the water table.

eradicate (noxious weeds)

To eliminate a noxious weed from a given area, including all viable seeds and vegetative propagules.

Essential Fish Habitat (EFH)

EFH is broadly defined by the Magnuson-Stevens Act as, "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity". This language is interpreted or described in the 1997 Interim Final Rule [62 Fed. Reg. 66551, Section 600.10 Definitions] -- Waters include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include historic areas if appropriate. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities. Necessary means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem. "Spawning, breeding, feeding, or growth to maturity" covers a species" full life cycle. Federal agencies are required, under '305(b)(2) of the MSA and its implementing regulations (50 CFR 600 Subpart K), to consult with NMFS regarding actions that are authorized, funded, or undertaken by that agency that may adversely affect EFH).

essential habitat

Used to describe habitat of listed species under ESA, but not designated as "critical habitat". Essential habitat has all the important elements of habitat necessary to sustain a species.

exotic species

Animals or plants that have been introduced from a distant place and are non-native to the area of introduction.

facility

Structures needed to support the management, protection, and utilization of the National Forests, including buildings, utility systems, bridges, dams, communication system components, and other constructed features. There are three categories of facilities: recreation, administrative, and permitted.

family

A collection of focal species that share similarities in source habitats, with the similarities arranged along major vegetative themes

fg (foreground)

The visual distance zone relating to the detailed landscape found within 0 to 0.25 to 0.5 mile from the viewer.

fine filter (conservation) approach

Focuses on individual species that are assumed to be inadequately protected under the coarse-filter or meso-filter conservation approach. Typically this includes threatened or endangered species under the Endangered Species Act (ESA) or those considered Regionally sensitive by the Intermountain Regional Forester.

fine-scale

Used to define a landscape area varying in size from a 6th-field HU to a combination of 5th-field HUs, approximately 10,000 to 100,000 acres.

fire-adapted ecosystem

An ecosystem with the ability to survive and regenerate in a fire-prone environment.

Fire Management Plans

A strategic plan that defines a program to manage wildland and prescribed fires and documents the Fire Management Program described in the approved Forest Plan.

fire regimes

The characteristics of fire in a given ecosystem, including factors such as frequency, intensity, severity, and patch size. The terms used for the different fire regimes are: Nonlethal, Mixed1, Mixed2, and Lethal. Nonlethal fires are generally of lowest intensity and severity with the smallest patches of mortality, while lethal fires are generally of highest intensity and severity with the largest patches of mortality. The others fall in between.

fire intensity

The effects of fire on the above-ground vegetation generally described in terms of mortality.

fire severity

Fire effects at and below the ground surface. Describes the impacts to organic material on the ground surface, changes to soils, and mortality of below-ground vegetative buds, roots, rhizomes, and other organisms.

fire suppression tactics

The tactical approaches regarding suppression of a wildland fire. These range from Control, Confine, Contain, and Monitor. Control is the most aggressive tactic, while Monitor is the least.

fire use

The combination of wildland fire use and prescribed fire application to meet resource objectives.

FIREWISE

A public education program developed by the National Wildland Fire Coordinating Center that assists communities located in proximity to fire-prone lands.

floodprone area width

The area that would be expected to be covered by water if the wetted stream depth were twice bank full height, determined at the deepest part on a given transect. This width is then extrapolated over the length of the stream reach by averaging several random transects taken within the project area.

fluvial fish

Fish that migrate, but only within a river system. Bull trout that migrate into larger river systems.

focal species

Species that represent the varying characteristics of a landscape’s attributes that must be represented in the landscape (Lambeck 1997).

forage

Plant material (usually grasses, forbs, and brush) that is available for animal consumption.

forbs

Broadleaf ground vegetation with little or no woody material.

forest development road

See National Forest System road.

forest development trail

As defined in 36 CFR 212.1 and 261.2 (FSM 1013.4), a trail wholly or partly within or adjacent to and serving National Forests and other areas administered by the Forest Service that has been included in the forest development transportation plan.

forest development transportation plan

The plan for the system of access roads, trails, and airfields needed for the protection, administration, and use of National Forests and other lands administered by the Forest Service, or the development and use of resources upon which communities within or adjacent to National Forests are dependent (36 CFR 212.1).

forest highway

A designated forest road under the jurisdiction of, and maintained by, a public authority that is subject to the Highway Safety Act. The planning process is a cooperative effort involving the State(s), Forest Service, and the Federal Highway Administration. The location and need for improvements for these highways depend on the relative transportation needs of the various element of the National Forest System (23 CFR 660.107). The determination of relative needs involves the analysis of access alternatives associated with Forest Service programs and general public use. The basis for access needs is established in the Forest Plan. (FSM 7740.5 and 7741.)

forest stand

A contiguous group of trees sufficiently uniform in age class distribution, composition and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit, such as mixed, pure, even-aged, and uneven-aged stands. A stand is the functional unit of silviculture reporting and record-keeping. Stand may be analogous to Activity Area. In the Intermountain Region, contiguous groups of trees smaller than 5 acres are not recorded or tracked. (Definitions, FSH 2470, 08-13-2004.)

forested stringers

Stands of forested vegetation that are long and narrow and surrounded by non-forested vegetation. Stringers often provide high value habitat for big game and other wildlife species because they are the only hiding or thermal cover in the immediate area.

forested vegetation

Refers to lands that contain at least 10 percent canopy cover by forest trees of any size, or land that formerly had forest tree cover and is presently at an early seral cover type.

forest system trail

See forest development trail.

forest telecommunications system

All equipment and related facilities used for the purpose of Forest communication. This includes but is not limited to radio, voice, data, and video communications.

forest transportation atlas

An inventory, description, display, and other associated information for those roads, trails, and airfields that are important to the management and use of National Forest System lands, or the development and use of resources upon which communities within or adjacent to the National Forests depend.

forest transportation facility

A classified road, designated trail, or designated airfield—including bridges, culverts, parking lots, log transfer facilities, safety devices, and other transportation network appurtenances—under Forest service jurisdiction that is wholly or partially within or adjacent to National Forest System lands.

forest transportation system management

The planning, inventory, analysis, classification, recordkeeping, scheduling, construction, reconstruction, maintenance, decommissioning, and other operations taken to achieve environmentally sound, safe, cost-effective, access for use, protection, administration, and management of National Forest System lands.

fragmentation

The splitting or isolation of habitat into smaller patches because of human actions. Habitat can be fragmented by management activities such as timber harvest and road construction, and changes such as agricultural development, major road systems, and reservoir impoundments.

fragmented population

The splitting or isolation of populations into smaller patches because of anthropogenic or natural causes.

free flowing

Existing or flowing in a natural condition without impoundment, diversion, straightening, riprapping, or other modification in the waterway.

function

The flow and interaction of abiotic and biotic nutrients, water, energy, or species.

geoclimatic setting

The geology, climate (precipitation and temperature), vegetation, and geologic processes (such as landslides or debris flows) that are characteristic of a place; places with these similar characteristics are said to have the same geoclimatic setting.

Geographic Information System (GIS)

A GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information.

Geomorphic Integrity (GI)

Geomorphic integrity is an assessment and comparison of existing soil-hydrologic conditions with historical conditions that existed before Euro-American settlement. Upland, riparian, and stream conditions are assessed to determine how their integrity and resilience may have changed due to effects from past or current human-caused (road construction, timber harvest, livestock grazing, etc.) or natural (wildfire, floods, etc.) disturbance. Relative integrity ratings are assessed at the subwatershed scale and based on the geomorphic resilience of streams and wetland/riparian areas, and the ability of the system to absorb and store water.

geomorphology

The study of land forms. Also, a natural physical process that is responsible for the movement and deposition of organic and inorganic materials through a watershed under the influence of gravity or water (either on a hillslope or in a stream channel).

goal

As Forest Plan management direction, a goal is a concise statement that helps describe a desired condition, or how to achieve that condition. Goals are typically expressed in broad, general terms that are timeless, in that there are no specific dates by which the goals are to be achieved. Goal statements form the basis from which objectives are developed.

goods and services

The various outputs produced by forest and rangeland renewable resources. The tangible and intangible values of which are expressed in market and non-market terms. (36 CFR 219)

guideline

As Forest Plan management direction, a guideline is a preferred or advisable course of action generally expected to be carried out. Deviation from compliance does not require a Forest Plan amendment (as with a standard), but rationale for deviation must be documented in the project decision document.

habitat

A place that provides seasonal or year-round food, water, shelter, and other environmental conditions for an organism, community, or population of plants or animals.

habitat family

See family.

habitat security

The protection inherent in any situation that allows big game to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other human activity. The components of security may include, but are not limited to: vegetation, topography, road density, general accessibility, hunting season timing and duration, and land ownership. Habitat security is area specific, while hiding cover (see definition below) is site specific.

habitat type

An aggregation of all land areas potentially capable of producing similar plant communities at climax (the end of secondary succession).

hardening

Used in the context of facility management, hardening refers to improvements, usually to the surfacing of roads, trails, campsite areas, and facility access areas, to reduce soil erosion and/or sedimentation in nearby watercourses. These improvements can include paving, gravel surfacing, or a number of other soil stabilization products and techniques.

head month

One head month is equal to 1 month's use and occupancy of the range by one animal. For grazing fee purposes, it is a month's use and occupancy of range by one weaned or adult cow with or without calf, one bull, one steer, one heifer, one horse, one burro, or one mule; or five sheep or five goats.

heritage program

The Forest Service program that encompasses all aspects of cultural resource management, including both project and non-project resource inventory, evaluation, mitigation, curation, interpretation, public participation and education, protection and monitoring, and support to other resources.

hibernaculum

Winter residence, or any natural covering for protecting organisms during the winter. This term is often used for bat wintering and roosting areas, which may include caves, mine adits, or loose tree bark.

hiding cover

Vegetation capable of hiding 90 percent of an adult elk or deer from a human's view at a distance equal to or less than 200 feet.

hierarchy

A general integrated system comprising two or more levels, the higher controlling to some extent the activities of the lower levels; a series of consecutively subordinate categories forming a system of classification.

historical emissions

The amount of smoke assumed to be produced annually or decadally, based on the number of acres burned in each historical fire regime. Used to provide a reference for current conditions.

Historical Range of Variability (HRV)

The natural fluctuation of healthy ecosystem components over time. In this document, HRV refers to the range of conditions and processes that likely occurred prior to settlement of the area by people of European descent (around the mid-1800s), and that would have varied within certain limits over time.

historic property

Any prehistoric or historic district, site, building, structure, or object included on, or eligible for inclusion on the National Register, including artifacts, records, and material remains related to such a property or resource.

human dimensions

Refers to social and economic components of an ecosystem.

hydrologic

Refers to the properties, distribution, and effects of water. "Hydrology" is the study of water; its occurrence, circulation, distribution, properties, and reactions with the environment.

Hydrologic Unit Code (HUC)

A hierarchal coding system developed by the U.S. Geological Service to map geographic boundaries of watersheds of various sizes.

hydric

Wet or moist conditions. Can refer to a habitat characterized by, or a species adapted to wet or moist conditions, rather than mesic (moderate) or xeric (dry) conditions.

Idaho Department of Water Resources Comprehensive Water Plan

State legislation provides for the development of a comprehensive state water plan that may include protected rivers designated either as natural or recreational rivers. The legislative purpose states that selected rivers possessing outstanding fish and wildlife, recreational, aesthetic, historic, cultural, natural, or geologic values should be protected for the public benefit and enjoyment. The legislation provides that a waterway may be designated as an interim protected river prior to the preparation of the comprehensive plan for the waterway.

impinge

To strike or dash, especially with a sharp collision. For fish, impingement, or physical contact with screen material, can cause some level of injury and/or mortality. Fish impingement onto a screen face can usually be avoided with proper consideration of diversion design hydraulics. Fish screen criteria used in the Northwest specifies that approach velocity must be less than 0.4 feet per second to adequately protect salmonid fry.

indicator

In effects analysis, a way or device for measuring effects from management alternatives on a particular resource or issue.

Infish

Interim Inland Native Fish Strategy for Intermountain, Northern, and Pacific Northwest Regions (USDA Forest Service).

infrastructure

The facilities, utilities, and transportation systems needed to meet public and administrative needs.

in lieu lots (*Sawtooth only*)

Lots that are permitted to recreation residence tract permittees in lieu of existing lot permits that cannot be renewed due to a change in land use or allocation, etc. See FSH 2709.11, Chapter 2721.23f.

inner gorge

Steep valley walls that bound a stream reach. Common in areas of stream downcutting or geologic uplift. More commonly found on the costal and cascade ranges.

insignificant effect

An insignificant effect is one that cannot by detected, measured, or evaluated in any meaningful way. Therefore, no change to a resource, social, or economic condition would be expected from an insignificant effect. Determination of an insignificant effect may be based on scientific analysis, professional judgment, experience, or logic.

Specific to the ESA and effects on Threatened, Endangered, Proposed or Candidate species, an insignificant effect can never reach the scale or magnitude where a species take occurs. The appropriate effects determination for insignificant effects on these species would be: "Is not likely to adversely affect". Refer to the "adverse effect" definition in this glossary.

integrated weed management

A multi-disciplinary, ecological approach to managing weed infestations involving the deliberate selection, integration, and implementation of effective weed control measures with due consideration of economic, ecological, and sociological consequences.

interior exclusion

A parcel of non-National Forest System land within the Forest boundary that can be acquired without having Congress change the exterior Forest boundary.

interim management direction

For Wild and Scenic Rivers, the identified outstandingly remarkable values are afforded adequate protection, subject to valid existing rights. Affording adequate protection requires sound resource management decisions based on NEPA analysis. Protective management may be initiated by the administering agency as soon as eligibility is determined. Specific management prescriptions for eligible river segments provide protection to free-flowing values, river-related values, and classification impacts.

intermittent stream

A stream or portion of a stream that flows only in direct response to precipitation or seasonal run-off, and that receives little or no water from springs or other permanent sources. Unlike ephemeral streams, an intermittent has well-defined channel and banks, and it may seasonally be below the water table.

Inventoried Roadless Area (IRA)

An area that:

- is larger than 5,000 acres or, if smaller, contiguous to a designated wilderness or primitive area;
- contains no improved roads maintained for travel by standard passenger-type vehicles;
- is characterized by a substantially undeveloped character; and
- has been inventoried by the Forest Service for possible inclusion in the Wilderness Preservation System.

These areas include those identified in a set of IRA maps—contained in the Forest Service Roadless Area Conservation Final EIS, Volume 2 (November 2000), and held at the National headquarters of the Forest Service—or any update, correction, or revision of those maps. Refer to Table C-5 in Appendix C to the Forest Plan Revision Final EIS for a listing of IRAs, their location, and acreage.

isolated cabin

Cabins on sites not planned or designated for recreational cabin purposes. These cabins are authorized by special-use permit.

isolated population

A population that is not connected as a result of barriers from anthropogenic or natural causes. For fish species, the migratory form is absent and the population is isolated to local streams or a small watershed.

Key Ecological Functions (KEF)

(KEF) are the set of ecological roles performed by a species in its ecosystem (Marcot and Vander Heyden 2004). These ecological roles are the main ways organisms use, influence, and alter their biotic and abiotic environments.

Key Environmental Correlates (KEC)

(KEC) are biotic or abiotic habitat elements that species use on the landscape to survive and reproduce.

key watershed

Governor's Bull Trout Conservation Plan (7/96) - A watershed that has been designated as critical to long-term persistence of regionally important bull trout populations. Designation is based on existing bull trout population biology and not land ownership. Land management actions emphasize maintenance or recovery of bull trout. Key watersheds must:

- be selected to provide all critical habitat elements;
- be selected from best available habitat, with best opportunity to be restored to high quality;
- provide for replication of strong subpopulations within their boundaries;
- be large enough to incorporate genetic and phenotypic diversity, and small enough that subpopulations interconnect;
- be distributed throughout bull trout historic range.

ladder fires

Consume material between low-level vegetation and tree canopies, such as small trees, downed logs, and vines.

ladder fuels (or a fuel ladder)

A firefighting term for live or dead vegetation that allows a fire to climb up from the forest floor into the tree canopy.

landscape

Heterogenous land area composed of a cluster of interacting ecosystems that are repeated in similar form throughout. When defined for landscape scale assessment, the spatial extent should be large enough to allow natural disturbance processes to operate.

landscape scale assessment

An assessment done for a landscape area varying in size from a 6th-field HU to a combination of 5th-field HUs, or approximately 10,000 to 100,000 acres. This scale is synonymous with “fine-scale analysis.” Ecosystem Analysis at the Watershed Scale (EAWS) occurs at this scale.

landslide

Any downslope mass movement of soil, rock, or debris.

landslide hazard

The calculated probability of slope failure (Prellwitz 1994). In practical field use, it is a relative (e.g., low, moderate, or high) estimate of the potential susceptibility for landslide occurrence.

landslide prone area

An area with a tendency for rapid soil mass movements typified by shallow, non-cohesive soils on slopes where shallow translational planar landsliding phenomena is controlled by shallow groundwater flow convergence. The initiation is often associated with extremely wet periods, such as rain-on-snow events. It does not include slow soil mass movements that include deep earth-flows and rotational slumps, nor snow avalanche or rock fall areas. Translational slides have been documented as the dominant form of landslides for the majority of the Forest.

landtype

A portion of the landscape resulting from geomorphic and climatic processes with defined characteristics having predictable soil, hydrologic, engineering, productivity, and other behavior patterns.

landtype associations

A grouping of landtypes similar in general surface configuration and origin.

leasable minerals

Leasable minerals are normally those “soft rock minerals” related to energy resources, such as oil, gas, coal, oil shale, tar sands, etc. Some “hard rock” minerals can become leasable because of land status, i.e., acquired mineral estate.

legacy trees

Defined as older trees that survived recent disturbances and are a relic of historical communities. These trees are important because they exhibit definitive characteristics and contribute to ecosystem function in a different manner than younger trees.

lifestyle

The way people live.

local population

For bull trout, this is a group that spawns within a particular stream or portion of a stream system. Multiple local populations may exist within a core area. The smallest group of fish that is known to represent an interactive reproductive unit will be considered a local population. For most waters where specific information is lacking, a local population may be represented by a single headwater tributary or complex of headwater tributaries.

Gene flow may occur between local populations (e.g., those within a core population), but is assumed to be infrequent compared to that among individuals within a local population (USDI FWS 2002).

local road

Roads that connect terminal facilities with Forest collector or arterial roads, or public highways. The location and standard are usually controlled by topography and specific resource activities rather than travel efficiency. Forest local roads may be developed and operated for long-term, intermittent, short-term, or temporary service.

locatable minerals

Locatable minerals are normally those "hard rock minerals" that are either base or precious metals, and that are open and available for appropriation under the General Mining Laws. In Idaho, locatable minerals often include gold, silver, lead, zinc, copper, antimony, cadmium, cobalt, molybdenum, etc.

log

Coarse woody debris with diameters ≥15 inches (≥12 inches for PVG 10) and lengths ≥6 feet.

long-term effects

Effects that last 15 years or longer.

macrovegetation

A unit of vegetation for analysis above the site-scale.

Magnuson-Stevens Act

Public Law 94-265, as amended through October 11, 1996. Ocean fisheries are managed under the Magnuson Fishery Conservation and Management Act of 1976 (also called the Magnuson-Stevens Act [MSA]). The Act provided NMFS legislative authority for fisheries regulation in the United States, in the area between three-miles to 200 miles offshore and established eight Regional Fishery Management Councils (Councils) that manage the harvest of the fish and shellfish resources in these waters. In 1996, the MSA was re-authorized and changed by amendments to emphasize the sustainability of the nation's fisheries and establish a new standard by requiring that fisheries be managed at maximum sustainable levels and that new approaches be taken in Essential Fish Habitat conservation.

maintain

When used in a management goal or objective for biological and physical resources, "maintain" means to stay within the range of desired conditions. The context is that resource conditions are already within their desired range, and the expectation is that management actions to achieve goals or objectives maintain resource conditions within their desired range in the planning period.

When used in a standard or guideline for biological and physical resources, “maintain” means that current conditions are neither restored or degraded, but remain essentially the same. The context is that resource conditions may or may not be in their desired range, and the expectation is that maintenance management actions do not degrade or restore current conditions.

This is an important distinction because most goal or objective management actions cannot be designed to achieve desired conditions for all resources. Specific actions are designed to achieve desired conditions for specific resources, but may simultaneously have effects on those or other resources. The intent behind “maintain” when used in a standard or guideline is to keep those effects from *degrading* resource conditions; i.e., moving conditions from functioning properly to functioning at risk, or making conditions measurably worse when they are currently functioning at risk or not functioning properly. See definitions for “degrade” and “restore” in this Glossary.

For Recreation, Scenic Environment, Heritage, Lands, Special Uses, and Wilderness resources, “maintain” means to continue a current or existing practice, activity, management strategy, resource condition, or level of use.

For physical improvements managed under the Roads and Facilities programs, “maintain” means to keep the road or facility in a usable condition.

For resource inventories, databases, plans, maps, or other documents related to all resources, “maintain” means to periodically update these items to reflect current conditions and/or status.

management action or activity

As identified in FSM 2527.05 - Any Federal activity including (1) acquiring, managing, and disposing of Federal lands and facilities, (2) providing federally undertaken, financed, or assisted construction or improvements, and (3) conducting Federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

An exception to this definition is fire suppression, which is considered an emergency response action rather than a management action. FSM 2671.45f, part 2(a) states, “Human safety is the highest priority for every emergency response action (see FSM 5130.3 for related direction on the wildland fire suppression policy and the priority for the safety of firefighters, other personnel, and the public).”

management area

A land area with similar management goals and a common prescription, as described in the Forest Plan.

Management Indicator Species (MIS)

Representative species whose habitat conditions or population changes are used to assess the impacts of management activities on similar species in a particular area. MIS are generally presumed to be sensitive to habitat changes.

Management Prescription Category (MPC)

Management prescriptions are defined as, "Management practices and intensity selected and scheduled for application on a specific area to attain multiple use and other goals and objectives" (36 CFR 219.3). MPCs are broad categories of management prescriptions that indicate the general management emphasis prescribed for a given area. They are based on Forest Service definitions developed at the national level, and represent management emphasis themes, ranging from Wilderness (1.0) to Concentrated Development (8.0). The national MPCs have been customized during Forest Plan revision to better fit the needs and issues of the Southwest Idaho Ecogroup Forests.

management strategies

For Forest Plan revision, this term is used to encompass both management direction and management emphasis (especially MPCs) that set the stage and sideboards for future actions or activities that may occur during the planning period. The strategies do not include any specific actions or activities, but rather focus on the general types and intensities of activities that could occur, given the management direction and prescriptions proposed under the Forest Plan alternatives.

mass stability

The susceptibility of soil masses to stress. Gravitational stresses, on slopes, changes of state (solution), and soil particles cohesion are the main factors involved (USDA Forest Service 1973).

matrix

In landscape ecology, a matrix is usually the most extensive and connected element present in a landscape. Patches and corridors are often imbedded in the matrix. The matrix may play a dominant role in the functioning of the landscape without being the most extensive landscape element. Determining the matrix in a landscape depends either on connectivity, dominance, or function. Each landscape should be evaluated individually.

matrix management

A concept that asserts biodiversity and ecological function can be sustained in working landscapes as long as attention is given to maintaining habitat across the full range of spatial scales.

Maximum Modification (MM)

Category of Visual Quality Objective (VQO) where human activity may dominate the characteristic landscape, but should appear as a natural occurrence when viewed as background.

meaningful measures

A recreation, wilderness, and heritage resources management process that:

- Establishes quality standards, based on validated visitor preferences and expectations, that are used to produce desired services and facilities;

- Accounts for the costs to manage resources;
- Establishes priorities for current budgets; and
- Links recreation resources to other management responsibilities of the agency

measurable change

A measurable change is one that can be meaningfully detected, measured, or evaluated using accepted analysis or monitoring methods. A measurable change would not result from an insignificant or discountable effect.

mesic

Moderate moisture conditions. Can refer to a habitat characterized by, or a species adapted to moderate moisture conditions rather than hydric (wet) or xeric (dry) conditions.

mesofilter (conservation) approach

Used to assess the conservation value of ecosystems and landscapes that lie conceptually between the coarse-filter and fine-filter. The core idea of this approach is that by conserving representation of key habitat elements important to species but too fine to address through the coarse-filter, many species will protected without the necessity of considering them individually. Examples of mesofilter approaches include providing direction to conserve elements such as logs or snags.

metapopulation

A group or collection of semi-isolated subpopulations of organisms that are interconnected and interact both physically and genetically. A population comprising local populations that are linked by migrants, allowing for recolonization of unoccupied habitat patches after local extinction events. For anadromous fish species, “metapopulation” is the population within a 3^{rd} field HU, i.e., Snake River Evolutionarily Significant Unit.

mid-scale

An area varying in size from a U.S. Geological Survey 4th-field hydrologic unit (HU) to groups of 4th-field HUs, approximately 500,000 to 5,000,000 acres. Subbasin Review and Land Management Planning unit analyses occur at this scale.

middleground (mg)

The visual distance zone between the foreground and the background in a landscape, located from 0.25 – 0.5 mile to 3-5 miles from the viewer.

mitigate

To avoid, minimize, reduce, eliminate, rectify, or compensate for impacts or degradation that might otherwise result from management actions.

mitigation measures

Modifications of actions that: (1) avoid impacts by not taking a certain action or parts of an action in a given area of concern; (2) minimize impacts by limiting the degree or magnitude of the actions and its implementation; (3) rectify impacts by repairing, rehabilitating, or restoring the affected environment; (4) reduce or eliminate impacts over time by preservation and maintenance operations during the life of the action; or (5) compensate for impacts by replacing or providing substitute resources or environments.

Modification (M)

Category of Visual Quality Objective (VQO) where human activity may dominate the characteristic landscape but must, at the same time, follow naturally established form, line, color, and texture. It should appear as a natural occurrence when viewed in foreground or middleground.

monitoring

The process of collecting information to evaluate if objectives and anticipated results of a management plan are being realized, or if implementation is proceeding as planned.

National Environmental Policy Act (NEPA)

The National Environmental Policy Act of 1969 requires environmental analysis and public disclosure of federal actions.

National Fire Plan

Strategic and implementation goals, budget requests and appropriations, and agency action plans to address severe wildland fires, reduce fire impacts on rural communities, and ensure effective firefighting capability in the future.

National Fire Plan communities

Those communities identified in the January and August 2001 Federal Register as "Urban Wildland Interface Communities" for each state as part of the National Fire Plan.

National Forest Scenic Byway

A road on National Forest System land that has been designated by the Chief of the Forest Service for its exceptional scenic, historic, cultural, recreational, or natural resources.

National Forest System road

A classified Forest road under the jurisdiction of the Forest Service. The term "National Forest System road" is synonymous with the term "forest development road" as used in 23 U.S.C. 205.

National Historic Preservation Act (NHPA)

A Federal Act, passed in 1966, which established a program for the preservation of additional historic properties throughout the nation and for other purposes, including the establishment of the National Register of Historic Places, the National Historic Landmarks designation, regulations for supervision of antiquities, designation of the State Historic Preservation Offices (SHPO), guidelines for federal agency responsibilities, technical advice, and the establishment of the Advisory Council on Historic Preservation.

National Register of Historic Places (NRHP)

A list of cultural resources that have local, state, or national significance maintained by the Secretary of the Interior.

National Wilderness Preservation System

All lands managed under the Wilderness Act and subsequent wilderness designations, irrespective of the department or agency having jurisdiction.

Nationwide Rivers Inventory (NRI)

The NRI provides a database for potential additions to the National Wild and Scenic River System. The NRI is maintained and updated by the National Park Service. Just because a segment is listed on the NRI or is on other source lists does not necessarily indicate eligibility, and conversely, absence from any such list or document does not indicate a river's ineligibility.

native species

Animals or plants that originated in the area in which they live. Species that normally live and thrive in a particular ecosystem.

natural disturbance

Any relatively discrete event in time that is not a management action or activity, that disrupts ecosystems, vegetative communities, or species populations. Natural disturbances may or may not be functioning within their historical range of variability.

natural-appearing landscape character

"Natural-appearing" refers to a visual landscape character that has resulted from a combination of geological processes, climate, disturbance events, and ecological succession.

networks

Highly interconnected features within landscapes. Network properties of connectivity are important for ensuring species dispersal, habitat colonization and hence persistence. Habitat networks are relevant when considering the movement of species and have been particularly useful for understand riparian systems.

new facilities

Facilities resulting from new construction in locations where no facilities previously existed.

new road construction

Activity that results in the addition of forest classified or temporary road miles (36 CFR 212.1).

no action (alternative)

The most likely condition expected to exist if current management practices continue unchanged. The analysis of this alternative is required for federal actions under NEPA.

non-discretionary actions

Land management activities initiated from outside the National Forest Service—such as mining proposals, special-use permitted activities, or suppression tactics for life-threatening situations.

non-forested vegetation

Lands that are not capable of supporting at least 10 percent canopy cover of forest trees of any size. Land that formerly had at least 10 percent tree canopy cover and is presently in an early seral cover type is still considered forested vegetation.

Northwest Power Planning Council Protected Rivers

The Council has designated certain river reaches in the Columbia River Basin as "protected areas". These are areas where the Council believes hydroelectric development would have unacceptable risks of loss to fish and wildlife species of concern, their productive capacity, or their habitat. Protected rivers are those reaches or portions of reaches listed on the “Protected Areas List”.

noxious weed

A state-designated plant species that causes negative ecological and economic impacts to both agricultural and other lands within the state.

nutrient cycling

Circulation or exchange of elements such as nitrogen and carbon between non-living and living portions of the environment. Includes all mineral and nutrient cycles involving mammals and vegetation.

objective

As Forest Plan management direction, an objective is a concise time-specific statement of actions or results designed to help achieve goals. Objectives form the basis for project-level actions or proposals to help achieve Forest goals. The time frame for accomplishing objectives, unless otherwise stated, is generally considered to be the planning period, or the next 10 to 15 years. More specific dates are not typically used because achievement can be delayed by funding, litigation, environmental changes, and other influences beyond the Forest's control.

Off Highway Vehicle (OHV)

Any motorized vehicle designed for or capable of cross-country travel on or immediately over land, water, snow, ice, marsh, swampland, or other natural terrain. These include common vehicles such as motorcycles, ATVs, snowmobiles, 4-wheel drive vehicles, and trail bikes.

old forest

Old forest is a component of the Large Tree Size Class, with the following general characteristics: a variability in tree size that includes old, large trees with signs of decadence, increasing numbers of snags and coarse woody debris, canopy gaps, and understory patchiness. There are two broad types of old forest—single-storied and multi-storied. Single-storied old forest is characterized by a single canopy layer of large or old trees. These stands generally consist of widely spaced, shade-intolerant species, such as ponderosa pine and western larch, that are adapted to a nonlethal, high frequency fire regime. Multi-storied old forest is characterized by two or more canopy layers, with large or old trees in the upper canopy. These stands can include both shade-tolerant and shade-intolerant species, and are typically adapted to a mixed regime of both lethal and nonlethal fires. Because old forest characteristics have been aggregated into two basic categories, it is generally easier to identify, monitor, and compare the characteristics of these old forest types with desired vegetative conditions than it is with "old growth" (see old growth definition, below).

old-forest habitat

See old forest.

old growth

Old growth is a defined set of forested vegetation conditions that reflect late-successional characteristics, including stand structure, stand size, species composition, snags and down logs, and decadence. Minimum amounts of large trees, large snags, and coarse wood are typically required. Definitions of old growth generally vary by forest type, depending on the disturbance regimes that may be present. Also, within a given forest type, considerable variability can exist across the type's geographical range for specific ecological attributes that characterize late seral and climax stages of development. This variability among and within multiple (often 10-20) forest types makes old growth characteristics difficult to identify, monitor, and compare to desired vegetative conditions.

opening (created)

Related to vegetation management, openings are created only by planned, even-aged, regeneration timber harvesting. Only those even-aged timber harvest practices that reduce stocking levels to less than 10 percent create openings. Canopy cover will normally be used to determine stocking levels. Residual stands of mature trees will generally have less than 10 percent stocking when fewer than 10 to 15 trees per acre remain following harvest. Even-aged harvest practices that may result in the creation of openings include clear-cutting, reserve tree clear-cutting, seed tree cutting, shelterwood seed cutting, and overstory removal.

operable forests

Forests where wood product operations are currently functioning and generating outputs.

ordinary high water mark

The mark on all watercourses that will be found by examining the beds and banks and ascertaining where the presence and action of waters are so common and continuous in ordinary years as to mark upon the soil a character distinct from that of the abutting upland.

Outstandingly Remarkable Value (ORV)

In the Wild and Scenic Rivers Act, river values identified include scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values and their immediate environments. The Act does not further define outstandingly remarkable values. The Intermountain Region defines outstandingly remarkable value as, "Characteristic of a river segment that is judged to be a rare, unique, or exemplary feature that is significant at a regional or national scale".

Pacfish

Interim strategies for managing Pacific anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California.

Pacific Northwest Rivers Study

A component of the Northwest Power Planning Council's Pacific Northwest Hydro Assessment Study. The study produced a comprehensive rating for five major classes of data including Resident Fish, Wildlife, Cultural Features, Natural Features, and Recreation. The study also identified reaches already protected by other State or Federal institutional constraints. Ratings were on a scale of 1-5, where 1 represented outstanding resource, 2 a substantial resource, 3 a moderate resource, 4 a limited resource, and 5 an unknown or absent resource.

Partial Retention (PR)

A category of Visual Quality Objective (VQO) where human activities may be evident to the casual Forest visitor but must remain subordinate to the characteristic landscape.

parturition

The act or process of giving birth

Passport In Time

A nationwide Forest Service program that provides opportunities for "hands-on" public involvement in cultural resources management, such as archeological excavations, historical research, and oral history collection.

patches

In landscape ecology, patches are spatial units at the landscape scale. Patches are areas surrounded by matrix, and may be connected by corridors. Patch size can affect species habitat, resource availability, competition, and recolonization. Patch shape and orientation also play an important ecological role. Interpatch distance refers to the distance between two or more patches

patchworks

Arrangement, size and pattern of distinct, interacting patches that can be used to predict biodiversity and species persistence.

patchy habitat

Habitat that is naturally isolated from near-by pieces that are similar. Habitat that is patchy should not be referred to a being fragmented because it is not a man-induced condition.

pattern, or spatial pattern

The spatial arrangement of landscape elements (patches, corridors, matrix) that determines the function of a landscape as an ecological system.

perennial stream

A stream that typically maintains year-round surface flow, except possibly during extreme periods of drought. A perennial stream receives its water from springs or other permanent sources, and the water table usually stands at a higher level than the floor of the stream.

Persons At One Time (PAOT)

A recreational capacity measurement term indicating the number of people who can use a facility or area at one time.

population

The people, wildlife, fish, or plants that inhabit and reproduce in a specific area. Also, a group of individuals of the same species occupying a defined locality during a given time that exhibit reproductive continuity from generation to generation. For anadromous fish species, this is the population within a 4^{th} field HU.

potential classification

For Wild and Scenic Rivers, when rivers are considered for eligibility, river segments are tentatively classified either as wild, scenic, or recreational, based on the degree of access and amount of development along the river area.

potential outstandingly remarkable value assessment

For Wild and Scenic Rivers, a general look at each river, to determine if the resource values are below average, average, or above average. Rivers determined to contain at least one resource value that is above average will be evaluated in the eligibility process.

Potential Vegetation Group

A group of habitat types that share similar environmental characteristics, site productivity, and disturbance regimes.

preclude

To put a barrier before; hence, to shut out; to hinder; to stop; to impede. (The Collaborative International Dictionary of English v. 0.44).

prescribed fire

Any fire ignited by management actions to meet specific objectives.

prescription (fire)

Measurable criteria that define conditions under which a prescribed fire may be ignited, guide selection of appropriate management responses, and indicate other required actions. Prescription criteria may include safety, economic, public health, environmental, geographic, administrative, social, or legal considerations.

Preservation (P)

Category of Visual Quality Objective (VQO) that allows for ecological change only.

primitive

A Recreation Opportunity Spectrum classification for areas characterized by an essentially unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

priority wildlife habitats

Those habitats that have most decreased or changed from historic times. They can be used to rank the need for restoration or management emphasis.

priority watershed

Governor's Bull Trout Conservation Plan (7/96) - A watershed that is either in the best condition for this species or is most recoverable with the greatest opportunity for success. Priority watersheds can be classified as follows:

Focal - highly occupied, existing protection and maintenance, cost for protection is low, chance of success is high over the short term.

Adjunct - considerable restoration may be needed, riparian and in-channel restoration stand a good chance of succeeding, good opportunity for colonizing from adjacent habitat, restoration can improve adjacent refuge populations.

Nodal - critical to sustaining existing populations within the watershed, connected and accessible to migrating populations, restoration potential is high.

Critical Contributing Area - restoration is necessary to secure functional value for associated focal, adjunct, or nodal habitats.

Lost Cause - level of effort exceeds benefits.

private road

A road under private ownership authorized by an easement to a private party, or a road that provides access pursuant to a reserved or private right.

professional judgment

Intuitive conclusions and predictions dependent upon training; interpretation of facts, information, observations, and/or personal knowledge.

promote

In the context of recommended wilderness management, to take measures that actively encourage non-conforming uses within recommended wilderness. These measures would include the development or improvement of facilities and infrastructure within recommended wilderness in support of non-conforming uses. These measures would not include actions taken to reduce safety hazards and routine maintenance of existing facilities and infrastructure.

Properly Functioning Condition (PFC)

Properly Functioning Condition means that the resource condition is within the range of desired conditions.

proposed action

A proposal made by the Forest Service or other federal agency to authorize, recommend, or implement an action to meet a specific purpose and need.

public road

Any road or street under the jurisdiction of, and maintained by, a public authority and open to public travel [23 U.S.C. 101(a)].

RARE I and RARE II

Roadless area inventory processes, conducted by the Forest Service in 1972 and 1977, respectively, mandated by the Wilderness Act of 1964.

rear

To feed and grow in a natural or artificial environment.

reclamation (mine facilities)

Reclamation can include removing facilities, equipment, and materials; recontouring disturbed areas to near pre-mining topography; isolating and neutralizing, or removing toxic or potentially toxic materials; salvage and replacement of topsoil, and/or seedbed preparation, and revegetation.

recreation residences

Cabins on National Forest System lands that normally were established in tracts and built for recreation purposes with agency approval and supervision. These cabins are authorized by special use permit and are not the primary residences of the owners.

Recreation Opportunity Spectrum (ROS)

A framework for stratifying and defining classes of outdoor recreation environments, activities, and experience opportunities. The settings, activities, and opportunities for obtaining experiences are arranged along a continuum or spectrum divided into six classes--primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban.

recreational river

In the National Wild and Scenic River System, a river or river segment that is readily accessible by road or railroad, may have some development along their shorelines, and may have undergone some impoundment or diversion in the past.

Recreation Visitor Day (RVD)

Twelve hours of recreation use in any combination of persons and hours (one person for 12 hours, three persons for four hours, etc.).

redundant

Communities and ecosystems occur in multiple locations across a planning area in order to ensure large-scale disturbances or other threats that affect one or more locations do not jeopardize conservation targets.

reference

The range of a factor/indicator that is representative of its recent historical values prior to significant alteration of its environment resulting from unnatural disturbance. The reference could represent conditions found in a relic site or sites having little significant disturbances, but does not necessarily represent conditions that are attainable. The purposes of references are to establish a basis for comparing what currently exists to what has existed in recent history. References can be obtained through actual data, such as paired or well-managed watersheds, or through extrapolated techniques such as modeling. Sources of information include inventory and records, general land office and territorial surveys, settlers' and explores' journals, ethnographic records, local knowledge, and newspapers.

refugia

Watersheds or large areas with minimal human disturbance, having relatively high quality water and fish habitat, or having the potential of providing high-quality water and fish habitat with the implementation of restoration efforts. These high-quality water and fish habitats are well distributed and connected within the watershed or large area to provide for both biodiversity and stable populations (Quigley and Arbelbide 1997).

replacement facilities

Reconstruction of pre-existing facilities.

representative

Conditions within landscapes that provide the biological features and historical range of variability under which ecosystems evolved. The assumption of a representative approach is that providing a wide-range of conditions will sustain the greatest percentage of the species which utilize those characteristics.

resident fish

Fish that are non-migratory and spend their entire life cycle within a given freshwater area.

resilient, resiliency

The ability of a system to absorb disturbances before changing to a state or trajectory that is entirely new to the system. The ability to absorb disturbances depends on the health of states, functions and processes that facilitate recovery. Resiliency is one of the properties that enable the system to persist in many different states of successional stages. In human communities, refers to the ability of a community to respond to externally induced changes such as larger economic or social forces.

resistance-to-control hazard

Conditions that, given the same topography and weather, have a higher likelihood of becoming a crown fire, which in turn can lead to fire behavior that makes the fire difficult to control.

restoration

Management actions or decisions taken to restore the desired conditions of habitats, communities, ecosystems, resources, or watersheds. For soil, water, riparian, or aquatic resources, restoration may include any one or a combination of active, passive, or conservation management strategies or approaches.

restoration priority

A means used in this Forest Plan revision to prioritize water quality and aquatic restoration using beneficial uses, current condition, imperiled fish species, 303(d)-listed water bodies, and TMDL-assigned subbasins. This process also includes whether restoration should be active or passive based upon district-level properly functioning condition analyses for 6th level hydrologic units (subwatersheds).

restore

For biological and physical resources, restore means to repair, re-establish, or recover ecosystem functions, processes, or components so that they are moving toward or within their range of desired conditions.

For the Recreation, Scenic Environment, Heritage, Lands, Special Uses, Wilderness, Roads and Facilities resources, restore means to use management actions to re-establish desired resource conditions.

retard attainment of desired resource conditions

When an effect resulting from a management action, individually or in combination with effects from other management actions, within a specified area and time frame, measurably slows the recovery rate of existing conditions moving toward the range of desired resource conditions.

Retention (R)

A category of Visual Quality Objective (VQO) where human activities are not evident to the casual Forest visitor.

riparian areas or zones

Terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated with high water tables, and soils that exhibit some wetness characteristics.

Riparian Conservation Areas (RCAs)

Portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific goals, objectives, standards, and guidelines. RCAs include traditional riparian corridors, perennial and intermittent streams, wetlands, lakes, springs, reservoirs, and other areas where proper riparian functions and ecological processes are crucial to maintenance of the area's water, sediment, woody debris, nutrient delivery system, and associated biotic communities and habitat.

riparian ecosystems

The area of influence of the riparian ecological functions and processes that serve as a transition between terrestrial and aquatic ecosystems that includes: streams, lakes, wet areas, and adjacent vegetation communities and their associated soils which have free water at or near the surface; an ecosystem whose components are directly or indirectly attributed to the influence of water.

riparian function and ecological processes

The regulation and exchange of ecological processes and disturbances as they relate to geology, landform, climate and micro-climate, soil, water, vegetation and terrestrial and aquatic species in providing a range of habitats, their conditions and trends. Riparian functions and ecological processes can be affected by changes including among others: streambank and hillslope root strength, large wood recruitment to RCAs, nutrient input to streams, shading, water quality (sediment, nutrients, temperature) water yield and timing (including stream subsurface flow), migration barriers, vegetation composition and structure, and micro-climate (soil moisture, soil temperature, solar radiation, air temperature, relative humidity, wind speed).

Riparian Habitat Conservation Area (RHCAs)

To be used for the No Action Alternative only. As defined in Pacfish and Infish:

> *Fish-bearing streams* - 100-year floodplain, outer edges of riparian area, to top of inner gorge, 300 feet slope distance, or two site potential tree heights, whichever is greatest.
>
> *Perennial nonfish-bearing streams* - 100-year floodplain, outer reach of riparian area, to top of inner gorge, 150 feet slope distance, or one site potential tree height, whichever is greatest.
>
> *Intermittent streams (includes landslide-prone areas and wetlands less than 1 acre)* - top of inner gorge, extent of landslide-prone area, outer edges of riparian area, and for key watersheds one site potential tree height or 100 feet slope distance (whichever is greatest), and for non-key watersheds half site potential tree height or 50 feet slope distance (whichever is greatest).
>
> *Ponds, lakes, and wetlands greater than 1 acre* - outer edges of seasonally saturated soils, edge of riparian area, extent of any unstable soils, one site potential tree height, or 150 feet from maximum pool elevation, whichever is greatest.

risk

The danger that damage or loss will occur; for example, for landslides and other mass soil movements, risk is a measure of the socio-economic consequences (susceptibility to losses) of slope failure (Prellwitz 1994).

river segment

For Wild and Scenic River studies, a portion of the river area which has been delineated for evaluation and planning purposes that usually breaks at a change in river character, land status, or classification.

road

A motor vehicle travelway over 50 inches wide, unless designated and managed as a trail. A road may be classified, unclassified, or temporary.

road decommissioning

Activities that result in the stabilization and restoration of unneeded roads to a more natural state (36 CFR 212.1, FSM 7703).

road maintenance

The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective (FSM 7712.3).

road maintenance level

Road maintenance is classified in terms of the following levels:

- *Maintenance level 1* - Assigned to intermittent service roads during the time they are closed to vehicular traffic. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities.
- *Maintenance level 2* - Assigned to roads open for public or permitted use by high clearance vehicles. Passenger car traffic is not a consideration.
- *Maintenance level 3* - Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities.
- *Maintenance level 4* - Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Some roads may be paved and/or dust-abated.
- *Maintenance level 5* - Assigned to roads that provide a high degree of user comfort and convenience. These roads are normally paved.

road obliteration

Road decommissioning technique used to eliminate the functional characteristics of a travelway and re-establish the natural resource production capability. The intent is to make the corridor unusable as a road or a trail and stabilize it against soil loss, which can involve re-contouring and restoring natural slopes.

road reconstruction

Activity that results in improvement or realignment of an existing classified road as defined below:

(a) *Road Improvement* – Activity that results in an increase of an existing road's traffic service level expansion of its capacity, or a change in its original design function.
(b) *Road Realignment* – Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway (36 CFR 212.1).

roads subject to the Highway Safety Act

National Forest System roads open to use by the public for standard passenger cars. This includes roads with access restricted on a seasonal basis and roads closed during extreme weather conditions or for emergencies, but which are otherwise open for general public use.

roaded natural

A Recreation Opportunity Spectrum classification for areas characterized by a predominantly natural or natural-appearing environment with moderate evidence of the sights and sounds of people. Such evidence usually harmonizes with the natural environment. Interaction between users may be moderate to high, with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is allowed and incorporated into construction standards and design of facilities.

roadless area

See Inventoried Roadless Area.

rotational slides

Landslides that move along a surface of rupture that is curved and concave. Rotational slides are uncommon and occur infrequently within the Forest.

RS 2477 claim

A claim for a pre-existing road right-of-way based upon a mining law passed in 1866. The law was later repealed as a part of the Federal Land Policy and Management Act (FLPMA) of 1976.

RS 2339 claim

A claim for a pre-existing ditchline or other water transmission structure.

rural

ROS classification for areas characterized by a natural environment that has been substantially modified by development of structures, vegetative manipulation, or pastoral agricultural development. Resource modification and utilization practices may be used to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sound of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate user densities are present away from developed sites. Facilities for intensified motorized use and parking are available.

scale

Defined in this framework as geographic extent; for example broad, mid, fine or site scale.

Scenery Management System (SMS)

An updated system for the management of scenery resources designed to replace the Visual Management System (VMS) and instituted by the Forest Service in 1995. The SMS differs from the VMS in that:

- It increases the role of constituents throughout the inventory and planning process; and
- It borrows from and is integrated with the basic concepts and terminology of Ecosystem Management.

The SMS provides for improved integration of aesthetics with other biological, physical, and social/cultural resources in the planning process. It also incorporates different terminology and planning elements including Ecological Unit Description, Scenic Attractiveness, Scenic Integrity, Landscape Visibility, and Constituent Analysis. Under SMS, Scenic Integrity Objectives (SIOs) are established that define relative levels of deviation from the character valued by constituents for its aesthetic appeal. Implementation of SMS does not necessarily confer greater or less protection for scenic resources. It is merely a different system for managing them.

scenic river

In the National Wild and Scenic River System, a river or river segment that may be accessible in places by roads, but the shorelines or watersheds are largely primitive and undeveloped.

scoping

The process the Forest Service uses to determine, through public involvement, the range of issues that the planning process should address.

security cover or habitat

See habitat security.

sedimentation

The action or process of forming and depositing sediments. Stream sedimentation occurs when water velocity cannot transport the bed load and suspended matter is deposited by gravity along the streambed.

semiprimitive motorized

ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized use of primitive roads with predominantly natural surfaces and trails suitable for motorcycles is permitted.

semiprimitive nonmotorized

ROS classification for areas characterized by predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum on-site controls and restrictions may be present, but would be subtle. Motorized recreation use is not permitted, but primitive roads used for other resource management activities may be present on a limited basis. Use of such roads may be restricted to minimize impacts on recreational experience opportunities or other resources.

sensitive species

A Forest Service or BLM designation, sensitive plant and animal species are selected by the Regional Forester or the BLM State Director because population viability may be a concern, as evidenced by a current or predicted downward trend in population numbers or density, or a current or predicted downward trend in habitat capability that would reduce a species' existing distribution. Sensitive species are not addressed in or covered by the Endangered Species Act.

sensitivity level

A measure of the degree of visitor sensitivity to the visual environment that is used as a component for the determination of Visual Quality Objectives under the Visual Management System. Three sensitivity levels are employed, each identifying a different level of user concern for the visual environment:

- Level 1 – Highest Sensitivity
- Level 2 – Average Sensitivity
- Level 3 – Lowest Sensitivity

short-term effects

Effects lasting from 3 to 15 years in duration.

significant cave

A cave located on federal lands that has been determined to meet the criteria in 36 CFR 290.3(c) or (d) and has been designated in accordance with 36 CFR 290.3(e). A cave considered significant may contain biotic, cultural, mineralogical, paleontologic, geologic, hydrologic, or other resources that have important values for scientific, educational or recreational purposes.

silviculture

The care and tending of stands of trees to meet specific objectives.

site potential tree height

For delineating RCAs, a site potential tree height is the height that a dominant or co-dominant tree within a stand is expected to attain at an age of 200 years. Outside of RCAs, a site potential tree height is the average height that the dominant or co-dominant tree within a stand will attain within 100 years.

site-scale

Any scale less than a broad, mid or fine scale.

snag

A standing dead tree.

soil erosion

Soil erosion is the detachment and transport of soil particles or aggregates by wind, water, or gravity. Management practices may increase soil erosion hazard when they remove ground cover and detach soil particles. .

soil-loss tolerance

Soil-loss tolerance is the maximum rate of soil erosion at which plant productivity can be sustained indefinitely. It is dependent on the rate of soil formation.

soil mass movement or soil mass erosion

Soil mass movement is the downslope movement of earth caused by gravity. This includes but is not limited to landslides, rock falls, debris avalanches, and creep. It does not, however, include surface erosion by running water. It may be caused by natural erosional processes, or by natural disturbances (e.g., earthquakes or wildland fire) or human disturbances (e.g., mining or road construction).

soil productivity

Soil productivity includes the inherent capacity of a soil under management to support the growth of specified plants, plant communities, or a sequence of plant communities. Soil productivity may be expressed in terms of volume or weight/unit area/year, percent plant cover, or other measures of biomass accumulation.

source habitat

Source habitats are those characteristics of macrovegetation (i.e. cover types and structural stages) that contribute to stationary or positive population growth for a species in a specified area and time (Wisdom 2000).

source habitat capacity

The extent of PVGs or covertypes capable of developing source habitat conditions at some point in time and within some defined area.

source environment

The composite of all environmental conditions that result in stationary or positive population growth for a species in a specified area and time (Wisdom 2000). Source habitats contribute to source environments (Pulliam 1988, Pulliam and Danielson 1991).

spawning

The act of fish reproduction. The mixing of the sperm of a male fish and the eggs of a female fish.

special use authorization

A permit, term permit, lease, or easement that allows occupancy or use rights or privileges on National Forest System lands (36 CFR 261.2).

special-use permit

A special-use authorization that provides permission, without conveying an interest in land, to occupy and use National Forest System lands or facilities for specific purposes, and which is both revocable and terminable.

species of concern

An unofficial status for a species whose abundance is at low levels.

species composition

The mix of species that occur within a vegetative unit. This is actually not unique to vegetation. Should vegetation be used as an example of species composition and this should say “A mix of species that occurs”?

species richness

A measure of biological diversity, referring to the number of species in a given area.

split estate

Lands where ownership of the surface estate and mineral estate has been separated.

stand

See forest stand.

standard

As Forest Plan management direction, a standard is a binding limitation placed on management actions. It must be within the authority and ability of the Forest Service to enforce. A project or action that varies from a relevant standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the standard.

State Historic Preservation Officer (SHPO)

A person appointed by a state’s Governor to administer the State Historic Preservation Program.

stream

A natural watercourse of perceptible extent, with definite beds and banks, which confines and conducts continuously or intermittently flowing water. Definite beds are defined as having a sandy or rocky bottom that results from the scouring action of water flow.

strongholds

For fish, strongholds are watersheds that: (1) include all major life-history forms (resident, fluvial, adfluvial) that historically occurred there; (2) have numbers that are stable or increasing, with local populations at least half of their historical size; and (3) have populations with at least 5,000 individuals or 500 adults.

structure

The size and arrangement, both vertically and horizontally, of vegetation.

subbasin

A fourth field hydrologic unit that nests within the hierarchical system developed by the U.S. Geological Survey to describe watersheds. Typically 800,00 to 1,000,000 acres in size, a subbasin is smaller than a river basin (third field unit), and larger than a watershed (fifth field unit).

subpopulation

A well-defined set of interacting individuals that compose a proportion of a larger, interbreeding population.

substrate

The composition of a streambed, including mineral and organic materials.

subwatershed

An area of land that drains to a common point. A subwatershed is smaller subdivision of a watershed but is larger than a drainage or site. Subwatersheds are often synonymous with sixth-field hydrologic units, which are nested within larger watersheds (fifth-field units), and are comprised of smaller drainages, sites, and stream reaches.

subwatershed vulnerability

Subwatershed vulnerability is an assessment of a subwatershed's sensitivity to disturbance and its resiliency or natural ability for restoration. The disturbance may be human-caused and/or natural. This assessment uses several criteria, including soil erosion rates, natural sediment yields, and percentage of landslide-prone areas within the subwatershed.

succession

The replacement in time of one plant community with another. The prior plant community (or successional stage) creates conditions that are favorable for the establishment of the next stage. These changes often occur in a predictable order. More specifically, the gradual and natural progression in composition and structure of an ecosystem toward a climax condition or stage.

suitability

For Wild and Scenic Rivers, an assessment or determination as to whether eligible river segments should be recommended for inclusion in the National Wild and Scenic Rivers System by Congress or the Secretary of the Interior. Wild and Scenic River suitability involves determining the best use of the eligible river and the best method to protect the outstandingly remarkable values within the river corridor.

suited land

Forest land designated in the Forest Plan to be managed for timber production on a regulated basis.

sustainability

The ability to maintain a desired condition or flow of benefits over time.

sustainability outcome

A characterization of the potential capability of the Forest to support focal species and their habitat.

- **Outcome A—**Suitable environments are either broadly distributed or of high abundance compared to their historical distribution. The combination of distribution and abundance of environmental conditions provides opportunity for continuous or nearly continuous intraspecific interactions for the focal species. Species with this outcome are likely well distributed throughout the planning area.
- **Outcome B—**Suitable environments are either broadly distributed or of high abundance compared to their historical distribution, but gaps exist where suitable environments are absent or only present in low abundance. However, the disjunct areas of suitable environments are typically large enough and close enough to permit dispersal among subpopulations and to allow the species to potentially interact as a metapopulation. Species with this outcome are likely well distributed throughout most of the planning area.
- **Outcome C—**Suitable environments are distributed frequently as patches and/or exist at low abundance. Gaps where suitable environments are either absent or present in low abundance are large enough such that some subpopulations are isolated, limiting opportunity for intraspecific interactions. Opportunity exists for subpopulations in most of the planning area to interact, but some subpopulations are so disjunct or of such low density that they are essentially isolated from other populations. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. Species with this outcome are likely well distributed in only a portion of the planning area.
- **Outcome D—**Suitable environments are frequently isolated and/or exist at very low abundance. While some of the subpopulations associated with these environments may be self-sustaining, limited opportunity exists for population interactions among many of the suitable environmental patches. For species for which this is not the historical condition, reduction in the species' range in the planning area may have resulted. These species are likely not well distributed in the planning area.
- **Outcome E—**Suitable environments are highly isolated and exist at very low abundance, with little or no possibility of population interactions among suitable environmental patches, resulting in strong potential for extirpations within many of the patches and little likelihood of recolonization of such patches. There has likely been a reduction in the species' historical range, except for some rare, local endemics that may have persisted in this condition since the historical time period. Species with this outcome are not well distributed throughout much of the planning area

sweet smelling toilet

Vault toilet construction and management technology that has been developed specifically to reduce odor problems associated with vault toilets.

temporary effects

Effects lasting from 0 to 3 years in duration.

temporary road

Roads authorized by contract, permit, lease, other written authorization, or emergency operation, that are not intended to be a part of the forest transportation system, and that are not necessary for long-term resource management.

thermal cover

Vegetation used by animals to lessen the effects of weather. For elk, thermal cover is typically a stand of coniferous trees, 40 feet or taller, with an average crown closure of 70 percent or more.

threatened species

Designated by the FWS or NMFS; a plant or animal species given federal protection because it is likely to become endangered throughout all or a specific portion of its range within the foreseeable future.

Total Maximum Daily Load (TMDL)

TMDL is the sum of waste load allocations for point sources, non-point sources, natural background, and a margin of safety. A TMDL specifies the amount of a pollutant that needs to be reduced to meet water quality standards set by the state. TMDL is used in a process to attain water quality standards that (1) identifies water quality problems and contributing pollutant sources, (2) allocates pollution control responsibilities among sources in the watershed, and (3) provides a basis for taking actions needed to restore a water body.

Total Soil Resource Commitment (TSRC)

TSRC is the conversion of a productive site to an essentially non-productive site for a period of more than 50 years. Examples include classified or unclassified roads, inadequately restored haul roads, designated skid roads, landing areas, parking lots, mining dumps or excavations, dedicated trails (skid trails also), developed campgrounds, other dedicated facilities, and some stock driveways. Productivity on these areas ranges from 0 to 40 percent of natural.

Standards for detrimentally disturbed soils are to be applied to existing or planned activities that are available for multiple uses. These standards do not apply to areas with dedicated uses such as mines, ski areas, campgrounds, and administrative sites.

traditional cultural property

Traditional cultural property is defined as a property that is associated with cultural practices or beliefs or a living community that (1) are rooted in that community's history, and (2) are important in maintaining the continuing cultural identity of the community (National Register Bulletin 38)

trail

A pathway for purposes of travel by foot, stock, ski, snowshoe, or trail vehicles.

trail vehicle

Vehicles designed for trail use, such as bicycles, snowmobiles, trail bikes, trail scooters, and all-terrain vehicles (ATVs).

translational slides

Landslides where the mass displaces along a planar or undulating surface of rupture, sliding out over the original ground surface. Translational slides generally are relatively shallower than rotational slides. Translational slides frequently grade into flows or spreads. Shallow translational landsliding is the dominant type of landslide found within the Forest (Megahan 1978, Clayton 1983, Dixon 2001).

transportation facility jurisdiction

The legal right to control or regulate use of a transportation facility derived from fee title, an easement, an agreement, or other similar method. While jurisdiction requires authority, it does not necessarily reflect ownership.

travel corridor

A linear strip of land defined for the present or future location of transportation facilities within its boundaries. This is a common term for wildlife biologists too. For wildlife a travel corridor is a pathway that connects patches of habitat such as migration routes for big game between winter and summer range.

travel management

The integrated planning of and providing for appropriate movement of people and products to and through National Forest System lands.

travel map or plan

Physical documentation of the outcome of the travel management process reflecting the access decisions (travel orders) issued by the responsible official to restrict, prohibit, or allow the use of a described area or transportation facility to entry or mode of travel.

travelway

Travelways existing on the national forest but not inventoried as part of the forest development transportation system. These routes vary in width, length and structure. Their origin is typically from off-road public travel, but may also be abandoned routes from past management activities such as mining, oil and gas exploration, grazing, and timber harvesting (see also unclassified roads). These roads may also include roads referred to as "two-tracks," "non-system roads," or "ghost roads".

tree size class

The categorization of trees for a vegetative unit to a descriptive class based on the largest trees that meet a set of criteria. Classes are Grass/Forb/Shrub/Seedling (GFSS), sapling, small, medium or large.

uncharacteristic wildfire

A fire that is burning in a way that does not emulate historical effects. This may include fire intensity, severity, size, and landscape patterns.

uncharacteristic wildfire hazard

Conditions with the potential to lead to undesirable outcomes, in this case an uncharacteristic wildfire.

unclassified road

Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as trails. Unclassified roads also include those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1).

undertaking

Any project, activity, or program that can result in changes in the character or use of any historic properties located in the area of potential effects (36 CFR 800.2). The project, activity, or program must be under the direct or indirect jurisdiction of a federal agency or licensed or assisted by a federal agency.

undeveloped character

In the context of land management, an area of land retaining its primeval character and influence, without permanent improvements or human habitation, which is managed so as to preserve its natural conditions and which generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable.

unroaded areas

Areas that do not contain classified roads.

unstable areas

Land areas that have a higher probability of increased erosion, landslides, and channel adjustment disturbances during climatic or physical events such as major storms or fires.

urban

ROS classification for areas characterized by a substantially urbanized environment, although the background may have natural-appearing elements. Renewable resource modification and utilization practices are often used to enhance specific recreational activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans are predominant on the site. Large numbers of users can be expected both on the site and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

utility corridor

A linear strip of land defined for the present or future location of utility facilities within its boundaries.

variety class

A measure of the degree of variety within a visual landscape. There are three variety classes that identify the degree of variation of the natural landscape:

- Class A - Distinctive
- Class B - Common
- Class C - Minimal

verification

Testifying, ascertaining, confirming, or testing the truth or accuracy of, asserting or proving to be true (Prellwitz 1994).

viable population

A population that is regarded as having the estimated numbers and distribution of reproductive individuals to ensure that it will continue to exist over time and will be well distributed within a given area.

Visual Management System (VMS)

A system for the management of scenery resources instituted by the Forest Service in 1974. It provides criteria for identification and classification of scenic quality on National Forest System lands. Scenic quality objectives are expressed in terms of Visual Quality Objectives (VQOs) that define the extent of allowable alteration of the natural-appearing landscape character. VQOs are determined based on a combination of natural landscape features and human use zones as expressed by Variety Class and Sensitivity Level.

Visual Quality Objective (VQO)

Categories of acceptable landscape alteration measured in degrees of deviation from the natural-appearing landscape. The categories include Preservation, Retention, Partial

Retention, Modification, and Maximum Modification.

vulnerability

Refers to lack of animal security during the hunting season. Vulnerability can be affected by conditions such as road density, road closures, openings, and hunting pressure. Also means "Increased susceptibility to hazards." The hunting season definition seems too narrow and only applicable to species that are hunted rather than affected by humans or activities in other ways.

water quality integrity

Water quality integrity is an assessment and comparison of existing water quality conditions with historical conditions that existed before Euro-American settlement. Physical, chemical, and biological water conditions are assessed to determine how their integrity and resilience may have changed due to effects from past or current human-caused (road construction, timber harvest, livestock grazing, etc.) or natural (wildfire, floods, etc.) disturbance. Conditions or values assessed include streambank damage, sediment loads, channel modification, flow disruption, thermal changes, chemical contamination, and biological stress. Relative integrity ratings are assigned at the subwatershed scale and are based on whether any designated beneficial use is not fully supported or any condition/value is seriously degraded.

water quality limited water bodies

Denotes streams or other water bodies not meeting state Water Quality Standards. For purposes of Clean Water Act listing, these are waters that will not meet standards even with application of required effluent limitations.

watershed

Region or area drained by surface and groundwater flow in rivers, streams, or other surface channels. A smaller watershed can be wholly contained within a larger one, as watersheds are hierarchal in structure. For this document, watersheds are often synonymous with 5th field hydrologic units, which are nested within larger subbasins (4th field units), and are comprised of smaller subwatersheds (6th field units).

Watershed Condition Indicator (WCI)

WCIs are an integrated suite of aquatic (including biophysical components), riparian (including riparian –associated vegetation species), and hydrologic (including uplands) condition measures that are intended to be used at the a variety of watershed scales. They assist in determining the current condition of a watershed and should be used to help design appropriate management actions, or to alter or mitigate proposed and or ongoing actions, to move watersheds toward desired conditions. WCIs represent a diagnostic means to determine factors of current condition and assist in determining future conditions associated with implementing management actions or natural restoration over time.

wetlands

Land areas that are wet at least for part of the year, are poorly drained, and are characterized by hydrophytic vegetation, hydric soils, and wetland hydrology. Examples of wetlands include swamps, marshes, and bogs.

wilderness areas

Areas that are without developed and maintained roads, and that are substantially natural, and that Congress has designated as part of the National Wilderness Preservation System.

wildfire

An unwanted wildland fire. Wildfires can be further described by two basic categories:

(a) *characteristic*, which produce effects similar to those that occurred in the historical fire regime, or
(b) *uncharacteristic*, which produce effects much different than those in the historical fire regime.

wildfire risk

Wildfire risk comprises the probability of an undesired wildfire event and the outcome of it. The undesired event realizes a hazard.

wildland fire

Any fire not involving a home or other structure, other than prescribed fire, that occurs in the wildland.

wildland fire use

Refers to any fire of natural causes that is monitored but allowed to burn

wildland fire use (for resource benefits)

The management of naturally ignited wildland fires to accomplish specific prestated resource management objectives in predefined geographic areas outlined in Fire Management Plans.

wildland fire use planning area

Portions of the Forest that may be considered for wildland fire use consistent with the selected alternative. Delineation of the planning area or areas consider proximity to designated Wilderness, area size, location of administrative boundaries, adjacency to wildland-urban interface, and other factors. Further refinements to identify a feasible implementation area may take place during Fire Management Planning.

wildland/urban interface (WUI)

The line, area, or zone where structures and other human developments meet or intermingle with wildland or vegetative fuel. Interface is further delineated into the following types:

(a) *wildland/urban interface*—developed areas with residential structures where many structures border wildland on a broad front.
(b) *wildland/rural interface*—developed areas with private residential structures where developments are few in number scattered over a large area surrounded by wildland.

wild river

In the National Wild and Scenic River System, a rivers or river segment that is generally inaccessible (no roads) except by trail, with watersheds or shorelines that are essentially primitive (free of impoundments and polluted waters).

winter range

An area or areas where animals (usually ungulates such as elk, deer, bighorn sheep) concentrate due to favorable winter weather conditions. Conditions are often influenced by snow depth, and the availability or forage and thermal cover.

xeric

Dry conditions. Can refer to a habitat characterized by, or a species adapted to dry conditions, rather than hydric (wet) or mesic (moderate) moisture conditions.

Zone of Influence (ZOI)

The area that is economically and socio-economically influenced by Forest Service management.

4.8.2 Acronyms and Symbols

ACS	Aquatic Conservation Strategy
ASQ	Allowable Sale Quantity
BLM	Bureau of Land Management
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CPZ	community protection zone
CWCS	Comprehensive Wildlife Conservation Strategy
CWPPs	Idaho County Wildfire Protection Plans
d.b.h.	Diameter at Breast Height
DD	Detrimental Disturbance (soils)
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERU	Ecological Reporting Unit
ESA	Endangered Species Act
FIA	Forest Inventory and Analysis
FRCC	fire regime condition class
FSH	Forest Service Handbook
FSM	Forest Service Manual
GFSS	Grass/Forb/Shrub/Seedling
GIS	Geographic Information System
HFRA	Healthy Forest Restoration Act
HRV	Historical Range of Variability
HU	Hydrologic Unit
HUC	Hydrologic Unit Code
ICB	Interior Columbia Basin
ICBEMP	Interior Columbia Basin Ecosystem Management Project
IDFG	Idaho Department of Fish and Game
IDT	Interdisciplinary Team
IRA	Inventoried Roadless Area
KEC	Key Environmental Correlates
KEF	Key Ecological Function
LAU	Lynx Analysis Units
LTSYC	Long-Term Sustained Yield Capacity
MIS	Management Indicator Species
MMBF	million board feet
MMCF	million cubic feet
MOU	Memorandum of Understanding
MPC	Management Prescription Category
NEPA	National Environmental Policy Act
NFMA	National Forest Management Act
NFS	National Forest System
NPCC	Northwest Power and Conservation Council
NRA	National Recreation Area
OHV	Off Highway Vehicle

PVG	Potential Vegetation Group
RAC	Resource Advisory Council
RCA	Riparian Conservation Area (from ICBEMP)
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
SPM	semi-primitive motorized
SWRA	Soil-Water-Riparian-Aquatics resources
TEPC	Threatened, endangered, proposed/petitioned, and candidate (species)
TEPCS	Threatened, endangered, proposed/petitioned, candidate, and sensitive (species)
TSPQ	Total Sale Program Quantity
USDA	United States Department of Agriculture
USDI	United States Department of Interior
USFWS	United States Fish and Wildlife Service
VDDT	Vegetation Dynamics Development Tool
WCS	Wildlife Conservation Strategy
WUI	Wildland Urban Interface

4.8.3 Scientific Names

American three-toed woodpecker	*Picoides tridactylus*
aspen	*Populus* spp
bald eagle	Haliaeetus leucocephalus
bark beetle	*Scolytidae* sp.
black bear	Ursus americanus
black-backed woodpecker	*Picoides arcticue*
boreal owl	Aegolius funereus
Canada lynx	*Lynx c*anadensis
Columbia spotted frog	*Rana luteiventris*
Columbian sharp-tailed grouse	*T. phasianellus columbianus*
common loon	*Gavia immer*
cottonwood	*Populus* spp.
cougar	*Puma concolor*
cutthroat trout	*Oncorhynchus clarkii*
deer	*Odocoileus* spp.
Douglas-fir	Pseudotsuga menziesii
Douglas-fir tussock moth	*Orgyia pseudotsugata*

dusky grouse	Dendragapus obscurus
elk	Cervus canadensis
Engelmann spruce	*Picea engelmannii*
fir engraver beetle	*Scolytus ventralis*
fisher	Martes pennant
flammulated owl	*Otus flammeolus*
gray wolf	Canis lupus
great gray owl	*Srix nebulosa*
greater sage grouse	Centrocercus urophasianus
Lazuli bunting	Passerina amoena
Lewis' woodpecker	*Melanerpes lewis*
lodgepole pine	*Pinus contorta*
mistletoe	*Arceuthobium* spp.
moose	Alces alces
mountain pine beetle	Dendroctonus ponderosae
mountain quail	*Oreortyx pictus*
northern flying squirrel	*Glaucomys sabrinus*
northern goshawk	Accipiter gentilis
peregrine falcon	Falco peregrinus anatum
pileated woodpecker	*Dryocopus pileatus*
ponderosa pine	*Pinus ponderosa*
pygmy rabbit	Brachylagus idahoensis
red squirrel	Tamiasciurus hudsonicus
red-backed vole	*Clethrionomys gapperi*.
Rocky Mountain bighorn sheep	*Ovis canadensis*
silver-haired bat	Lasionycteris noctivagans
snowshoe hare	Lepus americanus
spotted bat	Euderma maculatum
spruce budworm	Choristoneura fumiferana
subalpine fir	Abies lasiocarpa
Townsend's big-eared bat	*Corynorhinus townsendii*
western pine beetle	Dendroctonus brevicomis

whitebark pine	*Pinus albicaulis*
white-headed woodpecker	*Picoides albolarvatus*
wolverine	*Gulo gulo*
yellow-billed cuckoo	*Coccyzus americanus*

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