

S  
E  
C  
R  
U  
O  
S  
E  
R



L  
A  
R  
U  
T  
A  
N

# Table Mountain Natural Resources Conservation Area Management Plan

.....  
Skamania County  
Washington

April 2007



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
Doug Sutherland - Commissioner of Public Lands

## **Acknowledgements**

### **Department of Natural Resources**

Doug Sutherland, *Commissioner of Public Lands*

Bonnie Bunning, *Executive Director, Policy and Administration*

### **Asset Management and Protection Division**

Kit Metlen, *Division Manager*

Pene Speaks, *Assistant Division Manager, Natural Heritage Conservation and Recreation*

Curt Pavola, *Natural Areas Program Manager*

Scott Pearson, *Former Westside Ecologist*

David Wilderman, *Westside Ecologist*

Marsha Hixson, *Natural Areas Program Specialist*

Pam Bennett-Cumming, *Environmental Planner (2000-2001)*

### **Pacific Cascade Region**

Eric Schroff, *Region Manager*

Eric Wisch, *State Lands Assistant Region Manager*

Brian Poehlein, *Pacific Crest District Manager*

Carlo Abbruzzese, *Natural Areas Manager*

### **Communications Product Development**

Patty Henson, *Communications Director*

Princess Jackson-Smith, *Public Information Officer*

Nancy Charbonneau, *Graphic Designer*

**Cover Photo:** Carlo Abbruzzese

# Table Mountain Natural Resources Conservation Area Management Plan

---

Skamania County  
Washington

April 2007

Prepared by

**Pacific Cascade Region  
Natural Areas Program**

Washington State  
Department of Natural Resources



WASHINGTON STATE DEPARTMENT OF  
**Natural Resources**  
Doug Sutherland - Commissioner of Public Lands





**Doug Sutherland**  
Commissioner of Public Lands

April 2007

Dear Readers,

Table Mountain Natural Resources Conservation Area (NRCA) is a true gem in the Columbia River Gorge National Scenic Area. This site brings together a diversity of rare and sensitive features including spectacular wildflower meadows, old growth forest, rare flora and fauna, cultural sites, dramatic geological features, and stunning vistas.

The site also offers some of the best hiking in the Colombia Gorge with spectacular views of the gorge and mountain peaks, and excellent wildflower and wildlife watching opportunities. Hikers are also able to view the massive Bonneville Landslide, one the largest of its kind in the Pacific Northwest. Table Mountain NRCA will also benefit universities and schools by serving as a natural classroom where students can study and learn about a near pristine ecosystem.

The Table Mountain NRCA management plan will serve as a guide to the future protection, restoration, monitoring, and public enjoyment of these unique resources.

This management plan is the culmination of the cooperative efforts of nearby stakeholders such as Beacon Rock State Park, the U. S. Forest Service, tribes, recreationists, conservation groups, legislators and local elected officials. The Department of Natural Resources is thankful for this past support and we encourage your continued interest and involvement as this management plan is implemented.

Sincerely,

Doug Sutherland  
Commissioner of Public Lands

Department of Natural Resources  
1111 Washington ST SE  
PO Box 47001  
Olympia, Washington 98504-7001  
(360) 902-1000





# Contents

|           |  |
|-----------|--|
| <b>9</b>  | <b>PREFACE</b>                                     |
| <b>11</b> | <b>EXECUTIVE SUMMARY</b>                           |
| <b>17</b> | <b>I. INTRODUCTION</b>                             |
| 17        | A. The Department of Natural Resources             |
| 17        | B. DNR'S Conservation Lands                        |
| 21        | C. Table Mountain NRCA                             |
| 25        | D. Management Planning Process                     |
| <b>27</b> | <b>II. RESOURCE DESCRIPTION</b>                    |
| 27        | A. Location and Extent                             |
| 27        | B. Climate   |
| 27        | C. Physical Geography                              |
| 28        | D. Geology and Soils                               |
| 28        | E. Hydrology                                       |
| 29        | F. Cultural, Archaeological and Historic Resources |
| 29        | G. Plant Communities and Species                   |
| 33        | H. Wildlife  |
| 35        | I. Site Disturbance                                |
| 35        | J. Land Use  |
| <b>37</b> | <b>III. MANAGEMENT GOALS AND OBJECTIVES</b>        |
| 37        | A. Management Philosophy                           |
| 37        | B. Management Goals and Objectives                 |
| <b>41</b> | <b>IV. MANAGEMENT GUIDELINES</b>                   |
| 41        | A. Sensitive Areas                                 |
| 44        | B. Cultural and Historical Resources               |
| 44        | C. Public Access                                   |
| 49        | D. Commodity Based Activities                      |
| 50        | E. Roads and Easements                             |
| 50        | F. Fire Management                                 |
| 52        | G. Weed Management                                 |
| 53        | H. Forestry Activities                             |
| 53        | I. Monitoring                                      |
| 54        | J. Research  |
| 54        | K. Restoration                                     |
| 55        | L. Regulation and Law Enforcement                  |
| <b>57</b> | <b>V. IMPLEMENTATION</b>                           |
|           | Summary of Management Actions                      |

**63 REFERENCES**

**67 GLOSSARY**

**APPENDICES**

- 71 Appendix A – The Cascade Landslide Complex and Bonneville Landslide
- 75 Appendix B – Table Mountain NRCA Trail Management
- 85 Appendix C – Partial list of vascular plants of Table Mountain NRCA
- 93 Appendix D – Partial list of mammals of Table Mountain NRCA
- 93 Appendix E – Partial list of butterflies of Table Mountain NRCA
- 94 Appendix F – Partial list of amphibians of Table Mountain NRCA
- 95 Appendix G – Partial list of birds of Table Mountain NRCA

**TABLES**

- 30 Table 1 – Rare native plant species and communities found within Table Mountain NRCA
- 34 Table 2 – Rare wildlife species within Table Mountain
- 47 Table 3 – Allowed uses within the Table Mountain NRCA
- 53 Table 4 – Guidelines for noxious weeds

**FIGURES**

- 20 Figure 1 – Statewide map of Natural Area Preserves and Natural Resources Conservation Areas
- 22 Figure 2 – Table Mountain and Vicinity
- 24 Figure 3 – Table Mountain NRCA and Surrounding Public Lands
- 42 Figure 4 – Table Mountain NRCA Sensitive Areas
- 77 Figure 5 – Table Mountain NRCA Existing Trails
- 81 Figure 6 – Table Mountain NRCA Proposed Trails

---

## **PREFACE**

In 1987, the Washington State Legislature passed the Natural Resources Conservation Areas (NRCA) Act. The NRCA program is a product of the work of many individuals, including the Commissioner of Public Lands, state legislators, residents, conservationists and recreationists. The Department of Natural Resources manages these lands for the purposes of protecting outstanding ecological, geological, and archeological resources and providing low impact public use opportunities. The Table Mountain NRCA Management Plan meets the requirements set forth in the Natural Resources Conservation Areas Act (RCW 79.71) and adheres to the guidelines stipulated in the Natural Resources Conservation Areas Statewide Management Plan (1992).

This document was developed with the assistance and input of many groups and individuals including federal, state, local and tribal agencies, organizations, citizens, recreational users and other individuals, who identified key planning issues, provided valuable information, and provided comment on stewardship and boundary recommendations.



---

## EXECUTIVE SUMMARY

The Washington State Department of Natural Resources (DNR) manages the 2,837-acre Table Mountain Natural Resources Conservation Area, which lies in southern Skamania County. This site protects habitat for several rare species and plant communities as well as important geological, scenic, and archeological resources. The site also provides excellent opportunities for low-impact public use, including hiking, nature viewing, and hunting. The NRCA is located within the Columbia River Gorge National Scenic Area and is adjacent to Beacon Rock State Park and DNR trust land which will help ensure the long-term protection of its sensitive resources.

### Planning Process and Boundary

The Table Mountain Management Plan is the end result of several years of planning, which involved the general public, stakeholder groups, and federal, state, local and tribal agencies. Natural Areas and Natural Heritage Program staff identified sensitive resources on the NRCA and made management recommendations for long-term protection in a site inventory report. A trails inventory was conducted in 2000 to map trails and describe their condition. Members of hiking groups, recreation specialists, state and tribal archeologists, Natural Areas and Heritage Program staff and a trails consultant all took part in the effort to determine how best to reroute trails around sensitive areas. Comments and concerns, which arose during the planning process, were all considered in the production of this management plan.

The NRCA boundary includes only lands that are currently under DNR ownership and are designated NRCA. Private lands outside current ownership may be considered for potential future inclusion if they contribute to the management goals and improve the efficiency of land management. Any additions to current ownership will require a public hearing and will be by willing seller only.

### Protected Resources

The list below includes rare plants, animals and plant communities known from the NRCA. Table Mountain also protects habitat for other uncommon plants and animals including plants that are endemic to the Columbia River Gorge. The site also includes a variety of special wildlife habitats such as cliffs, talus, riparian areas, forested wetlands and old-growth forest.

#### Plants

- Howell's Daisy (*Erigeron howellii*)
- Douglas' Silene (*Silene douglasii* var. *monantha*)

#### Plant Communities

- Red Fescue Montane Herbaceous Vegetation
- Douglas-Fir/Oceanspray Forest
- Western Redcedar -Western Hemlock/Skunk cabbage Forest

---

### **Animal Species**

- Larch Mountain salamander
- Cascade torrent salamander
- Cope's giant salamander
- Tailed frog
- Northern Spotted Owl
- Peregrine Falcon
- Bald Eagle

Some of the states best-preserved examples of Native American rock features also occur within the NRCA boundaries. These features include linear rock walls and rock cairns. There is much to be learned about their age and function.

Table Mountain NRCA also protects important geologic resources that include the remains of a cinder cone, basaltic dikes, faults, and a large portion of the Bonneville Landslide, one of the largest examples of mass wasting in the Pacific Northwest.

### **Management Goals**

DNR land managers will use the following five broad goals to guide management of the site's sensitive resources.

- Goal One: Maintain, enhance and restore ecological systems**
- Goal Two: Maintain or provide habitat for threatened, endangered, and sensitive (TES) plant and animal species**
- Goal Three: Maintain scenic landscapes**
- Goal Four: Protect cultural resources**
- Goal Five: Enhance opportunities for environmental education**
- Goal Six: Provide opportunities for low-impact public use**

### **Public Use**

Table Mountain NRCA provides excellent opportunities for low-impact public use. This use is provided for as described in the NRCA Statewide Management Plan as long it does not interfere with or detract from the other NRCA goals.

The NRCA is primarily used by hikers and access is provided via user built trails that leave the Pacific Crest Trail. Sections of these trails are impacting or threaten to impact sensitive features while others were constructed in dangerous locations. Such trail sections will be rerouted to protect resources and improve hiker safety. Other low-impact uses that are allowed include hunting, photography, nature viewing, environmental education, and picnicking.

Activities that may threaten sensitive resources and are therefore prohibited include camping, the use of mechanized vehicles (including bicycles and ORVs) off roads, on trails, or on closed roads, and

---

the collection of plants, mushrooms, and firewood. Pets, pack and stock animals, and horses (except on the Pacific Crest Trail) are also not allowed.

## **Monitoring and Management**

Below is a list of management actions that are important to the long-term protection and viability of natural, cultural and recreational resources at Table Mountain NRCA. These actions will be implemented as funding becomes available and the following list will be used to coordinate recruitment of funds and support for projects.

Management actions on the NRCA will focus on protecting and restoring natural ecosystems and providing low-impact public access. Trails will be directed away from sensitive resources, dangerous areas and private lands. Monitoring of rare species and habitats will be very important in determining their long-term viability, and the potential impacts of public use on the site.

Success of this plan will depend on efforts to monitor and evaluate the NRCA and to tailor the management of the site to meet changing conditions. Success also depends on maintaining good working relationships with adjacent land managers, user groups, volunteers, land owners and associated agencies.

## **Summary of Management Actions**

### ***Sensitive Areas***

- Continue the herpetological inventory started by the DNR Natural Heritage Program herpetologist.
- Determine the distribution and relative abundance of rare and declining species.
- Conduct an inventory for some of the site's insects and other invertebrates.
- Conduct an inventory of the area's bats.

### ***Cultural and Historical Resources***

- Conduct a survey and inventory of cultural resources throughout the NRCA.

### ***Public Access Management***

#### **Education and Research**

- Continue ongoing development of the site steward program for the Table Mountain NRCA.
- Install informational signs at access points, and other key locations to explain the purpose of the site, educate users about the resources on the site, and to direct use.

- 
- Develop environmental interpretation materials for the balds area to educate users about their fragile nature.
  - Develop environmental interpretive materials for the NRCA's connection to the Pacific Crest Trail, which will inform users about the NRCA features near the trail.
  - Provide educational signs or other interpretive materials where use is restricted or limited.
  - Where environmental restoration is proposed or under way, provide interpretive materials to educate and inform the public about the activities.
  - Actively pursue opportunities to involve higher education institutions in research at the NRCA.
  - Work with interested user groups, members of the public and the local community to develop an understanding and appreciation for the conservation goals of the NRCA.
  - Work with user groups, schools and the local community to identify opportunities for their involvement in stewardship and restoration activities.

#### **Public Access**

- All trails should be routed away from dangerous areas.
  - Develop a trail maintenance agreement with user groups.
  - Inform users by placing signs at site access points, indicating the sensitivity of the area and that all other types of travel and human use, pets, and overnight camping are excluded from this site.
  - Avoid establishing new trails or promoting increased use on or near balds and other sensitive areas, except to reduce existing impact.
  - Develop and implement a carefully designed formal user survey to determine the level and type of public use.
  - Guide public use away from sensitive or degraded areas.
  - Avoid leading NRCA visitors on trails or roads to locations that would encourage trespass on private lands.
  - Work with user groups to reduce impacts and conflicts arising from group use, and/or conflicting types of uses.
  - Temporarily restrict public access in areas during stewardship activities and extreme conditions, if necessary.
-

---

### ***Roads and Easements***

- Implement the Table Mountain Road Maintenance and Abandonment Plan.
- Work with easement beneficiaries to encourage development of a limited access approach, including gates where feasible.

### ***Fire Management***

- Conduct a review of the existing fire management plan for Table Mountain and revise as necessary.

### ***Weed Management***

- Periodically survey for and map locations of weeds throughout the NRCA but especially in sensitive areas and areas with a high potential for weed invasion.
- Develop and implement a weed control plan using integrated pest management practices.

### ***Monitoring***

- Develop monitoring protocols to evaluate the potential negative effect of, and increase of introduced plant species on, the red fescue montane grassland community.
- Establish a monitoring protocol to examine tree and shrub encroachment on the balds and the red fescue montane grassland community in particular.
- Establish a monitoring protocol to examine changes in Howell's daisy population over time.
- Establish a monitoring protocol to examine the impacts of human use on the balds.

### ***Research***

- Promote research that will provide information about the threats to the continued health of the Howell's daisy population and the red fescue montane grassland communities.
- Promote research that will provide basic natural history information about Howell's daisy and the red fescue montane grassland community.
- Promote the opportunity to professionally research the geologic history of the Bonneville landslide.
- Promote the opportunity to professionally research the significant cultural resources found on the NRCA.

- 
- Promote research on the distribution, abundance and natural history of pika populations on the NRCA and surrounding landscape.
  - Actively pursue opportunities to involve higher education institutions in research at Table Mountain NRCA.

---

## INTRODUCTION

### A. The Department of Natural Resources

The Washington State Department of Natural Resources (DNR) manages approximately 5.4 million acres of state-owned forest, aquatic, agricultural, range and urban lands. These lands are managed for long-term benefits to designated public beneficiaries and the general public.

Approximately 124,000 acres (or 2.3% of all DNR lands) of these lands are managed primarily for resource protection as natural resources conservation areas (NRCAs) and natural areas preserves (NAPs).

#### DNR Managed Lands

- Trust Lands were established when Washington became a state in 1889. The Congressional Enabling Act designated over 3 million acres to be managed for the benefit of schools, universities and other state institutions.
- State Forest Lands were acquired by purchase or transfer from the counties beginning in the 1930s. Revenue from these lands goes to the county containing the State Forest Lands.
- Aquatic Resource Lands, 2.1 million acres of state-owned tidelands, shorelands, and the beds of navigable lakes, rivers and marine waters, are managed by DNR to provide a balance of public benefits for all citizens of the state.
- Natural area preserves (NAPs), established by an act of the Washington State Legislature in 1972 by enactment of Chapter 79.70 RCW, contain high-quality natural habitat, acquired by gift to, or purchase by, the DNR. NAPs often provide the highest level of protection to maintain pieces of natural Washington, serving as a genetic resource of native plants and animals, a point of reference in comparing natural and managed environments, and as outdoor laboratories for scientific research and education.
- Natural resources conservation areas (NRCAs) are the most recent land designation for DNR. Created by an act of the Washington State Legislature in 1987 (RCW Chapter 79.71), the NRCA program's multiple purposes include protecting outstanding ecological, geological, and cultural resources while providing opportunity for low-impact public use.

### B. DNR'S CONSERVATION LANDS

The Natural Resources Conservation Areas Act (Chapter 79.71 RCW) provides the legislative mandate for the protection and management of NRCAs such as Table Mountain. Site management plans are required for each conservation area, and the Table Mountain NRCA management plan provides site-specific guidelines for the management of the NRCA.

---

### **Legislation: Natural Resources Conservation Areas Act**

The Act was passed by the Legislature and signed into law by the governor on May 18, 1987, as RCW 79.71. The Act defines the characteristics of an NRCA as:

- Lands with a high priority for conservation, natural systems, wildlife and low-impact public use values;
- An area of land and/or water with flora, fauna, geological, archeological, scenic or similar critically important features that retains to some degree or has reestablished its natural character;
- Examples of native ecological communities; and
- Environmentally significant sites threatened by incompatible or ecologically irreversible uses.

The Act further defines the purposes of a conservation area as:

- Maintaining, enhancing or restoring ecological systems, including but not limited to aquatic, coastal, riparian, montane, and geological systems, whether such systems be unique or typical to the state of Washington;
- Maintaining exceptional scenic landscapes;
- Maintaining habitat for threatened, endangered, and sensitive species;
- Enhancing sites for primitive recreational purposes; and
- Providing opportunities for outdoor environmental education.

### **Administration: Natural Areas Program**

DNR's Natural Areas Program is responsible for the administration and management of 31 Natural Resources Conservation Areas totaling more than 92,000 acres. These lands represent a wide variety of landscapes throughout the state. Special features found in conservation areas include: coastal rainforests, Puget prairies, salt marshes, ponderosa pine forests, scenic vistas of the Columbia River, active nesting sites for bald eagles and peregrine falcons, Canada Lynx habitat, and significant geological features such as Mima Mounds, Mount Si and Table Mountain.

The program is also responsible for stewardship of more than 31,400 acres of land in 51 natural area preserves throughout the state, administered under the provisions of RCW Chapter 79.70, the Natural Area Preserves Act.

---

Conservation areas and preserves are acquired through gift or purchase from willing sellers. In addition, prime examples have been found on state trust lands. In such cases, the trust is compensated for the fair market value, to purchase replacement properties for the trust.

The staff of the Natural Areas Program work to fulfill the DNR policies and legislative provisions. Natural Areas Program staff are located in Olympia and in DNR's six regional offices located throughout the state. Figure 1 shows the location of conservation areas and preserves.

**Policy: Natural Resources Conservation Areas Statewide Management Plan**

In 1992, the Natural Resources Conservation Areas Statewide Management Plan was developed with the assistance of a nine-member citizen's advisory committee appointed by the commissioner of public lands. The statewide plan was prepared to develop statewide policies, and to provide consistent site management plan guidance.

According to the statewide management plan, the primary purpose of the NRCA program is to protect outstanding examples of native ecosystems, and habitat for threatened, endangered, and sensitive (TES) plants and animals, while providing opportunities for environmental education and low-impact public use. Areas with multiple features – such as geologic and scenic areas, cultural resources and threatened sites – are given priority.

Prior to formal adoption of a management plan for each NRCA, the NRCA Statewide Management Plan forms the basis for site management decisions. Following adoption of a site-specific plan, the statewide plan continues to provide for policy and programmatic consistency, while the site-specific plan provides more detailed guidance for management decisions.

# Washington's Natural Areas

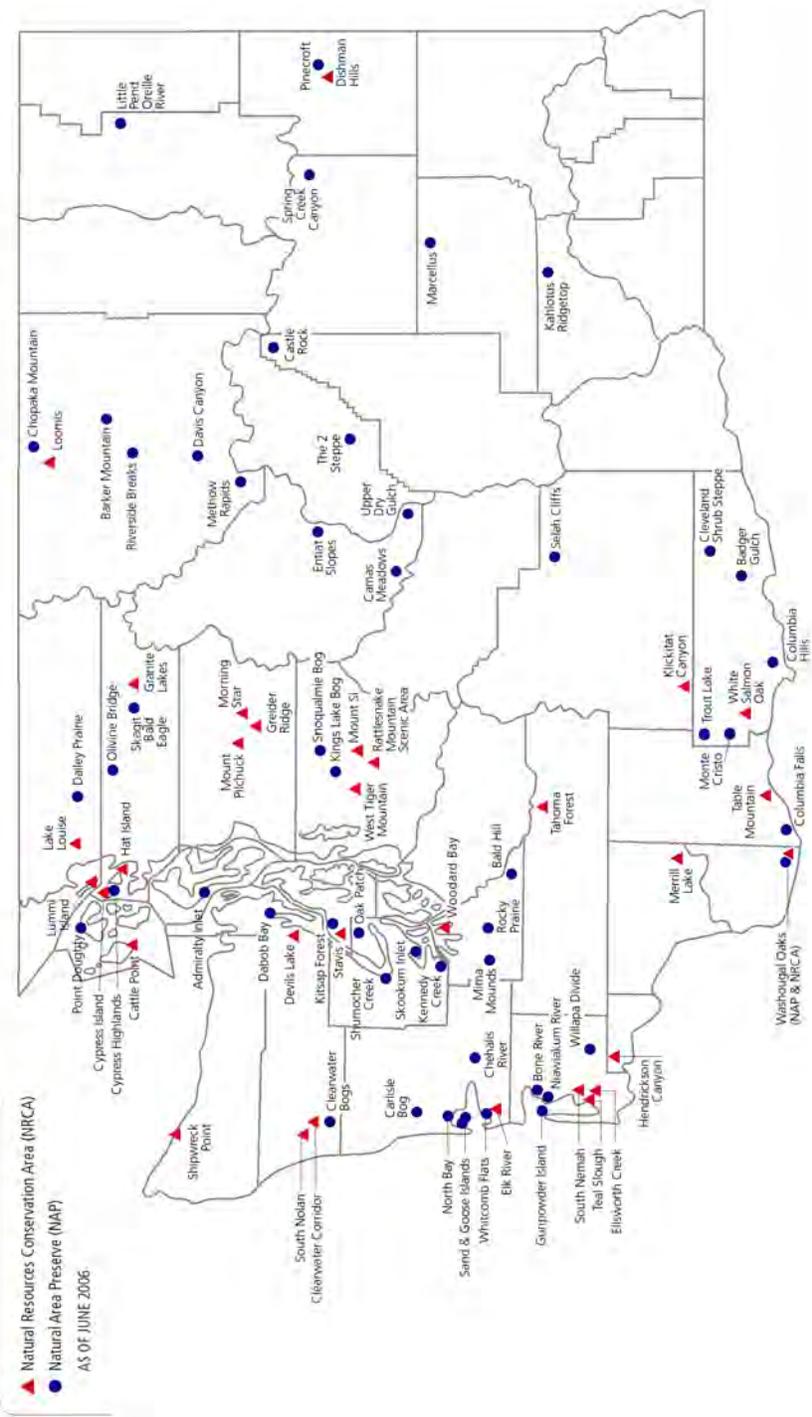


Figure 1

---

## **C. TABLE MOUNTAIN NRCA**

### **Site Location and General Description**

Table Mountain NRCA is situated at the southern extent of the West Cascades Ecoregion and within the west-central portion of the Columbia River Gorge National Scenic Area, in Skamania County (Figure 2 – Table Mountain and vicinity). The volcanic Cascade Mountain Range and its associated riverine valleys dominate this ecoregion. Vegetation within the region is made up primarily of conifer forest, although species composition depends on elevation, stand history and site characteristics. Other special habitats within the ecoregion include grassy balds, wetlands, oak woodlands, and deciduous riparian woodlands.

As the only low elevation pathway through the Cascades, the Columbia River Gorge provides a pathway for the successful east-west species movement. The Gorge is also thought to have provided refugia for species that occupied this area, and perhaps were more widespread, during the last ice age. The Columbia River Gorge is home to 16 species of plants that are found nowhere else in the world.

The site contains a wide range of elevations and dramatic topographic relief, resulting in extreme variations in microclimate over short distances. The NRCA includes spectacular views, rare plant communities, rare plant and animal species, well-preserved archeological features, a forested wetland, dramatic geology and old growth and natural regeneration forests.

Table Mountain's diverse habitats support a wide range of flora and fauna. Old growth forests occur in two forms, noble fir on the slopes of Table Mountain, and old growth cedar in a wetland mosaic in Greenleaf Basin. Both have downed logs and snags, which are important to many wildlife species.

The site's deciduous and old growth forests, streams, and forested wetlands provide important foraging, resting, cover, dispersal and breeding areas for a regionally diverse group of wildlife species. Of the approximate 350 terrestrial birds found seasonally in Washington, almost one quarter of them are found in this area. The site also provides important nesting and foraging areas for neotropical migratory birds, and habitat for other wildlife species including mountain lion, bear, deer, peregrine falcon, osprey and bald eagle.

The true uniqueness of the Table Mountain NRCA is seen in the geological and geographical attributes of the area, in the breadth of habitats created by those factors, and in the resulting diversity and uniqueness of flora and fauna. The end result is a special assemblage of habitats, wildlife, and plant communities not often seen together in one location. Given this rich concentration of special habitats and species and its proximity to other protected lands in the Columbia River Gorge, Table Mountain NRCA is vital to the overall protection of biodiversity of the Ecoregion. A more detailed description of the site's features and unique resources is provided in the section titled Resource Description.

## Table Mountain NRCA and Vicinity



Figure 2

---

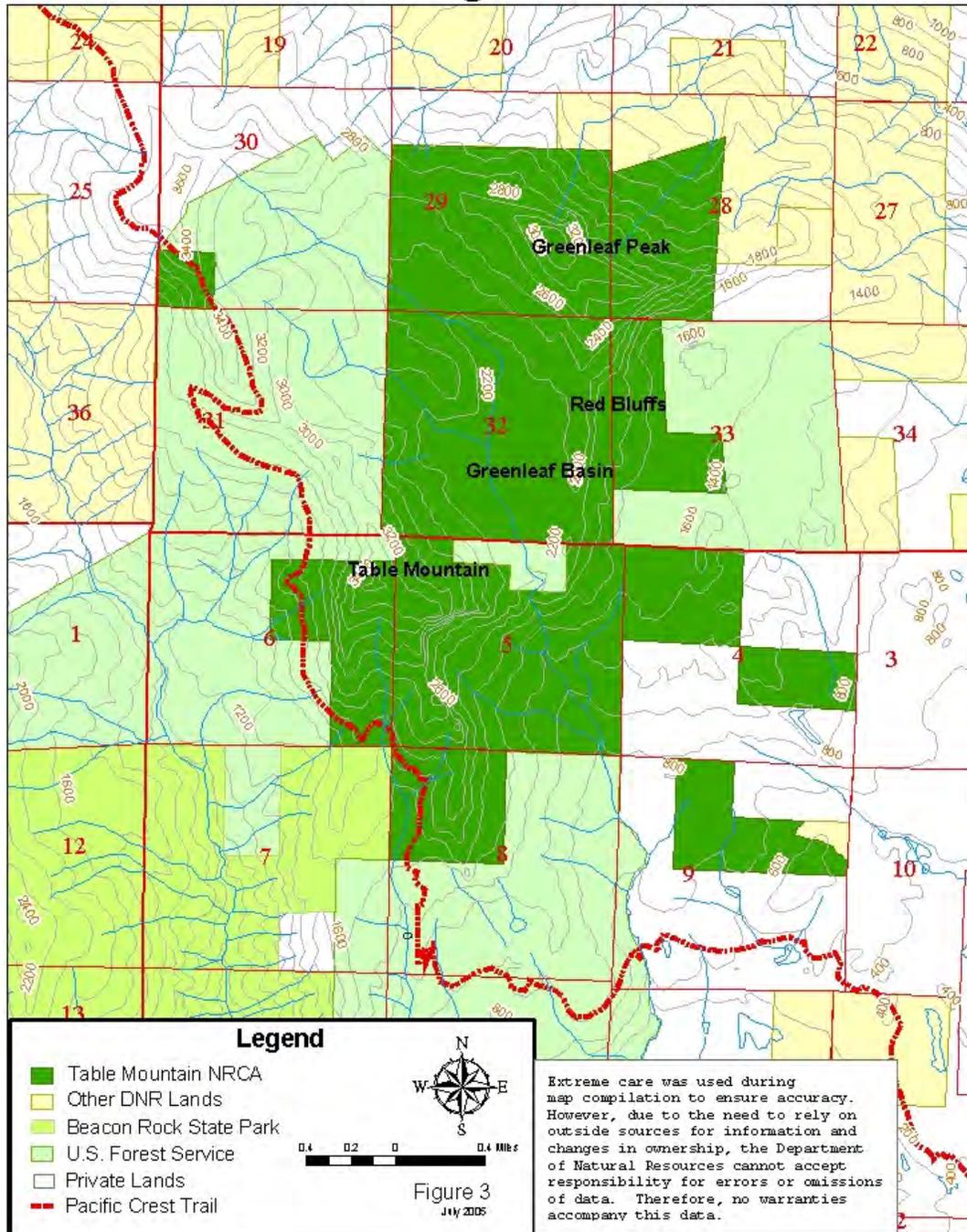
### **Acquisition History, Current NRCA Boundary, and Potential Future Acquisition**

Table Mountain and surrounding lands officially became a Natural Resources Conservation Area in 1991 when the Legislature authorized purchase of 2,197 acres of then state trust lands to be transferred into conservation status, and the Board of Natural Resources approved the NRCA's establishment. An additional 640 acres were purchased in 1996 and 1997 to bring the NRCA to its current size of 2,837 acres. Figure 3 depicts Table Mountain NRCA ownership, and surrounding public lands.

Ecological boundaries and areas of ecological interest were identified during the planning process based on scientific inventory work performed for the site. Areas of high conservation value were identified based on the rare elements they contain and the ecological boundary and area of ecological interest is developed based on this information. For the purposes of this management plan the ecological boundary is defined by current NRCA property ownership.

Lands adjacent to the existing NRCA boundary will be examined for important ecological, biological, geological (including better protection of the Bonneville Landslide) and cultural resources for potential future inclusion. Any changes to the current boundary will require a public hearing and acquisition of private properties will be by willing seller only. Landowner permission will be obtained prior to entry on private lands, if entry is needed for analysis. Any future inclusion of adjacent lands will be done to maximize the efficiency of management, reduce habitat fragmentation, and protect other NRCA values.

## Table Mountain NRCA and Surrounding Public Lands



**Figure 3**

---

## **D. MANAGEMENT PLANNING PROCESS**

### **Data Gathering and Scoping**

The first step in developing a management plan for any conservation area site, including Table Mountain, involves understanding the range and condition of the site's natural and cultural features. Natural Heritage and Natural Areas Program staff conducted an ecological site inventory in 2000. Inventory work identified the site's cultural, biological and natural features, and evaluated their condition. Once the features were identified, recommendations were developed to protect and maintain the site's primary natural and cultural features. A trail inventory was conducted in 2000, to document the location, condition, and use of the NRCA's trails.

The public, stakeholders, and agencies provided valuable information about conservation, use, and management issues relating to the site through the public scoping process.

### **Planning Process**

DNR initiated the management planning process on August 23, 2000, with a public information meeting in Skamania County. At the meeting, information was presented about DNR, the Natural Areas Program, the Table Mountain NRCA, and the management planning process. In addition, comments about the site history, public use, significant natural features, management issues, and land conservation, plus questions about the planning process were gathered.

Gorge area treaty tribes were invited to be involved in conservation planning for Table Mountain at the government-to-government level. Region and program staff met with representatives of the Yakama Indian Nation to provide information about the site and the management planning process, and to receive input into the management planning process.

Stakeholders were kept informed through planning updates, both to provide detailed response to comments received and to inform them of progress in the planning process. Staff also met with individuals, groups, and representatives from local, state and federal agencies, to ensure regulatory consistency during the planning process.

The Draft Table Mountain NRCA Management Plan was made available to stakeholders for comment in April, 2006 as part of the SEPA process. A public meeting was held on April 11, 2006 to receive comments on the draft plan, and on the SEPA Mitigated Determination of Nonsignificance. Comments were taken into consideration in preparation of the final management plan for the Table Mountain NRCA.

The plan was approved by the Commissioner of Public Lands in February of 2007 after conducting a final public hearing and follow-up revision of the plan.

### **Regulatory Consistency**

**SEPA Compliance:** The State Environmental Policy Act (SEPA), RCW Chapter 43.21, requires governmental agencies to consider the environmental impact of a proposal before making decisions. In compliance with SEPA, an environmental checklist and supplemental sheet for non-project actions was prepared. A Determination of Nonsignificance was issued on March 27,

---

2006, initiating a 30-day public comment period. The draft plan was subject to review and comment by the public and tribal, federal, state and local agencies and other interested groups and individuals.

**State, Federal and Local Regulatory Consistency:** The provisions of this management plan are intended to be consistent with the Columbia River Gorge National Scenic Area Act, Endangered Species Act and other federal regulations. It is also consistent with all applicable state provisions including the Growth Management Act and SEPA, and all local planning, resource protection and other regulations. Should there appear to be a conflict between this plan and a given regulation, the regulatory provision shall prevail. This plan will also be consistent with the Management Plan for the Columbia River Gorge National Scenic Area (September 1992) which mandates creation of protective buffer zones around sensitive plant and wildlife species, water resources, and cultural resources.

#### **Plan Update Process**

This management plan will be reviewed by the Department of Natural Resources and the public, as needed. These reviews will enable the document to be revised to address new management issues including integrated management with other lands adjacent to the NRCA.

#### **Limits of This Plan**

The management plan for the Table Mountain NRCA is a management guide to the administration and use of those DNR lands under NRCA ownership. The plan is not binding on, and does not affect the rights of adjacent private and public property owners who may continue to administer and manage their lands under existing local, state, and federal laws. Should adjacent land stewards choose to do so, this plan can provide a guide for conservation management.

Implementation of this plan is dependent on funding. The contents of this plan will be used to make budget requests for site planning, implementation and monitoring.

---

## **II. RESOURCE DESCRIPTION**

### **A. Location and Extent**

Table Mountain NRCA lies within Skamania County, Washington. The site is approximately 3 miles west of the City of Stevenson, and 2 miles north of Bonneville Dam and the Columbia River. The majority of the NRCA lies within the Columbia Gorge National Scenic Area. The 2,837-acre NRCA encompasses portions of Sections 28, 29, 30, 31, 32 and 33 of Township 3 North, Range 7 East; and portions of Sections 4, 5, 6, 8 and 9 of Township 2 North, Range 7 East, W.M., in Skamania County. The NRCA is bounded on the south, east and northwest by federal lands. Beacon Rock State Park lies to the southwest. Privately owned lands also abut the site to the north and east. There are two active rock-mining operations adjacent to the NRCA along its southeast boundary. The Pacific Crest National Scenic Trail traverses the southwest corner of the NRCA. A power line corridor traverses the northern portion of the site, and a natural gas pipeline easement crosses the southeastern corner of the site.

### **B. Climate**

The Coast Range of Washington and Oregon shields the Table Mountain NRCA from severe winter storms moving inland from the Pacific Ocean on the west, and the Cascade Range protects the area from the high summer and low winter temperatures of the Columbia Basin on the east. The Columbia River Gorge moderates the orographic effect of the Cascade Range somewhat by allowing air exchange between the inland and coastal areas of the state. Winds in the gorge generally blow from west to east in the summer and from east to west during the winter. Gale force winds through the gorge are common, especially in winter, when severe ice storms can also occur.

Precipitation and temperature vary with elevation, proximity to mountainous areas, position on leeward or windward slopes, and the season. At the closest weather station, Bonneville Dam, average annual precipitation is 77 inches with 80 percent falling during winter. Average temperatures at the weather station range from a low of 20 degrees Fahrenheit in January, to an average high of 89 degrees Fahrenheit in July. Temperature is expected to be lower and precipitation higher on much of the NRCA because it is higher in elevation than the Bonneville Dam weather station.

### **C. Physical Geography**

The site's landforms are the product of the geologic processes of multiple episodes of volcanism, erosion, and mass wasting. Table Mountain and nearby Greenleaf Peak are each more than 3,400 ft in elevation. Between the two peaks lies Greenleaf Basin, with an average elevation of 2,040 feet. Greenleaf Creek flows in a southerly direction through the basin's forested wetland. There is a waterfall where the creek exits over the scarp left by the Bonneville landslide. Immediately to the southeast of Table Mountain and the adjacent Red Bluffs lies the 36 square kilometer Bonneville landslide deposit. Its topography consists of a series of uneven, roughly undulating hills and abrupt slopes, inclined in a southerly direction toward and beyond the Columbia River. The river flows at an elevation of 100 feet.

---

#### **D. Geology and Soils**

Table Mountain NRCA lies within the Cascade Range, which contains the most complete stratigraphic section of Tertiary and Quaternary volcanic rocks in the state. From oldest to youngest, the main bedrock units in the area have been mapped as the Ohanapecosh Formation, and the Eagle Creek Formation, which is overlain by Yakima Basalt from the Grand Ronde Flow (approximately 12 to 16 million years old). These Columbia River basalts originated from vents in southeast Washington and Northeast Oregon, and flowed to the Pacific Ocean along the ancestral bed of the Columbia River. Evidence of young lava flows, indicates that there may have been a cinder cone between Table Mountain and Greenleaf Peak that collapsed with the landslide.

The NRCA contains portions of the Bonneville landslide which is part of a larger Cascades landslide complex, and is one of the largest examples of mass wasting in the Pacific Northwest. Debris from this landslide initially crossed and completely dammed the Columbia River creating an immense lake that stretched as far as 100 miles to the east. This temporary land bridge created by the slide is thought to have given rise to the “Bridge of the Gods” Native American legend. The slide also pushed the river channel nearly a mile to the south and constricted the channel to less than 400 meters wide. Remains of this landslide are still evident on both sides of the Columbia River. Approximately 1,300 feet of the Eagle Creek formation is exposed in the slide scarp of the landslide complex. Called the Red Bluffs, this scarp runs between Table Mountain and Greenleaf Peak to the northeast.

The exact cause and date of the landslide is still in question. Some geological references attribute the cause for most of the landslides along the north side of the Columbia River to a thick clay layer which caps the Ohanapecosh Formation, which during periods of high precipitation could have provided a lubricated slip plane. Another theory is that a large earthquake triggered the slide. It is likely that there were many different processes, acting at different times and in different places that lead to the slides. The Cascades landslide complex appears to include several lobes of slide material of different ages. Based on tree ring studies it is currently believed that the Bonneville landslide took place during the mid 1400s. Additional information on the landslide complex can be found in Appendix A.

The soils of the Table Mountain NRCA are derived from landslide deposits, rock outcrops, residuum, and colluviums of basalt, andesite, breccia and conglomerate, pumice and volcanic ash. The steep terrain of the majority of the NRCA results in exposed rock and rubble accounting for over 40 percent of the soil coverage of the NRCA. Soils on the southern and eastern portions of the NRCA are derived from the series of landslides that occurred on this site and support significant areas of talus.

#### **E. Hydrology**

Portions of several streams flow through Table Mountain NRCA. The largest is Greenleaf Creek, flowing southward through the site. Although this creek has seasonal tributaries within the NRCA ownership, both the headwaters and the more southerly downstream portion of the creek are outside the current ownership of the NRCA. The headwaters of Cedar Creek flow

---

---

southward from the NRCA into Hamilton Creek. The headwaters of two un-named tributaries of Rock Creek flow northward off the slopes of Greenleaf Peak.

Greenleaf Basin contains the only significant wetland within the current ownership of the NRCA. This extensive forested wetland lies in a perched basin fed by Greenleaf Creek, and supports an old growth forest community.

#### **F. Cultural, Archaeological and Historic Resources**

Table Mountain NRCA contains recognized archaeological features, which are considered to be some of the best preserved concentrations of native American rock features recorded in the state of Washington. Potential uses for these structures include food drying or storage pits, hunting blinds, vision quest ceremonies and even astronomical observation. Known sites are registered with the Office of Historic and Archaeological Preservation and additional sites may also exist.

Site observations by DNR staff and verbal communication from members of the public indicate that historic resources also exist within the Table Mountain NRCA. These include evidence of a logging railroad, log camps, old cabins, and fire lookout(s). State and federal law, and the provisions of the NRCA Statewide Management Plan provide for confidentiality of cultural, archaeological and historic sites as deemed necessary to protect the sites.

#### **G. Plant Communities and Species**

The vegetation of Table Mountain NRCA is a diverse mixture of forests, tall shrub communities, grassy balds, and sparsely vegetated rocky areas. Even though Table Mountain is west of the Cascade crest, east-side species such as heart-leaf buckwheat (*Eriogonum compositum*), fernleaf biscuitroot (*Lomatium dissectum*), spurred lupine (*Lupinus laxiflorus*), and cup clover (*Trifolium cyathiferum*) are found interspersed with west-side species. Consequently, Table Mountain is literally where east meets west.

To prioritize conservation efforts, rare species are ranked using the system developed by NatureServe, formed by The Nature Conservancy and the Natural Heritage Network. NatureServe works with the Natural Heritage Network scientists that collect data on rare animal and plant species, which are ranked based on rarity both within the state (S) and globally (G). Ranks are whole numbers 1-5, with 1 being rarest and 5 most abundant and widespread. Use of standard ranking criteria and definitions makes natural heritage ranks comparable across species and locations. Consequently a G1 ranking has the same basic meaning whether applied to a salamander, a moss or a forest community.

Using these criteria, Table Mountain NRCA contains one very rare and threatened plant species, Howell's daisy (*Erigeron howellii*). This plant is a federal species of concern and is listed as a threatened species in Washington. In addition, the NRCA contains one plant community that is very rare, the Red Fescue Montane Herbaceous Vegetation Community. There are only three known occurrences of this community in Washington, and an unknown number in Oregon. Because this daisy species and grassland community are quite rare, they are given considerable attention in this management plan's Management Recommendations section. Table Mountain also contains several plant communities that are vulnerable to extinction, including the Douglas-

fir/oceanspray, western redcedar -western hemlock/skunk cabbage, and the western hemlock/foamflower - western oakfern communities. The site's rarest plants and communities are listed in Table 1. Following the table is a descriptive overview of Table Mountain's rarest and most threatened plant species and plant communities.

**Table 1. Rare plant species and communities found within Table Mountain NRCA.**

| <b>Plant species</b>   | <b>Status</b>   | <b>Global and State Rank<sup>1</sup></b> |
|--|-----------------|--|
| Howell's Daisy ( <i>Erigeron howellii</i> )                      | Threatened      | G2S1                                     |
| Douglas' Silene ( <i>Silene douglasii</i> var. <i>monantha</i> ) | Review: Group 2 | G4T?S3?                                  |
| <b>Plant communities</b>   |                 |  |
| Red Fescue Montane Herbaceous Vegetation                         |                 | G2S2?                                    |
| Douglas-Fir/Oceanspray Forest                                    |                 | GNRS2                                    |
| Western Redcedar -Western Hemlock/Skunk cabbage Forest           |                 | G3?S2                                    |

<sup>1</sup>Global Rank (G) indicates relative rarity throughout the world and State Rank (S) indicates relative rarity in the State of Washington; 1 = critically imperiled, 2 = vulnerable, 3 = vulnerable to extirpation or extinction, 4 = apparently secure, and 5 = demonstrably widespread, abundant, and secure. Intraspecific taxon (subspecies or varieties) is denoted by a T. T ranks follow the same principles as global and state ranks. SR = reported from the state, but without persuasive documentation. A "?" following a "T" indicates questionable taxonomy that may reduce conservation priority and a "?" following a numeric rank denotes an inexact numeric rank (e.g., G2?).

*Howell's daisy (Erigeron howellii)*: This perennial vascular plant reaches 20 inches in height. It is a classic daisy in appearance with a yellow center and white flower rays. In Washington, the range of Howell's daisy is confined to Skamania County, with the largest populations being found on Greenleaf Peak and Table Mountain. It is found on rocky sites (with little soil development and few competing species) on steep north-facing slopes at elevations ranging from 1,600 to 3,400 feet. It is often found with Martindale's lomatium (*Lomatium martindalei*), spreading phlox (*Phlox diffusa*), matted saxifrage (*Saxifraga bronchialis*), and western stenanthium (*Stenanthium occidentale*). It flowers in June and reproduction is presumed to be primarily sexual via seed production; pollination is thought to occur primarily via insect pollinators.

This species is threatened because there are few populations within a restricted range, and the total population size is small. The largest threats to the NRCA populations are the introduction of invasive exotic plants and trampling from hikers.

*Douglas' silene (Silene douglasii* var. *monantha*): Douglas' silene is a perennial with very hairy leaves and is found on open rocky slopes from near sea level to 3,000 feet in elevation. Unfortunately, little is known about the natural history of this species. In addition, the varietal status of this taxa may be in question. Douglas' silene was observed at three locations on Table

---

Mountain and one location on Greenleaf Peak in the summer of 2000. It occurs as scattered individuals, and likely occurs at additional sites on both mountains.

*Herbaceous and dwarf-shrub balds (includes red fescue montane herbaceous grassland community)*: Balds are open grasslands or meadows that often occur on tops of ridges and mountains, but at elevations below the subalpine meadows. Balds often occur on rocky outcrops with poorly developed soils. The herbaceous and dwarf-shrub balds on Table Mountain NRCA are probably the highest quality montane balds in the western Columbia Gorge of Washington because of their good to excellent ecological condition, substantial size, and high diversity of species and community types. They can be broken down very roughly into three types: forb-rich grasslands, juniper-kinnikinnick dwarf-shrublands, and sparse forblands.

Forb-rich grasslands (red fescue montane herbaceous grassland community type) are probably the most extensive type of bald on Table Mountain. These highly diverse plant communities are composed primarily of forbs and graminoids (grasses or sedges). The dwarf-shrub, spreading phlox (*Phlox diffusa*), is often co-dominant, though short enough in stature to appear to be a forb. Important herbaceous species in terms of dominance are red fescue (*Festuca rubra*), long-stolon sedge (*Carex inops*), prairie junegrass (*Koeleria macrantha*), Nuttall's larkspur (*Delphinium nuttallii*), nodding onion (*Allium cernuum*), nine-leaf lomatium (*Lomatium triternatum*), western groundsel (*Senecio integerrimus* var. *exaltatus*), fine-tooth penstemon (*Penstemon subserratus*), wooly sunflower (*Eriophyllum lanatum*), field chickweed (*Cerastium arvense*), and spurred lupine (*Lupinus laxiflorus*). Many other species can be prominent. The moist microsites within the forb-rich grasslands appear to be transitional to shrublands. They have very dense herbaceous cover combined with an open layer of thimbleberry (*Rubus parviflorus*) about 0.5-1.0 m tall and 5-40 percent cover.

The juniper-kinnikinnick dwarf-shrublands are dominated by either or both common juniper (*Juniperus communis*) or kinnikinnick (*Arctostaphylos uva-ursi*). Many herbaceous species found in the forb-rich grasslands and the sparse forblands also occur in this vegetation type.

The sparse forblands are varied and occur where soils are extremely shallow and total vascular plant cover is relatively low (about 10-50 percent). Martindale's lomatium (*Lomatium martindalei*), heart-leaf buckwheat (*Eriogonum compositum*), and Cascade mariposa lily (*Calochortus subalpinus*) are among the many species found in this type.

### **Forest Communities**

Forests are the most extensive vegetation type in the NRCA and are dominated by Douglas fir (*Pseudotsuga menziesii*) with noble fir (*Abies procera*) as a frequent co-dominant above 2,400 feet. Deciduous trees, such as bigleaf maple (*Acer macrophyllum*) and red alder (*Alnus rubra*), are found on recently disturbed sites, on old scree fields, and along riparian corridors. Western redcedar (*Thuja plicata*) and black cottonwood (*Populus trichocarpa*) dominate or co-dominate very locally on moist to wet sites such as the Greenleaf Basin. Bitter cherry (*Prunus emarginata*) is at times abundant, although usually not co-dominant, in young mixed conifer-broadleaf stands. Grand fir (*Abies grandis*) is co-dominant in some lower elevation forests east of Red Bluffs. Western hemlock (*Tsuga heterophylla*), western redcedar, and to a lesser degree,

---

Pacific silver fir (*Abies amabilis*) are found regenerating in the lower canopy layers in some forests. Hemlock and redcedar are occasional except in old-growth forests or on some moist, protected sites. Pacific silver fir is found only on the coldest, moist sites within the Greenleaf Basin area on protected benches or gentle north facing slopes above 2,600 feet elevation. The two rarest forest communities are the Douglas-fir/oceanspray and western redcedar-western hemlock/skunk cabbage communities.

*Douglas-fir/Oceanspray*: The tree layer is composed of mixed-aged Douglas-fir trees with a few scattered big-leaf maple trees. The shrub layer is dominated by oceanspray (*Holodiscus discolor*). Volcanic rocks in the area are covered with moss and without vascular plants. This community is found at lower elevations on the southern slopes of Table Mountain, between previously logged forests and slopes covered by unforested volcanic rocks. Some of the very dry forests of this community type have trees of multiple age classes in the same stand due to partial mortality fires or other disturbance.

Western redcedar-western hemlock/skunk cabbage: This forested wetland is located in the flats of Greenleaf Basin. The stand consists of old western redcedar and western hemlock trees in the canopy and the understory is dominated by vine maple (*Acer circinatum*) and wet pockets with skunk cabbage (*Lysichitum americanum*). There are many standing dead redcedars that were likely killed by the Yacolt fire of 1902.

### **Wetlands**

Greenleaf Basin is the only significant wetland on the site. Forests in the bottom of Greenleaf Basin are dominated by western redcedar and red alder. This relatively large forested wetland system collects water from throughout the basin and forms the headwaters of Greenleaf Creek. The creek flows south out of the perched basin and over a falls.

### **Talus, Cliffs, and Scree**

Considerable areas of the NRCA are sparsely vegetated with vascular plants. These areas include talus, cliffs, scree or other recently mass-wasted soils. Most often these rocky sites are dominated by non-vascular vegetation, especially mosses and lichens. Herbs or shrubs may be a minor component of the vegetation on these sites. Sometimes, the sparsely vegetated areas occur in an intricate mosaic with shrubby and/or herbaceous vegetation.

### **Plant Community Condition**

*Old-growth forests*: Several stands of old-growth forest, which are greater than 200 years of age, escaped the previous fires. The more extensive old-growth stands are the noble fir-Douglas-fir forest (western hemlock/foamflower association) on the north slope of Table Mountain and the western redcedar forest (western hemlock/devils club and western redcedar/skunk cabbage associations) in the bottom of Greenleaf Basin. The old-growth stand in Greenleaf Basin has multi-layered canopies, many large old (greater than 200 years old) trees, and much coarse woody debris. The high component of western redcedar in Greenleaf Basin is uncommon in other Columbia Gorge stands. Many trees within Greenleaf Basin were killed by the Yacolt fire of 1902 and were either salvaged after the burn or are snags today, which are scattered among the naturally regenerated forest.

---

*Balds:* All of the bald communities on Table Mountain appear to be in good to excellent ecological condition. The only non-native species of any importance is common St. John's wort (*Hypericum perforatum*), which is widespread in low abundance. An exotic species of hawkweed (*Hieracium acuminatum*) is found locally in a few balds. It is abundant in the powerlines corridor and should be monitored closely. Thin bentgrass (*Agrostis diegoensis*), a native grass that tends to increase with disturbance, is also widespread but typically occupies low percent cover. This is in contrast to some more disturbed balds elsewhere in the Columbia River Gorge where it is more abundant.

## **H. Wildlife**

Table Mountain NRCA provides a number of important habitats and habitat structures for wildlife, including forests of different ages and associated structures, wetlands, streams, talus slopes, and cliff faces. Table Mountain is also a location where animal species typically found east of the Cascade Range mix with west-side species, resulting in a richness not normally found at a single site. For example, lazuli buntings, canyon and rock wrens have all been observed here and are species whose ranges are primarily east of the Cascade crest. Table Mountain NRCA also hosts several species listed at the federal and state level for conservation and rarity (Table 2).

**Table 2. Rare wildlife species within Table Mountain, including global and state ranks and Federal and State status. Listed in approximate order of rarity and threat.**

| Species  | Global and State Rank <sup>1</sup> | Federal and State Status                     |
|--|------------------------------------|--|
| Larch Mountain salamander<br>( <i>Plethodon larselli</i> )     | G2S2                               | Federal Species of Concern, State Sensitive  |
| Cascade torrent salamander<br>( <i>Rhyacotriton cascadae</i> ) | G3S3                               | Federal Species of Concern, State Candidate  |
| Cope's giant salamander<br>( <i>Dicamptodon copei</i> )        | G3S3                               | State Monitor                                |
| Tailed frog<br>( <i>Ascaphus truei</i> )                       | G4S4                               | Federal Species of Concern, State Monitor    |
| Northern spotted owl<br>( <i>Strix occidentalis caurina</i> )  | G3T3S3                             | Federally Threatened, State Endangered       |
| Peregrine falcon<br>( <i>Falco peregrinus</i> )                | G4S1B,S3N                          | Federal Species of Concern, State Endangered |
| Bald eagle<br>( <i>Haliaeetus leucocephalus</i> )              | G4S3S4B,S4N                        | Federally Threatened, State Threatened       |

<sup>1</sup>Global Rank (G) indicates relative rarity throughout the world and State Rank (S) indicates relative rarity in the State of Washington; 1 = critically imperiled, 2 = vulnerable, 3 = vulnerable to extirpation or extinction, 4 = apparently secure, and 5 = demonstrably widespread, abundant, and secure. Intraspecific taxon (subspecies or varieties) is denoted by a T. T ranks follow the same principles as global and state ranks. SR = reported from the state, but without persuasive documentation. A “?” following a “T” indicates questionable taxonomy that may reduce conservation priority and a “?” following a numeric rank denotes an inexact numeric rank (e.g., G2?). Breeding (B) and nonbreeding (N) are added to indicate that the rank pertains to the breeding and nonbreeding population of the species.

### **Amphibians and Reptiles**

This area of Washington has a rich assemblage of amphibian and reptile species. Twenty-four amphibian and reptile species potentially occur within the NRCA. Ten species have been observed to date. In addition to the priority conservation species (Larch Mountain salamander, Cope's giant salamander, tailed frog, and Cascade torrent salamander), the area contains appropriate habitat for two additional species of concern, western toad and California mountain kingsnake.

### **Fish**

All of the fish species of concern spawn outside the current NRCA boundary. Anadromous species spawn below the lowest falls of Greenleaf Creek outside the NRCA and are not found further upstream. The NRCA serves an important ecological role for fish by providing a source of clear cold water to the lower reaches of streams, which originate within the NRCA

---

boundaries. Fortunately, the streams within the boundary are well shaded, primarily with conifer trees. As the conifer forests continue to mature, they will provide larger woody structure to the stream.

### **Special Wildlife Habitats**

A variety of wildlife habitats exist within the NRCA boundary. These include balds, cliffs, talus, mature deciduous forests, old growth forest, streams and riparian areas, and forested wetlands. Balds host a butterfly community found nowhere else in the state. While none of these species known from or likely to be found here are rare, the number and diversity of butterflies found from July through early September is remarkable. Talus areas are composed of weathered rock fragments and are usually located below a cliff face. Talus slopes provide a broad spectrum of thermal and moisture microclimates. Some species, such as the Larch Mountain salamander, pika and rock wren are found almost exclusively in the talus slopes within the NRCA. The forested talus slopes or the forest edges of the talus slopes are likely important habitats for the Larch Mountain salamander. A variety of potential bat habitats, from caves and crevices to large hollow snags, are present within the NRCA, but additional research is needed to document the relative importance of this area to bats. The large cave in the Yakima basalts within the outlier southeast portion of the NRCA should be surveyed for bat use.

### **I. Site Disturbance**

*Fire:* Fire has been the most recent major natural disturbance influencing the structure and composition of vegetation on the NRCA. The majority of the forests on the site experienced stand-replacement fire in the early 1900s. The Yacolt fire of 1902 and several subsequent re-burns appear to have caused much, if not all, of the fire-related tree mortality observed on the site. The most common age class of dominant trees in the young post-fire forests is 60-70 years. A 90-95 year old age class dominates a few stands on the eastern edge of the NRCA. There appears to have been a re-burn of portions of the Yacolt burn area about 70 years ago. The unlogged 70 year old forests show abundant evidence of two successive stand replacement fires: large, but relatively short, snags with charcoal on the exposed wood. These snags were old-growth Douglas-fir trees prior to 1902 that were killed by the Yacolt burn, and then charred in the re-burn. Many have fallen to the ground. Fire may have played a role in maintaining bald vegetation, by thinning or removing woody species and favoring fire-tolerant herbaceous species.

*Timber harvest:* Large areas of the NRCA were logged at some point within the last 80 years. Logging history on individual sites includes: (1) logged and burned about 60 years ago (fire after logging); (2) salvage logged after stand-replacement fire; (3) commercially thinned about 40 years ago (in 80-90 year old stands); and (4) high-grade logged (large Douglas-fir and western redcedar removed). Old-growth stands are relatively undisturbed by logging.

### **J. Land Use**

During this century, timber harvest appears to have occurred at Table Mountain NRCA in at least four phases (see above). However some old growth stands are relatively undisturbed by logging.

Roads of varying condition exist within the NRCA and adjacent to it. The majority of them were originally used for timber harvest. Also, adjacent rights-of-way provide access to other

---

ownerships. A power line corridor traverses the northern portion of the site, and a natural gas pipeline easement crosses the southeastern corner. Evidence also points to a logging railroad that existed both to the west of the Table Mountain peak and within Greenleaf Basin.

Today, the site is mainly used for hiking. The Pacific Crest Trail crosses the southwest corner of the site, and there are several user-built trails throughout the NRCA that were constructed before the land was transferred to NRCA status.

---

### III. MANAGEMENT GOALS AND OBJECTIVES

#### A. Management Philosophy

The primary purpose of NRCAs is to protect outstanding examples of native ecosystems and habitat for endangered, threatened and sensitive plants and animals while providing opportunities for environmental education and low impact public use. Areas with multiple features, such as geologic and scenic areas, cultural resources and threatened sites, are given priority.

As well as addressing the content and administration of management plans at the site level, the NRCA Statewide Management Plan provides policy guidance for the selection and evaluation of appropriate management priorities for individual NRCAs, with the recognition that the opportunities, constraints, and conservation needs of each NRCA vary, and that management philosophy should reflect the uniqueness of each area.

The Table Mountain NRCA provides a unique combination of natural resources, scenic features, and opportunity for low-impact environmental education and public use. The management plan for the site encompasses these values, and provides specific direction for their management within the Table Mountain NRCA

#### B. Management Goals and Objectives

The following management goals outline the broader vision for Table Mountain NRCA. They provide the NRCA-wide philosophy that will guide the overall management of the NRCA. The goals are drawn from provisions of the Natural Resources Conservation Areas Act in RCW Title 79, and from the program purpose as outlined in the NRCA Statewide Management Plan.

The objectives, as well as the strategies set forth later within this management plan, are the result of resource research, site analysis and recommendations, provisions of the Statewide Management Plan, and information drawn from comments during the planning process.

#### General Management Objectives

Following each management goal, specific objectives are provided.

#### **Goal One: Maintain, enhance and protect ecological and geological resources.**

##### *MANAGEMENT OBJECTIVES:*

- Conserve and protect the critical features the NRCA was designated to protect.
- Minimize the introduction and spread of non-native species and potentially remove non-native species.
- Allow natural ecological and physical processes to predominate unless they threaten the continued existence of the primary features that the conservation area was intended to protect.

- 
- Restore areas where ecosystem quality is degraded through impacts such as erosion, non-native species invasion, or other processes and activities.

**Goal Two: Maintain or provide habitat for threatened, endangered, and sensitive (TES) plant and animal species**

*MANAGEMENT OBJECTIVES:*

- Preserve rare landscape elements, critical habitats and associated species.
- Maintain, enhance or restore habitats for Threatened and Endangered plant and animal species as required by state and federal laws.
- Protect essential and valuable wildlife habitat to facilitate natural biological diversity, reduce fragmentation of genetic resources and reduce geographic isolation of ecosystems.
- Designate critical species, elements and habitats as sensitive areas under this plan.

**Goal Three Maintain scenic landscapes**

*MANAGEMENT OBJECTIVES:*

- Design public use sites and facilities so as to not detract from the scenic beauty of the site.
- Plan management activities and site development to minimize visual impacts as viewed from surrounding areas.

**Goal Four: Protect cultural resources**

*MANAGEMENT OBJECTIVES:*

- Protect cultural and historic resources in the NRCA in consultation with local tribes, with specific emphasis on protection of tribal heritage resources and historic resources.
- Manage historical resources for conservation and protection.

**Goal Five: Enhance opportunities for environmental education**

*MANAGEMENT OBJECTIVES:*

- Using interpretive signs, foster a broader understanding of Table Mountain NRCA as a site that protects Washington's ecological, cultural and geological heritage.
- Proactively educate users about their role as stewards of the natural features of the site.
- Develop environmental education opportunities where such activities do not diminish ecosystem quality and natural site characteristics.

- 
- Where possible, incorporate educational programs into site restoration efforts.
  - Promote opportunities for Table Mountain NRCA to be used as a research site for educational institutions.
  - Encourage research projects that will provide information about, or that will help manage, the rare species and communities that the area is intended to protect.
  - Promote conservation goals by providing opportunities for site stewardship.
  - Present use restrictions and regulations within the context of environmental education.

**Goal Six: Provide opportunities for low-impact public use**

*MANAGEMENT OBJECTIVES*

- Provide low-impact public use where use levels and activities do not impact the protected resources of the NRCA, or diminish ecosystem quality and natural site characteristics.
- Maintain, enhance, relocate, abandon, or restore degraded or dangerous areas of the trail system to provide for safe, low-impact public use opportunities while protecting resources.



---

## IV. MANAGEMENT GUIDELINES

Specific site management guidelines and provisions allow for operational direction in the management and stewardship of the Table Mountain NRCA site. The previous chapter provided the broader overall site goals and objectives as the foundation for site administration. The management guidelines in this chapter build on the goals and objectives at a more specific level. This provides a framework with which to make appropriate management decisions to implement program conservation goals at the resource and use-specific level.

### **A. Sensitive Areas**

The lands within Table Mountain NRCA have been classified as Sensitive Areas and Less Sensitive Areas, based on inventory work and studies completed to date. With this site's broad array of ecological, natural and cultural resources, it is important to recognize that even lands designated as less sensitive are critical elements of the conservation area, and are also vulnerable to natural and human induced impacts.

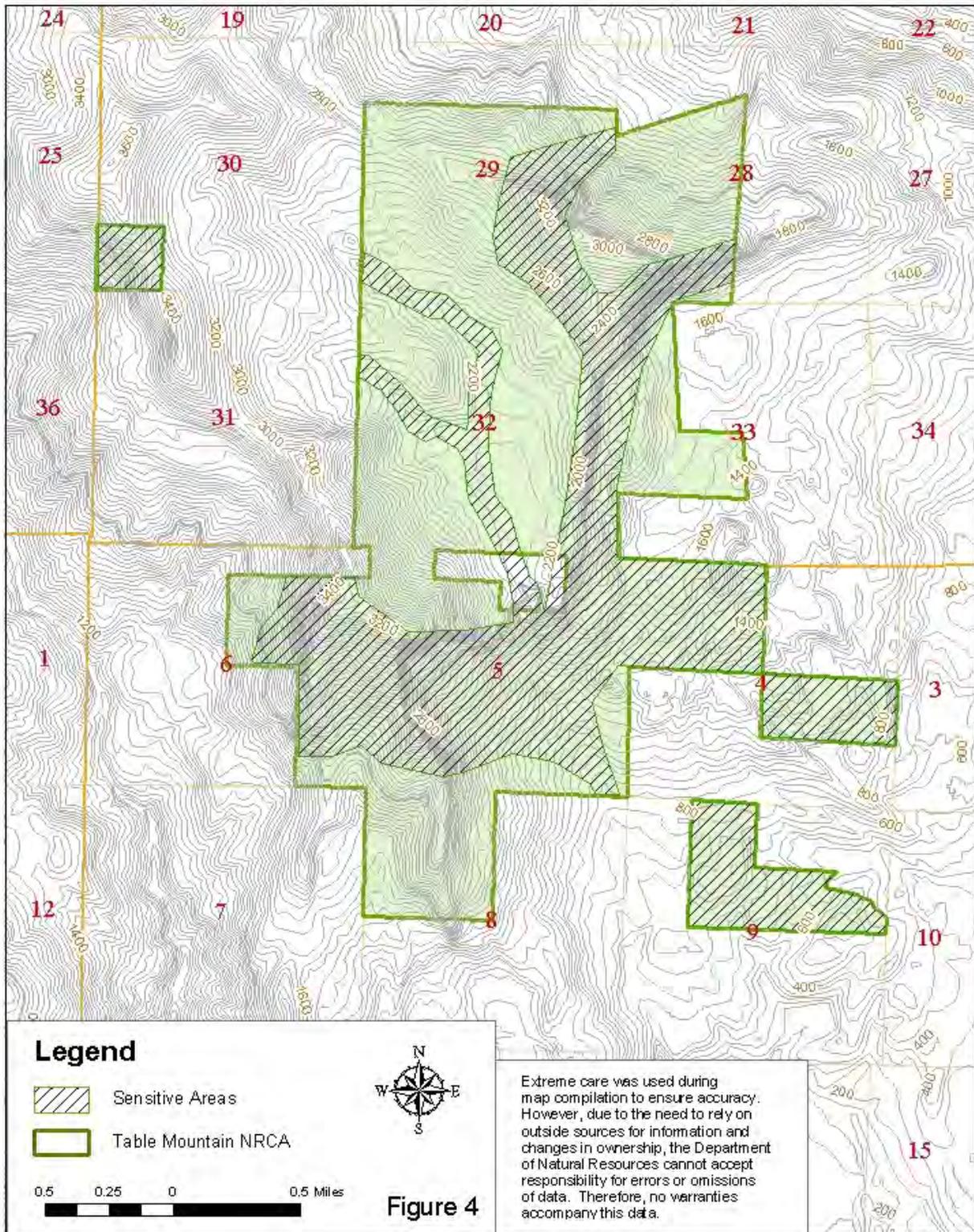
#### ***Sensitive areas***

Sensitive areas contain species, communities, areas and habitats, which are vulnerable or particularly fragile and therefore highly sensitive to human disturbance. Table Mountain NRCA's sensitive areas include cliffs, montane balds, wetlands, riparian areas, aquatic habitats, erosive soils and unstable slopes, talus occupied by Larch Mountain salamander, areas with the presence of, or habitat for, threatened or endangered species, and areas with cultural and historic resources.

#### ***Less sensitive areas***

Less sensitive areas are the lands that, based on inventory work and knowledge of the site to date, do not contain the resources identified as "sensitive." Although these lands may be more self-maintaining and resilient, and therefore potentially more suitable for low-impact public use, it is important to recognize that they may still be sensitive to impact if misused. Specific management guidelines relating to public use are addressed within the Low-impact Public Use Section.

## Table Mountain NRCA- Sensitive Areas



**Figure 4**

**Figure 4**

---

Habitats identified as sensitive areas include:

***Grassy balds:***

The grassy balds of Table Mountain NRCA are currently in good condition due to limited human impact. Their condition contrasts greatly with balds on adjacent Hamilton Mountain to the west, where extensive human use has contributed to degradation of the site. Shallow soils, fragile plant communities and rocky soils make grassy balds highly susceptible to non-native plant invasion, trampling and erosion.

***Cliffs:***

Cliffs are considered significant wildlife breeding habitat, especially for peregrine falcons and turkey vultures, and they are limited in availability (Washington Department of Fish and Wildlife, 1999). Peregrine falcons are sensitive to human activity near the nest.

***Aquatic habitats and riparian areas:***

Aquatic habitats and riparian areas are generally at greater risk from disturbance, due to their species richness and their higher vulnerability to disturbance. Most of the amphibian and reptile species that occur west of the Cascade Mountains depend on aquatic habitats. Riparian habitats are vulnerable to the sedimentation that can occur in areas where trails are poorly designed, as is the case for some unauthorized trails on Table Mountain.

***Talus:***

Talus is an important habitat for Larch Mountain salamander and pika and is limited in availability. Any activity that destroys the interstitial spaces between the rocks and disturbs the moisture regimes of these habitats (such as trail building and human trampling) is a threat to the Larch Mountain salamander.

***Rare and declining species:***

The phrase “rare and declining” is used to encompass threatened, endangered and sensitive species, and other species as yet not listed under federal or state listing provisions, but which are of concern because of their limited numbers or due to threats to their habitats.

Management guidelines:

- Conduct amphibian and butterfly surveys before any site development or land-use activities take place near talus slopes, balds, lentic habitats and lotic habitats. Rocky areas and talus slopes should be protected until it is shown that they are not occupied by the Larch Mountain salamander.
- Avoid establishing new trails or promoting additional human use in or near sensitive areas. Relocation of existing trails for greater resource protection is allowed when accompanied with the appropriate analysis and review by Natural Heritage Program and Natural Areas Program scientists.
- Avoid new trails and increased human activity near the balds and Howell’s daisy populations. These are rare and imperiled natural features, and can be damaged and

---

destroyed by human trampling. In addition, people can bring in seeds from exotic plants on their boots that can negatively affect both native plant populations and plant communities.

- Protect, enhance and restore aquatic habitats impacted by human use through the guidelines of this management plan, and the implementation of the trails rehabilitation plan to restore, rehabilitate, improve or relocate existing trails in or near aquatic habitats and their buffers.
- Non-native animal species should not be introduced to the site. Any existing non-native animal species may need to be removed as necessary and practical.
- Trails and human activity should be located away from cliffs.

## **B. Cultural and Historical Resources**

Table Mountain NRCA contains documented cultural and historic sites, which may be vulnerable to damage by public use and by adjacent land uses. Federal law, the Columbia Gorge National Scenic Areas Management Plan, state law administered by the Office of Archaeology and Historic Preservation (RCW Title 27), and the NRCA Statewide Management Plan, provide that such sites be protected and confidentiality maintained. For this reason, cultural and historic resources are considered sensitive areas under this plan. Site confidentiality is maintained for protection of these important cultural and historic resources.

Management Guidelines:

- Identify, document and protect archaeological, cultural and historic resources by designating them as sensitive areas under this plan and maintaining site confidentiality.
- The program and the DNR archeologist will work in close coordination with tribal archaeologists, and continue to review the NRCA for cultural resources of tribal significance. DNR will then work cooperatively with tribes to jointly develop appropriate and culturally sensitive approaches to managing the site's cultural and historic resources.
- Prior to any form of site modification work, conduct a cultural and historic resources inventory of the proposed area in conjunction with tribal archaeologists.
- Adjacent uses may continue in their existing footprint, however easily visible boundary markers should be placed at the edge of the NRCA. The markers should include the buffer already established by DNR.
- As cultural and historic resources are identified, direct public use away from these areas to protect resources, maintain confidentiality, and meet the provisions of legislated protection and program policy.

## **C. Public Access**

### **Overview**

Table Mountain NRCA's unique natural resources and scenic vistas attract both local and regional users. The site's location within the Columbia River National Scenic Area, and its

---

---

proximity to regional urban population centers mean there will continue to be increased interest in public access. The purpose of this section is to guide management of the site so it is possible to provide for continued opportunities for environmental education and low-impact public use while achieving the other goals of resource protection, enhancement and restoration.

The NRCA is reached by a user-built loop trail leading off the Pacific Crest Trail. This user built trail is steep and eroded in some places. Snow makes a portion of the site inaccessible in winter. Distance and the steepness of access contribute to the difficulty and length of time needed to reach the site and the current low level of access has been important in protecting the good condition of the NRCA's ecological features.

Because of the site's location within the Columbia River National Scenic Area, and its proximity to regional urban population centers, there will likely continue to be increased interest in public access. Any future proposed actions that may increase the levels of public use must meet the criteria outlined below in the Conditional Uses Section and must be approved by the Natural Areas Program ecologist and natural areas region manager to ensure consistency with the program goals.

Ongoing monitoring is a requirement of planning for public use and will be utilized to ensure resource protection. The type and intensity of an allowed use may be limited if it is determined, through monitoring, that the level of use is negatively affecting the resources the NRCA was intended to protect.

Planning for environmental education and low-impact public use opportunities must take into account several key issues at Table Mountain NRCA:

- Conservation of high quality balds which at present are in very good condition, but are a fragile feature that is highly susceptible to human impact, and
- Conservation of the site's other resources in relation to the potential for impact from greater use, and
- Public safety issues in relation to the precipitous topographic features of Table Mountain NRCA, and
- Site remoteness, which makes providing access opportunities more difficult, but which also protects fragile elements from overuse, and
- Natural Areas Program goals and management plan provisions.

### **Education**

Environmental education programs provide a rich opportunity for creating a greater understanding and appreciation of conservation values and the Natural Areas Program, instilling a sense of stewardship, and providing opportunities for research.

The expertise of educational, scientific and other Natural Areas Program staff will be utilized to develop site-appropriate educational components. These may include expansion of the classroom component and site-appropriate approaches to developing various materials and educational modules. Environmental education materials may also include signs, interpretive areas, leaflets and other tools to educate and share information about the fragile nature of Table

---

Mountain NRCA's sensitive areas, and the need for protection and restoration of the site. Site-based materials should be appropriate to the location, the information being shared, and not detract from the natural setting.

Many caring and conservation-minded individuals have been involved with this site over time, including volunteer site stewards who joined a formal stewardship program at Table Mountain in 2001. By providing rewarding stewardship opportunities to interested volunteers with a diversity of expertise, this committed group can learn about the program's conservation goals and the diverse natural resources of the site. They can also be resources to educate users and others about the unique qualities of Table Mountain NRCA, the Natural Areas Program's conservation goals, and issues of resource protection and conservation in the 21<sup>st</sup> Century.

### **Low-Impact Public Use**

Provisions for low-impact public use of NRCAs are included as part of the NRCA Act. The NRCA Statewide Management Plan gives specific policy guidance about how to define and evaluate low-impact public use. Low-impact public uses are those activities that do not adversely affect a site's resource qualities. Specifically, these activities shall not compromise a site's integrity, or its ecological, geological, scenic, historic and archaeological values.

DNR proposes to use an interactive approach to resource protection in public use areas by working with users and user groups to share knowledge of the NRCA, its resources, and its site-specific public use provisions.

### **Allowed Uses**

Table 3 below lists uses currently allowed within Table Mountain NRCA, however uses may be restricted or prohibited where such uses cause unacceptable resource degradation or impact sensitive species.

Where possible, allowed uses will be clustered to avoid disturbances to the entire NRCA. As much land as possible will remain undisturbed to further the goals to maintain, enhance and restore ecosystems.

Ongoing monitoring is a requirement of planning for public use and will be utilized to ensure resource protection. The type and intensity of an allowed use may be limited if it is determined that the current level of use negatively affects the resources the Table Mountain NRCA is intended to protect.

Any use not specifically listed in Table 3 as an allowed use in this plan is excluded; except those low-impact uses which may be temporarily allowed if they undergo the review process and meet all the criteria for a conditional use.

**Table 3: Allowed Uses Within Table Mountain NRCA**

| <b>Allowed Uses in Table Mountain NRCA</b> |  |   |
|--|--|---|
| <b>Land Area Designation</b>               | <b>Type of Use</b>                       | <b>Conditions of Use</b>  |
| <b>Highly Sensitive Areas</b>              | DNR administrative uses                  | Administrative activities as necessary to protect, enhance and restore site and administer use  |
|  | DNR approved scientific uses             | Requires prior approval by Natural Areas Program scientist and region natural areas manager for consistency with program goals                        |
|  | Low-impact public use of sensitive areas | Restricted to approved designated trails only. Level of use may be limited or changed based on sensitivity of resource or stewardship activities      |
| <b>Less Sensitive Areas</b>                | Hiking                                   | On designated trails  |
|  | Photography                              | On designated trails  |
|  | Bird watching                            | On designated trails  |
|  | Nature study                             | On designated trails  |
|  | Picnicking                               | No infrastructure provided: pack in, pack out policy  |
|  | Hunting                                  | Following WDFW rules and regulations. No shooting from, across or into any approved trail or road.  |
|  | Environmental education activities       | Where such activities are low-impact and do not adversely affect the resource values, and pre-arranged with DNR prior to site visit; maximum size 12. |
|  | DNR administrative uses                  | Administrative activities as necessary to protect, enhance and restore site and administer use  |
|  | DNR approved scientific uses             | Requires prior approval by Natural Areas Program scientist and region natural areas manager for consistency with program goals                        |
|  | Interpretive tours                       | Accompanied by DNR representative or designee; maximum size 12.   |

---

## **Hunting**

Access to the NRCA for hunting is allowed when conducted according to the rules and regulations of the Washington Department of Fish and Wildlife. Pack animals and pets are not allowed on the NRCA. The discharge of firearms in seasons other than regulated seasons may be a safety issue due to potential user conflict and would require further study prior to any future consideration of approval. In order to ensure the safety of other recreational users, no shooting is allowed from, across or into any approved trail or road.

## **Conditional Uses**

Conditional uses are low-impact pedestrian uses that are not specifically addressed as allowed uses, that upon undergoing DNR's review process are determined to be consistent with the criteria for an allowed use when carried out on a limited, single-use basis.

DNR may grant a temporary permit when a proposed use is not listed as prohibited, and the use meets all of the criteria for a conditional use. DNR takes a cautious approach to reviewing conditional uses due to the fragile nature of the features being protected and the risk of damage to the resource.

Conditional uses must meet all of the applicable provisions of the NRCA Statewide Management Plan and the provisions of this plan, including the following criteria.

- Poses no threat to protecting the sensitive resources the NRCA was intended to protect
- Does not compromise or degrade ecosystems and resources of the NRCA
- Meets the provisions of RCW 79.71 and the NRCA Statewide Management Plan.
- Provides a net benefit to the NRCA and the Natural Areas Program
- Is not extractive or destructive in nature
- Does not occur in a sensitive area
- Does not deprive the general public access to, or limit enjoyment of, the NRCA
- Does not detract from the general public interest

## **Incidental Rock and Mineral Collecting**

Incidental rock and mineral collecting as a recreational activity is defined in the NRCA Statewide Management Plan as the collection of limited amounts of rock, mineral or fossil specimens by an individual for personal collection purposes.

Management guidelines:

- Incidental rock and mineral collecting as a recreational activity will be reviewed using the criteria for conditional uses. No incidental rock and mineral collecting shall occur in sensitive areas.

## **Excluded Uses**

Uses, including commodity-based activities, which are destructive of the resources, aesthetically offensive, disruptive, incompatible with cultural or ecological values, limiting or curtailing to existing life on the site or pose health and safety concerns, will not be allowed unless the activity is part of an approved scientific study or restoration effort (NRCA Statewide Management Plan).

---

Management guidelines:

- Since it is difficult to realistically anticipate the type of potential uses that might be proposed, all uses not specifically listed as allowable uses, or reviewed as conditional uses, are excluded.
- The use of mechanized transportation (including but not limited to cars, trucks, ORVs, motorcycles and bicycles) off road, on trails or on closed roads will not be allowed. Exceptions may be made for utilizing vehicles for emergency response, management activities and stewardship activities.
- Due to the high conservation value of this site and the fragility of its sensitive areas, non-motorized vehicles and pack or stock animals are excluded. This exclusion does not apply to roads and trails outside the jurisdiction of the plan, such as existing deeded road easements or the Pacific Crest Trail. These types of routes are subject to their respective requirements and provisions.
- Due to the site's ecological sensitivity, the collection of plants and mushrooms or firewood is not allowed.
- In order to protect native wildlife and other natural resources, pets are not allowed.
- Due to the lack of campsites and potential damage to sensitive resources camping is not allowed.

### **Tribal Uses**

The continuation of activities that are part of tribal cultural values and reserved treaty rights is provided under federal and state laws and DNR policy. DNR will consult with local tribes to develop guidelines for compatibility of use with the conservation goals of the Natural Areas Program. See the Cultural and Historic Resources Section for management guidelines.

### **D. Commodity-Based Activities**

Commodity-based activities, including but not limited to grazing, agriculture, aquaculture, natural resource picking and harvesting, mining, and oil and gas exploration, are generally inconsistent with the management goals and emphasis of the Natural Areas Program and the Table Mountain NRCA.

DNR will review all applications for commodity-based activities by applying all the criteria listed under the Conditional Uses Section, combined with the policies of the Statewide Management Plan, which state:

- Commodity-based activities shall not compromise a site's integrity and its ecological, geological, scenic, historic and archaeological values.
- Proposals for the exploration and development of minerals, oil and gas not owned as part of the NRCA, including trust-owned minerals, will be evaluated for environmental sensitivity

---

and agreement with the NRCA's management policy. Open pit mines will be strongly discouraged; subsurface operations should be accessed from outside of the NRCA with little or no surface disturbance in the conservation area.

When the mineral rights are NRCA-owned, mineral leases will be issued only when no surface or no harmful disturbance can be anticipated over the project's life.

- Mining will not be allowed under the following conditions:
  - Pit mining where the NRCA ownership includes mineral rights.
  - All surface mining where the NRCA ownership includes mineral rights.
  - All sub-surface mining where NRCA ownership includes mineral rights, unless such mining can be accomplished without harming ecological systems.

### **E. Roads and Easements**

Easements are specific deeded access or use rights within the NRCA that are described in recorded documents previously executed between DNR and the easement beneficiary. All existing easements were deeded prior to the designation of Table Mountain as an NRCA and include:

- Easement for Pacific Crest Trail
- Power line easement
- Natural gas pipeline easement
- Existing rights-of-way executed with property owners for purposes of crossing Table Mountain NRCA ownership over existing easement roads.

Proposals for new roads and easements will be considered only when they do not conflict with the provisions of the NRCA Statewide Management Plan.

### **F. Fire Management**

Fire is an important natural disturbance in the ecosystems of Table Mountain; therefore its management is of considerable significance. The natural fire regime for the majority of forests on the site is probably that of infrequent, high-severity fires that kill the majority of trees in a stand. In addition to affecting forest stands, fire likely also played a role in maintaining balds by thinning or removing woody species and favoring fire-tolerant herbaceous species. Today, the majority of forests are recovering from relatively recent fires and logging activity. In addition, many of these young forests appear to have experienced two intense fires within the last century.

Reburns of extensive stand-replacement fires early this century appear to have been a somewhat widespread phenomenon. The Yacolt burn of 1902 appeared to be largely a result of human land use practices, including extensive logging without slash abatement and many human ignitions.

As of the date of completion of this NRCA management plan, there is a Table Mountain NRCA Wildfire Suppression Plan on file at DNR's Pacific Cascade Region office in Castle Rock. The plan addresses fire management objectives, resource specialist notification instructions, pre-suppression planning, training and orientation, control lines, mop-up procedures, post-fire rehabilitation and known safety hazards.

Table Mt. NRCA is managed according to RCW 79.71 (NRCA Act) to protect natural processes and natural features. The NRCA is also subject to RCW 76.04.750, which states that "every reasonable effort will be made to suppress uncontrolled fires". Within the NRCA, fire may

---

produce beneficial effects and help maintain certain ecosystems or species, however the responsibility to protect life and adjacent resources and land is paramount. The immediate and short-term goal is to act safely and aggressively to suppress all uncontrolled fires while using discretion to minimize impacts to ecological systems.

Prescribed fire may be desirable in the near future (within 20 years) for maintaining the bald grasslands in the NRCA. This will be determined by monitoring and research conducted on the site. Because the natural fire regime within the forests on the site is one of long intervals and high-intensity fires, fire suppression is compatible with maintaining these communities for at least the next 100 years, based on when they last burned. This will allow the forest to develop late-successional characteristics and species (such as western hemlock) that are in short supply in the landscape now. This will benefit many animal species that are associated with old forests. In the long term (approximately 100 years), it may be appropriate to use fire as a management tool within the forest stands on the NRCA. A detailed fire management plan would be needed to complement such a strategy.

- All fire activities should be conducted in a way that minimizes impacts to the NRCA. Specifically:

Fire suppression efforts should emphasize early detection and early suppression in order to minimize damage related to mechanical creation of firebreaks.

- Fire fighting activity should be avoided whenever possible in sensitive areas: Howell's daisy populations, riparian habitats, balds, and talus habitats.
- Water and hand tools should be used to stop the spread of wildfire, except under extreme conditions or if an improved structure or neighboring resource is threatened. Crews should use a mist (instead of straight stream) water application where possible.
- Existing fuel breaks and roads should be used for fire lines as much as possible, rather than creating new fire lines. When new fire lines are necessary, hand lines are preferable to retardants or bulldozers.
- Fire retardants should not be used within the NRCA unless absolutely necessary. Under extreme conditions or when an improved structure or neighboring resource is threatened, foam or retardants are preferable to bulldozers.
- Fire vehicles will be confined to roads and, when applicable, bulldozed fire trails.
- Any activity that would alter the flow of water into or out of wetlands or shore areas should be avoided.

- 
- Helicopter landing areas and fire camps should not be established within the NRCA
  - Trees and snags will not be felled unless they pose a threat to firefighters.
  - Location and extent of mop-up, and type of mop up activity will be determined by the Incident Commander in consultation with region Natural Areas staff, using the following guidelines: 1) Let the fire burn to containment/confinement/control perimeter line; 2) water will be used rather than dry mopping, to minimize the disturbance of the soil and vegetation (verses dry mopping,). Mop-up activities should be avoided in the sensitive areas and soil disturbance minimized by using water as much as possible.
  - Cultural resources should be protected.
  - During fire suppression, DNR will use the Table Mountain NRCA Wildfire Suppression Plan and attempt to have a Natural Areas Program representative available to advise the incident commander.

### **G. Weed Management**

Several non-native plant species occur on Table Mountain and Greenleaf Peak, according to data gathered for the biological inventory for the Table Mountain NRCA. Most of them are not abundant.

The potential negative effects of introduced plant species should be monitored for the red fescue montane grassland community and for the Howell's daisy populations. St. Johnswort, is common and widespread on Table Mountain. Because of its abundance and wide distribution, control of this species does not seem feasible. However, if this species starts to dominate the montane grassland community, then control efforts should be considered. Canada thistle (*Cirsium arvense*) was observed at two nearby locations on Table Mountain. Both stands are approximately 75 feet by 40 feet. This species is a Class C weed in Washington. Because this is a localized occurrence of an extremely invasive species, immediate and aggressive control measures are likely to successfully eradicate it from the site. If the species becomes widespread on the mountain, control would be very difficult or impossible. Chemical treatment of this species using the recommendations of Bossard et al. (2000) should continue annually until it has been eradicated. Common hawkweed (*Hieracium acuminatum*) was collected near the power lines to the northwest of Table Mountain where it is abundant. It has also been observed to be frequent in small amounts in some areas around the Table Mountain summit and spreading along trails that traverse the powerline corridor. Because little is known about the ecological behavior of this species locally and because it appears to be spreading along trail corridors it should be viewed as a potential threat and controlled. Its spread along trails and into undisturbed balds should be monitored. One low elevation bald on the southeastern flank of Table Mountain is dominated by exotic annual grasses and should be monitored and targeted for weed control. Himalayan blackberry (*rubus discolor*) and Scotch broom (*Cystisus scoparius*) are uncommon in

power line and gas line corridors and other open areas. Both plants are known to be highly invasive and should be controlled aggressively.

Table 4 provides an overview of weed management approaches to be implemented at Table Mountain.

**Table 4- Noxious Weed Management for Table Mountain NRCA**

| <b>Weed</b>          | <b>Site distribution</b>   | <b>Noxious weed classification</b> | <b>Guideline for control</b>  |
|----------------------|--|------------------------------------|---|
| St Johnswort         | Widespread and abundant  | Class C                            | Not feasible unless begins to dominate montane community, then consider control efforts                   |
| Canada thistle       | On bald near summit overlook   | Class C                            | Immediate and aggressive control measures should be implemented to control this extremely aggressive weed |
| Common hawkweed      | Along power lines in northwest; also common in parts of summit plateau | Class C                            | Control and monitor closely   |
| Dandelion            | Widespread in open areas   | Not classified                     | Monitor   |
| Wall lettuce         | Roads and forests  | Not classified                     | Monitor   |
| Himalayan Blackberry | Uncommon but widespread  | Not classified                     | Control and monitor closely   |
| English Holly        | Uncommon but widespread  | Not classified                     | Monitor and control when possible   |
| Scotch broom         | Talus, power line, and gas line corridors                              | Class B                            | Control aggressively and monitor  |

## **H. Forestry Activities**

Timber harvest will not be allowed except for stewardship purposes intended to maintain or enhance protected resources or when necessary for constructing low-impact public use facilities outside sensitive areas. Natural Areas Program scientists and staff, and Natural Heritage Program scientists, shall review and consider the impacts of any forestry activity in relation to the goals of the Natural Areas Program, the Colombia River Gorge National Scenic Area Act and the health of the resources and features protected at Table Mountain NRCA. See also the Restoration Activities Section.

## **I. Monitoring**

Monitoring involves the collection and analysis of repeated observations or measurements to evaluate changes in condition or progress toward meeting a management objective. The process begins with the establishment of a baseline measurement of specific conditions and characteristics. Periodic measurements (sometimes coupled with suitable historic data) can show the extent and rate of change taking place within the identified monitoring area. Monitoring

---

systems must be carefully designed to capture information that will be relevant for answering questions about resource conditions and management goals for the site.

As stewardship techniques are developed to restore and maintain ecological systems for the associated public and natural resource benefits, monitoring is utilized to determine the effectiveness of these conservation strategies.

Low-impact use monitoring measures the impact that users have on the condition of the site, and aids land stewards in making decisions that promote the Natural Area Program conservation goals of resource protection, enhancement and restoration. Where public use is determined to have a negative impact, decisions can be made to relocate or curtail an activity based on measurable changes to the site.

### **J. Research**

Research involves a designed study to determine the cause(s) and/or effects of an observed ecological phenomenon, or to develop management techniques that can benefit the site, e.g. restoration or population re-introduction methods. Research is generally designed to answer a specific question(s). Research at Table Mountain NRCA provides the opportunity to learn more about the site's resources and conditions. It also provides an opportunity to promote environmental education goals through links with educational institutions and faculty or advanced students interested in pursuing pertinent research questions at the site. The site provides an example of ecological resources in their natural state, allowing researchers to learn from the NRCA, and in turn share information with DNR and the public.

### **K. Restoration**

Restoration activities are carried out to implement site recovery where allowing ecological and physical processes to predominate would threaten the continued existence or condition of the primary features that the conservation area was intended to protect. Currently, there is no need to use silvicultural practices to modify or create habitat for animal species. With time the forests will age and develop the structural characteristics of older forests including large live trees, snags, and logs. Silvicultural activities may speed up this process and create many of these structural characteristics, but the end result may be quite different from a naturally created old growth forest.

The NRCA can serve an important ecological role for fish by providing a source of clear cold water to the lower reaches of streams that originate within the NRCA boundary. Fortunately, the streams within the preserve boundary are well shaded, primarily with conifer trees. Several of the sites with alder along the stream are naturally occurring alder stands and should not be converted to conifer stands. As the forests continue to mature naturally, they will provide larger woody structure to the stream.

Any ecological restoration activity should consider the following:

- When possible, use plants and seeds from adjacent sites.
- Plant species selected should mimic natural plant communities, or at least an appropriate seral stage of these communities.

- 
- When purchasing “native” species, attempt to locate material originating from local stock (within approx. 30 miles) and similar climate and topographic conditions. Only use material that originated from the same ecoregion and is the same variety as that found on the site.
  - Do not use invasive native species that are likely to negatively impact adjacent native vegetation.
  - Do not use “native species” that are not native to the site.
  - Use soils from adjacent sites. When soils are imported, it is critical that they are sterilized to minimize the potential import of exotic weed species.

For larger restoration projects, a detailed restoration plan should be developed identifying the purpose and objectives, methods, and monitoring.

#### **L. Regulation and Law Enforcement**

DNR staff will be responsible for enforcement of fire regulations, trespass, and public use provisions within the Table Mountain NRCA. Enforcement will emphasize non-confrontational techniques and voluntary compliance whenever possible. In the event of violation of game laws or other serious crimes, DNR staff will seek cooperative assistance from the Skamania County Sheriff, the Department of Fish and Wildlife, the Washington State Patrol and other appropriate law enforcement authorities.

Management guidelines:

- DNR’s existing Law Enforcement Policy is applicable to all law enforcement actions relating to NRCAs.
- Uses and activities within an NRCA that are not consistent with the Natural Resource Conservation Areas Act’s conservation purposes shall be considered in violation of the Act. DNR’s existing law enforcement policies shall apply.
- The Department shall comply with all applicable government regulations in the management of the NRCA and shall also cooperate with local and state enforcement agencies.



---

## V. IMPLEMENTATION

The following actions will be implemented as funding becomes available and the following list will be used to coordinate recruitment of funds and support for projects.

Success of this plan will depend on efforts to monitor and evaluate the NRCA and to tailor the management of the site to meet changing conditions. Success also depends on maintaining good working relationships with adjacent land managers, user groups, volunteers, land owners and associated agencies. In particular, coordination and collaboration with adjacent land managers from the USFS, DNR trust lands, and Beacon Rock State Park, with whom we share common roads, trails and management objectives, will be very important. For example, land managers may benefit from the sharing of information or collaboration on management actions such as weed control, habitat restoration, and road abandonment.

### **Summary of Management Actions**

#### ***Sensitive Areas***

- Continue the herpetological inventory started by the DNR Natural Heritage Program herpetologist. The inventory should focus on rare species, declining species, and species that have special management needs such as Larch Mountain salamander, cascade torrent salamander, Cope's giant salamander, and tailed frog.. Priority habitats are balds, rocky areas, headwater streams, seeps and lentic habitats.
- Determine the distribution and relative abundance of other rare and declining species such as the northern spotted owl, peregrine falcon, bald eagle, Howell's daisy, and Douglas' silene.
- Conduct an inventory for some of the site's insects and other invertebrates. Currently, very little is known about Table Mountain's insects. It would not be feasible or cost effective to attempt to inventory all of the insect species within the Table Mountain NRCA boundary. However, some information about the area's invertebrate community could be gained by encouraging Washington groups such as the Scarabs, Washington Butterfly Association, Northwest Lepidopterist Association, North American Butterfly Association, and the Xerces Society to conduct inventories for us. Rare landscape features such as balds, oak communities, and rocky areas should be priority habitats for insect inventories.
- Conduct an inventory of the area's bats. Bats undoubtedly use the NRCA but the relative importance of this area to bats is not known. The inventory should focus on suitable habitat in the Greenleaf Basin, riparian habitats, and in the Bonneville landslide area. The large cave in the Yakima basalt within the southeast outlier portion of the NRCA should be inventoried. This cave is too dangerous to enter but bat exit surveys could be conducted.
- Encourage study of the plant communities (both vascular and non-vascular) living on talus and rocky slopes. These habitats have a diverse community of mosses, lichens and ferns and are little understood.

- 
- Update species lists (Appendices B, C, D, E and F) as new species are found or as a species status changes.

### ***Cultural and Historical Resources***

- The cultural features located on DNR lands should undergo a total resource inventory and survey. The survey should include traditional cultural properties and current use areas, as well as an historic and archaeological survey. The survey should include the sites currently recorded with the Office of Historic and Archaeological Preservation, as well as the NRCA lands north and east of the known sites. DNR will invite local tribes to be involved in survey, mapping and management decisions and recommendations.

### ***Public Access Management***

#### ***Education and Research***

- Continue ongoing development of the site steward program for the Table Mountain NRCA. Provide site-related training and education to stewards so they can share site and conservation information with site users. Recruit volunteers to help inform all types of users and the community about NRCA goals, fragile areas, use provisions, ecological resources, and history.
- Install informational signs at access points, and other key locations to explain the purpose of the site, educate users about the resources on the site, and to direct use. Materials should be appropriate to the rustic nature of the site.
- Develop environmental interpretation materials for the balds area to educate users about balds, their fragile nature, and the risk of impact from excessive use.
- Develop environmental interpretive materials for the NRCAs connection to the Pacific Crest Trail, which will inform users about the NRCA features near the trail.
- Provide educational signs or other interpretive materials where use is restricted or limited due to fragility, impacts or other reasons. Include explanation of the closure's purpose and its intended outcome.
- Where environmental restoration is proposed or under way, provide interpretive materials to educate and inform the public about the activities, and the proposed outcome of the work.
- Actively pursue opportunities to involve educational institutions in research at Table Mountain NRCA. Research proposals will be reviewed by the Natural Areas Program ecologist and region program staff to ensure consistency with the program goals.
- Work with interested user groups, members of the public and the local community to develop an understanding and appreciation for the conservation goals of the NRCA.

- 
- Work with user groups, schools and the local community to identify opportunities for their involvement in stewardship and restoration activities where possible, including providing training, tools and other necessary materials so they can actively participate in maintaining, restoring and enhancing public use areas.

### ***Public Access***

- All trails should be routed away from dangerous areas. Hiker safety is of major concern when constructing new trails or rerouting trails.
- Develop a trail maintenance agreement with user groups.
- The Table Mountain NRCA is to be used primarily for foot travel, because of the site's sensitivity. Travel is limited to designated trails and a few roads. Inform users by placing signs at site access points, indicating the sensitivity of the area and that all other types of travel and human use, pets, pack animals, and overnight camping are excluded from this site.
  - Avoid establishing new trails, or promoting increased use, on or near balds and other sensitive areas, except to reduce existing impact. Implementation will include involvement of the user community and the public.
  - Develop and implement a carefully designed formal user survey to determine the level and type of public use. Survey results combined with monitoring results will help assure conservation of the area while providing opportunities for low-impact public use. At a minimum, the user survey should assess:
    - Baseline use (type, level, frequency)
    - Future use trends
    - Relationship between current and future levels of use, and the site's conservation issues
    - User familiarity with and understanding of the site
    - Environmental education knowledge and needs
  - Guide public use away from sensitive or degraded areas. Use signs and other interpretive materials to guide and educate users about the protection of sensitive areas, and to highlight restoration activities.
  - Avoid leading NRCA visitors on trails or roads to locations that would encourage trespass on private lands.
  - Work with user groups to reduce impacts and conflicts arising from group use, and/or conflicting types of uses.
  - Temporarily restrict public access in areas during stewardship activities and extreme conditions, if necessary. Other seasonal closures of sites or trails may be needed to protect sensitive plants, wildlife, highly erosive soils, and restoration efforts, or due to high user impact.

---

### ***Roads and Easements***

- Implement the Table Mountain Road Maintenance and Abandonment Plan. Most existing roads, without easements, will be abandoned and generally new roads will not be constructed since motorized use is not considered a low-impact activity and conflicts with the NRCA's conservation purpose. Work with right-of-way easement holders to reduce impacts to the NRCA from roads and easements.

Existing deeded easements, which provide legal access across the NRCA to other lands, will continue to provide the right(s)-of-way set forth within the recorded legal document(s). DNR staff will work with easement beneficiaries to encourage development of a limited access approach, including gates where feasible, to protect the site's resources from inappropriate uses.

### ***Fire Management***

- Periodically review the existing fire management plan for Table Mountain and revise as necessary.

### ***Weed Management***

- Periodically survey for and map locations of weeds throughout the NRCA but especially in sensitive areas and areas with a high potential for weed invasion.
- Develop and implement a weed control plan using integrated pest management practices.

### ***Monitoring***

- Develop a monitoring protocol to evaluate trends and effects of introduced plant species within the red fescue montane grassland community. The monitoring regime would likely be infrequent, approximately once every five years.
- Establish a monitoring protocol to examine tree and shrub encroachment within the balds, particularly in the red fescue montane grassland community. Trees and shrubs may encroach on the bald community over time, which may require some control of trees through prescribed fire, tree removal or tree girdling. The monitoring regime would likely be infrequent, approximately once every five to 10 years.
- Establish a monitoring protocol to examine changes in the Howell's daisy population over time.
- Establish a monitoring protocol to examine the impacts of human use on the balds. A quantitative approach should be utilized that describes existing conditions and then monitors potential impacts over time. The desired condition is a high-quality native community where vegetation loss and damage is confined to established trails and there are no increases in introduced species associated with trail use. Data collected during monitoring would include information on the current condition and species composition of the balds, information on the number and location of all trails. Any significant departure from current conditions over time would be considered unacceptable.

---

### **Research**

- Promote research that will provide information about the threats to the Howell's daisy population and the red fescue montane grassland communities.
- Promote research that will provide basic natural history information about Howell's daisy and the red fescue montane grassland community.
- Actively pursue opportunities to involve educational institutions in research at Table Mountain NRCA. Research proposals will be reviewed by the Natural Areas Program ecologist and natural areas region manager to ensure consistency with program goals. Natural Heritage Program review and approval is necessary for all Natural Heritage Program data-related research.
- Promote the opportunity to professionally research the geologic history of the Bonneville landslide.
- Promote the opportunity to professionally research the significant cultural resources found on the NRCA.
- Work with neighboring land managers such as Washington Department of Fish and Wildlife, Washington State Parks, and the U. S. Forest Service to promote research on American pika (*Ochotona princeps*) distribution, abundance and general natural history in the NRCA and surrounding landscape. Because pika populations in the Columbia Gorge are known to live at elevations much lower than is typical for the species, they may constitute a distinct subpopulation of the species. Recent studies have found that declines and local extinctions of populations of pika may be linked to global climate change. A comprehensive inventory could serve as a baseline by which the species distribution, abundance and persistence can be monitored over time.

### **Restoration**

- Sections of trails that traverse sensitive areas will be abandoned. Check dams will be used in highly eroded areas to divert or slow the flow of water down abandoned trails. Where necessary, hydrologic connectivity will be restored. Abandoned trails will either be allowed to naturally re-vegetate or will be restored using site-collected seed.
- Roads deemed unnecessary for management purposes will be abandoned. Drainage structures will be removed and the natural streambed will be restored to as close to its original location, depth and width as possible. When possible and practical, some sections of road that were constructed using sidecast fill or that have unstable fill material should be recontoured by pulling sidecast materials upslope against the cutslope and recontoured to approximate the original slope. Unvegetated areas on abandoned roads and culvert removal sites either be allowed to naturally re-vegetate or will be restored using site-collected seed.



---

## VII. REFERENCES

- Agee, J. K. 1993. Fire ecology of Pacific Northwest forests. Island Press, Washington, D.C.
- Allen, J.S. 1979. The Magnificent Gateway. Timber Press, Forest Grove, Oregon.
- Altman, B. 1999. Conservation strategy for landbirds in coniferous forests of western Oregon and Washington. Version 1.0. Unpublished report prepared for Oregon-Washington Partners in Flight.
- Altman, B., and R. Sallabanks. 2000. Olive-sided Flycatcher (*Contopus cooperi*). In The Birds of North America, No. 502 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.
- Anderson, M. et al. 1998. International classification of ecological communities: terrestrial vegetation of the United States. Volume II. The National vegetation classification system: list of types. The Nature Conservancy, Arlington, Virginia, USA.
- Aubry, K. B., and C. M. Raley. 1993. Wildlife habitat relationships in Washington and Oregon. Annual report, fiscal year 1993, on file at Pacific Northwest Res. Stn., Olympia, WA.
- Bossard, C. C., J. M. Randall, and M. C. Hoshovsky (eds.). 2000. Invasive plants of California's wildlands. University of California Press, Berkeley.
- Bradford, M. 1986. Trailing the Indians - vision quests. The Daily Olympian, 22 June 1986.
- Brockway, D. G., C. Topik, M. A. Hemstrom, and W. H. Emmingham. 1983. Plant association and management guide for the Pacific silver fir zone, Gifford Pinchot National Forest. USDA Forest Service, Pacific Northwest Region. R6-Ecol-130a-1983.
- Bull, E. L., and J. E. Jackson. 1995. Pileated woodpecker (*Dryocopus pileatus*). In The birds of North America, No. 148 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Crawford, R. and J. Gamon. (1989). Columbia River Gorge Natural Areas Site Report. Unpublished raw data. Washington Natural Heritage Program, Wa. Dept. of Natural Resources, Olympia.
- Dvornich, K.M., K.R. McAllister, and K.B. Aubry. 1997. Amphibians and reptiles of Washington State: Location data and predicted distributions, Volume 2 in Washington State Gap Analysis - Final Report, (K.M.Cassidy, C.E. Grue, M.R. Smith and K.M. Dvornich, eds.), Washington Cooperative Fish and Wildlife Research Unit, University of Washington, Seattle, 146pp.

- 
- Fahnestock, G. R., and J. K. Agee. 1983. Biomass consumption and smoke production by prehistoric and modern forest fires in western Washington. *Journal of Forestry* 81:653-657.
- Gano, Jan. Memorandum to J. Edwards, 23 Dec. 1987.
- Gilbert, F.F. and R. Allwine. 1991. Spring bird communities in the Oregon Cascade Range. Pp. 145-158 in *Wildlife and vegetation of unmanaged Douglas-fir forests* (L. F. Ruggier, K. B. Aubry, A. B. Carey, and M. H. Huff eds.). U.S. Forest Service GTR-PNW-285 .
- Haagen, E. 1990. Soil Survey of Skamania County. USDA Soil Conservation Service.
- Hess, S. 1995 An Inventory and Evaluation of Cultural Resources in the Catherine Creek and Major Creek Drainages, Southwestern Klickitat County, Washington. BOAS Inc.
- Manuwal, D. A. and M. H. Huff. 1987. Spring and winter bird populations in a Douglas-fir forest sere. *J. Wildl. Management* 51: 586-597.
- McDaniels, E.H. 1939. The Yacolt fire. USDA Forest Service, Portland, Oregon.
- Munsell, D. March 21, 1974. Letter written in capacity as archaeologist at University of Washington.
- Nelson, S. K. 1988. Habitat use and densities of cavity nesting birds in the Oregon coast ranges. Master's thesis, Oregon State Univ., Corvallis.
- Nordstrom, N. 1997. Cascade Torrent Salamander (*Rhyacotriton cascadae*) . Pages 1-1 to 1-14 in Larsen, E.M., editor. 1997. Management recommendations for Washington's priority species, Volume III: Amphibians and Reptiles. Wash. Dept. and Wildl., Olympia. 122pp.
- Nordstrom, N. and R. Milner. 1997. Larch Mountain salamander (*Plethodon larselli*). Pages 3-1 to 3-6 in Larsen, E.M., editor. 1997. Management recommendations for Washington's priority species, Volume III: Amphibians and Reptiles. Wash. Dept. and Wildl., Olympia. 122pp.
- Nordstrom, N. and K. Riener. 1997. California mountain kingsnake (*Lampropeltis zonata*). Pages 8-1 to 8-4 in Larsen, E.M., editor. 1997. Management recommendations for Washington's priority species, Volume III: Amphibians and Reptiles. Wash. Dept. and Wildl., Olympia. 122pp.
- Nussbaum, R.A., E.D. Brodie, Jr. and R.M. Storm. 1983. Amphibians and Reptiles of the Pacific Northwest. University of Idaho Press. Moscow, Idaho. 332pp.
- Olsen, D.H. and W.P. Leonard. 1997. Amphibian inventory and monitoring: a standardized approach for the Pacific Northwest in Olsen, D.H., W.P. Leonard, and R.B. Bury. 1997.
-

---

Sampling Amphibians in Lentic Habitats. Northwest Fauna Number 4. Society for Northwestern Vertebrate Biology. Olympia, Washington. 134pp.

Palmer, L 1977 "Large landslides of the Columbia River Gorge, Oregon and Washington" Reviews in Engineering Geology Volume III.

Pringle, P.T.; Schuster, R.L., 1998 "A new radiocarbon date for the Bonneville Landslide, Columbia River Gorge, Washington" American Association of Engineering Geologists Annual Meeting.

Swanson, D.(Ed.). (1994). Geologic field trips in the Pacific Northwest (Vol. 1). Dept. of Geological Sciences, Univ. of Washington.

Swanson, D.A. and Haugerud, R.A. 1994 Geologic field trips in the Pacific Northwest Department of Geological Sciences in conjunction with Annual Meeting of the Geological Society of America Seattle, WA.

Tolfree, J November 16, 1987. Letter from Archaeologist, Wind River Ranger District to Jay Gano, Southwest Region Manager DNR.

Topik, C., M. Halverson, and D.G. Brockway. 1986. Plant association and management guide for the western hemlock zone, Gifford Pinchot National Forest. USDA Forest Service, Pacific Northwest Region. R6-ECOL-230A-1986.

Washington Department of Natural Resources. 1992. Natural Resources Conservation Areas: Statewide Management Plan. Natural Areas Program, Olympia, WA. 33p.

Washington Department of Natural Resources. 1997b. Final Habitat Conservation Plan, September 1997. Wa. Dept.of Natural Resources, Olympia.

Washington Department of Natural Resources. 1997a. Endangered, threatened and sensitive vascular plants of Washington - with working lists of rare non-vascular species. Department of Natural Resources, Olympia, 62pp.

---

---

## VIII. GLOSSARY

**Act:** In the context of this management plan - the Revised Code of Washington statutes governing establishment, acquisition and management of NRCAs (RCW79.71).

**Balds:** Landscape feature characterized by grass, forbs, moss and lichen and relative absence of trees and shrubs, resulting from a combination of factors, including shallow soil, dry site conditions, steep topography and fire.

**Buffer:** An area that surrounds and protects an environmentally sensitive area from adverse impacts to the functions and values of that area.

**Critical habitat:** Those areas necessary for the survival of threatened, endangered or sensitive species as designated under the Federal Endangered Species Act and Washington State Forest Practices Rules.

**Cultural resources:** Archaeological and historic sites and artifacts and traditional religious, ceremonial and social uses and activities of affected Indian tribes. (Washington Administrative Code 222-16-010)

**Disturbance:** A force of natural or non-natural origin that creates an interference with normal, or existing, or undisturbed conditions.

**DNR:** Washington State Department of Natural Resources

**Ecology:** The science of the relationships between organisms and their environments.

**Ecosystem:** A community of organisms and their pattern of interaction with its environment.

**Endangered species:** A species in danger of extinction throughout all or a significant portion of its range.

**Enhance:** The intentional re-creation of one or more characteristics that existed naturally on a site before alteration.

**Exotic:** Not native to the region in which it is found; any species of plant or animal that does not occur naturally in the region.

**Extirpated:** Term used to describe a species that has been destroyed or removed from its natural territory in a specific region.

**Federal candidate species:** A species that is the subject of a proposed final rule indicating the appropriateness of listing as threatened or endangered under the federal Endangered Species Act.

---

**Habitat:** The components of the ecosystem upon which a plant or animal species relies for its life cycle.

**Highly sensitive areas:** Those species, communities, areas and habitats, on the NRCA, which are particularly fragile or vulnerable and therefore highly sensitive to human disturbance. These areas include cliffs, montane balds, wetlands, riparian areas, aquatic habitats, erosive soils and unstable slopes, talus occupied by Larch Mountain salamander, areas with the presence of or habitat for threatened or endangered species, and areas with cultural and/or historic resources.

**Inventory:** A point-in-time measure of the resource to determine location and/or condition. Inventories can be used to: 1) locate populations of a species, 2) determine the total number of individuals of a species, 3) locate all populations of rare species within a specified area, 4) locate all rare species occurring within a specified habitat type, 5) assess and describe the habitat of a rare species (e.g., associated species, soils, aspect, elevation), and 6) assess existing and potential threats to a population.

**Lentic habitats:** Of or relating to freshwater habitats characterized by calm waters, such as lakes, ponds, swamps, or bogs.

**Less sensitive areas:** Land or water of the NRCA that is not known to contain the identified sensitive resources which are protected in the sensitive areas. While the entire NRCA is protected under RCW 79.71 and subsequent policy guidelines, inventory of the NRCA to date indicates that the less sensitive areas contain resources that are thought to be more resilient and not as easily impacted by the public uses allowed in this plan.

**Lotic habitats:** Of or relating to freshwater habitats characterized by swift-moving currents, such as rivers and streams

**Low-impact public use:** Public recreation uses and improvements that do not adversely affect the resource values, are appropriate to the maintenance of the site in a relatively unmodified natural setting, and do not detract from long-term (natural) processes. (RCW 79.71.030)

**Maintain:** To protect natural site characteristics and ecosystem processes, such as wildlife habitat, soil conservation, and succession of native plant communities.

**Mineral, oil and gas exploration:** Examination of a site to determine its mineral potential by on-site or off-site geochemical, geophysical, geological or drilling methods.

**Mining:** The removal of minerals or other valuable materials in commercial quantities or for commercial purposes from the surface or subsurface.

**Mitigate:** To minimize or compensate for potential adverse environmental impacts.

**Monitoring:** The collection and analysis of repeated observation or measurements to evaluate changes in condition and progress toward meeting a management objective. Monitoring can also

---

---

be used to examine population changes over time; this use has no predetermined management objective but would trigger management action if the population demonstrated a significant decline.

**NAP (Natural Area Preserve):** Lands managed for the protection of outstanding examples of native ecosystems and threatened and endangered species in Washington state.

**Native:** Generally, indigenous to or originating naturally in Washington. Remaining or growing in an unaltered natural condition. Specifically for restoration purposes, native species should be native to the site.

**Natural Heritage Program (NHP):** The staff of natural resources scientists within the Department of Natural Resources that provide scientific expertise on the conservation and preservation of native ecosystems.

**Natural Resources Conservation Area:** Designated under RCW 79.71, lands with scenic, natural and public use values as described in RCW 79.71.020. NRCAs are managed by DNR for the conservation purposes of: maintaining, restoring and enhancing ecological systems, including habitat for state and federal listed threatened, endangered and sensitive species; protecting scenic values; and where resource protection is not compromised, providing low-impact public use and environmental education opportunities (RCW 79.71.030). Management plans are to be developed for each NRCA identifying resources to be protected and opportunities for public use and environmental education (RCW 79.71.070).

**NRCA boundary:** A mapped boundary established by public hearing, encompassing significant resources that DNR has an interest in protecting, as described in RCW 79.71.020: “(1) Lands identified as having high priority for conservation, natural systems, wildlife and low, impact public use values; (2) An area of land or water, or land and water, that has flora, fauna, geological, archaeological, scenic, or similar features or critical importance to the people of Washington and that has retained to some degree or has re-established its natural character; (3) examples of native ecological communities; and (4) Environmentally significant sites threatened with conversion to incompatible or ecologically irreversible uses.” Where these resources are in private ownership, and the owner is willing to sell at market value, DNR may purchase property within the boundary. Private property and associated rights within the NRCA boundary are not affected by the NRCA boundary designation or by NRCA management.

**Plant community:** Generally, vegetation having a characteristic pattern of species composition and dominance, used here in the broadest sense to include both seral and climax vegetation. A group of species, which tend to co-occur in time and space.

**Priority habitat:** As defined by Washington State Department of Fish and Wildlife, priority habitats are those habitat types or elements with unique or significant value to a diverse

---

assemblage of species. A priority habitat may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element.

**Priority wildlife species:** As defined by Washington State Department of Wildlife, those species that require protective measures for their perpetuation due to their population status, their sensitivity to habitat alteration, or their recreational importance.

**RCW:** Revised Code of Washington codifying state law.

**Research:** A designed study to determine the cause(s) of some observed ecological phenomenon. Research is designed to identify the causes of a change in a measured parameter. In research, cause and effect can be statistically inferred, while cause and effect cannot be statistically inferred in monitoring.

**Restore:** To recover natural site features and processes that existed on site prior to disturbance.

**Talus (Scree):** A sloping mass of rock debris, sometimes located at the base of a cliff.

**Threatened, endangered and sensitive species (TES):** Plants and animals protected under the federal Endangered Species Act or state designation.

**Threatened species:** A species that is likely to become endangered within the foreseeable future.

**Wetlands:** Lands where saturation with water is the dominant factor determining soil development and the types of plant and animal communities living in the soil and on its surface. Any section of low-lying land that is periodically submerged or whose soil contains a great deal of moisture.

**Watershed:** A drainage basin contributing water, organic matter, dissolved nutrients and sediments to a stream or river.

---

## Appendix A- The Cascade Landslide Complex and Bonneville Landslide

Excerpted from: Norman, David K.; Roloff, Jaretta M., 2004, A self-guided tour of the geology of the Columbia River Gorge--Portland Airport to Skamania Lodge, Stevenson, Washington: Washington Division of Geology and Earth Resources Open File Report 2004-7, 9 p. [<http://www.dnr.wa.gov/geology/pdf/ofr04-7.pdf>]

The Cascade landslide complex is an impressive example of mass wasting created by multiple events. The source area includes portions of Table Mountain and the Red Bluffs (Fig. 1 and 2) in Washington. The landslide complex covers 12 to 14 mi<sup>2</sup> (30–36 km<sup>2</sup>), with individual slide deposits of about 2 to 5 mi<sup>2</sup> (5–13 km<sup>2</sup>).



Figure 1. Aerial-oblique photo of the Bonneville landslide. View is to the northeast with Mount Adams volcano in the distance. The Bonneville Dam and powerhouses (lower left) and the “Bridge of the Gods” highway (far right) flank the landslide. *(Photo courtesy of Derek Cornforth.)*



Figure 2. Bonneville landslide (wooded area) as seen from Cascade Locks. Table Mountain (3417 ft/1042 m) is on the left and Greenleaf Peak (3422 ft/1043 m) is on the right. Red Bluffs is the scarp area just below Greenleaf Peak.

The Bonneville landslide (a lobe of the complex) has an area of about 5.5 mi<sup>2</sup> (14 km<sup>2</sup>). Debris from the source area reached as far as 3 mi (5 km) to the southeast (Fig. 3) and buried the pre-slide Columbia River channel, which was about 1.5 mi (2.5 km) north of its present location (Shannon and Wilson, 1978). The landslide substantially diverted the river channel toward the Oregon shoreline (Wang and others, 2002; Palmer, 1977). The second powerhouse of Bonneville Dam now abuts against the landslide. The cliffs north of the dam were exposed after the mountain gave way.

In the late 1970s, the U.S. Army Corp of Engineers studied the landslide for the purpose of additional construction. The study found that “the mechanics of failure involved a planar movement in the rock mass and a subsequent lateral spreading at the toe of the slide. Sand liquefaction was [interpreted as] the failure mechanism for this lateral spreading. Remnant slide blocks are found surrounded by a matrix of fine mica sand” (Shannon and Wilson, 1978). It has been proposed that the high energy deposition resulted in liquefaction and injection of sandy dikes of the debris-covered alluvium up into the landslide deposit (Wang and others, 2002; Scofield and others, 1997).

The river water impounded by the Bonneville landslide earthen dam rose tens of meters, creating a lake that stretched almost 70 mi (113 km), (up to the present-day John Day Dam). After a few months, the Columbia River rose high enough to wash through the southern side of the landslide creating a flood of water that was 100ft (30 m) deep at Troutdale (Scofield and others, 1997).

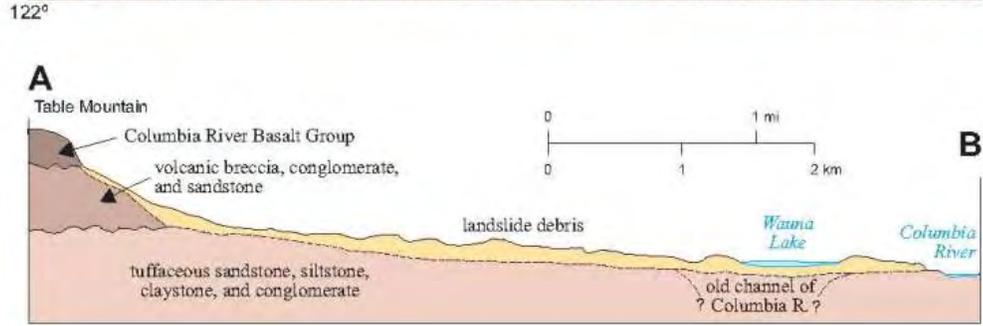
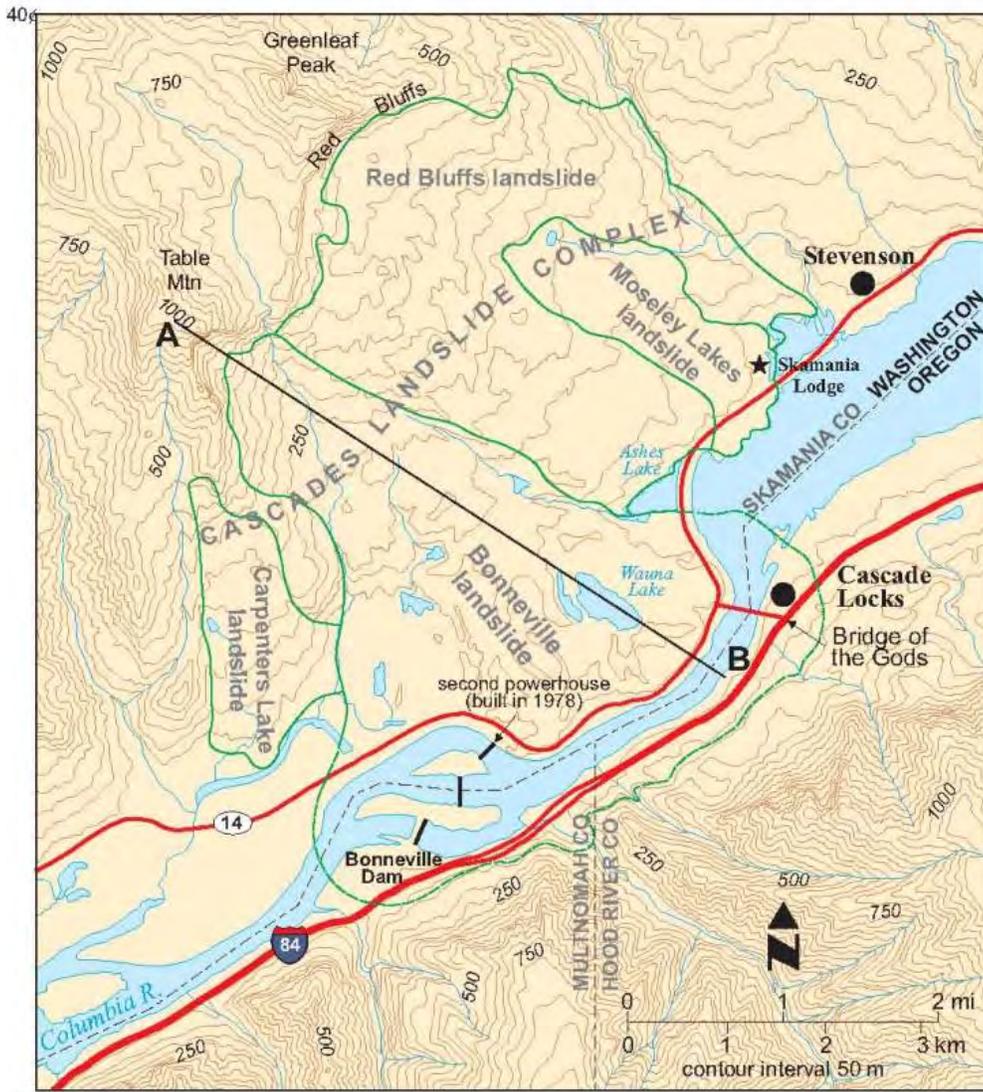


Figure 3. Approximate boundary of the Bonneville landslide within the Cascades landslide complex, dashed where approximate maximum extent inferred (after Schuster and Pringle, 2002); simplified cross section (A–B) through the Bonneville landslide from Table Mountain to the southern shore of the Columbia River (after U.S. Army Engineer District, 1976).

---

Afterwards, things returned to normal, except that the river was displaced a mile to the south and the Cascade Rapids had formed.

Evidence for the landslide dam includes submerged tree stumps observed upstream (Lawrence, 1937; Lawrence and Lawrence, 1958). Evidence for catastrophic flooding from the breach has been observed downstream near the mouth of the Sandy River and at other locations (O'Connor and others, 1996; Lunney and Taylor, 2000). The Cascade Rapids, which developed from the breaching of the landslide dam, and the submerged forests were later inundated by the reservoir from the 1938 Bonneville Dam (Schuster and Pringle, 2002).

Although the slide complex has been extensively studied, the exact age of the slide remains a controversy. An 1830s account of an early Native American legend describes the Cascade Rapids as follows: "The Indians say those falls are not ancient, and that their fathers voyaged without obstruction in their canoes as far as The Dalles. They also assert that the river was dammed up at this place, which caused the waters to rise to a great height far above and that after cutting a passage through the impeding mass down to its present bed, those rapids first made their appearance" (Lawrence, 1937). Another version tells of the sons of Old Coyote, Wy'east (Mount Hood) and Pahto (Mount Adams), as powerful braves both in love with a maiden (Mount St. Helens). Because they crossed the "Bridge of the Gods" to fight over their love for her, Old Coyote collapsed the land bridge to keep his sons from fighting.

This "Bridge of the Gods" landslide dam was formed by the Bonneville landslide, which is the youngest and largest of four portions of the Cascade landslide complex. Recent radiocarbon studies indicate a calendar age of some time during the 15th century for this landslide (Pat Pringle, Wash. Divn. of Geology and Earth Resources, oral commun., 2004).

---

## Appendix B- Table Mountain NRCA Trail Management Plan

### Background

When Table Mountain Natural Resources Conservation Area (NRCA) was established in 1991 it contained approximately 5 miles of pre-existing trails, including a 1.8-mile stretch of the Pacific Crest Trail (PCT), and several undesignated trails. These trails have developed over time through repeated use. Generally, they are not located according to any current trail planning management practices to avoid sensitive features, and they are not constructed to any form of trail specifications or standards. According to a trail assessment conducted in 2000, 12 percent of trails are in poor to failing condition. Several existing trails cross highly sensitive areas including rare plant sites, rare plant communities, and archeological sites.

Due the steep topography and geology, trails at Table Mountain NRCA are rugged and challenging, and are primarily used by seasoned long distance hikers.

One of the most significant management concerns from the presence of trails in natural areas is the spread of weeds. Non-native plants threaten natural areas by competing with and displacing native plants, often fundamentally changing plant communities and harming rare plant populations (DeLoach 1991, Simberloff, D. 1996). Once infested, restoration of these rare resources to their original condition is difficult if not impossible. These changes typically degrade the quality of food, cover and breeding sites used by native wildlife (MacDonald, C. 1985, Simberloff, D. 1996). Recreational trails can act as conduits for the spread of weeds into natural areas (Benniger-Truax et al. 1992, Tyser and Worley 1992), and the number of exotic plants in natural areas is known to increase with higher numbers of visitors (Lonsdale 1999). Because the PCT crosses several concentrations of weeds, such as power line corridors, highway rights-of-way, and old logging roads, the potential for the spread of weeds to Table Mountain NRCA is high. The BPA power line corridor is in places dominated by weeds such as Scotch broom (*Cytisus scoparius*), Himalayan blackberry (*Rubus discolor*) and common hawkweed (*Hieracium lachenalii*) that could infest the relatively weed-free balds near the summit of Table Mountain.

Recreational use also has the potential to disturb or harm sensitive wildlife species such as peregrine falcons, spotted owls, or Larch Mountain Salamanders. Birds in particular, can be sensitive to human intrusion along trails because they are sensitive to movement and habitat alteration (Gutzwiller et al. 1994, Robinson et al. 1995). Research suggests that recreation along trails can impede the ability of birds to forage (Burger & Gochfeld 1998), attract mates (Gutzwiller 1994), and reproduce successfully (Major, R.E. 1990).

Trampling can harm native plants both directly, in the form of reduced plant survival and increased mortality (Thomas and Willson 1992), and indirectly in the form of soil erosion, soil compaction and the spread of weeds (Bowles and Maun 1982, Cole 1987, Bowles et al. 1990).

---

Human trampling is thought to have caused the local extinctions of rare plants (Nothington and Burgess 1979, Gibson 1988).

Cultural sites may be impacted when hikers build rock cairns to mark trails or if they are looted for arrowhead points or tools. In accordance with the NRCA act trails should be directed away from cultural sites in order to protect their integrity and confidentiality.

Because of the above-mentioned impacts associated with trails, trail planning at Table Mountain NRCA should proceed with caution.

The primary objective of this trail plan is to eliminate or mitigate any negative effects of trails and human trampling on sensitive features at Table Mountain, while supporting passive public recreation.

### **Existing Trails and Conditions**

#### *Location of existing trails:*

Two parallel, user-built trails lead northerly from the PCT, leading to the summit of Table Mountain. One trail follows a north-south ridge on the east (Eastway Trail) and the other a north-south ridge on the west (Westway Trail). The summit of Table Mountain has trails and spurs along westerly, easterly, and northerly running ridges. At the north end of the summit area, a poorly developed trail leads in a northerly direction away from the summit towards a Bonneville Power Administration (BPA) power line corridor. In general, trail routes are currently inadequately marked with signs, often leaving hikers unsure as to the correct route. Figure 5 illustrates locations of existing trails.

#### *Condition of existing trails:*

Eastway: The Eastway Trail is steep, highly eroded and failing in places. On portions of the Eastway trail that cross the balds, the grades are over 60 percent, and the trail has failed. Several areas of the trail are deeply eroded and dangerous.

Westway: While there are sections of the Westway Trail that are in need of repair, this trail is generally in good shape because it was mostly built along a rocky ridge. Sections of the trail, however, that go through or near sensitive features should be closed and rerouted.

## Table Mountain NRCA Existing Trails

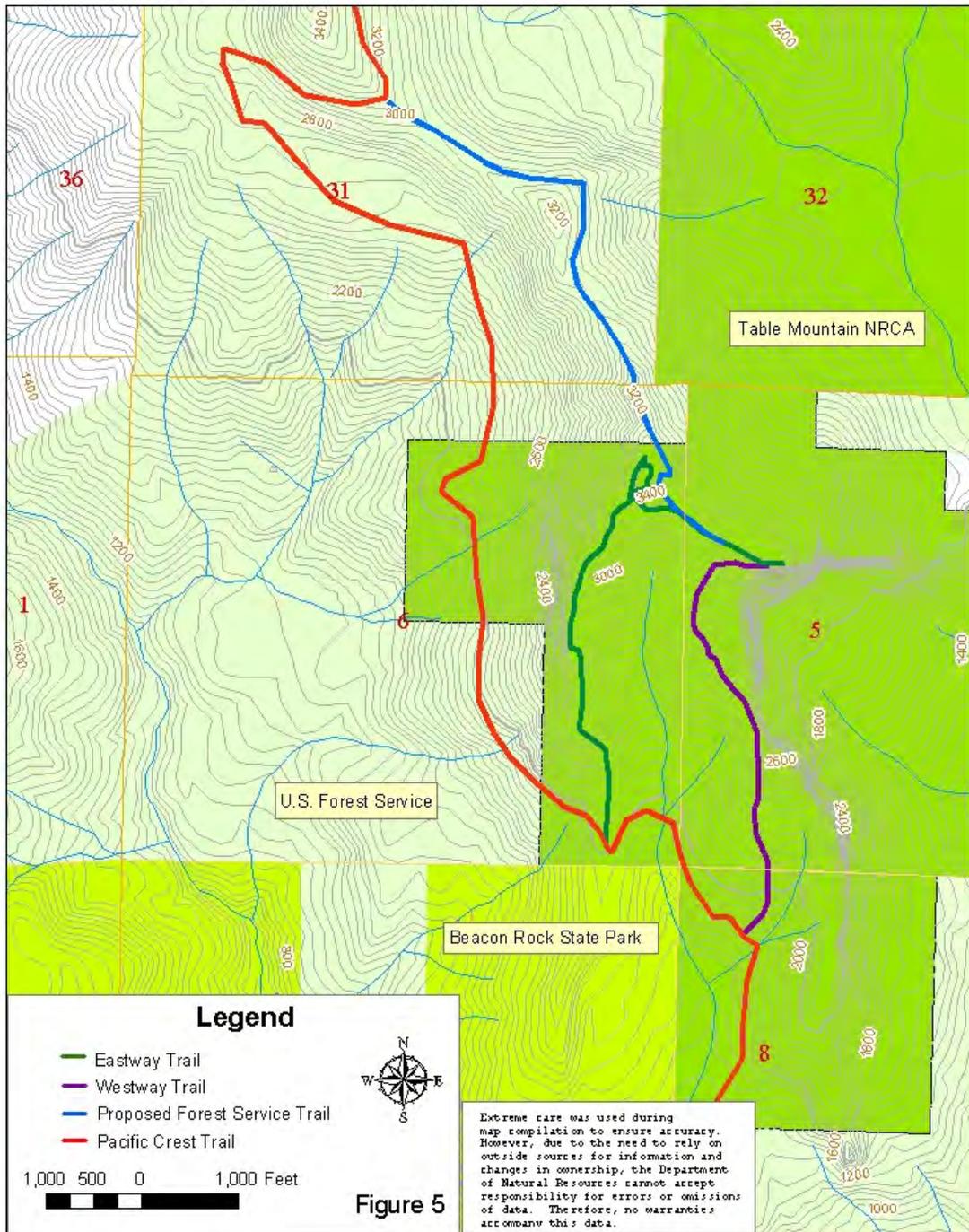


Figure 5

Figure 5

---

*US Forest Service proposed trail:*

The US Forest Service has proposed building a spur trail from the Pacific Crest Trail to Table Mountain summit. The trail would lead from a section of the Pacific Crest Trail northwest of Table Mountain in a southerly direction through the BPA power line corridor and over an old rail bed using an existing poorly designed trail, to the Table Mountain Summit area. This trail currently traverses sensitive balds and a population of the rare Howell's daisy and thus poses a direct threat to these resources in the form of introduction of weeds, trampling, and soil erosion.

**Trail Planning**

In August 2000, a trail mapping inventory was completed to determine the location, condition, and impact of existing trails and roads within the NRCA. The trails inventory project provided valuable information about patterns of existing hiking, including the location and current condition of existing trails. This information also helped identify which trails are well situated, and which need relocation, restoration or rehabilitation to reduce environmental impact to sensitive features.

The site has not yet undergone a formal user survey to more accurately quantify the volume, type and trends of public use. Currently, the site appears to be utilized for day-use hiking. There are no permanent structures or built facilities. Informal discussions with long-time users of the site indicate that use is increasing, based on their observations.

At an August 23, 2000, public meeting, several user groups and interest groups expressed concern for public use at Table Mountain. Public comments indicated a strong interest in continued public access to the site, and also recognition that use should not have a negative impact on the site's resources. The challenge for managing future use will be to manage the pressures of increasing interest in low-impact public use while protecting the fragile resources.

Beginning in 2002 several members of the Mazama hiking group alerted DNR staff to severe erosion problems on the Eastway Trail and asked to have it closed until a better solution could be found. In response to this concern, the DNR, in cooperation with hiking clubs, closed the Eastway Trail by posting "Trail Closed" signs and by having user groups inform hikers at club meetings and via e-mail. Based on the appearance of new growth of plants in the trail and the lack of new disturbance, the closure appears to be effective.

In 2002 and 2004 members from key Oregon and Washington hiking clubs met to discuss trail issues and how to best accommodate trails at Table Mountain without harming its sensitive features. In the spring and summer of 2004, DNR staff organized several field trips to the site with members of hiking clubs, recreation specialists from the DNR and the USFS, DNR ecologists, and DNR and Yakama tribal archeologists. The groups assessed trail problems and investigated new routes around sensitive areas.

In November of 2005 a private trail consultant was hired to assess trail conditions and to layout a viable reroute around sensitive features.

The following plan is based on observations and suggestions gathered during this planning process.

---

---

## **General Trail Management Recommendations**

General Criteria for Table Mountain trails:

- Trails should not go directly up slope, unless built on hard non-erosive substrate such as rock or talus. Trail grades should not exceed 15 percent on most soft surfaces.
- In accordance with the NRCA Act, trails should avoid sensitive areas such as balds, cultural sites, and habitat for rare and threatened species.
- Trails should avoid dangerous areas.
- New trails should be built to maintain the primitive back-country feel of the site.
- Trails should be constructed with as little damage to the surrounding environment as possible.
- All trails within the Table Mountain NRCA will allow hikers only, with the exception of the PCT that also allows equestrian access.

### *Signage*

Signs will be used sparingly and only when necessary so as to not detract from the scenic beauty of the site. Trail signs should be small and should fit into the wilderness feel to the site. Informational signs will be placed at the NRCA boundary that clearly states the NRCA rules. Small trail signs and reassurance markers will be used to mark the correct trail route.

### *Trail Layout and Construction*

Proposed trail routes will be flagged. Proposed routes will then be surveyed by state and tribal archeologists prior to construction. If cultural sites are found during these surveys, the trail route will be amended to protect the sites.

Trails at Table Mountain will be designed to be a narrow wilderness type trail and will be approximately four feet in width, with a two-foot wide tread surface. New trails will be designed to shed water with a minimal use of water structures such as grade dips and water bars. Trail tread will be out sloped to encourage proper drainage.

### *Trail Monitoring and Maintenance*

Trails will require annual monitoring and maintenance to repair erosion and water related problems and to clear encroaching brush. The DNR will rely on user and volunteer groups to assist with this work during planned DNR workdays.

### *Trail Closure and Rehabilitation*

Trails will be abandoned at strategic locations along the trail such as at sharp bends. Closed trail sections will be blocked with a thick layer of brush and posted with “trail closed” signs. Check dams will be used in highly eroded areas to divert or slow the flow of water down abandoned trails. Where necessary, hydrologic connectivity will be restored. Abandoned trails will either be allowed to naturally re-vegetate or will be restored using native site-collected seed.

---

### ***Access***

Trails on the NRCA are accessible via the PCT, both from the north and south.

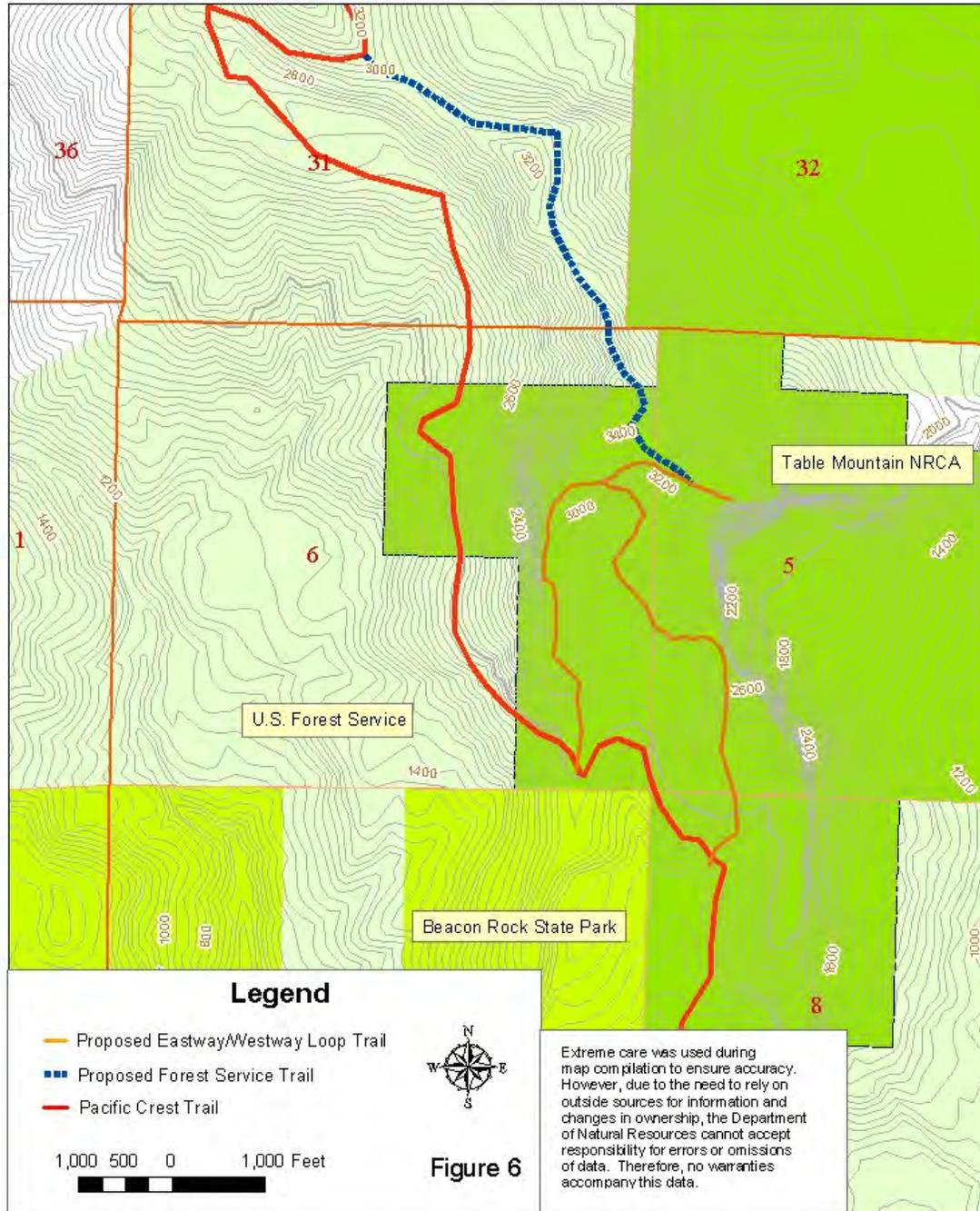
### **Specific Trail Management Recommendations**

*Westway Trail* - Much of this trail will remain in place, in the short term, with some trail work to fix problem areas. A short section of this trail near the summit will be abandoned to protect nearby sensitive elements. Figure 6 illustrates the approximate locations of the proposed rerouted trails.

*Eastway Trail* - The southern half of this trail will remain in place with some trail work needed to prevent or repair erosion problems. The northern half of this trail will be abandoned and the trail routed around sensitive meadows. Starting roughly halfway up the Eastway trail near a saddle in the ridge, the trail will be rerouted to the west, largely along contour lines, and will bend slightly uphill until it reaches a long talus slope. From here, the trail will continue straight up the talus slope. From the end of the talus slope the trail will head to the northwest, join with the Westway Trail, and head to the northeast to reach the overlook.

*Proposed Forest Service Spur Trail*- Because of the previously mentioned potential threats this trail poses to the NRCA, plans for this trail should be put on hold until more information can be gathered. For example, the spread of weeds and public use patterns should be studied for at least two years to determine what effect this trail might have on the sensitive balds and the Howell's Daisy population. At a minimum, if this trail is to be contracted, sections of the trail will need to be routed to the east and away from balds and the daisy population.

## Table Mountain NRCA Proposed Trails



**Figure 6**



---

## REFERENCES

- Benniger-Truax, M., J. L. Vankat and R. L. Schaefer. 1992. Trail corridors as habitat and conduits for movement of plant species in Rocky Mountain National Park, Colorado. *Landscape Ecology* 6(4): 269-278.
- Bowles, J. M. and M. A. Maun. 1982. A study of the effects of trampling on the vegetation of Lake Huron sand dunes at Piney Provincial Park. *Biological Conservation* 24:219-244.
- Bowles, M. L., M. M. DeMauro, N. Pavlovic, and R. D. Hiebert. 1990. Effects of anthropogenic disturbances on endangered and threatened plants at the Indiana Dunes National Lakeshore. *Natural Areas Journal* 10:187-200.
- Burger, J., and M. Gochfeld. 1998. Effects of ecotourists on bird behaviour at Loxahatchee National Wildlife Refuge, Florida. *Environmental Conservation* 25:13-21.
- Cole, D. N. 1987. Effects of three seasons of experimental trampling on five montane forest communities and a grassland in western Montana, USA. *Biological Conservation* 40:219-244.
- DeLoach, C. J. 1991. Past successes and current prospects in biological control of weeds in the United States and Canada. *Natural Areas Journal* 11:129-142.
- Gutzwiller, K. J., R. T. Wiedenmann, K.L. Clements, and S.H. Anderson. 1994. Effects of human intrusion on song occurrence and singing consistency in subalpine birds. *Auk* 111:28-37.
- Lonsdale, W. M. 1999. Global patterns of plant invasions and the concept of invasibility. *Ecology* 80:1522-1536.
- MacDonald, C. 1985. Trouble in Paradise: Weeds in Nature Preserves. *J. of Pesticide Reform*, Fall 1985.
- Major, R. E. The Effect of Human Observers on the intensity of Nest Predation. *Ibis* 132 (1990): 608-612.
- Nothington, D. K. and T. L. Burgess. 1979. Status of rare and endangered plant species of the Guadalupe Mountains National Park, Texas. Pp. 59-78 in H.H. Genoways and R.J. Baker, eds., *Biological investigations in the Guadalupe Mountains National Park, Texas*. U.S. Department of the Interior, National Park Service, Proceedings and Transactions Series No. 4.

---

Robinson, Scott K., Frank R. Thompson III, Therese M. Donovan, Donald R. Whitehead, John Faaborg 1995. Regional forest fragmentation and the nesting success of migratory birds. *Science* 267:1987-1990.

Simberloff, D. 1996. Impacts of introduced Species in the United States. Internet: [Http://cgrio.ciesin.org/CONSEQUENCES/VOL2NO2/ARTICLE 2.HTML](http://cgrio.ciesin.org/CONSEQUENCES/VOL2NO2/ARTICLE 2.HTML).

Tyser, R. W. and C. A. Worley. 1992. Alien flora in grasslands adjacent to road and trail corridors in Glacier National Park, Montana (U.S.A.). *Conservation Biology* 6:253-262.

---

**Appendix C- List of Vascular Plant Species known from Table Mountain NRCA**

Based on field surveys by Joe Arnett, Chris Chappell, Russ Jolley, and Lois Kemp.

\* = exotic species established beyond roadsides.

**Scientific Name****Common Name****Trees**

|  |                    |
|--|--------------------|
| <i>Abies amabilis</i>                              | Pacific silver fir |
| <i>Abies grandis</i>                               | grand fir          |
| <i>Abies procera</i>                               | noble fir          |
| <i>Acer macrophyllum</i>                           | bigleaf maple      |
| <i>Alnus rubra</i>                                 | red alder          |
| <i>Pinus monticola</i>                             | western white pine |
| <i>Pinus ponderosa</i>                             | ponderosa pine     |
| <i>Populus balsamifera</i> ssp. <i>Trichocarpa</i> | black cottonwood   |
| <i>Prunus emarginata</i> var. <i>mollis</i>        | bitter cherry      |
| <i>Pseudotsuga menziesii</i> var. <i>menziesii</i> | Douglas-fir        |
| <i>Salix scouleriana</i>                           | Scouler's willow   |
| <i>Taxus brevifolia</i>                            | Pacific yew        |
| <i>Thuja plicata</i>                               | western redcedar   |
| <i>Tsuga heterophylla</i>                          | western hemlock    |

**Shrubs, Subshrubs, and Vines**

|  |                      |
|--|----------------------|
| <i>Acer circinatum</i>                                       | vine maple           |
| <i>Acer glabrum</i> var. <i>douglasii</i>                    | Rocky Mountain maple |
| <i>Alnus viridis</i> spp. <i>sinuata</i>                     | Sitka alder          |
| <i>Amelanchier alnifolia</i> var. <i>alnifolia</i>           | serviceberry         |
| <i>Arctostaphylos columbianum</i>                            | hairy manzanita      |
| <i>Arctostaphylos uva-ursi</i>                               | kinnikinnick         |
| <i>Berberis aquifolium</i>                                   | tall Oregongrape     |
| <i>Berberis nervosa</i>                                      | dull Oregongrape     |
| <i>Ceanothus sanguineus</i>                                  | redstem ceanothus    |
| <i>Chimaphila umbellata</i>                                  | Prince's pine        |
| <i>Columbiadorea</i> (aka <i>Haplopappus</i> ) <i>hallii</i> | Hall's goldenweed    |
| <i>Corylus cornuta</i> var. <i>californica</i>               | beaked hazel         |
| <i>Crataegus douglasii</i>                                   | black hawthorn       |
| <i>Cytisus scoparius</i>                                     | Scotch broom         |
| <i>Eriogonum compositum</i><br>var. <i>compositum</i>        | heartleaf buckwheat  |
| <i>Frangula purshiana</i>                                    | cascara buckthorn    |
| <i>Gaultheria shallon</i>                                    | salal                |
| <i>Holodiscus discolor</i>                                   | oceanspray           |
| <i>Ilex aquifolium</i> *                                     | English holly        |

---

|  |                       |
|--|-----------------------|
| <i>Juniperus communis</i> var. <i>montana</i>          | common juniper        |
| <i>Linnaea borealis</i> var. <i>longiflora</i>         | twinflor              |
| <i>Lonicera ciliosa</i>                                | orange honeysuckle    |
| <i>Malus fusca</i>                                     | Pacific crabapple     |
| <i>Menziesia ferruginea</i> var. <i>ferruginea</i>     | fools huckleberry     |
| <i>Oemleria cerasiformis</i>                           | Indian plum           |
| <i>Oplopanax horridus</i>                              | devils club           |
| <i>Paxistima myrsinites</i>                            | Oregon boxwood        |
| <i>Penstemon cardwellii</i>                            | Cardwell's penstemon  |
| <i>Penstemon fruticosus</i>                            | shrubby penstemon     |
| <i>Penstemon rupicola</i>                              | cliff penstemon       |
| <i>Penstemon serrulatus</i>                            | Cascade penstemon     |
| <i>Penstemon subserratus</i>                           | fine-tooth penstemon  |
| <i>Philadelphus lewisii</i>                            | mockorange            |
| <i>Phlox diffusa</i> spp. <i>Longistylis</i>           | spreading phlox       |
| <i>Prunus virginiana</i>                               | chokecherry           |
| <i>Quercus garryana</i>                                | Oregon white oak      |
| <i>Ribes bracteosum</i>                                | stink currant         |
| <i>Ribes lacustre</i>                                  | swamp currant         |
| <i>Ribes sanguineum</i>                                | red-flowering currant |
| <i>Rosa gymnocarpa</i>                                 | baldhip rose          |
| <i>Rosa nutkana</i> var. <i>nutkana</i>                | Nootka rose           |
| <i>Rubus discolor</i> *                                | Himalayan blackberry  |
| <i>Rubus lasiococcus</i>                               | dwarf bramble         |
| <i>Rubus leucodermis</i>                               | blackcap              |
| <i>Rubus parviflorus</i>                               | thimbleberry          |
| <i>Rubus spectabilis</i>                               | salmonberry           |
| <i>Rubus ursinus</i>                                   | trailing blackberry   |
| <i>Sambucus cerulea</i>                                | blue elderberry       |
| <i>Sambucus racemosa</i> var. <i>arborescens</i>       | red elderberry        |
| <i>Sorbus scopulina</i> var. <i>cascadensis</i>        | Cascade mountain-ash  |
| <i>Spiraea betulifolia</i> var. <i>lucida</i>          | birch-leaf spirea     |
| <i>Spiraea pyramidata</i>                              | pyramid spirea        |
| <i>Symphoricarpos albus</i> var. <i>albus</i>          | common snowberry      |
| <i>Symphoricarpos hesperius</i>                        | creeping snowberry    |
| <i>Toxicodendron diversiloba</i>                       | poison-oak            |
| <i>Vaccinium membranaceum</i>                          | big huckleberry       |
| <i>Vaccinium ovalifolium</i> (inc. <i>alaskaense</i> ) | oval-leaf huckleberry |
| <i>Vaccinium parvifolium</i>                           | red huckleberry       |
| <i>Viburnum ellipticum</i>                             | oval-leaf viburnum    |

---

---

## **Grasses, Sedges, and Rushes**

|  |                          |
|--|--------------------------|
| <i>Agrostis pallens</i> (aka <i>diegoensis</i> ) | thin bentgrass           |
| <i>Aira caryophyllea</i>                         | silver hairgrass         |
| <i>Alopecurus pratensis</i> *                    | field meadow-foxtail     |
| <i>Bromus carinatus</i>                          | California brome         |
| <i>Bromus tectorum</i> *                         | cheatgrass               |
| <i>Bromus vulgaris</i>                           | Columbia brome           |
| <i>Calamagrostis howellii</i>                    | Howell's reedgrass       |
| <i>Carex deweyana</i>                            | Dewey's sedge            |
| <i>Carex inops</i>                               | long-stolon sedge        |
| <i>Carex mertensii</i>                           | Merten's sedge           |
| <i>Danthonia californica</i>                     | California danthonia     |
| <i>Elymus glaucus</i>                            | blue wildrye             |
| <i>Festuca occidentalis</i>                      | western fescue           |
| <i>Festuca rubra</i>                             | red fescue               |
| <i>Festuca subulata</i>                          | bearded fescue           |
| <i>Koeleria macrantha</i>                        | prairie junegrass        |
| <i>Luzula multiflora</i>                         | many-flowered wood-rush  |
| <i>Luzula parviflora</i>                         | small-flowered wood-rush |
| <i>Melica subulata</i>                           | Alaska oniongrass        |
| <i>Poa nevadensis</i>                            | Nevada bluegrass         |
| <i>Poa secunda</i>                               | curly bluegrass          |
| <i>Vulpia myuros</i>                             | rat-tail fescue          |

## **Forbs and Ferns**

|  |                         |
|--|-------------------------|
| <i>Achillea millefolium</i>  | yarrow                  |
| <i>Achlys californica</i>  | vanillaleaf             |
| <i>Actaea rubra</i>  | baneberry               |
| <i>Adenocaulon bicolor</i>   | pathfinder              |
| <i>Adiantum aleuticum</i>  | western maidenhair fern |
| <i>Allium acuminatum</i>   | Hooker's onion          |
| <i>Allium cernuum</i>  | nodding onion           |
| <i>Allotropa virgata</i>   | candystick              |
| <i>Anaphalis margaritacea</i>  | pearly-everlasting      |
| <i>Anemone deltoidea</i>   | Columbia windflower     |
| <i>Anemone oregana</i> var. <i>oregana</i>                                 | blue windflower         |
| <i>Angelica arguta</i>   | Lyall's angelica        |
| <i>Antennaria howellii</i> ssp. <i>neodioica</i><br>(aka <i>neglecta</i> ) | Howell's pussytoes      |
| <i>Antennaria microphylla</i>  | rosy pussytoes          |
| <i>Apocynum androsaemifolium</i>   | spreading dogbane       |
| <i>Aquilegia formosa</i>   | red columbine           |
| <i>Arabis holboellii</i>   | Holboell's rockcress    |

---

|   |                               |
|---|-------------------------------|
| <i>Arenaria capillaris</i> spp. americana                     | slender mountain sandwort     |
| <i>Arnica latifolia</i> var. latifolia                        | broad-leaved arnica           |
| <i>Artemisia</i> cf. douglasiana                              | Douglas' wormwood             |
| <i>Aruncus dioicus</i>  | goatsbeard                    |
| <i>Asarum caudatum</i>  | wild ginger                   |
| <i>Aspidotis densa</i>  | Indian's dream                |
| <i>Asplenium trichomanes</i>                                  | maidenhair spleenwort         |
| <i>Athyrium filix-femina</i>                                  | lady-fern                     |
| <i>Barbarea vulgaris</i> *                                    | garden yellow-rocket          |
| <i>Blechnum spicant</i>                                       | deerfern                      |
| <i>Calochortus subalpinus</i>                                 | subalpine mariposa-lily       |
| <i>Campanula rotundifolia</i>                                 | bluebells-of-Scotland         |
| <i>Campanula scouleri</i>                                     | Scouler's harebell            |
| <i>Castilleja hispida</i> var. hispida                        | harsh paintbrush              |
| <i>Castilleja miniata</i> var. miniata                        | great red paintbrush          |
| <i>Cerastium arvense</i>                                      | field chickweed               |
| <i>Cerastium dubium</i> *                                     | doubtful chickweed            |
| <i>Chamerion</i> (aka <i>Epilobium</i> ) <i>angustifolium</i> | fireweed                      |
| <i>Circaea alpina</i>   | enchanter's nightshade        |
| <i>Cirsium arvense</i> *                                      | Canada thistle                |
| <i>Cirsium vulgare</i> *                                      | bull thistle                  |
| <i>Clarkia amoena</i>   | farewell-to-spring            |
| <i>Claytonia siberica</i>                                     | Siberian springbeauty         |
| <i>Clintonia uniflora</i>                                     | queen's cup                   |
| <i>Collinsia grandiflora</i>                                  | large-flowered blue-eyed mary |
| <i>Collomia heterophylla</i>                                  | varied-leaf collomia          |
| <i>Comandra umbellata</i> var. californica                    | bastard-toadflax              |
| <i>Coptis laciniata</i>                                       | Oregon goldthread             |
| <i>Corallorhiza</i> sp.                                       | coralroot                     |
| <i>Cornus unalaschkensis</i>                                  | western bunchberry            |
| <i>Crepis</i> sp.   | hawksbeard                    |
| <i>Cryptogramma acrostichoides</i>                            | American rockbrake            |
| <i>Cystopteris fragilis</i>                                   | fragile fern                  |
| <i>Daucus carota</i>  | queen Anne's lace             |
| <i>Delphinium menziesii</i> var. mensiesii                    | Menzies' larkspur             |
| <i>Delphinium nuttallii</i>                                   | Nuttall's larkspur            |
| <i>Dicentra formosa</i>                                       | Pacific bleedingheart         |
| <i>Disporum hookeri</i>                                       | Hooker's fairybells           |
| <i>Disporum smithii</i>                                       | Smith's fairybells            |
| <i>Douglasia laevigata</i> var. laevigata                     | cliff dwarf-primrose          |
| <i>Dryopteris expansa</i>                                     | spreading woodfern            |
| <i>Epilobium minutum</i>                                      | small-flowered willow-herb    |
| <i>Equisetum telmateia</i>                                    | giant horsetail               |
| <i>Erigeron howellii</i>                                      | Howell's daisy                |
| <i>Eriophyllum lanatum</i> var. lanatum                       | woolly sunflower              |

---

---

|  |                             |
|--|-----------------------------|
| <i>Erysimum capitatum</i> (aka <i>asperum</i> )    | western wallflower          |
| <i>Erythronium grandiflorum</i>                    | glacier lily                |
| <i>Erythronium montanum</i>                        | white avalanche lily        |
| <i>Fragaria vesca</i> var. <i>bracteata</i>        | woods strawberry            |
| <i>Fragaria virginiana</i> var. <i>platypetala</i> | broadpetal strawberry       |
| <i>Fritillaria lanceolata</i>                      | chocolate lily              |
| <i>Galium aparine</i>                              | cleavers                    |
| <i>Galium boreale</i>                              | boreal bedstraw             |
| <i>Galium oreganum</i>                             | Oregon bedstraw             |
| <i>Galium triflorum</i>                            | sweetscented bedstraw       |
| <i>Gentiana calycosa</i>                           | Rainier pleated gentian     |
| <i>Gilia capitata</i>                              | bluehead gilia              |
| <i>Goodyera oblongifolia</i>                       | rattlesnake plantain        |
| <i>Gymnocarpium dryopteris</i>                     | oakfern                     |
| <i>Heracleum maximum</i>                           | cow-parsnip                 |
| <i>Heuchera glabra</i>                             | alpine alumroot             |
| <i>Heuchera micrantha</i>                          | small-flowered alumroot     |
| <i>Hieracium albiflorum</i>                        | white-flowered hawkweed     |
| <i>Hieracium acuminatum</i>                        | common hawkweed             |
| <i>Hieracium longiberbe</i>                        | longbeard hawkweed          |
| <i>Hieracium scouleri</i>                          | Scouler's hawkweed          |
| <i>Hydrophyllum tenuipes</i>                       | slender-stem waterleaf      |
| <i>Hypericum perforatum</i> *                      | common St-Johns-wort        |
| <i>Hypochaeris radicata</i> *                      | hairy catsear               |
| <i>Lapsana communis</i>                            | nipplewort                  |
| <i>Lathyrus nevadensis</i> var. <i>pilosellus</i>  | Nevada peavine              |
| <i>Lathyrus polyphyllus</i>                        | leafy peavine               |
| <i>Lewisia columbiana</i> var. <i>columbiana</i>   | Columbia bitterroot         |
| <i>Ligusticum apiifolium</i>                       | celery-leaf licorice-root   |
| <i>Lilium columbianum</i>                          | Columbia lily               |
| <i>Listera caurina</i> western                     | twayblade                   |
| <i>Lithophragma parviflorum</i>                    | small-flowered prairie star |
| <i>Lomatium dissectum</i> var. <i>dissectum</i>    | fern-leaved lomatium        |
| <i>Lomatium martindalei</i>                        |                             |
| var. <i>martindalei</i>                            | Martindale's lomatium       |
| <i>Lomatium nudicaule</i>                          | bare-stem lomatium          |
| <i>Lomatium triternatum</i>                        |                             |
| var. <i>triternatum</i>                            | nine-leaf lomatium          |
| <i>Lotus micranthus</i>                            | small-flowered deervetch    |
| <i>Lupinus argenteus</i> ssp. <i>argenteus</i>     |                             |
| var. <i>laxiflorus</i>                             | spurred lupine              |
| <i>Lupinus latifolius</i> ssp. <i>latifolius</i>   | broadleaf lupine            |
| <i>Lupinus polyphyllus</i>                         | large-leaf lupine           |
| <i>Lupinus sellulus</i> ssp. <i>sellulus</i>       |                             |
| var. <i>lobbii</i>                                 | Donner Lake lupine          |

---

---

|   |                            |
|---|----------------------------|
| <i>Lysichiton americanus</i>  | skunkcabbage               |
| <i>Maianthemum dilatatum</i>  | beadruby                   |
| <i>Maianthemum racemosa</i>   | large false Solomon's seal |
| <i>Maianthemum stellata</i> starry  | false Solomon's-seal       |
| <i>Microseris laciniata</i>   | cutleaf microseris         |
| <i>Mimulus alsinoides</i>   | chickweed monkey-flower    |
| <i>Mimulus guttatus</i>   | yellow monkey-flower       |
| <i>Moehringia macrophylla</i>   | big-leaved sandwort        |
| <i>Monotropa uniflora</i>   | Indian pipe                |
| <i>Montia parvifolia</i>  | little-leaf montia         |
| <i>Mycelis</i> (aka <i>Lactuca</i> ) <i>muralis</i> *                                     | wall lettuce               |
| <i>Nemophila parviflora</i> var. <i>parviflora</i>  | small-flowered nemophila   |
| <i>Nothochelone nemorosa</i>  | woodland beardtongue       |
| <i>Orobanche uniflora</i>   | naked broomrape            |
| <i>Orthilia secunda</i>   | sidebells                  |
| <i>Osmorhiza berteroi</i> (aka <i>chilensis</i> )   | sweet-cicely               |
| <i>Osmorhiza occidentalis</i>   | western sweet-cicely       |
| <i>Oxalis trillifolia</i>   | trillium-leaf oxalis       |
| <i>Packera</i> (aka <i>Senecio</i> ) <i>bolanderi</i><br>var. <i>harfordii</i>            | Columbia Gorge groundsel   |
| <i>Pedicularis racemosa</i> var. <i>racemosa</i>  | sickle-top lousewort       |
| <i>Petasites frigidus</i>   | coltsfoot                  |
| <i>Phacelia heterophylla</i>  | varied-leaf phacelia       |
| <i>Phacelia nemoralis</i> ssp. <i>oregonensis</i>   | woodland phacelia          |
| <i>Phlox</i> (aka <i>Microsteris</i> ) <i>gracilis</i>                                    | slender phlox              |
| <i>Piperia unalascensis</i>   | Alaska rein-orchid         |
| <i>Plantago major</i> *   | common plantain            |
| <i>Polygonum douglasii</i>  | Douglas' knotweed          |
| <i>Polypodium glycyrrhiza</i>   | licorice fern              |
| <i>Polypodium</i> sp.   | polypody                   |
| <i>Polystichum munitum</i>  | swordfern                  |
| <i>Potentilla glandulosa</i>  | sticky cinquefoil          |
| <i>Prenanthes alata</i>   | western rattlesnake-root   |
| <i>Prunella vulgaris</i>  | self-heal                  |
| <i>Pteridium aquilinum</i>  | bracken                    |
| <i>Pyrola asarifolia</i> spp. <i>asarifolia</i>   | pink wintergreen           |
| <i>Pyrola picta</i>   | white-veined wintergreen   |
| <i>Rumex acetosella</i>   | sheep sorrel               |
| <i>Sanicula graveolens</i>  | Sierra sanicle             |
| <i>Saxifraga</i> (aka <i>integrifolia</i> ) <i>nidifica</i><br>var. <i>claytoniifolia</i> | peak saxifrage             |
| <i>Saxifraga bronchialis</i> var. <i>vespertina</i>                                       | yellow-spot saxifrage      |
| <i>Saxifraga caespitosa</i><br>var. <i>subgemmifera</i>                                   | tufted alpine saxifrage    |
| <i>Saxifraga ferruginea</i> var. <i>vreelandii</i>  | russet-hair saxifrage      |

---

---

|   |                               |
|---|-------------------------------|
| <i>Saxifraga rufidula</i> (aka <i>occidentalis</i> )                  | rusty-hair saxifrage          |
| <i>Sedum oreganum</i>   | Oregon stonecrop              |
| <i>Sedum spathulifolium</i>   | broadleaf stonecrop           |
| <i>Selaginella wallacei</i>   | Wallace's selaginella         |
| <i>Senecio integerrimus</i> var. <i>exaltatus</i>                     | western groundsel             |
| <i>Silene douglasii</i> var. <i>monantha</i>                          | Douglas' catchfly             |
| <i>Silene oregana</i>   | Oregon catchfly               |
| <i>Solidago canadensis</i> var. <i>salebrosa</i>                      | Canada goldenrod              |
| <i>Stachys chamissonis</i> var. <i>cooleyae</i>                       | Cooley's hedge-nettle         |
| <i>Stellaria crispa</i>   | crisped starwort              |
| <i>Stenanthium occidentale</i>  | bronze bells                  |
| <i>Streptopus amplexifolius</i>                                       | clasping-leaved twisted-stalk |
| <i>Streptopus roseus</i>  | rosy twisted-stalk            |
| <i>Synthesis reniformis</i>   | snow queen                    |
| <i>Synthesis stellata</i>   | Columbia kittentails          |
| <i>Taraxacum officinale</i> *   | dandelion                     |
| <i>Tellima grandiflora</i>  | fringecup                     |
| <i>Thalictrum occidentale</i>   | western meadowrue             |
| <i>Thlaspi montanum</i> (aka <i>fendleri</i><br>var. <i>glaucum</i> ) | rock pennycress               |
| <i>Tiarella trifoliata</i> var. <i>trifoliata</i>                     | three-leaf foamflower         |
| <i>Tiarella trifoliata</i> var. <i>unifoliata</i>                     | one-leaf foamflower           |
| <i>Tolmeia menziesii</i>  | youth-on-age                  |
| <i>Tragopogon dubius</i> *  | yellow salsify                |
| <i>Trientalis borealis</i> ssp. <i>latifolia</i>                      | western starflower            |
| <i>Trifolium cyathiferum</i>  | cup clover                    |
| <i>Trillium ovatum</i>  | western trillium              |
| <i>Triteleia</i> (aka <i>Brodiaea</i> ) <i>hyacinthina</i>            | hyacinth brodiaea             |
| <i>Valeriana scouleri</i>   | Scouler's valerian            |
| <i>Vancouveria hexandra</i>   | inside-out flower             |
| <i>Vicia americana</i> var. <i>truncata</i>                           | American vetch                |
| <i>Viola glabella</i>   | pioneer violet                |
| <i>Viola orbiculata</i>   | round-leaf violet             |
| <i>Viola sempervirens</i>   | evergreen violet              |
| <i>Woodsia oregana</i>  | Oregon cliff fern             |
| <i>Woodsia scopulina</i>  | mountain cliff fern           |
| <i>Xerophyllum tenax</i>  | beargrass                     |
| <i>Zigadenus venenosus</i>  | death-camas                   |

---



---

## Appendix D – List of Mammals known from Table Mountain NRCA

Based on field surveys by John Fleckenstein.

| <b>Common Name</b>  | <b>Scientific Name</b>                 |
|---------------------|--|
| pika                | <i>Ochotona princeps</i>               |
| Douglas squirrel    | <i>Tamias douglasii</i>                |
| Townsend's chipmunk | <i>Eutamias townsendii</i>             |
| bobcat              | <i>Felis rufus</i>                     |
| cougar              | <i>Felis concolor</i>                  |
| coyote              | <i>Canis latrans</i>                   |
| black bear          | <i>Ursus americanus</i>                |
| black-tailed deer   | <i>Odocoileus hemionus columbianus</i> |
| elk                 | <i>Cervus elaphus rosevelti</i>        |

## Appendix E- List of Butterflies known from Table Mountain NRCA.

Based on field surveys by John Fleckenstein.

### Butterflies

| <b>Common Name</b>        | <b>Scientific Name</b>             |
|---------------------------|------------------------------------|
| clodius paranassian       | <i>Paranassius clodius</i>         |
| anise swallowtail         | <i>Papilio zelicaon</i>            |
| western tiger swallowtail | <i>Papilio rutulus</i>             |
| pale tiger swallowtail    | <i>Papilio eurymedon</i>           |
| cabbage white             | <i>Artogeia rapae</i>              |
| sara's orange-tip         | <i>Anthocharis sara</i>            |
| western sulphur           | <i>Colias occidentalis</i>         |
| brown elfin               | <i>Incisalia augustinus</i>        |
| spring azure              | <i>Celastrina argiolus</i>         |
| silvery blue              | <i>Glaucopsyche lygdamus</i>       |
| Boisduval's blue          | <i>Icaricia icariodes</i>          |
| Western meadow fritillary | <i>Boloria epithore</i>            |
| Chalcedona checkerspot    | <i>Euphydryas chalcedona colon</i> |

---

**Appendix F - List of Amphibian and reptile species observed or predicted to occur on Table Mountain NRCA.**

Based on field surveys by Lisa Hallock, Wade Alonso, Bill Leonard, Steve Manlow, P. Pearman and Carlo Abbruzzese.

Species indicated by an asterisk, have not been reported although their presence at the site is likely.

| <b>Common Name</b>                | <b>Scientific Name</b>         |
|-----------------------------------|--------------------------------|
| Northwestern salamander*          | <i>Ambystoma gracile</i>       |
| Long-toed salamander*             | <i>Ambystoma macrodactylum</i> |
| Cope's giant salamander           | <i>Dicamptodon copei</i>       |
| Pacific giant salamander*         | <i>Dicamptodon tenebrosus</i>  |
| Cascade torrent salamander        | <i>Rhyacotriton cascadae</i>   |
| Rough-skinned newt                | <i>Taricha granulosa</i>       |
| Larch Mountain salamander         | <i>Plethodon larselli</i>      |
| Western red-backed salamander     | <i>Plethodon vehiculum</i>     |
| Ensatina                          | <i>Ensatina eschscholtzii</i>  |
| Tailed frog                       | <i>Ascaphus truei</i>          |
| Western toad*                     | <i>Bufo boreas</i>             |
| Pacific chorus frog               | <i>Psuedacris regilla</i>      |
| Red-legged frog                   | <i>Rana aurora</i>             |
| Bullfrog*                         | <i>Rana catesbeiana</i>        |
| Painted turtle*                   | <i>Chrysemys picta</i>         |
| Northern alligator lizard         | <i>Elgaria coerulea</i>        |
| Western fence lizard*             | <i>Sceloporus occidentalis</i> |
| Western skink*                    | <i>Eumeces skiltonianus</i>    |
| Rubber boa*                       | <i>Charina bottae</i>          |
| Racer*                            | <i>Coluber constrictor</i>     |
| Ringneck snake*                   | <i>Diadophis punctatus</i>     |
| Western terrestrial garter snake* | <i>Thamnophis elegans</i>      |
| Northwestern garter snake*        | <i>Thamnophis ordinoides</i>   |
| Common garter snake               | <i>Thamnophis sirtalis</i>     |

## Appendix G- List of Bird Species known from Table Mountain NRCA.

Based on field surveys by Scott Pearson, Chris Chappell, and Carlo Abbruzzese.

Under Species Name, \*= Unconfirmed but expected to occur based on habitat relationships and availability. Under Season, A = abundant (> 100/day in appropriate habitat), C = common (25-100/day), F = fairly common (10-25/day), U = uncommon (1-10/day), R = rare (1-5/day and 1-10/season; usually not seen daily), VR = very rare (10-40 records for the area), Ca = casual (4-10 records for the State), Ac = accidental (1-3 records for the State) (Abundance categories and definitions modified from Andrews et al. 1992). Under Use, M = migration, B = likely used for Breeding, Bc = confirmed breeder, O = over-wintering. Under Habitat, F = forest, M= meadow, T=talus and cliffs, and S=shrubland.

| Species Name             | Scientific Name                 | Season    |          |           |           | Use | Habitat |
|--------------------------|---------------------------------|-----------|----------|-----------|-----------|-----|---------|
|                          |                                 | Dec – Mar | Apr- May | Jun & Jul | Aug – Nov |     |         |
| Turkey Vulture           | <i>Cathartes aura</i>           |           | U        | U         | U         | B   | T       |
| Osprey                   | <i>Pandion haliaetus</i>        |           | U        | U         | U         | B   | F       |
| Northern Harrier         | <i>Circus cyaneus</i>           |           |          |           | R         | M   | M       |
| Bald Eagle               | <i>Haliaeetus leucocephalus</i> | R         | R        | R         | R         | B   | F       |
| Golden Eagle             | <i>Aquila chrysaetos</i>        | VR        | VR       | VR        | VR        | B   | M       |
| Sharp-shinned Hawk       | <i>Accipiter striatus</i>       |           | U        |           | U         | B   | F       |
| Cooper's Hawk*           | <i>Accipiter cooperii</i>       |           | U        |           | U         | B   | F       |
| Red-tailed Hawk          | <i>Buteo jamaicensis</i>        | U         | U        | U         | U         | B   | F,M     |
| American Kestrel         | <i>Falco sparverius</i>         |           |          |           | U         | M   | M       |
| Peregrine Falcon         | <i>Falco peregrinus</i>         | R         | R        | R         | R         | B   | T       |
| Ruffed Grouse            | <i>Bonasa umbellus</i>          | U         | U        | U         | U         | B   | F       |
| Blue Grouse*             | <i>Dendragapus obscurus</i>     | U         | U        | U         | U         | B   | F       |
| Band-tailed Pigeon       | <i>Patagioenas fasciata</i>     | R         | U        | U         | U         | B   | F       |
| Mourning Dove            | <i>Zenaida macroura</i>         | R         | R        | R         | R         | B   | F       |
| Great Horned Owl*        | <i>Bubo virginianus</i>         | U         | U        | U         | U         | B   | F,M     |
| Spotted Owl              | <i>Strix occidentalis</i>       | VR        | VR       | VR        | VR        | B   | F       |
| Barred Owl               | <i>Strix varia</i>              | R         | R        | R         | R         | B   | F       |
| Western Screech Owl      | <i>Megascops kennicottii</i>    | F         | F        | F         | F         | B   | F       |
| Northern Pygmy Owl       | <i>Glaucidium gnoma</i>         | F         | F        | F         | F         | B   | F       |
| Northern Saw-whet Owl*   | <i>Aegolius acadicus</i>        | F         | F        | F         | F         | B   | F       |
| Common Nighthawk*        | <i>Chordeiles minor</i>         |           | U        | U         |           | B   | M       |
| Vaux's Swift             | <i>Chaetura vauxi</i>           |           | F        | F         | F         | B   | F       |
| Rufous Hummingbird       | <i>Selasphorus rufus</i>        | U         | F        | F         | U         | B   | F       |
| Northern Flicker         | <i>Colaptes auratus</i>         | F         | F        | F         | F         | B   | F       |
| Red-breasted Sapsucker   | <i>Sphyrapicus rubber</i>       | U         | U        | U         | U         | B   | F       |
| Downy Woodpecker         | <i>Picoides pubescens</i>       | C         | C        | C         | C         | B   | F       |
| Hairy Woodpecker         | <i>Picoides villosus</i>        | C         | C        | C         | C         | B   | F       |
| Pileated Woodpecker      | <i>Dryocopus pileatus</i>       | U         | U        | U         | U         | B   | F       |
| Olive-sided Flycatcher   | <i>Contopus borealis</i>        |           | U        | U         | U         | B   | F,S     |
| Western Wood-pewee       | <i>Contopus sordidulus</i>      |           | R        | R         | R         | B   | F       |
| Willow Flycatcher        | <i>Empidonax traillii</i>       |           | F        | F         | F         | B   | F       |
| Hammond's Flycatcher     | <i>Empidonax hammondii</i>      |           | U        | U         | U         | B   | F       |
| Pacific-slope Flycatcher | <i>Empidonax difficilis</i>     |           | F        | F         | U         | B   | F       |
| Hutton's Vireo           | <i>Vireo huttoni</i>            |           | F        | F         | F         | B   | F       |
| Cassin's Vireo           | <i>Vireo cassinii</i>           |           | R        | R         | R         | B   | F       |
| Warbling Vireo           | <i>Vireo gilvus</i>             |           | F        | F         | F         | B   | F       |
| Gray Jay                 | <i>Perisoreus canadensis</i>    |           | U        | U         | U         | B   | F       |

| Species Name                | Scientific Name                  | Season |    |    |    | Use | Habitat |
|-----------------------------|----------------------------------|--------|----|----|----|-----|---------|
|                             |                                  |        |    |    |    |     |         |
| Steller's Jay               | <i>Cyanocitta stelleri</i>       |        | F  | F  | F  | B   | F       |
| American Crow               | <i>Corvus brachyrhynchos</i>     | U      | U  | U  | U  | B   | F       |
| Common Raven                | <i>Corvus corax</i>              | F      | F  | F  | F  | B   | F       |
| Tree Swallow                | <i>Tachycineta bicolor</i>       |        | F  | F  | F  | B   | T       |
| Violet-green Swallow        | <i>Tachycineta thalassina</i>    |        | F  | F  | F  | B   | T       |
| Black-capped Chickadee      | <i>Poecile atricapillus</i>      | C      | C  | C  | C  | B   | F       |
| Mountain Chickadee          | <i>Poecile gambeli</i>           |        |    |    | R  | M   | F       |
| Chestnut-backed Chickadee   | <i>Poecile rufescens</i>         | C      | C  | C  | C  | B   | F       |
| Bushtit                     | <i>Psaltriparus minimus</i>      | C      | C  | C  | C  | B   | F       |
| Brown Creeper               | <i>Certhia americana</i>         | C      | C  | C  | C  | B   | F       |
| Red-breasted Nuthatch       | <i>Sitta canadensis</i>          | C      | C  | C  | C  | B   | F       |
| Winter Wren                 | <i>Troglodytes troglodytes</i>   | C      | C  | C  | C  | B   | F       |
| Rock Wren                   | <i>Salpinctes obsoletus</i>      | VR     | VR | VR | VR | B   | T       |
| House Wren                  | <i>Troglodytes aedon</i>         |        |    |    | R  | M   | S       |
| Canyon Wren                 | <i>Catherpes mexicanus</i>       | VR     | VR | VR | VR | B   | T       |
| American Dipper             | <i>Cinclus mexicanus</i>         | U      | U  | U  | U  | B   | F       |
| Golden-crowned Kinglet      | <i>Regulus satrapa</i>           | C      | C  | C  | C  | B   | F       |
| Ruby-crowned Kinglet        | <i>Regulus calendula</i>         | C      | C  |    | C  | M   | F       |
| Townsend's Solitaire        | <i>Myadestes townsendi</i>       | U      | U  | U  | U  | B   | F       |
| Swainson's Thrush           | <i>Catharus ustulatus</i>        |        | F  | F  |    | B   | F       |
| Hermit Thrush               | <i>Catharus guttatus</i>         |        | F  | F  | F  | B   | F       |
| Varied Thrush               | <i>Ixoreus naevius</i>           | U      | U  | U  | U  | B   | F       |
| American Robin              | <i>Turdus migratorius</i>        | F      | F  | F  | F  | B   | F,M     |
| Cedar Waxwing               | <i>Bombycilla cedrorum</i>       | U      | C  | C  | C  | B   | F       |
| Orange-crowned Warbler      | <i>Vermivora celata</i>          | R      | F  | F  | F  | B   | F       |
| Nashville Warbler           | <i>Vermivora ruficapilla</i>     |        | R  | R  | R  | B   | F       |
| Yellow Warbler              | <i>Dendroica petechia</i>        |        | F  | F  | F  | B   | F       |
| Yellow-rumped Warbler       | <i>Dendroica coronata</i>        |        | F  | F  | F  | B   | F       |
| Black-throated Gray Warbler | <i>Dendroica nigrescens</i>      |        | F  | F  | F  | B   | F       |
| Hermit Warbler              | <i>Dendroica occidentalis</i>    |        | U  | U  | U  | B   | F       |
| MacGillivray's Warbler      | <i>Oporornis tolmiei</i>         |        | U  | U  | U  | B   | S       |
| Common Yellowthroat         | <i>Geothlypis trichas</i>        |        | U  | U  | U  | B   | S       |
| Wilson's Warbler            | <i>Wilsonia pusilla</i>          | R      | F  | F  | F  | B   | F       |
| Western Tanager             | <i>Piranga ludoviciana</i>       |        | F  | F  | F  | B   | F       |
| Spotted Towhee              | <i>Pipilo maculatus</i>          | C      | C  | C  | C  | B   | S       |
| Chipping Sparrow            | <i>Spizella passerina</i>        |        | U  | U  | U  | B   | S,M     |
| Fox Sparrow                 | <i>Passerella iliaca</i>         | F      | R  | R  | F  | O   | S,M     |
| Song Sparrow                | <i>Melospiza melodia</i>         | C      | C  | C  | C  | B   | S       |
| White-crowned Sparrow       | <i>Zonotrichia leucophrys</i>    | C      | C  | C  | C  | B   | S,M     |
| Golden-crowned Sparrow      | <i>Zonotrichia atricapilla</i>   | U      | U  |    | U  | O   | S,M     |
| Dark-eyed Junco             | <i>Junco hyemalis</i>            | C      | C  | C  | C  | B   | S,M     |
| Lazuli Bunting              | <i>Passerina amoena</i>          |        | R  | R  |    | B   | S       |
| Black-headed Grosbeak       | <i>Pheucticus melanocephalus</i> |        | C  | C  |    | B   | F       |
| Brown-headed Cowbird        | <i>Molothrus ater</i>            | R      | U  | U  | R  | B   | S,M     |
| Bullock's Oriole            | <i>Icterus bullockii</i>         |        | R  | R  |    | B   | F       |
| Pine Grosbeak               | <i>Pinicola enucleator</i>       |        |    |    | VR | O   | F       |
| Purple Finch                | <i>Carpodacus purpureus</i>      | U      | U  | U  | U  | B   | F       |
| Red Crossbill               | <i>Loxia curvirostra</i>         | F      | F  | F  | F  | B   | F       |
| Pine Siskin                 | <i>Corduelis pinus</i>           | C      | C  | C  | C  | B   | F       |
| American Goldfinch          | <i>Corduelis tristis</i>         | R      | U  | U  | U  | B   | F       |

---

| <b>Species Name</b> | <b>Scientific Name</b>            | <b>Season</b> |          |          | <b>Use</b> | <b>Habitat</b> |          |
|---------------------|-----------------------------------|---------------|----------|----------|------------|----------------|----------|
| Evening Grosbeak    | <i>Coccothraustes vespertinus</i> |               | <i>U</i> | <i>U</i> | <i>U</i>   | <i>B</i>       | <i>F</i> |

