PARKS ADVISORY COMMITTEE

AGENDA

Monday, January 8, 2018

5:30 pm	Dinner (Committee/Staff) – Breakroom	**Customer Service Center**
6:00pm	Public Meeting Session - Goodpasture Rm.	3050 N. Delta Hwy., Eugene, OR 97408

PAC Meeting

I. **Public Comment –** (up to 10 min.)

II. **Agenda Additions/Changes/Modifications** – All (3 min.)

III. **Assignment Review –** All (5 min.)

IV. **Nominations/Elections –** All (15 min.)

V. **Review of Meeting Summary** – All (2 min.)

1) December 11, 2017 meeting summary

VI. **Staff Updates/Reports** – Various (20 min.)

1) Parks Division Manager Process
2) Parks Master Plan Update
3) Harbor Vista Project Update
4) HBRA Habitat Management Plan Update

VII. **Old Business:**

1) Parks Funding Options Discussion

VIII. **New Business:**

1) Goals and Accomplishments

IX. **Open –** All (5 min.)

1)

X. **Operations Report** – (10 min.)

XI. **Meeting wrap-up/assignments** — (5 min.)

XII. **Adjourn**

2018 Meeting Dates:

JANUARY 8	MAY 14	SEPTEMBER 10
FEBRUARY 12	JUNE 11	OCTOBER 8
MARCH 12	JULY 9	NOVEMBER 12
APRIL 9	AUGUST 13	DECEMBER 10

Lane County Parks Advisory

December 11, 2017
Meeting Summary

This written indexed summary of minutes is provided as a courtesy to the reader. The recorded minutes created pursuant to ORS 192.650(1) are the official minutes of this body under Oregon law.

The recorded minutes are available on the Parks Advisory Committee website:
http://www.lanecounty.org/Departments/PW/Parks/Pages/pac.aspx

Members Present:	Mary Brorby, Carl Stiefbold, Wayne Lemler, Pat Bradshaw, Jim Mayo, Greg Hyde, Kevin Shanley
Members Absent:	None
Staff Present:	Petra Schuetz, Tim Elsea, Charlie Conrad, Todd Bowen
Guests Present:	None

Chair Lemler called the meeting to order at 6:02 p.m.

00:01:00 Public Comment
- None

00:01:10 Agenda Additions/Changes/Modifications
- Schuetz – Advised that the staff report on the Master Plan Update will be presented by Elsea.

00:02:00 Assignment Review
- Conrad reported that Alan Bennett's appointment was approved by the BCC. Mr. Bennett's first meeting as a PAC member will be January 2018.
- Budget/Funding Options Memo – Conrad distributed the memo to members for review and discussion later in this meeting.

00:03:10 Review of November 13, 2017 Meeting Summary
- No changes.

00:04:25 Farewell for Vice Chair Mary Brorby

00:15:15 Staff Reports
- Parks Manager Vacancy Update: Schuetz stated that the position is currently posted.
- Master Plan Update: Elsea reported that the next task force member meeting will be January 29th, 2018. The discussion at that time will be to determine what level the Master Plan should take for each park going for forward with an outline for the upcoming public outreach meetings. MIG will be providing a draft of the Master Plan in early spring 2018.
- Harbor Vista Campground Project: Schuetz reported that the Florence city council accepted the wastewater project and Oceanwoods deed transfer, as well as approving the deed restriction in perpetuity. The Florence city council will award a construction bid for the Harbor Vista wastewater project at their December 18 meeting with completion of the project to be the end of March 2018.

Lane County Parks Advisory

December 11, 2017
Meeting Summary

00:27:20 Old Business

- Year-end Maintenance Review – Ranger Bowen reviewed maintenance highlights from 2017.
- Large Event Oversight Group Update – Members discussed whether or not to add the question to the assessment tool of: "Should this event have a post-event evaluation?" Yes/No. Mayo made a motion to add the post-event evaluation question to the assessment tool. Shanley seconded. The motion passes unanimously.

01:27:20 New Business

- Parks Funding Memo Discussion – Members decided to postpone this discussion until the January meeting to allow time to review the options outlined in the memo.

01:29:40 Operations Report

- Brief review and discussion of year-in-review report. Members expressed appreciation for this form of update and look forward to future reports. Staff agreed that this is a welcome addition and will continue to document projects throughout the year.

01:38:10 Open

- Schuetz updated members on the HBRA North Trailhead project. Staff presented this project proposal to PW Roads staff as a possible way to bring project costs down and have Road Maintenance staff perform the work during the winter months. The proposal was agreed upon between both departments and the project will move forward at a considerably reduced cost of $74,000 for curbs, parking barriers, and other work needed to repair damage by off-roading in the park.
- Brorby provided some parting words to wrap up her service to the advisory committee.

01:59:06 Adjourn – Meeting ended at 7:49 p.m.

The next meeting is scheduled for January 8, 2018.

Lane County Parks Advisory Committee

2017 Accomplishments

- Held a public hearing and forwarded a recommendation to the Board of Commissioners on the FY2017/18 – 20121/22 Parks Systems Development Charges Capital Improvement Plan.
- Supported the Master Plan process and Task Force by attending joint and community meetings.
- Approved both the Large Event Application and Large Event Assessment Tool.
- Formed a sub-committee to reassess and tweak the Large Event Assessment Tool.
- Implemented Large Event Oversight Committee and held the first meeting to evaluate applications and made recommendations to the BCC.
- Formed a vacancy sub-committee and recommended to the BCC that Greg Hyde fill the vacant position.
- Quickly filled Mary Brorby's vacated position by recommending to the BCC that Alan Bennett fill the position.
- Received a presentation regarding Parks potentially acquiring Lloyd Knox Park.
- Received multiple presentations regarding Trail projects at HBRA.
- Received numerous updates and supported Parks implementation of the Tobacco Free policy.
- Continued to support and discuss ways in which Parks could better serve the community, including:
    - Sponsoring events such as a "Kids in the Park Day".
    - Advising on a Public Service Announcement strategy to encourage and increase participation in Master Plan public meetings.
    - Volunteering at the Parks Lane County Fair booth.
- Held a joint meeting with the Eugene Parks Advisory Group.
- Heard a presentation regarding improving Harbor Vista Campground by adding sewer; the proposal also included a jurisdictional transfer of Oceanwoods to the City of

Florence. The Committee supported the agreement and recommended that BCC approve it.

- Received a year-end maintenance presentation from Ranger Bowen.
- Discussed a post-large event evaluation process and received a pre- and post-event evaluation regarding the Frozen Trail Run.

Lane County Parks Advisory Committee
2018 Goals

- Hold public hearing and forward recommendation to the Board of Commissioners on the FY 2018/19-2022/23 Parks System Development Charges Capital Improvement Plan.
- Continue to review, support and then recommend approval of the Parks Master Plan to the Board of Commissioners.
- Continue to review, support and then recommend approval of the HBRA Habitat Management Plan to the Board of Commissioners.
- Use and refine the Large Event Oversight process.
- Participate in a Park Tour.
- Ride-along with Parks maintenance personnel at least once.
- Continue to identify and support efforts to increase Parks funding.
- Continue to identify and support ways Parks can better serve the community.
- Provide input and participate in the Parks Manager hiring process.
- Provide input and participate in the Public Works Director and Assistant Director hiring process.
- Continue to receive presentations and provide recommendations to the Board of Commissioners regarding park acquisitions.

Lane County Parks Advisory Committee
2016 Accomplishments

- Reviewed and supported the Parks Division's FY 16/17 budget.
- Continued to assist the Parks Division in its efforts to provide service delivery to all citizens and visitors of Lane County.
- Held a public hearing and provided recommendation to the Board of Commissioners concerning a Parks tobacco free policy.
- Worked with staff regarding the Draft HBRA Management Plan.
- Worked with County Administrator on hiring park and recreation planning consultant for continued Parks Master Plan Update development.
- Appointed three PAC members to serve on the Parks Master Plan Task Force
- Reviewed and provided support for the update of the Lane County Parks Master Plan.
- Formed a subcommittee and continued working on finalizing the Large Events Application and Assessment tool.
- Supported Parks recommendation to transfer jurisdiction of Cinderella Park to the City of Creswell.
- Attended a tour of multiple Parks on September 17, 2016.
- Continued to provide feedback on Friends of Buford Park & Mt. Pisgah trail improvements.
- Supported and attended the Archie Knowles Grand Opening.
- Received regular updates on the following projects:
    - Archie Knowles Campground Rehabilitation
    - Perkins Peninsula Playground grant application
    - Hendricks Bridge Park Boat Ramp and Parking Lot improvement
    - Orchard Point Marina Pumpout & Courtesy Dock
    - Harbor Vista Campground Improvements
- Received a report from County Counsel on the Oregon Public Meetings Law
- Reviewed and provided feedback on Orchard Point kiosk posting guidelines

- Reviewed and provided feedback on the establishment of Metal Detecting Permits and guidelines.
- Received a report on a neighborhood meeting regarding Rodakowski Boat Ramp (Harvest Lane)
- Supported HBRA Meadowlark Phase 2 Oak Habitat Restoration project
- Received a presentation on the Transient Room Tax
- Received a pre- and post-report on The Frozen Trail Run held within Buford Park
- Formed a PAC Member Application Subcommittee to review applications for a vacant position.
- Received the 2016 Recreation Season Report from Ranger Bowen
- Received a presentation on the Tax Foreclosed Property Parkland Designation Program.

ADOPTED ?

County Parks Advisory Committee
2017 Goals

- Hold public hearing and forward recommendation to the Board of Commissioners on the FY 2017/18-2021/22 Parks System Development Charges Capital Improvement Plan.
- Continue review and support the Lane County Parks Master Plan update.
- Implement Large Event Oversight Committee, application process, and assessment
- Quickly fill any vacant Parks Advisory Committee positions.
- Participate in Park Tour.
- Make an effort to contact all “friends” groups involved with helping Lane County Parks.
- Make an effort to educate the public about Parks funding.

ADOPTED ?

Parks Operations Summary – December 2017

The purpose of this report is to provide a written monthly summary of system wide operational highlights from the previous month.

ADMINISTRATION

- North Jetty Analysis – Approached by DSL to take on maintenance and operations, cost - benefit analysis done and submitted to Dan
- Cash handling process – ongoing internal process refinement
- Mt. Pisgah Caretaker house foundation restoration – contract executed, scheduled construction date is 1/22 – 1/25.
- HBRA N. Trailhead parking lot – finalizing design
- HBRA credit card only fee machine – contract executed, install possibly Feb. 2018
- Online parking pass payments – in-progress, several vendors contacted and business analysis is being done
- Richardson Park Campground Wi-Fi – work with Technology Services to expand Wi-Fi
- Event insurance requirement – internal process refining/improving insurance event insurance requirement and process
- Camp Lane information packet –beginning work on developing a customer information packet
- Elmira Babe Ruth agreement (at Perkins Peninsula) – finishing conditions of approval
- Standardized campground forms – planning
- Fee Schedule RFP – beginning to develop RFP to examine fees schedules and policies
- Friends of Buford Park Agreement – reviewing County Counsel's draft
- Summer survey results analysis – preliminary results in regarding customer demographics and usage
- Updating Special Use permits to reflect insurance requirements and customer usage
- County budget process beginning
- Beginning moorage planning

MAINTENANCE

Pisgah

- Installed signs in the north trailhead parking lot and issued a press release

Richardson

- Swim bay cable repair
- Marina dock repair

Harbor Vista

- Moved campground office
- Planning for sewer construction

Armitage

- Pedestal insulation project
- Replaced dog bag post in the dog park

Perkins

- Unplugged the host's sewage line
- Blowing leaves

Hendricks

- Blowing leaves
- Working on major water leak

NATURAL AREAS

- Bender Landing - Boat trip with other Parks staff on the North Fork Siuslaw River to assess the potential to construct a trail along the levee located on private land just south of the park, wrote up a project concept document to distribute to other parks staff.
- Camp Lane - Conducted initial natural areas field assessment/inventory, updated plant lists from other parks that had been inventoried earlier in the fall.
- HBRA - Organized and facilitated the quarterly stakeholder meeting, wrote up action items from the meeting and distributed them to attendees.
- HBRA - Participated in a site visit with other stakeholders to identify a potential route on the ground for an equestrian loop trail in the North Bottomlands at HBRA, as originally identified in the 1994 HBRA Master Plan.
- HBRA North Bottomlands - Coordinated with Waste Management staff to deliver a drop box for removal of debris from former Seavey House location.
- HBRA Ponderosa management unit- Coordinated with Friends of Buford Park staff on development and submittal of an Oregon Watershed Enhancement Board grant proposal for habitat restoration; strategized with Friends staff on points to emphasize during OWEB review team site visit, scheduled for 12/19.
- Siltcoos Lake - Compiled information from other staff to complete Oregon State Marine Board grant application for installing floating restroom pilings.

- Mapleton Boat Ramp - Filled out Lane County LMD floodplain fill/removal permit application for sediment removal.
- Zumwalt - Continued to work on the joint Corps/DSL fill-removal permit application for the shoreline stabilization project, including phone conversation with DSL permit staff for guidance on permit application details.
- Attended partnership coordination meeting: Rivers to Ridges Partnership Implementation Team; Upper Willamette Cooperative Weed Management Area; Willamette River Water Trail. Prepared LCP "accomplishment slide" for Rivers to Ridges Executive Team meeting in December and gathered accomplishments information for 2017 Rivers to Ridges annual report.
- Worked with other parks staff to review and edit a revised partnership agreement with Friends of Buford Park and Mt. Pisgah.
- Coordinated with potential partners (Willamalane, Friends of Buford Park) on submitting application for a shared Americorps NCCC crew in Spring 2017; contacted NCCC Assistant Program Director to get additional information.

Parks Funding Options

User Fees|Charges

User fees and facility charges generate revenue for parks and programs by charging users some or all of the costs of providing services. Some program areas are more suitable for higher fees and charges. Park services revenues can be increased by expanding rental facilities or by increasing rental fees and other facility-use charges. An RFP is currently being developed to analyze the Parks fee structure.

For example, parking passes are a significant revenue source. Daily parks passes are $4 per day per vehicle and annual pass for $40. Senior and Disabled Veteran discounts are available.

Other fees include creating/increasing fees to use specific amenities and recreational facilities such as camp sites. All fee changes need to be approved by the BCC. Refer to the attached current fee schedule for specifics.

Donations

Donations of labor, land, materials, or cash by service agencies, private groups, or individuals is a popular way to raise small amounts of money for specific projects. Service agencies often fund small projects such as picnic shelters or playground improvements, or they may be involved in larger aspects of park development. The County could consider allowing people to memorialize their loved ones with a remembrance bench, plaque, or plant in the form of a formal donation program. The person would pay an amount to have the bench or plaque installed in the park of their choice. Alternatively, a donor could pay to commemorate a person with a bench that already exists in a park. People could also pay for a memorial plant, such as a tree or rhododendron, which would then be planted in a park. These ideas do not have to be exclusively for remembrances, but could also be promoted as a way for individuals and businesses to contribute to the parks as a charitable and tax-deductible gift. Establishing a non-profit Parks Foundation is an option.

General Fund

The General Fund receives its revenue primarily from property taxes, but also includes grants, fees and charges. The General Fund does not currently fund the Parks Division. Allocating General Fund resources is a Board of County Commissioners decision.

Resources from other funds

Usually there is a connection between parks and other funds such as transportation. For example, the Road Fund which includes revenue from the state gasoline tax and contributions Agreement, have supported a County Road Fund. Part of this fund is used to maintain, upgrade, or build bike lanes, bike paths, and beautification areas (such as medians, street islands, entryways, etc.) which are adjacent to many Parks properties.

General Obligation Bonds

A bond is an instrument of indebtedness of the bond issuer to the holders. It is a debt security, under which the issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay them interest (the coupon) and/or to repay the principal at a later date, termed the maturity date. The County can bond for Parks and did so for the Richardson Park Marina. It requires Board of Commissioners endorsement and requires a double majority, unless during a general election in even-numbered years. This type of property tax does not affect the overall tax rate limitation.

Taxes

Taxes are charges imposed to raise general revenues intended for purposes not directly related to the taxed asset or activity. Currently, County taxes are directed to the General Fund.

Levy

A levy is a property tax assessment that can be used for the construction, operation, and/or maintenance of parks and facilities, and for recreation programming. This type of levy is established for a given rate or amount for up to five years, or, in the case of capital only, up to ten years. Passage requires a double majority (a majority of registered voters must vote and a majority of those voting must approve the measure), unless during a general election in even-numbered years, in which case a simple majority is required. Local option levies have become more difficult to pass in Oregon because of the double-majority requirement. In the future, the use of a local option levy may be difficult due to a $10/$1,000 of real market value tax rate limitation for all taxing agencies in the area except schools. Potential revenue from a local option levy may be reduced due to the $10/$1,000 of real market value property tax rate limitations for general government taxes. If the $10 limitation is exceeded for any individual property, all general government taxing authorities receive only a prorated share of their tax levy, so that the total general government taxes remain within the cap. This situation is called compression. Compression occurs in two stages, with local option levies compressed first and then permanent tax rates.

Systems Development Charges (SDCs)

SDCs are a one-time charge for wastewater, water, stormwater, transportation and parks. Parks receives parks SDCs. SDCs are assessed on new residential development (growth) to pay for the costs of expanding public facilities. The County does not charge a commercial SDC, but this is a legal option. Growth creates additional infrastructure demands; SDCs provide a mechanism to allow new growth in a community to pay for its share of infrastructure costs rather than existing taxpayers or utility ratepayers. The idea behind SDCs is that long-time residents have “paid their way” through property taxes, utility rates, and other means for the systems that are already in place. If those systems need to be expanded to accommodate growth, it is not paid for at the expense of the existing population. SDCs are collected when a development permit is issued. Prior to the establishment of a system development charge by ordinance, the County government has prepared a capital improvement plan, public facilities plan, master plan or comparable plan that includes a list of the capital improvements that the local

government intends to fund, in whole or in part, with revenues from an improvement fee and the estimated cost, timing and percentage of costs eligible to be funded with revenues from the improvement fee for each improvement. General obligation bonds and parks SDCs cannot be used for the operation and maintenance of parks, according to Oregon state law. Capital funding may only be used for projects that result in the creation, expansion, or restoration of park infrastructure and may not be used to maintain that infrastructure. Because of these limitations on funds, any park infrastructure restoration projects are generally done with the goal of reducing maintenance.
https://www.oregonlaws.org/ors/223.302

Local Improvement District

Counties *may b*e able to use a Local Improvement District (LID) to subsidize specific capital improvement projects. Through the formation of a LID, special assessments are imposed on all properties benefiting from a local improvement project. LIDs are often used to subsidize transportation and infrastructure systems but may also be extended to parks and recreation areas. Because the properties within the district must receive a special benefit from the project, it is most likely to be useful for neighborhood parks and recreation areas.

Timber Revenue

Several Lane County Parks have harvestable timber, such as Blue Mountain and Howard Buford Recreational Area (HBRA). Revenue generated from timber sales can be reinvested back into the park for capital expenditures. The HBRA deed specifically states that all net timber revenue is split equally between Lane County Parks (LCP) and Oregon Parks and Recreation Division (OPRD). There is an agreement between LCP and OPRD that OPRD will waive their timber revenue is all of the revenue is used within HBRA.

Tax Foreclosed Properties

Oregon Revised Statute 275.320 allows the BCC to designate tax foreclosed properties as parkland, and that the properties can subsequently be sold with the revenue going to Parks.

Grants

Grants are a sum of money given by an organization for a particular purpose. The County regularly applies for a variety of grants. Opportunities include:

- *Oregon State Marine Board* - provides construction grants for waterfront improvements, such as boat ramps, restrooms, parking, and other related projects, as well as operations funds for maintenance and patrol. It receives its revenue for grants from the licensing of pleasure boats and a portion of the gas tax
- *Recreation Trails Program* - funded through the Oregon Parks and Recreation Department. Projects eligible under this program include: 1) maintenance and restoration of existing trails, 2) development and rehabilitation of trailhead facilities, 3) construction of new recreation trails,

and 4) acquisition of easements and fee simple title to property. Grants are distributed on an annual basis and require a 20% match.

- *County Opportunity Grant* - Oregon Parks and Recreation Department
- *Oregon Watershed Enhancement Board* - The Oregon Watershed Enhancement Board (OWEB) is a State agency led by a policy oversight board. Together, they promote and fund voluntary actions that strive to enhance Oregon's watersheds. The Board fosters the collaboration of citizens, agencies, and local interests. OWEB's programs support Oregon's efforts to restore salmon runs, improve water quality, and strengthen ecosystems that are critical to healthy watersheds and sustainable communities. OWEB administers a grant program that awards more than $20 million annually to support voluntary efforts by Oregonians seeking to create and maintain healthy watersheds.
- *Land and Water Conservation Fund* - This is a federal grant program that receives its money from offshore oil leases. The money is distributed through the National Park Service and is administered though Oregon Parks and Recreation Department. In the past, this was one of the major sources of grant money for local agencies. The funds can be used for acquisition and development of outdoor facilities and require a 50% match.
- *Diamonds in the Rough Grant Program* – For historic preservation of structures through the Oregon Parks and Recreation Department
- *Oregon Heritage Grant Program* - Oregon Parks and Recreation Department
- *Preserving Oregon* - Oregon Parks and Recreation Department
- *Veterans and War Memorials Grant* - Oregon Parks and Recreation Department
- Community Development Block Grants (CDBG) - These grants from the Federal Department of Housing and Urban Development are available for a wide variety of projects. CDBG funds have limitations and are generally required to benefit low and moderate income residents. Grants can cover up to 100% of project costs.
- Urban Forestry Grants - There are several grant programs that provide money for urban forestry projects. While some programs fund public tree planting projects, most federal money must be spent on projects other than planting trees. United States Forest Service grants are small (usually less than $10,000).
- Department of State Lands
- Department of Environmental Quality

Public|Private Partnerships

The basic approach is for a public agency to enter into a working agreement with a private business to help fund, build, and/or operate a public facility. Generally, the three primary incentives that a public agency can offer are free land to place a facility (usually a park or other piece of public land), certain tax advantages, and access to the facility. While the County may have to give up certain responsibilities or control, it is one way of obtaining public facilities at a lower cost.

Land Trusts

Private land trusts such as the Trust for Public Land, the Nature Conservancy, and the McKenzie River Trust employ various methods, including conservation easements, to work with willing owners to conserve important resource land. Land trusts assist public agencies in various ways. For example, land trusts may acquire and hold land for eventual acquisition by the public agency.

National Tree Trust

National Tree Trust provides trees through two programs: America's Treeways and Community Tree Planting. These programs require that trees be planted on public lands by volunteers. In addition, America's Treeways requires that a minimum of 100 seedlings be planted along public highways.

Lifetime Estates

This is an agreement between a landowner and the County that gives the owner the right to live on the site after it is sold to the County.

Exchange of Property

An exchange of property between a private landowner and the County can occur. For example, the County could exchange a less useful site it owns for a potential park site currently under private ownership.

Naming Rights

Certain parks could be developed or improved with specific facilities in mind that could then have the naming rights sold and the revenue put toward park maintenance. In addition, the naming rights of existing or future parks could be sold to generate revenue.

Volunteer Groups

County volunteers continue to play a pivotal role in the success of programs and services offered throughout the park system.

Park Adoption | Friends Organizations

Volunteers and service organizations can adopt a park, and in doing so, make an agreement to participate in supporting activities such as committing to certain number of work parties per year.

Specific User Groups

For parks that include infrastructure intended for specific activity types, such as a baseball field (e.g. Babe Ruth), soccer field or dog park, the County could consider recruiting additional community members or school teams that use those facilities for monthly work parties.

Intergovernmental Agreements

Parks can enter into agreements to operate and maintain park properties from other governmental agencies.

Innovative Funding Measures

Due to the increasing limitations on property taxes, some public agencies are looking toward alternative methods of funding the park and open space systems that citizens find essential to quality of life. These alternative mechanisms are generally taxes, and some are more viable than others as funding sources. The County has the legal option to explore the following alternative mechanisms:

- Entertainment taxes
- Utility taxes
- Corporate Income Tax
- Income Tax Surcharge
- Personal Income Tax
- Gross Receipts Tax
- Payroll Tax
- General Sales Tax
- Restaurant Tax
- Business License Tax
- New Construction Fees

Habitat Management Plan

Howard Buford Recreation Area

Photo

DRAFT v. 3

January 6, 2018

Prepared by Lane County Parks Division, Public Works Department
In partnership with Friends of Buford Park & Mount Pisgah
and Mount Pisgah Arboretum ~~and~~

~~Lane County Parks Division, Public Works Department~~

Acknowledgements

Board of County Commissioners

Lane County Parks Advisory Committee

Buford Park Habitat Management Plan Technical Advisory Group
Ed Alverson and Jason Nuckols, The Nature Conservancy
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Mount Pisgah Arboretum
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Photos provided by:
Ed Alverson, Jason Blazar, Jeff Krueger,

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Appendices

Chapter 1: Executive Summary

The Habitat Management Plan for Lane County's Howard Buford Recreation Area (Plan) is designed to assist Lane County land managers, park stakeholders, agency partners, interested park users and public citizens in managing and sustaining the 2,215-acre Howard Buford Recreation Area's valuable aesthetic and natural resources and their enjoyment by the public.

This visionary plan identifies highest priority purposes for available resources, and a focus for collaborative partnerships and future grant writing efforts. With this management plan in hand, park managers, partner agencies, and volunteer groups can collaborate more effectively to conserve the park's diverse habitats for the public to enjoy long into the ~~next century~~future.

Howard Buford Recreation Area (HBRA) and the greater Mount Pisgah area are recognized ~~by~~ in the 2006 Oregon Conservation Strategy, as well as the 2016 revision, ~~(2006)~~ as a Conservation Opportunity Area—a location "that provide(s) good opportunities to address the conservation needs of high-priority habitats and species" (Oregon Department of Fish & Wildlife, 2006). With only about 2% of the Willamette Valley's original prairie and savanna and 10% of floodplain forest habitat remaining, HBRA is home to some of the largest remnants of these habitat types in public ownership—~~nearly~~ more than 1,000 acres of prairie, savanna, and oak woodland—~~-~~located at the confluence of the Coast and Middle Forks of the Willamette River. In 2010, The Nature Conservancy purchased more than 1,200 acres of similar habitat immediately adjacent to HBRA (the preserve was later expanded to 1305 acres). This presents extraordinary new opportunities for restoration and protection of significant contiguous acreage of these rare habitats. A fundamental challenge of park management in HBRA is to balance the recreational needs of ~~hundreds of thousands of~~ park visitors with the conservation needs of plants and

Each year, an estimated 400,000 people visit HBRA to enjoy its diverse natural beauty.

wildlife—some of which are listed as rare, threatened, or endangered.

1.1 Methodology

The plan was developed using the *Conservation Action Planning* process, or CAP. The CAP ~~protocol~~ methodology is a science-based planning ~~process~~ analysis developed by The Nature Conservancy and other land manage~~m~~ernt ~~agencie~~s, and provides an analytical method for helping conservation practitioners achieve effective conservation results. The CAP ~~process~~ methodology allows a team of technical experts from diverse disciplines to work through a series of analytical steps that result~~s~~ in a set of priority strategies and actions to benefit identified conservation targets.

1.2 The Planning Process

Consistent with the CAP ~~protocol~~methodology, the Friends of Buford Park & Mount Pisgah (FRIENDS), with Lane County assistance, convened an inter-agency Technical Advisory Group with diverse expertise to work through the planning process. The Technical Advisory Group (TAG) held seven facilitated meetings to develop and review detailed conservation planning information. The TAG developed specific "conservation targets" for HBRA. Both "focal" and "nested" targets will guide conservation efforts in HBRA. The focal targets include six habitats, one federally endangered plant, one rare bird and, to integrate and value compatible recreation, "visitor experience." More specific "nested targets" (individual species and communities of interest that will benefit from strategies that address focal targets) are included in the plan. The focal conservation targets are:

- Upland prairie and savanna
- Oak woodland
- Wet prairie
- Bradshaw's lomatium (*Lomatium bradshawii)*
- Buckbrush chaparral
- Willamette riparian systems and associated floodplain
- Creeks and streams
- Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)
- Visitor experience

The focal conservation targets represent 1) Habitat types identified as important for conservation within ~~the Willamette Valley in~~ the Oregon Conservation Strategy for the Willamette Valley Ecoregion; 2) habitats that provide important aquatic, ~~and~~ wetland, and upland ecological functions; 3) Federally listed species~~,~~ or species petitioned for listing; and 4) public uses that benefit ~~from the presence of~~from a landscape rich in native biodiversity. ~~within the park. Together, the focal conservation targets are intended to represent and encompass the full array of priority conservation values (habitats, species, and related beneficial public uses) of HBRA.~~

As part of the CAP ~~process~~methodology, the "viability" of and "threats" to these focal targets were assessed in order to establish clear goals and strategies (Chapter 6) for the desired future conditions for each target. With these goals in place, the process developed stewardship project recommendations, along with recommended best management practices and a "Stewardship Tool Box". The plan calls for monitoring and adaptive management (Chapter 12) so that implementation actions may be adjusted to changing conditions and emerging information.

Lane County Public Works Department performed a technical review of the plan from March to December 2011. In 2012, habitat planning was postponed due to insufficient funding. In 2015, Lane

County resumed the planning process, collaborating with Friends of Buford Park & Mount Pisgah to complete the plan. The ~~plan will be reviewed by the~~ Lane County Parks Advisory Committee (PAC) will review the draft plan and may recommend that the plan be ~~recognized~~ approved by the Lane County Board of Commissioners.

1.3~~x~~ Stakeholder Groups

At the outset of the planning process, HBRA stakeholders, including the Mount Pisgah Arboretum and the Lane County Sheriff's Mounted Posse, were invited to briefings on the project and to public input plans. These groups are integral to the ongoing operation of HBRA.

Mount Pisgah Arboretum, a non-profit organization, is a 209-acre, living tree museum on the west slope of Mount Pisgah within HBRA. The Arboretum operates through a 50-~~-~~year lease with Lane County, and is responsible for habitat management within the Arboretum Stewardship Zone (see chapter 7). The primary purpose of Mount Pisgah Arboretum is nature education. H~~, and h~~abitat management efforts are aimed at providing dynamic outdoor classrooms for teaching about local ecology. The Arboretum offers a wide range of both structured educational programs and informal learning opportunities for visitors of all ages, and is currently developing a series of interactive nature exhibits.

The Lane County Sheriff's Mounted Posse was established in 1941, and was originally created to serve as both a community service group, and to assist the Sheriff, such as with search and rescue efforts. The posse operates the horse arena located in the North Bottomlands in HBRA as a training facility and hosts a series of ~~where~~ regular events ~~are held~~, and schedules regular trail rides to patrol park trails.

The mission of the Friends of Buford Park and Mount Pisgah (the Friends), fo~~h....~~unded in 1989, is to protect and enhance native ecosystems and compatible recreation in the Mt. Pisgah area. The Friends is a 501(c)3 non-profit organization working to conserve the Mt. Pisgah area's incredible botanical, wildlife and recreational values. The Friends mobilizes funding, scientific expertise and volunteers to improve the botanical, fish, wildlife and recreational resources throughout the 4,700 acre greater Mt. Pisgah area.

The Friends is a separate organization distinct from the Mount Pisgah Arboretum working to care for the 2,100 acres in Buford Park outside of the Arboretum Stewardship. Though separate organizations, together they help care for Buford Park's natural and recreational values in partnership with Lane County, the landowner.

1.53 Public Input

~~At the outset of the planning process, HBRA stakeholders, including the Mount Pisgah Arboretum and the Sheriff's Mounted Posse, were invited to briefings on the project and to public input plans.~~ During the planning process, Lane County, the TAG and Friends of Buford Park & Mount Pisgah collaborated to:

- Host two public workshops: March 19, 2009 and June 2, 2009,
- Publish displays and informational materials on the internet,
- Obtain a major article in *The Register-Guard* (March 27, 2009),
- Host an informational booth at the Mount Pisgah Wildflower Festival in 2009, and
- Host two stakeholder meetings, Nov 12, 2008 and Sept 3, 2009.

During 2016 and 2017, Lane County ~~plans to~~ solicited comments through:

- Stakeholder meetings,
- ~~Review by members of the inter-agency Technical Advisory Group,~~
- Outreach to the general public, park neighbors and other stakeholders through website postings; flyers at park kiosks;~~,~~ print, TV, and radio stories in May 2016, ~~email, website postings, park tours~~
- An informational booth at the May 19th 2016 Mount Pisgah Wildflower Festival,
- Three public park tours in June 2016, 2 public tours in 2017 (July and August respectively),
- ~~an~~ An online survey to which there were 51 respondents
- ~~and~~A ~~informational meetings~~public open house at Harris Hall on May 25th to provide information and solicit public feedback,
- Review by members of the inter-agency Technical Advisory Group, which met on May 5, 2016,
- Review by Parks Advisory Committee, including a public comment opportunity,
- A public open house to showcase the final plan and highlight in what ways public comment shaped the final document, and
- Review and ~~recognized~~ approval by Lane County Board of Commissioners, including ~~another~~ additional opportunities~~y~~ for public comment.

1.64 Conservation Vision

The planning process and associated public input resulted in the creation of a *Conservation Vision* for Howard Buford Recreation Area is listed below:

Conservation Vision for Howard Buford Recreation Area

The Howard Buford Recreation Area will be managed to conserve and restore prairie, savanna, woodland, forest, and river habitats in ways that enhance visitor experience, compatible recreation and educational uses described in the HBRA Master Plan (1994).

The uplands shall sustain increasingly rare Willamette Valley habitat types including a mosaic of open prairie, savanna, and oak woodland ~~on~~ in portions of the park ~~sites~~ where these habitat types occurred historically. Conifer and mixed forest shall be retained and enhanced in upland portions of HBRA, particularly in portions of the park ~~that~~ historically supported

forest conditions. The lowlands shall sustain healthy riparian (streamside) and aquatic habitats and processes. These native habitats shall conserve common and rare native plants and animals, including federally and state-listed threatened and endangered species.

Habitat restoration shall provide significant increases in quality and/or extent of priority habitat to support a ~~high~~ diversity of wildlife species, particularly those that ~~which~~ were historically ~~much~~ more prevalent throughout the ~~entire~~ Willamette Valley. Restoration will also lessen the threat of severe wildfire through reduction of dense, brushy fuels in prairie, savanna, and oak woodland habitats.

1.75 Management Goals

Fifteen management goals and associated strategies ~~objectives~~ were developed to provide measurable milestones on the road to achieving the Conservation Vision. Refer to Chapter 6 for a complete list of the strategies and projects associated with each goal, as well as a brief description of the conservation targets each goal is designed to address.

- **GOAL 1:** Provide a safe and positive visitor experience in Howard Buford Recreation Area.
- **GOAL 2:** Educate park users about the unique natural values that make the HBRA and the broader Mount Pisgah area a priority for conservation.
- **GOAL 3:** Maintain and improve the park's trail system to minimize ecological impacts while providing views of and access to HBRA's diverse habitats.
- **GOAL 4:** Minimize adverse impacts of park management on conservation targets.
- **GOAL 5:** Restore and enhance prairie, savanna and oak woodland habitats by reducing encroaching woody vegetation.
- **GOAL 6:** Achieve significant restoration of prairie and savanna, oak woodland, and wet prairie habitats in HBRA.
- **GOAL 7:** Achieve significant restoration of chaparral habitat in HBRA.
- **GOAL 8:** Manage for diverse native plant communities within each conservation target habitat.
- **GOAL 9:** Increase the size of wet prairie habitat patches.
- **GOAL 10:** Locate and, to the extent feasible, reduce populations of feral or harmful non-native animal species impacting each conservation target.
- **GOAL 11:** Locate and reduce the presence of habitat-modifying, non-native plant species within each conservation target habitat.
- **GOAL 12:** Remove fish passage barriers from the lower mile of creeks and streams on HBRA that flow into the Coast Fork of the Willamette River.
- **GOAL 13:** Improve ecological health of creeks and streams.
- **GOAL 14:** Improve ecological health of riparian floodplain habitats.
- **GOAL 15:** Manage habitats in the North Bottomlands Stewardship Zone to be mutually compatible with recreational activities identified in the 1994 HBRA Master Plan and the recommendations of the Large Events Task Force~~applicable Lane County Parks planning documents~~.

1.86 Moving Forward

Effective partnerships have been a key feature of the ~~landscape~~ management ~~at~~ of the Howard Buford Recreation Area ~~for more than 30 years~~since the park was established. Achieving the ambitious vision set forth in this plan will require those partnerships to grow broader and deeper. The HBRA Habitat Management Plan provides the basis for that growth, and a solid framework for Lane County Parks and its partners to pursue the financial resources necessary for successful implementation.

1.9~~7~~ Chapter 1 References

Chapter 2: Purpose & Need

2.1 Purpose

The purpose of the Howard Buford Recreation Area Habitat Management Plan is for Lane County and its partner agencies to identify goals, strategies and projects to effectively conserve a diversity of native habitats and species in the Howard Buford Recreation Area (HBRA or Buford Park) while effectively meeting demand for low intensity recreational use of the park, as provided for in the 1994 HBRA Master Plan. The Habitat Management Plan seeks to address identified threats to conservation targets, effectively manage habitat areas, reduce wildfire risk, and increase public safety within the park. The Plan will guide efforts by Lane County and its partners to secure sufficient resources for habitat conservation throughout Buford Park.

2.2 Regional Context: Mount Pisgah's Importance

The 2,215-acre HBRA, located primarily on the eastern, southern, and western slopes of Mount Pisgah, is a regionally significant natural area. The park encompasses a mosaic of increasingly rare habitats, including oak woodland, oak savanna, upland and wetland prairie, and riparian forest. The HBRA is the largest single public ownership in a 4,700-acre complex of conservation lands in the Mount Pisgah area owned by public and private agencies. HBRA is the second largest block of native habitats in the Willamette Valley under the management of a single owner; only the 5,706-acre Finley National Wildlife Refuge near Corvallis (managed by the U.S. Fish & Wildlife Service) is larger.

Mount Pisgah is surrounded on three sides by two major rivers,~~:~~ the Middle and Coast Forks of the Willamette. At the confluence and across the river along the north bank of the Middle Fork of the Willamette, approximately 1000 acres of public lands are managed by Willamalane Parks District, Springfield Utility Board, Oregon State Parks and Friends of Buford Park & Mount Pisgah (Friends).

On ~~Buford Park~~HBRA's northern boundary is the 1305-acre Willamette Confluence Preserve, acquired in 2010 by The Nature Conservancy (TNC) with support from Lane County. This neighboring property includes conifer forest, oak woodland and savanna habitats on Mount Pisgah's northeast slope, as well as extensive floodplains, including large ponds from historic gravel mining and six miles of river frontage. TNC and partner agencies in the vicinity of the confluence of the Middle Fork and Coast Fork are collaborating to restore riparian and upland habitats on this property.

The resulting~~is~~ 4,700-acre block of contiguous open space not only offers primarily low-intensity recreation opportunities, but also serves as an important natural area for the conservation of declining fish, wildlife, and native flora, close to downtown Eugene-Springfield, Oregon's third largest population center.

2.3 Rare Habitats at HBRA

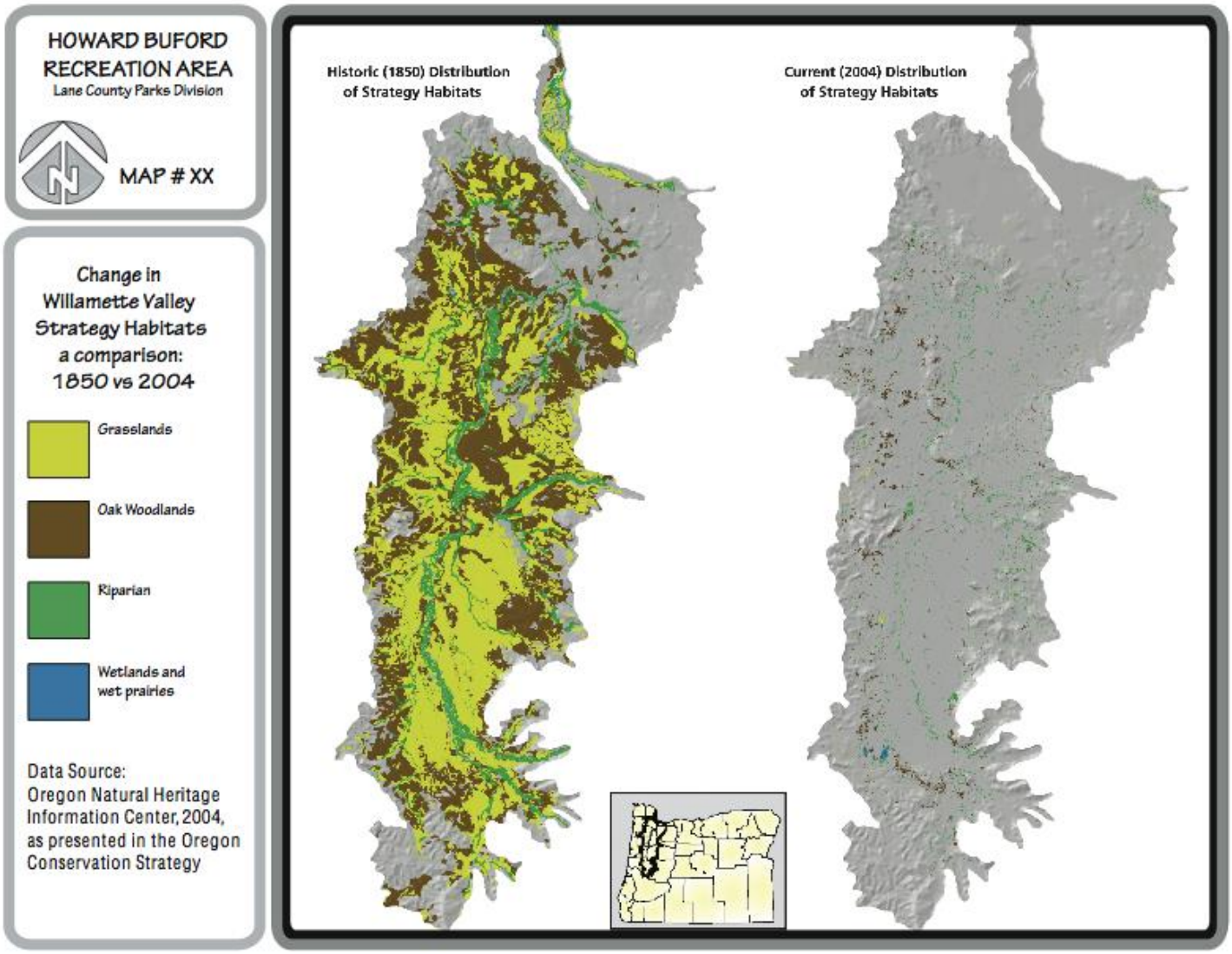
Howard Buford Recreation Area is noted for its diversity of habitat types. A number of these Willamette Valley habitats have become increasingly rare as much of the Willamette Valley landscape continues to be converted to agricultural and urban uses. As a result, the loss of native grassland and oak woodland habitat types has been dramatic, making the preservation of these habitats at HBRA ecologically significant for the Willamette Valley. See maps entitled: *Change in Willamette Valley Strategy Habitats:*

1850 vs. 2004. Strategy habitats are those identified in the *Oregon Conservation Strategy* (~~2006,~~ ODFW, 2006).
From lowland to upland, examples of rare habitat types on HBRA include:

- Willamette Valley riparian forest,
- Willamette Valley wetland prairie,
- Willamette Valley upland prairie,
- Willamette Valley savanna (scattered trees, often oaks~~, sometimes other species~~, in native ~~prairie~~grassland)
- Willamette Valley chaparral (~~a dry or~~fire-adapted, drought-tolerant ~~"mesic"~~ shrub land)

Some wonder if conifer forests are rare in the Willamette Valley. Since the 1850s, the acreage occupied by conifer forests has expanded into oak woodlands, savannas and prairies, in part because Euro-Americans settlers to Oregon introduced the practice of suppressing ~~forest~~ fires. As a result, acreage of closed canopy conifer forest in the Willamette Valley at the present time is similar to the acreage that existed in the 1850's (Hulse et al., 2002). Therefore, young and mature (less than ~~150~~ 150-year ~~-~~old) conifer forests are a plentiful habitat type in the Willamette Valley, and not considered ~~a~~ rare ~~habitat type~~. Within HBRA, cooler, wetter north-facing slopes usually support ~~second growth (but not "ancient" or "late-successional")~~ Douglas-fir (*Pseudotsuga menziesii*) forests that contribute to the park's habitat diversity.

Figure 2-1: Change in Willamette Valley Strategy Habitats 1850 vs. 2004



Source: Oregon Conservation Strategy, 2006

2.4 Managing Conservation Targets & Fire Risk in a Changing Climate

Another need for the HBRA *Habitat Management Plan* is to anticipate and plan for how future changes in the region's climate could stress or change the park's habitats, wildlife and rare species in the coming century.

While some may debate whether human activity is a primary cause of the documented changes in air temperatures, precipitation patterns, and extreme weather occurrences, a broad consensus of current scientific research provide evidence of a changing climate regionally and worldwide. This evidence ranges from shrinking glaciers, decreased polar ice caps, decreased regional snow packs, rising sea levels, and record high temperatures. *Climate Change 2014: Synthesis Report* (United Nations Intergovernmental Panel, 2014) is a generally accepted compilation of the state of scientific research on the issue.

In the Willamette Valley, scientists project that climate change is expected to result in:

- warmer drier spring weather,
- hotter, drier summers (with increased potential for wildfires), and
- warmer winters with more severe storms causing increased flooding (from faster snow melt) and smaller snowpack.

Without planning and active management, longer, hotter, drier summers could increase the risk of catastrophic fires that could destroy both ~~rare~~ remnant oak woodlands and ~~mature~~ early seral stage conifer forests on HBRA, as well as threaten adjacent private property and increase risks to public safety. Because of the drought tolerance of native oaks, prairie grasses, and forbs, ~~Managing~~ managing the park to sustain prairies and oak savanna can make the park's habitats more resilient, and reducing woody fuels can reduce the risk of stand-replacing wildfires.

Restoring riparian floodplain habitats should increase their stability and ability to detain and filter floodwaters, reducing impacts downstream. The South Meadow Floodplain project on HBRA offers an example of how this can be accomplished while also enhancing passive recreational amenities such as ~~(~~improved trails, backwater overlook and a ~~,~~ wildlife blind~~, etc.).~~

2.5 Relationship to Previous Plans

Local, state and federal efforts to conserve a large natural area at the confluence of the Coast and Middle Forks of the Willamette River date to the 1970s, when the Oregon Legislature authorized state funds to match federal Land & Water Conservation funding to purchase the 2,2~~3~~00-acre Mount Pisgah State Park. In 1982, after the state transferred title to the park to Lane County, the Board of Commissioners renamed the park Howard Buford Recreation Area to honor Lane County planner Howard Buford.

2.5.1 HBRA Master Plan (1994)

In 1994, Lane County adopted the *HBRA Master Plan* as a refinement to the *Metro Plan*. The *HBRA Master Plan* provides a comprehensive site analysis, a set of 9 park goals, and facilities plan that addresses park goals, in addition to recommendations for further study. The *HBRA Master* Plan specifically directed Lane County to develop both a wildlife management plan and a separate vegetation management plan. In 2005, Lane County decided to combine both plans into a single Habitat Management Plan to address both wildlife and vegetation management. This practical and ~~cost~~ cost-

saving approach allows for evaluation of HBRA's unique and thriving wildlife populations and their connections to diverse plant communities (habitats) when planning and implementing management activities. This Habitat Management Plan is relevant to, and helps achieve, six of the nine broad goals listed on p. 3 of the HBRA Master Plan that are intended to guide managers:

1) Accommodate increased use while protecting the resource, minimizing development and preserving the natural and rural character of the HBRA.

2) Protect sensitive and significant natural resource~~s~~ areas and restore degraded habitat.

3) Minimize conflicts among Park users.

6) Maximize the value of the P~~p~~ark as an educational resource.

7) Help coordinate efforts and cooperate with groups whose goals are complementary to those of the HBRA.

8) Protect the park and its users from damage and injury and prepare for emergency needs.

This *Habitat Management Plan* seeks to advance these goals through a more specific planning process to manage the park's natural resources, minimize conflicts, coordinate efforts among park groups, increase public safety, and identify ways to increase the park's value as an educational resource.

2.5.2 Confluence of Coast and Middle Forks Willamette River Project Area – Alternatives Team Recommendation (1997)

In response to the 1980 Northwest Power Planning and Conservation Act, which required the Bonneville Power Administration (BPA) to compensate for losses of fish and wildlife habitat caused by construction and operation of the region's hydroelectric system, an inter-agency "Alternatives Team" was formed to help generate a series of recommended habitat enhancements for the lower Coast Fork and Middle Fork Willamette River ~~in conjunction with ODFW~~. Included in the report was a recommendation for the acquisition and restoration of a private agricultural parcel along the east bank of the Coast Fork, now the BPA-~~-~~owned Sorenson site.

2.5.3~~2~~ Rivers to Ridges Open Space Study (2003)

Lane County, the Cities of Eugene and Springfield, and Willamalane Parks District endorsed the *Rivers to Ridges Metropolitan Regional Parks and Open Space Study: Vision & Strategies.* This document identified Buford Park and the Willamette Confluence Project (acquired in 2010 by The Nature Conservancy) as open space anchors connected to parks in the metro area by "Greenways" along ridgelines and "Blueways" along streams and rivers. In general, the plan recognized the importance of the Willamette River for linking several of the region's most significant park and open space features such as Howard Buford Recreation Area, Island Park, Alton Baker Park, Skinner Butte Park, Delta Ponds, and Green Island. It also identified potential new open space anchors, including what is now the 1305-acre Willamette Confluence Project, acquired in 2010 by The Nature Conservancy, and located adjacent to HBRA.

This *Habitat Management Plan* specifies ways to conserve and balance habitat and recreational values on the largest public ownership in the ~~Mt.~~Mount Pisgah area "open space anchor" as identified in the Rivers to Ridges Open Space study.

2.5.~~4~~3 Oregon Conservation Strategy (2006, updated in 2016)

The *Oregon Conservation Strategy* (Oregon Dept. of Fish and Wildlife, 20~~00~~06, pp. 244-5; the 2016 update is on the web at www.oregonconservationstrategy.org/ecoregion/willamette-valley/) specifically identifies the ~~Mt.~~Mount Pisgah area in its ecosystem conservation opportunity profile. This document notes that:

- This area supports a number of at-risk species, including some of the largest northwestern pond turtle (*Actinemys marmorata*) populations in the ecoregion,
- Lands in the ~~Mt.~~Mount Pisgah area represent some of the area's largest tracts of native habitats,
- ~~Mt.~~Mount Pisgah is a designated Oregon Important Bird Area, and
- The area contains a great blue heron (*Ardea herodias*) rookery.

The *Oregon Conservation Strategy* explicity states the following actions should be taken:

- Actively manage uplands to promote and maintain oak savanna and prairie habitats,
- Maintain or enhance in-channel watershed function, connection to riparian habitat, flow and hydrology,
- Maintain or restore riparian habitat and ecological function; ensure sufficient habitat complexity for wildlife, and
- Promote early detection and suppression of invasive weeds

The *Oregon Conservation Strategy* identifies a number of priority habitats and species that are present on Buford Park, including:

- Oak woodlands:
  - Wayside aster (*Eucephalus vialis)*
  - Western gray squirrel (*Sciurus griseus*)
  - Songbird assemblage including western wood pewee (*Contopus sordidulus*), Acorn Woodpecker (Melanerpes formicivorus), Western Bluebord (*Sialia Mexicana),* ~~Slender-billed~~ White breasted nuthatch (*Sitta carolinensis aculeata*), chipping sparrow (*Spizella passerina*)
- Grasslands:
  - Grasshopper Sparrow (*Ammodramus savannarum perpallidus*)
  - Common Nighthawk (*Chordeiles minor*)
  - Western Rattlesnake (*Crotalus oreganus)*
  - Monarch Butterfly (*Danaus plexippus)*
  - Oregon Vesper Sparrow (*Pooecetes gramineus affinis)*
  - Western meadowlark (*Sturnella neglecta*)
- Wetlands:
  - Bradshaw's lomatium (*Lomatium bradshawii)*
  - Willow flycatcher (*Empidonax traillii)*
  - Yellow-breasted Chat (*Icterieria virens auricollis)*
  - Northern red-legged frog (*Rana aurora*)
- Riparian:
  - Olive-sided flycatcher (*Contopus cooperi)*

    - Townsend's Big-eared Bat (*Corynorhinus townsendii)*
    - ~~Northwestern~~ Western P~~p~~ond T~~t~~urtle (*Actinemys marmorata)*~~e~~
    - Breeding riparian songbirds
    - Great blue heron
    - Bald eagle (*Haliaeetus leucocephalus*)
- Columbia (Willamette as tributary) River:
    - Chinook salmon (*Oncorhynchus tshawytscha*)
    - Winter Steelhead (*Oncorhynchus mykiss*)
    - Oregon Chub (*Oregonichthys crameri*)
- Freshwater aquatic:
    - Western brook lamprey (*Lampetra richardsoni*)
    - Pacific lamprey (*Lampetra tridentata*)

Oregon Department of Fish & Wildlife provided partial funding for this *Habitat Management Plan* through its Oregon Conservation Strategy Implementation grant program, in recognition of the vital importance of habitats on HBRA and in the broader ~~Mt.~~Mount Pisgah "conservation opportunity area."

2.5.54 Willamette River Open Space Vision (2010)

The Willamette River Open Space Vision is the first comprehensive open space vision or plan specifically for the Willamette River in the Eugene-Springfield region. It built on the 2003 *Rivers to Ridges Metropolitan Regional Parks and Open Space Vision* that identified the Willamette River as a key element of the region's open space network from a habitat, recreational, visual, and cultural perspective. Lane Council of Governments completed the *Willamette River Open Space Vision* in 2010. Below is the plan's vision statement:

> Our community has long treasured the Willamette River for the natural, recreational, and visual qualities it provides. The river gives us a sense of place and contributes greatly to the quality of life for all who call the Eugene-Springfield area home. The open space that lines the river provides a welcome break from the urban environment, accommodates recreational amenities of all types, and provides exceptional wildlife habitat. The river corridor also functions as a linear~~l~~ connector between many of our region's major parks and natural areas for wildlife and humans alike. The goal of ~~for~~ this planning effort is to create an inspiring vision for the Willamette River corridor that will help lead the way for coordinated efforts to further improve this outstanding open space resource in the coming years and decades.

The document, maps and other information are available at: http://www.lcog.org/willamette/.

This HBRA *Habitat Management Plan* advances the *Willamette River Open Space Vision* by identifying priority habitat management actions to conserve native habitats and enhance recreational opportunities in an "open space anchor" located within the urban/rural interface of the Eugene-Springfield metropolitan area.

2.5.65 Lane County Parks & Open Space Master Plan (1980) and ~~DRAFT~~ Lane County ~~Open Space~~Parks Master Plan (revision in development)

Lane County Parks Division is updating its 1980 Parks and Open Space Master Plan. ~~-~~The updated document will be a long-term plan for the 70 recreation sites managed by the County, including HBRA. The Parks Master Plan update would become an amendment, or change, to the County's

Comprehensive Plan. ~~-~~In order for the new system-wide park ~~system-wide~~ Master Plan to take effect, the Lane County Parks Advisory Committee will review and make recommendations to the Lane County Board of Commissioners, which must adopt it by ordinance.

The Lane County webpage with more information is:

http://www.lanecounty.org/Departments/PW/Parks/Pages/masterplan.aspx

~~This *Habitat Management Plan* provides park-specific guidance specific to HBRA. Unlike the system-wide Parks & Open Space Master Plan, the HBRA *Habitat Management Plan* is not a land use document, nor does it require an amendment to the Lane County Rural Comprehensive Plan.~~

2.5.~~7.6~~ Other Plans and Assessments

All of HBRA is located within the Willamette River Greenway, as designated under Oregon Statewide Planning Goal 15. The purpose of Goal 15 is to "protect, conserve, enhance and maintain the natural, scenic, historical, agricultural, economic and recreational qualities of lands along the Willamette River as the Willamette River Greenway".

To further aquatic and floodplain habitat improvements along the Willamette River, the Oregon Watershed Enhancement Board, Meyer Memorial Trust, and Bonneville Environmental Foundation ~~have developed~~ created the "Willamette River Initiative", ~~as~~ a vehicle ~~for~~ support~~ting~~ habitat restoration work. As part of this effort, priority areas have been identified as "Anchor Habitats", including both the Middle Fork and Coast Fork Willamette in the vicinity of Mount Pisgah ~~-~~(OWEB, 2016).

Management plans or assessments have been developed for several nearby conservation ownerships. These plans include:

1) Willamette Confluence Preserve Management Plan (TNC, 2012).

2) Sorenson Parcel Management Plan (Friends, 2015).

3) Turtle Flats Baseline Assessment (Friends, 2015).

4) Thurston Hills Management Plan (Willamalane, 2016).

5) Turtle Flats Management Plan (Friends, 2017).

2.6 Chapter 2 References

- IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.
- Lane County Parks Division & Cameron & McCarthy Landscape Architects. 1994. Howard Buford Recreation Area Master Plan.
- Lane Council of Governments and regional partners. 2003. Rivers to Ridges: Eugene – Springfield Regional Parks and Open Spaces Vision.
- Oregon Department of Fish & Wildlife. 2006 & 2016. Oregon Conservation Strategy. 9, 11, 234-245.

- Lane Council of Governments and regional partners. 2010. Willamette River Open Space Vision and Action Plan.

Chapter 3: Methodology

3.1 The Conservation Action Planning ~~Protocol~~Process

The "Conservation Action Planning" (CAP) ~~protocol~~ methodology is a science-planning process used by governments and land trusts around the world to develop management plans for large natural areas. The Nature Conservancy developed the ~~protocol~~ methodology in 2006, in consultation with other land management agencies.
The CAP process draws upon the best professional judgment of a team of technical experts with knowledge in diverse disciplines and about the planning area. The planning process has the following steps:

1. ~~a)~~ Identify conservation targets,
2. ~~b)~~ Evaluate viability and critical threats to conservation targets,
3. ~~c)~~ Incorporate public input,
4. ~~d)~~ Develop conservation strategies,
5. ~~e)~~ Establish conservation measures, and
6. ~~f)~~ Develop a supporting stewardship work plan.

More information about conservation action planning can be found at: http://www.conservationgateway.org/topic/conservation-action-planning . The planning terms used in this chapter are defined in the Glossary (Appendix A.)

3.1.1 Why This Tool Was Selected

Conservation Action Planning (CAP) is a straightforward and proven approach for planning, implementing and measuring success for conservation projects. The analytical rigor of the CAP process provides a level of confidence in the management strategies that are developed from it. CAP requires analysis of the threats that impact the selected conservation targets, and plans management objectives to address the significant threats or improve viability of conservation targets. It then establishes management actions and benchmarks for success to provide a quantifiable basis for evaluating progress toward goals.

3.1.2 Other Conservation Action Plans developed in Western Oregon

Public agencies have used the Conservation Action Planning ~~protocol~~ methodology to develop habitat management plans for natural areas elsewhere in western Oregon. Below are four examples.

- *The West Eugene Wetlands Conservation Action Plan* included the City of Eugene, Bureau of Land Management, and The Nature Conservancy.
- *The Spencer Creek (south of Eugene, Oregon) Conservation Action Plan* (U.S. Forest Service, City of Eugene and The Nature Conservancy)
- *The Table Rocks (in Medford, Oregon) Conservation Action ~~plan~~ Plan* was developed by Bureau of Land Management in partnership with The Nature Conservancy. BLM is using the results of the Table Rocks CAP to inform their internal planning process.
- *Nehalem River Watershed (north Oregon Coast) Conservation Action Plan* was developed with representation from two Soil & Water Conservation Districts.

3.2 Planning Process Overview

3.2.1 Technical Advisory Group

Consistent with the CAP process, Lane County convened an inter-agency Technical Advisory Group with diverse expertise to work through the Conservation Action Planning protocol. Participants serving on the TAG included representatives from the following agencies listed in the table below:

Figure 3-1: HBRA Habitat Management Plan Technical Advisory Group

AGENCY	MEMBER	ROLE / EXPERTISE
Lane County Parks Division	Todd Winter	Former Parks Manager & TAG chair
Oregon Dept. of Forestry	Greg Wagenblast	Fire management and suppression
Oregon Dept. of Fish & Wildlife	Various staff biologists: Jeff Ziller, Kelly Reis, Erik Moberly, Brian Wolfer, and Chris Yee	Aquatic and terrestrial biologists
Oregon Department of Agriculture	Glenn Miller	Invasive species management
Bonneville Power Administration	Ben Tilley	Vegetation management specialist
US Army Corps of Engineers	Roberta Swift Garrett Dorsey (2016)	Wildlife biologist experienced in northwestern pond turtle conservation Wildlife Biologist
The Nature Conservancy	Ed Alverson Jason Nuckols (2016)	Botanist and ecologist Willamette & Restoration Program Manager
Mount Pisgah Arboretum	Tom LoCascio	Arboretum Site Manager and HBRA Caretaker with historic knowledge of the planning area
Watersheds Inc.	Paul Hoobyar	TAG facilitator specializing in natural resource issues
Friends of Buford Park ~~Stewardship Coordinator~~& Mt Pisgah	Jason Blazar	Designer, landscape ecologist, and steward. Friends Stewardship Coordinator and Support staff to TAG
Friends of Buford Park ~~board member (and chair, Friends' Stewardship Technical Advisory Committee.)~~ & Mt.	Bruce Newhouse	Botanist and ecologist Board member and chair of the Friends' Stewardship Technical Advisory Committee’

Pisgah		
Project intern	Sandra Koike	TAG note taker. (Candidate for Masters in landscape architecture, University of Oregon)

Lane County thanks the many agencies and their staff that contributed in-kind time to help develop this habitat management plan.

3.2.2 The Role of Friends of Buford Park & M~~oun~~t Pisgah

Friends of Buford Park & M~~oun~~t Pisgah, a non-profit 501c3 organization, was a primary contributor to the development of the habitat management planning process. Friends ~~of Buford Park & Mount Pisgah~~ supported Lane County by:

- collaborating with Lane County to scope the *Habitat Management Plan* process,
- securing and administering a $40,000 "Oregon Conservation Strategy" grant from Oregon Dept. of Fish & Wildlife to support plan development,
- providing funds for support staff, meeting facilitators, public outreach materials, public tours, and Geographic Information System (GIS) to support planning and mapping, and
- developing the draft narrative report and findings under county staff supervision.
- In addition, Friends of Buford Park's Stewardship Technical Advisory Committee (STAC), which is comprised of volunteer scientists, biologists, botanists, ecologists and related professions, served as a research and support resource to the TAG. The TAG sometimes would refer a question or issue to the STAC for additional research. Members of the STAC during development of this plan ~~include:~~are listed in Figure 3-2.

Figure 3-2: Friends of Buford Park & M~~oun~~t Pisgah Stewardship Technical Advisory Committee

MEMBER	AFFILIATION / EXPERTISE
Bruce Newhouse	Chair, field ecologist and naturalist, Salix Associates, & Friends' representative on Technical Advisory Group.
Gail Baker	Botanist and educator (retired) – joined STAC in 2014
Kat Beal	Wildlife biologist (retired) – served on STAC 2013 - 2016
Bill Castillo	Wildlife Biologist, Oregon Dept. of Fish & Wildlife (retired) – resigned from STAC in 2009
Greg Hyde	Parks planner (retired) – joined STAC in 2015
Aryana Ferguson	Restoration Specialist, Madrona Consulting
Dr. Bart Johnson, Ph.D.	Associate Professor, Dept. of Landscape Architecture, University of Oregon
John Koenig	Botanist and hydrologist (retired)
Tom LoCascio	Site Manager, Mount Pisgah Arboretum

David Predeek	Botanist, U.S. Forest Service (retired)
Jim Reed, Ph.D.	GIS specialist, The Hydrologic Group – STAC ex officio member
Dr. Bitty A Roy, Ph.D.	Plant ecologist specializing in invasion biology and plant-fungus ecology, University of Oregon – STAC sub-committee member
Kevin Shanley	Landscape architect (retired) - joined STAC in 2015

Lane County thanks the technical experts on the Stewardship Technical Advisory Committee for their contributed services to help develop this HBRA habitat management plan.

3.3 Public Involvement

Lane County, in collaboration with Friends of Buford Park & M~~oun~~t Pisgah, sought public input during the development of this *Habitat Management Plan* through multiple outreach methods.
In Spring and Fall 2008, prior to initiation of habitat planning, Friends of Buford Park & M~~oun~~t Pisgah implemented a related, highly visible demonstration project along the Summit Trail (Trail 1) to educate the public about the need to enhance prairie, savanna and oak woodland habitat. This project included weed removal and savanna restoration through the removal of Douglas fir and thinning of oaks and maples. Before, during and after implementation, the project engaged park visitors and the public through trailside information tables, temporary signage, and brochures. In addition, multiple pre- and post-project tours described the project goals and methods and the upcoming habitat management planning process. During implementation, extensive media coverage included numerous television, radio and print media, including a front-page article in *The Register-Guard.*

When habitat management planning got underway with the formation of the Technical Advisory Group (TAG), park stakeholders, including the Mount Pisgah Arboretum and Sheriff's Posse (which operates a horse ~~n~~ arena ~~on~~ in the park) were invited to briefings on the project and upcoming public input plans. During the planning process, Lane County, the TAG and Friends of Buford Park & Moun~~Moun~~t Pisgah collaborated to:

- host two public workshops: March 19, 2009 and June 2, 2009,
- publish displays and informational materials on the internet,
- obtain major article in *The Register-Guard* (March 27, 2009),
- host an informational booth at the Mount Pisgah Wildflower Festival in 2009,
- host two stakeholder meetings, Nov 12, 2008 and Sept 3, 2009, and
- post information about the planning process on the internet.

3.3.1 Lane County Technical Review

Lane County's Public Works Department completed a technical review of the draft *Habitat Management Plan* in 2012. An environmental engineer, natural resource analyst and environmental engineering specialist were primary County contacts that reviewed and commented on the goals and objectives developed during the planning process, and provided comments and suggestions on the final draft plan. Lane County's Parks Manager and Natural Areas Coordinator reviewed and contributed to the final draft of this plan. This technical review augments the public meetings and other public input opportunities.

3.3.2 The Planning Process Ahead

Lane County Public Works will submit this draft plan for review to the Parks Advisory Committee with a request to recommend 'recognition' of this plan by the Lane County Board of Commissioners. The PAC will accept additional public comment on the draft plan during this process. Subsequently, Lane County staff will present a final *Habitat Management Plan* to the Board of County Commissioners, allowing for additional public comment on the plan before recognition.

~~3.4 Chapter 3 References~~

Chapter 4: Conservation Vision, Conservation Targets, and Other Habitats

4.1 Conservation Vision Statement

This Conservation Vision Statement expresses the positive future outcome of managing habitats at the Howard Buford Recreation Area.

Conservation Vision Statement for HBRA
The Howard Buford Recreation Area will be managed to conserve and restore prairie, savanna, woodland, forest, and river habitats in ways that support compatible recreational and educational uses described in the HBRA Master Plan (1994).

The uplands shall sustain increasingly rare Willamette Valley habitat types including a mosaic of open prairie, savanna, and oak woodland on sites where these habitats occurred historically. Conifer and mixed forest shall be retained and enhanced in upland portions of HBRA that historically supported forests. The lowlands shall sustain healthy riparian (streamside) and aquatic habitats and processes. These native habitats shall conserve common and rare native plants and animals, including federally and state-listed threatened and endangered species

Habitat restoration shall provide significant increases in quality and/or extent of priority habitat to support a high diversity of wildlife species which were historically much more prevalent throughout the entire Willamette Valley. Restoration will also lessen the threat of severe wildfire through reduction of dense, brushy fuels in prairie, savanna, and oak woodland habitats.

4.2 Conservation targets

This plan identifies nine **focal conservation targets** (see glossary for definitions of planning terms).~~:~~ Six are habitats, one is a federally endangered plant, one is a rare bird, and one is "visitor experience." The focal conservation targets represent 1) habitat types identified as important for conservation within the Oregon Conservation Strategy for the Willamette Valley Ecoregion; 2) habitats that provide important aquatic, wetland, and upland ecological functions; 3) Federally listed species or species petitioned for listing; and 4) public uses that benefit from a landscape rich in native biodiversity.
~~The focal conservation targets represent 1) habitat types identified as important for conservation within the Willamette Valley in the Oregon Conservation Strategy; 2) habitats that provide important aquatic and wetland ecological functions; 3) Federally listed species, or species petitioned for listing; 4) public uses that benefit from the presence of native biodiversity within the park.~~ Together, the focal conservation targets are intended to represent and encompass the full array of priority conservation values (habitats, species, and related beneficial public uses) of HBRA.

The TAG determined that this set of focal conservation targets was sufficient to represent the full range of ecological communities and native plant and animal species within the park, without being such a large list as to make the analysis unwieldy. The focal conservation targets are:

- Upland prairie and savanna
- Oak woodland
- Wetland prairie
- Bradshaw's lomatium (*Lomatium bradshawii)*
- Buckbrush chaparral
- Willamette riparian systems and associated floodplain
- Creeks and streams
- Oregon Vesper Sparrow (*Pooecetes gramineus affinis*)
- Visitor experience

"Nested targets" are more specific natural features or species associated with each of the six habitats selected as focal targets. Examples of nested targets include rare species, like the Western Meadowlark (Oregon's state bird that nests in prairies) and rare features, such as a seep within an upland prairie. Management actions that benefit the focal targets will also benefit the associated nested targets. Rare species that are included as nested targets are based on their status as determined by the Oregon Biodiversity Information Center (~~2013~~2016).

The nine focal conservation targets are described below. Nested targets are listed under the habitat they are most commonly associated with. Chapter VI defines goals and strategies to conserve the conservation targets. Rare plant communities or habitat types are from the *Oregon Conservation Strategy* (ODFW, 2006).

4.2.1 Upland prairie and savanna

Description: Grass and forb-dominated communities on non-hydric soils with few to no trees or shrubs (prairie), or with scattered open-grown trees that are not so dense as to break up the continuous grassland ground layer (savanna). The primary savanna tree species is Oregon white oak (*Quercus garryana*), but scattered conifers such as ponderosa pine (*Pinus ponderosa*), incense cedar (*Calocedrus decurrens*), and Douglas fir may also be present. California black oak (*Quercus kelloggii*) grows naturally within about 1.5 miles to the west of HBRA, and one tree is located within HBRA in the Mount Pisgah Arboretum, but the origin of this tree is uncertain. Locations vary from productive soils on the valley floor to shallow soils on hot, dry exposures in the valley foothills. These grass and forb-dominated habitats were historically

maintained by fire, which prevented succession to woodland and forest. Upland prairie often grades continuously into savanna, which in turn may grade into oak woodland. Upland prairie, savanna, and oak woodland provides important habitat for snakes and lizards, particularly where rocky.

Nested targets include:

- Western Meadowlark
- Upland yellow violet (*Viola praemorsa* ssp. *praemorsa*)
- Camas pocket gopher (*Thomomys bulbivorus*)
- Western Pond Turtle (for nest sites)
- Monarch butterfly (*Danaus plexippus*)
- Seasonal seeps and swales
- Herbaceous balds and rock outcrops

Several other globally rare plant species documented from upland prairie and savanna habitats in the southern Willamette Valley could potentially be found occurring naturally within HBRA. These species include Willamette daisy (*Erigeron decumbens*), shaggy horkelia (*Horkelia congesta* ssp. *congesta*), Kincaid's lupine (*Lupinus oreganus*), and white-topped aster (*Sericocarpus rigidus*).

4.2.2 Oregon Vesper Sparrow

Description: Oregon Vesper Sparrow (*Pooecetes gramineus affinis*) is a subspecies of Vesper Sparrow that breeds only in the region west of the Cascades from northern California to western Oregon, western Washington, and (historically) southwestern British Columbia. Recent range-wide surveys estimate that only about 5,000 birds remain, with fewer than 500 birds in the Willamette Valley ecoregion. Very few of the remaining breeding populations are on public lands. More information on the bird's status can be found at *New Study Heightens Concern for Oregon Vesper Sparrow* (American Bird Conservancy, 2016).

Birders have long documented this species during the breeding season in prairie and savanna habitats on HBRA, but sightings have declined in recent years. This grayish, brown bird has a streaked chest and back with white outer tail feathers. Oregon Vesper Sparrow is a ground-nesting bird, and is a species of upland prairie and savanna, ~~has~~ with fairly specific habitat~~s~~ requirements in terms of tree density, short vegetation ~~height~~, plant species composition, and bare ground. Managing prairie habitats on HBRA can help sustain the presence of vesper sparrow in the park. It generally does not ~~use~~ nest in otherwise suitable habitat located within about ~~7~~25 meters of dense forest.

4.2.3 Oak Woodland

Typical oak woodland habitat along West Summit Trail #1. A 2008 restoration project removed invasive plants, woody vegetation and encroaching conifers in this area to enhance oak woodland.

Description: A sparsely treed community dominated by oaks with tree density intermediate between the scattered trees of an oak savanna and the interlocking crowns of a closed canopy forest. Tree crowns usually do not touch, allowing sunlight to penetrate to the ground. Tree architecture is a mixture of open-grown oaks and more vase-shaped oaks whose canopies are constrained by nearby trees. Conifers, including Douglas-fir, Ponderosa Pine, and Incense Cedar, may be associated with oaks. The ground layer of grasses and forbs is broken up by tree shade and/or by the presence of dispersed or dense shrubs. Oak woodland is located on non-hydric soils with varied topography, frequently on hill slopes of small buttes and valley foothills. It grades into savanna at the lower end of tree density and into closed canopy forest on the upper end.

Ponderosa pine is an important component of an oak-pine woodland community that is found in several parts of HBRA, particularly on the south and east slopes of ~~Mt.~~Mount Pisgah. Ponderosa pine grows with, and has a similar ecological profile to, Oregon white oak, commonly being associated with dry or rocky soils that historically were fire-influenced. Ponderosa pine occurs naturally in scattered pockets throughout much of the Willamette Valley, but very few conservation lands support Ponderosa pine communities. In the absence of management, Ponderosa pine is similarly vulnerable to suppression by faster growing conifers such as Douglas-fir.

Nested targets include:

- Western gray squirrel (Sciurus griseus)
- ~~Slender-billed~~White-breasted nuthatch (*Sitta carolinensis*)
- Acorn woodpecker (*Melanerpes formicivorus*)
- Wayside aster (*Eucephalus vialis*)
- Thin-leaved peavine (*Lathyrus holochlorus*)
- Ponderosa pine-Oregon white oak woodland

4.2.4 Wetland Prairie

Cusick's checkermallow

Description: A grass and forb dominated community with few to no trees or shrubs located on hydric soils that are saturated to the surface during the rainy season and dry during the summer. Perched water tables associated with relatively impermeable clay soils are characteristic of this wetland type, but it also is found on lower slopes in areas of seasonal groundwater discharge. Surface topography includes pedestals and hummocks emerging above water level as well as vernal pools. Wetland prairie may be associated with shrub-scrub and forested wetlands where woody plants have established due to fire suppression.

Nested targets include:

- Western Meadowlark (*Sternella neglecta*)
- Yellow- Breasted Chat (*Icteria virens*)
- Willow flycatcher (*Empidonax traillii*)
- Timwort (*Cicendia quadrangularis*)
- Meadow checkermallow (*Sidalcea campestris*)
- Cusick's checkermallow (*Sidalcea cusickii)*
- Hitchcock's blue-eyed grass (*Sisyrinchium hitchcockii*)
- Seeps and swales

4.2.5 Bradshaw's Lomatium

Description: Bradshaw's lomatium (*Lomatium bradshawii*) is a conservation target species at the HBRA because it is federally and state listed as an "endangered" species. It occurs in the southeast quadrant of

the HBRA. It is an important population for the recovery of the species, because it is the largest~~, and possibly only surviving~~ population within the Eugene East recovery zone.

Bradshaw's Lomatium is endemic to the Willamette Valley and occurs only in wet prairie habitat. Wet prairies that comprise suitable habitat have heavy clay soil and a seasonally high water table (water perched usually at or just above the surface) through the early part of the growing season, and often are dominated by tufted hairgrass (*Deschampsia cespitosa*). Historically, vegetation of these sites were maintained by fire (from either indigenous peoples' cultural practice of burning prairies or from ignition by lightning strike), or by flooding from rivers, or high water tables. Sustaining the population of Bradshaw's lomatium in HBRA is an important action identified in the US Fish and Wildlife Service's 2010 "Recovery Plan For The Prairie Species Of Western Oregon And Southwestern Oregon"

4.2.6 Buckbrush chaparral

Description: A shrub-dominated community with few to no trees located on excessively drained to shallow soils on hot, dry hillside exposures and upon gravel bars within the floodplain. The principal shrub species is buckbrush (*Ceanothus cuneatus)*, with associations of snowberry (*Symphoricarpos albus*), tall Oregon grape (*Berberis aquifolium*), poison oak (*Toxicodendron diversilobum*), and the occasional Oregon white oak tree. Lane County is the northern limit in the range of buckbrush chaparral and Mount Pisgah is the largest remaining patch of this habitat in the area. A population of Hedgerow hairstreak (*Satyrium saepium*) butterflies, uncommon at low elevations (below 1000'), utilize the buckbrush as its sole host plant at Mount Pisgah.

Nested targets include:

- Hedgerow hairstreak (*Satyrium saepium*)
- Blue-gray gnatcatcher (*Polioptila caerulea*)

4.2.7 Willamette riparian systems and associated floodplain

Description: Riparian areas are dynamic biological and physical systems that act as the interface between terrestrial and aquatic ecosystems. Riparian areas encompass the land and vegetation adjacent to Willamette River channels, oxbow lakes, alcoves, backwater areas, and sloughs that are influenced by perennial or intermittent water and the influence of hydric and fluvent soils. The frequency and physical extent of periodic flooding, an integral disturbance regime, shapes the form and ecosystem function of the floodplain. Plant communities common within this system include Oregon ash (*Fraxinus latifolia*) - big leaf maple (*Acer macrophyllum*) ~~gallery~~ floodplain forest, black cottonwood (*Populus trichocarpa*) bottomland forest, and willow (*Salix sp.*) shrub thickets.

Nested targets include:

- Upper Willamette spring Chinook (*Oncorhynchus tshawytscha*)
- Cutthroat trout (*Oncorhynchus clarkii*)
- Rainbow trout, (*Oncorhynchus mykiss*), including the anadramous variant known as Winter Steelhead
- Oregon chub (*Oregonichthys crameri*)
-
- Northwestern pond turtle (*Actinemys marmorata*)
- Northern red-legged frog (*Rana aurora*)
- Bald eagle (Haliaeetus leucocephalus)
- ~~Cutthroat trout (*Oncorhynchus clarkii*)~~
  - ~~Oregon chub~~
  - ~~Bald eagle~~
- Dwarf false rue-anemone *(Enemion stipitatum)*

4.2.8 Creeks and Streams

Description: Riparian areas with intermittent flows typically running from October through early June that originate from the slopes of Mount Pisgah. These areas are characterized as first and second order streams. Those that are first order headwater streams are closely associated with seeps fed by ground water discharge. Plant communities common within this system include oak woodland, wet prairie and mixed forest.

Nested targets include:

- Cutthroat trout (*Oncorhynchus clarkii*)
- Rainbow trout, (*Oncorhynchus mykiss*), including the anadramous variant known as Winter Steelhead

Winter Steelhead at HBRA (photo: Jim Reed)

4.2.9 Visitor Experience

Description: Compatible public use in the Howard Buford Recreation Area (HBRA) includes recreational and educational uses and activities identified in the 1994 *HBRA Master Plan*. This plan recognizes that a primary reason people visit HBRA is to recreate in the diverse natural beauty provided by diverse, healthy habitats. This *Habitat Management Plan* provides guidance to land managers to help ensure that recreation and visitor experience are enhanced and compatible with the management of the significant natural values and conservation targets recognized in the *HBRA Master Plan.*

4.2.10 Other Habitats

HBRA contains hundreds of acres of other ~~beautiful~~ habitats that visitors enjoy, such as ~~drier~~ conifer forests on Mount Pisgah's north facing slopes. Unlike ~~other~~ the habitats selected as conservation targets, conifer forests have not declined from historic abundance in the Willamette Valley ecoregion, although their structure has been altered, and the acreage of conifer forest currently managed primarily for conservation values is limited. However, these forests still contribute to the diversity of habitats for plants and wildlife in HBRA. While habitat management at HBRA will prioritize projects to sustain the conservation targets, ~~more~~ regionally common habitat types will also be managed and conserved. These ~~Other~~ habitat types are described below:

~~Dry conifer~~ Conifer forest:

Description: In general, a forest is considered as a stand of trees at a density of 100 to 200 trees per acre (or greater). The canopy cover from trees occupying the overstory is greater than 75%. Within the HBRA, Douglas-fir (*Pseudotsuga menziesii*) is the most common tree associated with ~~the dry~~ conifer forest and is most often the dominant tree in the overstory. This habitat type includes several sub-types as listed below. In addition, there are small stands of Pacific yew (*Taxus brevifolia*), a fire-sensitive conifer, on Mount Pisgah's north slope. Most conifer forest within HBRA is 50-75 year-old second growth from logging in areas of historic mature forests as well as conifer encroachment into former oak savanna and oak woodland over the last 5-7 decades.

~~Most conifer forest within HBRA is second growth, originating from logging that occurred more than 70 years ago 50-75 year old second growth, originating from logging in areas of fir encroachment as well as historic mature forests, and early seral stage forest resulting from encroachment by conifer into former oak savanna and oak woodland over the last 5-7 decades.~~ However, there are scattered older conifers, often "wolf trees" that were not removed during previous logging.

Nested ~~targets~~ community types and rare species include:

- Douglas-fir – ~~bigleaf~~ Bigleaf maple (*Acer* macrophyllum) forest
- Douglas-fir – ~~grand~~ Grand fir *(Abies grandis)* forest
- Douglas-fir – Incense cedar (*Calocedrus decurrens*) forest
- Douglas-fir – ~~western~~ Western hemlock *(Tsuga heterophylla)* forest

- Douglas-fir – Pacific madrone (*Arbutus menziesii)* forest
- Tall ~~Bugbane~~ bugbane (*Cimicfuga elata*)

4.3 Projected Increase in Extent of Focal Conservation Target Habitats and Resources

Implementation of the HBRA Habitat Management plan and its supporting work plan will result in a direct increase in the extent of each Focal Conservation Target Habitat, resources that directly support Focal Conservation Targets, as well as Other Habitats. Figure 4-1 presents an accounting of the projected change.

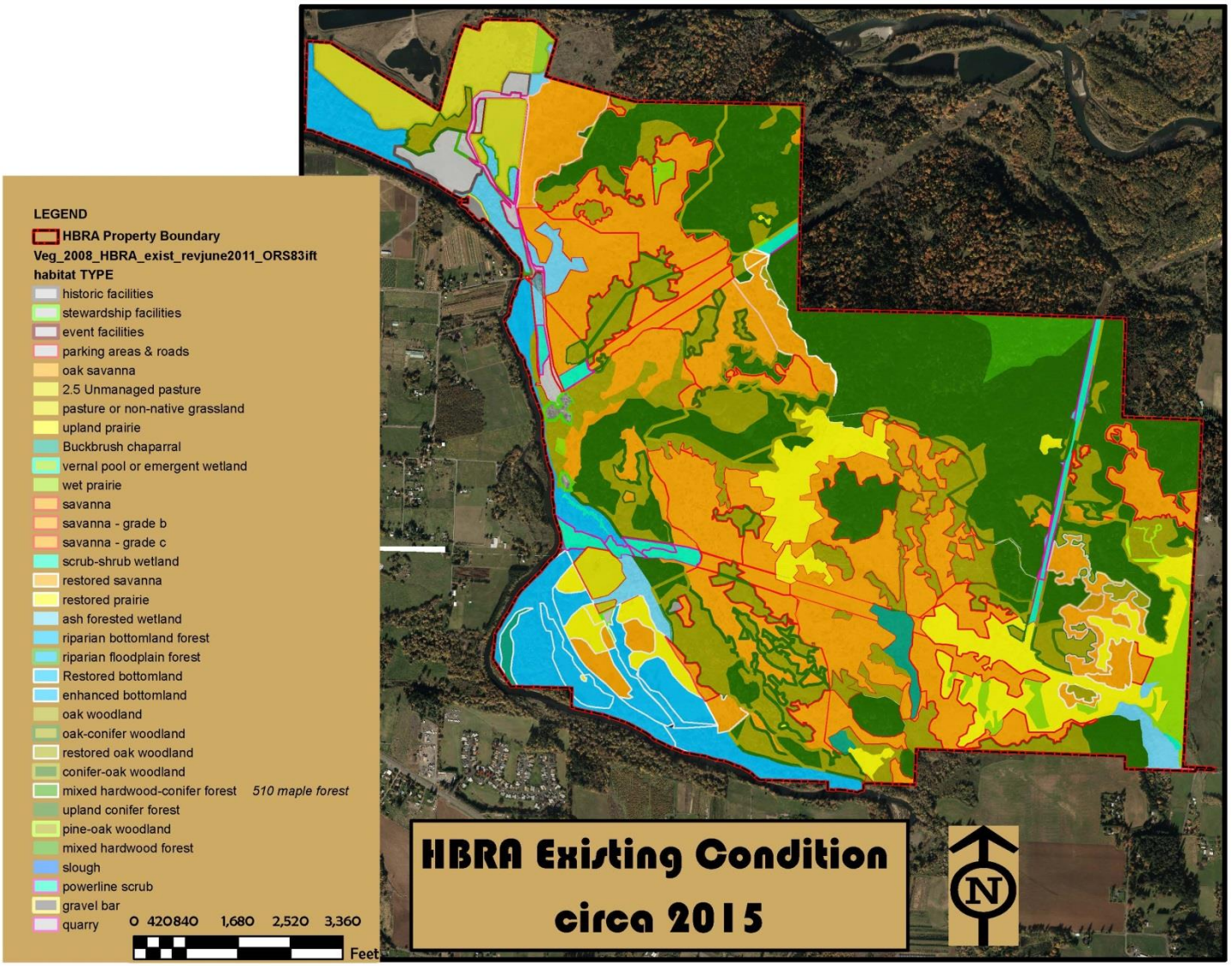
Figure 4-1 Focal Conservation Target or Other Habitat	Extent in 2008 (ACRES)	Projected Extent in 2035 (ACRES)	NET CHANGE (ACRES)	2035 % of 2008
Visitor Experience - parking areas & roads	16	17	1	106%
Visitor Experience – historic facilities	2	2	0	100%
Visitor Experience - event facilities	3	7	4	233%
Oak Savanna	363	716	353	197%
Upland Prairie	143	223	80	156%
Wet Prairie	35	66	31	189%
(Open) Oak Woodland	237	496	259	209%
Buckbrush Chaparral	14	40	26	278%
Forested Wetland	42	30	-12	71%
Riparian Bottomland Forest	147	182	35	124%
Upland Conifer forest	275	376	101	137%
Upland Hardwood Forest	27	35	8	129%
Other non-target cover types	910	25	-885	3%
NOTE - This table does not account for changes associated with Creeks & Streams, Bradshaw's				

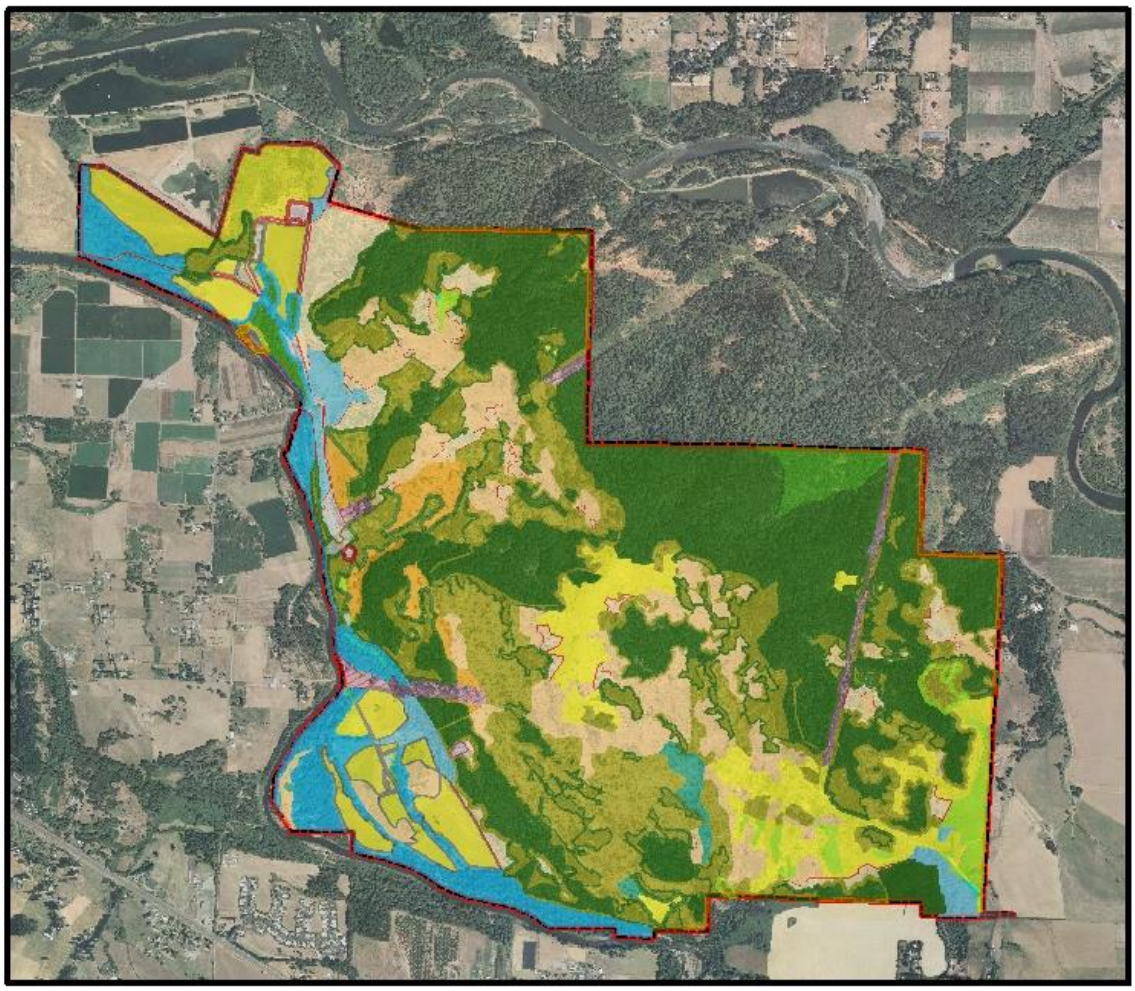
lomatium, Oregon Vesper Sparrow, or the trail system inventory.

4.~~3~~ Chapter 4 References

- Titus, Jonathan. Native Wetland, Riparian, & Upland Ecotypes and their Biota – Willamette Valley, Oregon. 1996.
- Christi, J.A. and D. Vander Schaaf. Oregon Natural Heritage Program, natural (Pre-settlement) vegetation classification. 1996.
- Newhouse, B. Native Wetland Plant Communities of Oregon. 1998.
- Kagan, Jimmy & Steve Caicco. Manual of Oregon Actual Vegetation. 1992.
- US Department of Agriculture, US Forest Service Pacific Northwest Region. Field Guide to Riparian Plant Communities in Northwestern Oregon. 2005.

Figure 4-1: HBRA Existing Condition circa 2015 Map





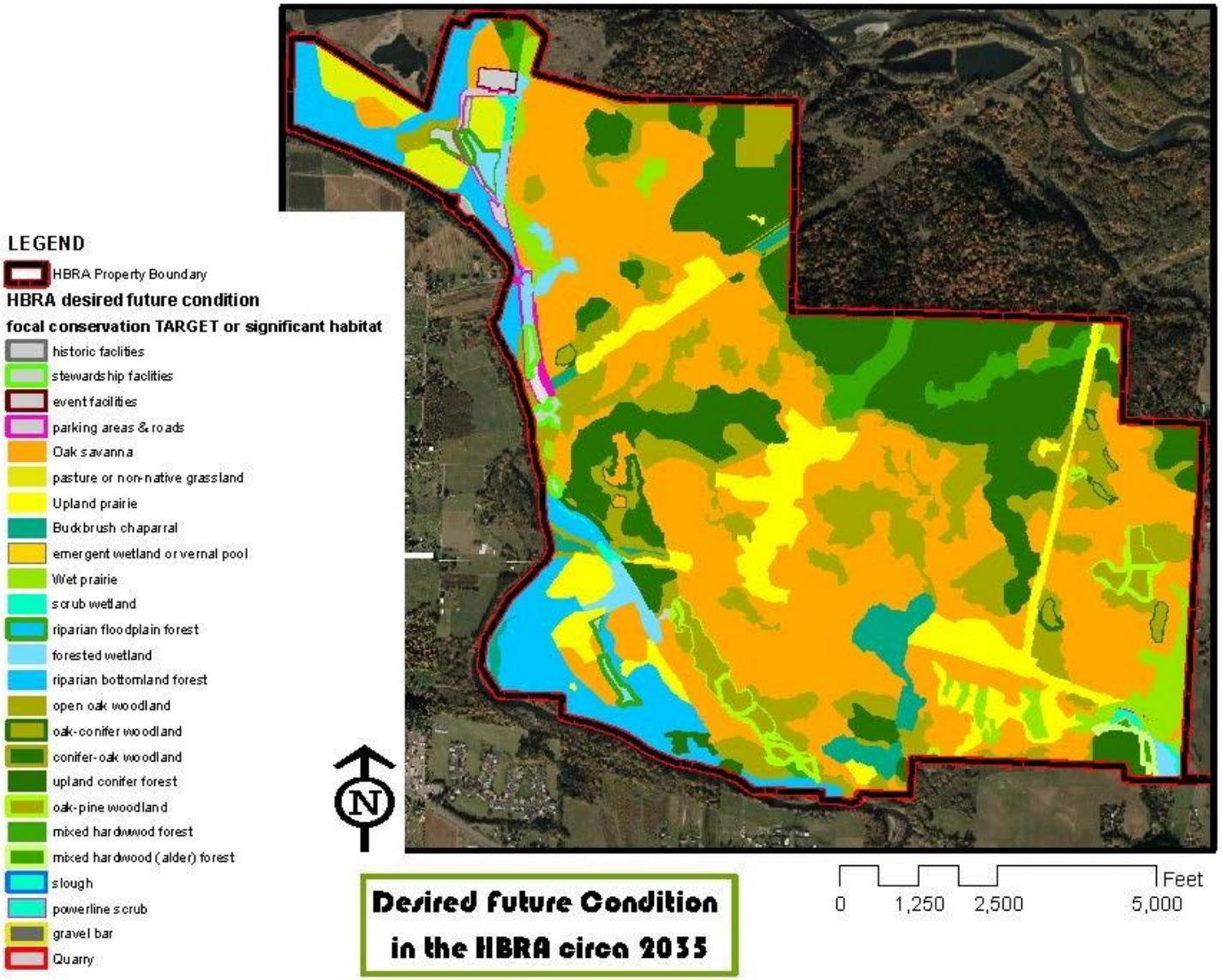
Existing Condition in HBRA circa 2008

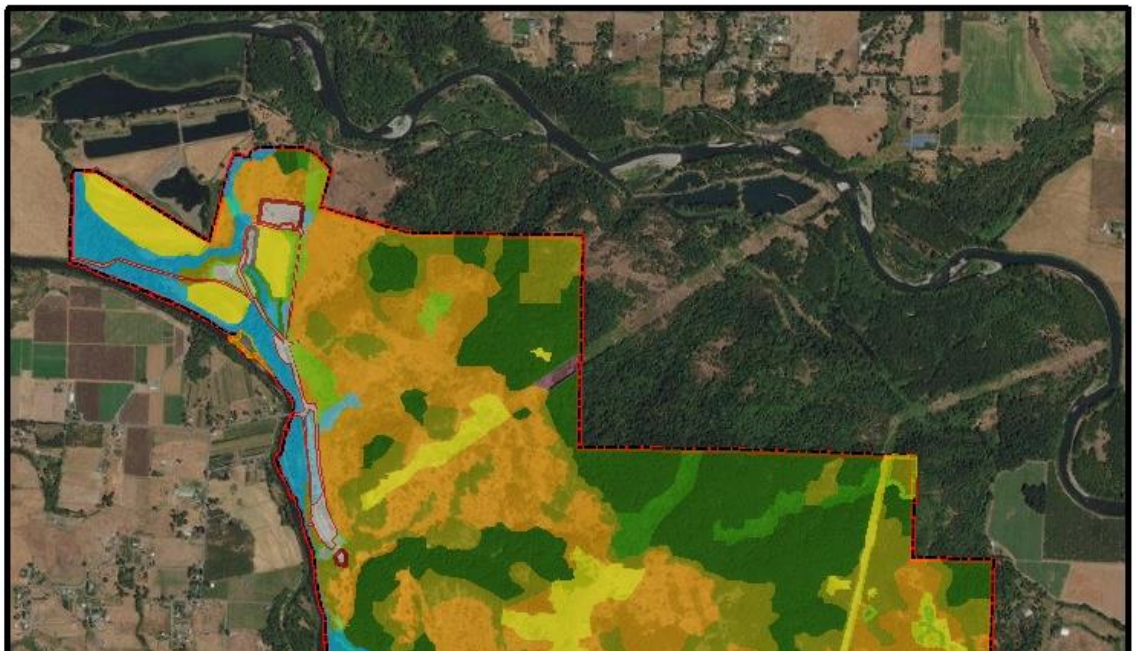
Existing Condition Circa 2008

Habitat or Land Use

- park facilities - historic
- stewardship facilities
- event facilities
- parking areas & roads
- Oak savanna - good condition
- pasture or non-native grassland
- Upland prairie
- Buckbrush chaparral
- emergent wetland
- Wet prairie
- savanna - fair condition
- savanna - poor condition
- scrub wetland
- forested wetland
- Riparian Bottomland forest
- Riparian hardwood forest
- Oak woodland
- Oak - conifer woodland
- Conifer - oak woodland
- Upland conifer forest
- Oak - Ponderosa pine woodland
- Upland hardwood forest
- powerline scrub
- gravel bar
- Quarry

Figure 4-2: Desired Future Condition in the HBRA circa 2035


LEGEND
HBRA Property Boundary
HBRA desired future condition
focal conservation TARGET or significant habitat
historic facilities
stewardship facilities
event facilities
parking areas & roads
Oak savanna
pasture or non-native grassland
Upland prairie
Buckbrush chaparral
emergent wetland or vernal pool
Wet prairie
scrub wetland
riparian floodplain forest
forested wetland
riparian bottomland forest
open oak woodland
oak-conifer woodland
conifer-oak woodland
upland conifer forest
oak-pine woodland
mixed hardwood forest
mixed hardwood (alder) forest
slough
powerline scrub
gravel bar
Quarry
N
0
1,250
2,500
5,000
Feet
Desired Future Condition
in the HBRA circa 2035



ary

See Chapter 10 for detailed maps of each Stewardship Zone.

Chapter 5: Viability and Threats to the Conservation Targets

5.1 Assessing the Viability of Each Conservation Target

The Technical Advisory Group (TAG) evaluated the current "viability" of each focal conservation target. This provides a measure of the "health" of the target, and leads to the development of strategies to maintain or enhance the target's health. The Conservation Action Planning process does this by having the team of experts first identify several "key ecological attributes" that are necessary to the long-term health of each conservation target.

For example, a healthy, viable prairie may have a "key ecological attribute" of an abundance of native grasses and forbs ("wildflowers"). Another example of a key ecological attribute of a healthy prairie is low cover of woody vegetation. ~~a "fire-regime" with a fire return frequency of 3 to 7 years, which helps maintain its grassland character by suppressing establishment of woody shrubs and trees. By evaluating the condition of the key ecological attributes, the TAG eventually assigned a viability rating.~~

After ~~evaluating~~ identifying a number of "key attributes" for each focal conservation target, the experts assigned one of four viability rankings for each attribute: "poor," "fair," "good," or "very good." For example, a prairie whose key attribute of less than 5% woody cover (trees and shrubs) was ranked as "very good." Figure 5.1 ~~A three-page table showing the~~identifies key ecological attributes and the TAG's viability rankings for each conservation target ~~follows this page~~.

5.2 Assessing Threats to Each Conservation Target

The next step in the CAP process is to analyze the many threats to the long-term viability of each conservation target. Building on the understanding of each target's "key attributes," the TAG examined what ecological processes or external threats (such as invasive weeds) would undermine or threaten those key attributes.

For example, invasive exotic shrubs, like Scot's broom and blackberry, can convert a prairie's structure to a shrub land. Western Meadowlarks or western pond turtles can no longer nest in the former prairie. Therefore, the threat of invasive woody plants may be a greater threat than an invasive grass. Where possible, the TAG also attempted to identify and analyze the root causes of the threats.

Figure 5-~~1~~ 2 is a summary of the TAG's analysis of the most significant threats by conservation target. This is an attempt to synthesize many hours of analysis and discussion. After the most significant threats have been identified, the CAP planning process seeks to identify high priority stewardship goals, objectives and projects to reduce the threats.

5.3 Chapter 5 References

- The Nature Conservancy, 2007. Conservation Action Planning Handbook: Developing Strategies, Taking Action and Measuring Success at Any Scale. Arlington, VA.

Insert

Figure 5-1: Viability of Conservation Targets Table

Insert

Figure 5-2: Summary of Threats Table

Chapter 6: Goals and Strategies

The goals and strategies listed below were developed carefully to address park management issues in a way that maintains or improves the condition of (~~refer to~~ Table 4) and/or addresses the most significant threats ~~(see Table 5)~~ to (Table 5) ~~-~~the nine focal conservation targets and their associated nested targets. However, despite the importance of these activities, ~~currently~~ funding and other resources available for implementation are currently limited.

Fortunately, wide recognition of the conservation value of Howard Buford Recreation Area has generated significant ~~past~~ support for habitat improvement in the park in the past. This support has come from a variety of sources, including private donors and grants secured by Friends of Buford Park & Mount Pisgah and, separately, by the Mount Pisgah Arboretum~~;~~, participation in projects by Lane County's operations team~~;~~, in-kind contributions of technical expertise and services from partner agencies~~;~~, scientific research by University professors and their graduate students~~;~~, and tens of thousands of hours of labor contributed by volunteers to care for the park.

This visionary plan identifies the highest priorities ~~y purposes~~ for available resources, and a focus for collaborative partnerships and future grant writing efforts. With this management plan in hand, park managers, partner agencies and volunteer groups can collaborate more effectively to conserve the park's diverse habitats for the public to enjoy ~~in the next century~~for many years to come.

Projects that are consistent with these goals and strategies are described in Chapter 10, both by conservation target and geographically by stewardship zone.

GOAL 1: Provide a safe and positive visitor experience in Howard Buford Recreation Area

Conservation Target: Visitor Experience

Issues Addressed: Goal 1 seeks to enhance the visitor experience and alleviate impediments to a quality experience.

- Strategy 1.1: Minimize adverse impacts of management activities upon visitor experience.
- Strategy 1.2: Manage vegetation within designated parking areas to enhance visibility and deter crime.
- Strategy 1.3: Collaborate with ODF to incorporate fire evacuation information (in case of wildfire) within signage posted at the trailhead.
- Strategy 1.4: Monitor trail usage and collect census information to quantify park usage, inform seasonal management decisions, and long term planning considerations.
- Strategy 1.5: Identify and address hazard trees within 30' of the edge of designated trail corridors.
- Strategy 1.6~~5~~: Manage populations of poison oak and non-native blackberry to prevent encroachment along all designated recreational trail corridors.
- Strategy 1.7: Locate viewpoints and benches in a manner that nurtures a sense of place while minimizing impacts to other users.
- Strategy 1.8: Provide at least 1 bench or viewpoint per mile of trail along major trail corridors (trails 1, 2, 3, 5, & 6).

- Strategy 1.9: Manage dog use in HBRA to reduce impacts to other visitors by requiring that dogs be on leash throughout the park except in specific designated off-leash areas.

GOAL 2: Educate park users about the unique natural values that make the HBRA and the broader Mount Pisgah area a priority for conservation.

Conservation Target: All conservation targets.

Issues Addressed: Goal 2 seeks to foster visitors' appreciation of ~~Mt.~~Mount Pisgah's importance and uniqueness as a regionally significant habitat area, to encourage visitors to enjoy the park with care~~,~~ ~~and to reduce~~minimize their impacts ~~from recreation upon~~to ~~all~~ other conservation targets, and become engaged in and supportive of habitat management and conservation activities.

- Strategy 2.1: Collaborate with Friends of Buford Park & Mount Pisgah, Mount Pisgah Arboretum, the Sheriff's Mounted Posse, and other stakeholders to survey and educate park patrons about impacts ~~from~~ of off-trail activity and cultivate a "stay-on-the-trail" ethic.
- Strategy 2.2: Partner with ~~entities~~organizations ~~,~~ such as Friends of Buford Park & Mount Pisgah, Travel Lane County, Mount Pisgah Arboretum, equestrian groups, the University of Oregon, and watershed councils, to develop an interpretation program including media outreach, guided tours, self-guided tours (possibly using digital media), and informational displays. The program should enhance appreciation for Mount Pisgah's natural capital, elevate understanding of and support for native habitat management and conservation ~~issues~~ on local and ecoregional scales, and cultivate a "leave no trace ethic."
- Strategy 2.3: Educate visitors to help them understand the seasonal sensitivities of wildlife to visitor activities.

GOAL 3: Maintain and improve the park's trail system to minimize ecological impacts while providing views of and access to HBRA's diverse habitats.

Conservation Target: All conservation targets.

Issues Addressed: Goal 3 seeks to enhance visitor experience by improving trail conditions and reduce impacts of recreation upon other conservation targets.

- Strategy 3.1: Encourage park visitors to remain on designated trails.
- Strategy 3.2: Manage dog use in HBRA to reduce impacts to wildlife by requiring that dogs be on leash throughout the park except in specific designated off-leash areas or during specified seasons.
- ~~Strategy 3.2: Require that dogs to be on leash in the HBRA except in designated off-leash areas.~~
- Strategy 3.3: Manage vegetation to preserve and enhance trailside viewpoints, as well as provide shade in appropriate locations.
- Strategy 3.4: Update 1995 HBRA Trail Management Plan to ensure that the trail system~~s~~ addresses the visitor experience and habitat needs/goals of the Habitat Management Plan.
- Strategy 3.5: Apply best management practices and trail standards (see Chapter 11) when implementing trail projects.

- Strategy 3.6: Research feasibility of a forage production program to produce "Pisgah" native hay (consisting of native grasses and forbs harvested from ~~restored prairies~~designated areas in bottomland portions of HBRA) with consultation from area ranchers and equestrian groups.
- Strategy 3.7: Use best available science about wildlife and habitat impacts of different visitor uses and facilities to guide decisions about improving or constructing trails and facilities for park visitors.
- Strategy 3.8: Inventory existing "rogue trails", analyze their reasons for existence, and identify management actions to reduce the impact to conservation targets from rogue trails while addressing the needs of park users that such trails meet.

GOAL 4: Minimize impacts of park management on conservation targets.

Conservation Target: All conservation targets.

Issues Addressed: Goal 4 seeks to reduce impacts from park management upon conservation targets.

- Strategy 4.1: Manage natural areas, recreational facilities (including but not limited to trails and parking areas), and utility corridors consistent with best management practices in the Oregon Department of Transportation BMPs (adopted by Lane County) and the "Stewardship Tool Box" in Chapter XI of this *Habitat Management Plan.*
- Strategy 4.1: Managers reference the *Habitat Management Plan* to guide land management practices.
- Strategy 4.2: Partner with confluence area land management agencies to design and develop an equipment cleaning facility.
- Strategy 4.3: Collaborate with agency partners to secure designated equipment for use specifically within natural areas in the Mount Pisgah area.

GOAL 5: Restore and enhance prairie, savanna and oak woodland habitats by reducing encroaching woody vegetation.

Conservation Targets: Prairie and savanna, oak woodland, wet prairie, Oregon Vesper Sparrow.

Issues Addressed: Goal 5 seeks to enhance viability of wet prairie, upland prairie, savanna and oak woodland habitats by reducing the threat of encroachment ~~of~~ from ~~native~~ woody vegetation.

- Strategy 5.1: Treat ~~xx~~ 1,086 acres to ~~Reduce~~ reduce woody cover ~~so that~~ in ~~at~~ oak woodland, savanna and prairie and wet prairie habitats so they are under the appropriate thresholds for woody cover, using methods that minimize soil disturbance and impacts to remnant native herbaceous vegetation.
- Strategy 5.2: Collaborate with Bonneville Power Administration, Friends of Buford Park & Mount Pisgah, Oregon Department of Forestry, U.S. Fish & Wildlife Service and other partners to reduce density of ~~native~~ woody vegetation within prairie, savanna, and oak woodland habitats.
- Strategy 5.3: Retain appropriate amounts of large down wood and dead trees, or create snags, for habitat value when reducing tree density as part of savanna and oak woodland restoration.

GOAL 6: Achieve significant restoration of prairie and savanna, oak woodland, and wet prairie habitats in HBRA.

Conservation Targets: Upland prairie and savanna, oak woodland, wet prairie, Oregon Vesper Sparrow

Issues Addressed: ~~Altered ecological fire regime.~~ Goal 6 seeks to enhance viability of upland and wet prairie, savanna and oak woodlands by introducing periodic ecological burns.

- Strategy 6.1: Continue ~~C~~ongoing collaborat~~e~~ion with Oregon Department of Forestry East Lane District, Rivers to Ridges Partnership, and other qualified fire management entities to design and implement ~~annual~~ ecological burns on 50-200 acres annually.
- Strategy 6.2: By 2020~~17,~~ collaborate with Oregon Department of Forestry East Lane District to revise fire management plan to update suppression objectives on HBRA to minimize negative habitat impacts from wildfire suppression efforts.
- Strategy 6.3: By 202~~0~~, use an integrated pest management strategy to manage fuels along the edge of forests, prairies and savannas to reduce potential for fire escape and catastrophic fire conditions.
- Strategy 6.4: By 2032~~25~~, achieve a fire return interval of 3 to 13 years on at least 1,502~~0~~ acres spanning prairie and savanna, oak woodland, and wet prairie.

GOAL 7: Achieve significant restoration of chaparral habitat in HBRA.

Conservation Targets: Buckbrush chaparral.

Issues Addressed: Goal 7 seeks to enhance viability of this habitat by using ecological burns.

- Strategy 7.1: Burn 25% of the buckbrush chaparral habitat periodically to achieve a fire return interval of 50 years.
- Strategy 7.2: By 2032, triple the acreage where buckbrush (*Ceanothus cuneatus)* affords at least 25% cover in habitat blocks of at least 5 acres.

GOAL 8: Manage for diverse native plant communities within each conservation target habitat.

Conservation Targets: Prairie and savanna, oak woodland, wet prairie, Oregon Vesper Sparrow.

Issues Addressed: Goal 8 seeks to enhance viability of prairie and savanna, oak woodland, and wet prairie by reducing the threat of invasive, non-native vegetation.

- Strategy 8.1: By 2020, 10 or more patches greater than 10 ~~or more~~ acres of prairie, savanna, oak woodland, and wet prairie have 5 or more "high-fidelity" (defined in Appendix A: Glossary) native herbaceous species with 75% frequency in 1 meter square plots, and 10 or more additional native herbaceous species occurring with at least 25% frequency in 1 meter square plots.
- Strategy 8.2: Maintain existing high quality habitat patches using ecological burning, mowing, and other treatments to control species of invasive plants.
- Strategy 8.3: Enhance low quality patches of existing habitat.

GOAL 9: Increase the size of wet prairie habitat patches~~extent of wet prairie habitat.~~

Conservation Targets: Wet prairie, Bradshaw's Lomatium.

Issues Addressed: Goal 9 seeks to enhance viability of federally endangered Bradshaw's lomatium and its wet prairie habitat by increasing the extent of wet prairie habitat on HBRA. Threats include impacts from management of roads and trails, encroachment ~~s~~ of native woody vegetation, invasion of non-native vegetation, and altered ecological fire regime.

- Strategy 9.1: Where feasible, restore areas of wet prairie on HBRA that have been filled, drained, modified or adversely affected by adjacent land management (such as modification of upslope/upstream hydrology in conjunction with trail infrastructure).
- Strategy 9.2: Identify intact wet prairie on adjacent properties and explore potential to cooperate on habitat enhancements, restoration funding, conservation easements or acquisitions.
- Strategy 9.3: Establish new and expand existing populations of Bradshaw's lomatium within wet prairies.

GOAL 10: Locate and, to the extent feasible, reduce populations of feral or harmful non-native animal species impacting each conservation target.

Conservation Targets: All conservation targets.

Issues Addressed: Goal 10 seeks to reduce the threat of ~~invasion~~ impacts by non-native animals.

- Strategy 10.1: Document observations of non-native animal species present or potentially present within HBRA and evaluate to identify species that represent threats or potential threats to conservation targets ("problem species").
- Strategy 10.2: Initiate an Early Detection Rapid Response program in partnership with Lane County Animal Services, Oregon Dept. of Agriculture (ODA), and Oregon Dept. of Fish & Wildlife (ODFW) to report observations of problem species within the greater Mount Pisgah area.
- Strategy 10.3: Collaborate with Lane County Animal Services, Feral Cat Coalition, Oregon Humane Society, and related groups to initiate an educational campaign to discourage people from releasing domestic animals into natural areas.
- Strategy 10.4: Working under the direction of ODFW and other partners, monitor abundance (particularly for game species) and reduce or eliminate threats to conservation targets from non-native animal species that are creating significant impacts to conservation targets. Implement strategies to the extent practicable.
- Strategy 10.5: Collaborate with neighboring landowners (public and private), stakeholders, and watershed councils to control problem species on adjoining lands and in the greater Mount Pisgah area.

GOAL 11: Locate and reduce the presence of habitat-modifying, non-native plant species within each conservation target habitat.

Conservation Targets: All conservation targets.

Issues Addressed: Goal 11 seeks to address the threat from invasion of non-native plant species (herbaceous and woody plants). A preliminary list and profile of "habitat modifying" non-native plant species is located in Chapter 9 (developed by the Friends of Buford Park Stewardship Technical Advisory Committee).

- Strategy 11.1: Screen and prioritize for management all non-native species known to occur within the HBRA using the standardized assessment tool, "Handbook for Ranking Exotic Plants for Management and Control", created by U.S. National Park Service ~~and U.S. Geological Survey~~.
- Strategy 11.2: Operate an "Early Detection - Rapid Response" program. Train volunteers to identify and report invasive plants.
- Strategy 11.3: Effectively manage all target "invasive" plants along their vectors of distribution; treat all "outlier" populations and effectively contain the "main" populations.
- Strategy 11.4: Manage "secondary invaders" (i.e. nipplewort (*Lapsana communis*), wall lettuce (*Mycelis muralis*) along edges of roads, recreational trails, and wildlife trails.
- Strategy 11.5: Reduce populations of false brome (*Brachypodium sylvaticum*), Maltese star thistle (*Centaurea melitensis*), spotted knapweed (*Centaurea stoebe*), Meadow knapweed (*Centaurea × moncktonii*), cotoneaster (*Cotoneaster sp.*), English ivy (*Hedera helix*), and ~~Japanese~~ giant knotweeds (*Polygonum cuspidatum, P. x bohemicum*), to less than 5% of 2009 area of occupation.
- Strategy 11.6: Effectively treat populations of shining geranium (*Geranium lucidum*), Reed canary grass (*Phalaris arundinacea*), and tansy ragwort (*Senecio jacobaea*) among other species growing within vicinity of rare, sensitive, and listed plants and animals.
- Strategy 11.7: Remove individual trees and patches of non-native fruit and nut trees, including English hawthorn (*Crataegus monogyna*), apple (*Malus domestica*), common pear (*Pyrus communis*), Myrobalan plum (*Prunus cerasifera*), ~~and~~ sweet cherry (*Prunus avium*), hazelnut (*Corylus avellana*), and walnuts (*Juglans nigra* and *J. regia*) impacting conservation target species and habitats.
- Strategy 11.8: Remove patches of ~~Armenian~~ non-native blackberry species (*Rubus armeniacus, R. anglocandicans, R. laciniatus, R. vestitus*) and Scot's broom (*Cytisus scoparius*) impacting conservation target species and habitats.
- Strategy 11.9: Collaborate with neighboring landowners (public and private), stakeholders, and watershed councils to ~~control~~ proactively reduce the threat of invasive non-native species on adjoining lands and in the broader confluence/Mount Pisgah area, with a particular focus on early invaders.
- Strategy 11.10: Partner with Friends of Buford Park, Mount Pisgah Arboretum and other partners to fund a stewardship endowment to support ongoing management of invasive species.
- Strategy 11.11: Partner with Friends of Buford Park, Mount Pisgah Arboretum and Bonneville Power Administration to remove priority invasive non-native plant species from power line rights-of-way, and prevent the establishment of new invaders.

GOAL 12: Remove fish passage barriers from the lower mile of creeks and streams on HBRA that flow into the Coast Fork of the Willamette River.

Conservation Targets: Creeks and streams

Issues Addressed: Goal 12 seeks to enhance viability of creeks and streams by improving fish passage, a key ecological attribute. Threats to this conservation target include management (specifically, obstructions to fish passage, such as poorly designed culverts).

- Strategy 12.1: Inventory each creek or stream on HBRA to identify barriers obstructing aquatic connectivity/passage (and their impacts) ~~within the lower mile (upstream from the stream's confluence with the Coast Fork or Middle Fork of the Willamette River)~~.
- Strategy 12.2: Where appropriate, ~~Remove~~ remove human-created barriers to aquatic passage identified in the inventory.

GOAL 13: Improve ecological health of creeks and streams.

Conservation Target: Creeks and streams

Issues Addressed: Loss of creek or stream's ability to interact with its floodplain due to channelization, lack of riparian vegetation, and impacts from management. Goal 13 considers the form and function of streams on HBRA and seeks to enhance viability for creeks and streams for this "key ecological attribute."

- Strategy 13.1: Improve 50% of stream miles rated "poor" to "good" condition for macro-invertebrates.
- Strategy 13.2: Research, prioritize and begin restoration of stream reaches that have been straightened, channelized, or dewatered., ~~,~~ S~~s~~tarti~~ng~~ implementation on downstream ends where feasible, aiming to restore functionality of entire high priority stream basins before moving to lower priority basins.
- Strategy 13.3: Manage grazing practices near streams and wetlands to limit damage.

GOAL 14: Improve ecological health of riparian floodplain habitats.

Conservation Target: Willamette River riparian system and associated floodplains

Issues Addressed: Goal 14 seeks to enhance the viability of Willamette River riparian and floodplain habitat by addressing the threat of loss of the river's ability to interact with its floodplain due to channelization. Goal 14 will also benefit nested targets and other native plants and animals that rely on floodplains for some or all of their habitat and life history requirements.

- Strategy 14.1: Reconnect and improve function of the sloughs, oxbows and historic channels within the contemporary floodplain.
- Strategy 14.2: Remove plugs and constructed barriers that obstruct connectivity with the river for flows equal to or greater than bank full events.
- Strategy 14.3: Restore and connect historic alcoves, side channels, and back water sloughs to the river.
- Strategy 14.4: Explore opportunities to collaborate with neighboring landowners (public and private), stakeholders, and watershed councils to restore historic alcoves, side channels, and back water sloughs and connect to the river on adjoining lands and in the greater Mount Pisgah area.

Goal 15: Manage habitats in the North Bottomlands Stewardship Zone to be mutually compatible with recreational activities identified in ~~applicable Lane County Parks planning documents~~the 1994 HBRA Master Plan and the recommendations of the Large Events Task Force.

Conservation Targets: Goal 15 seeks to enhance visitor experience (specific to the North Bottomlands) while also enhancing oak woodland, Willamette River riparian systems and associated floodplains, upland and wet prairie.

Issues Addressed: Impacts to visitor experience, impacts from management (such as infrastructure improvements); invasion of non-native vegetation. Goal 15 seeks to enhance visitor experience ~~habitats~~ in the North Bottomlands by enhancing habitats in a manner that accommodates more active recreational uses (such as small events and use of the outdoor equestrian arena) through compatible conservation actions for oak woodland, upland and wet prairie, and for Willamette River riparian systems and associated floodplains.

- Strategy 15.1: When issuing special use permits for events, consider protocols and conditions that minimize potential impacts to conservation targets to the maximum extent practicable.
- Strategy 15.2: Reduce the potential for the colonization of invasive plant species within the North Bottomlands and their spread to other areas of the park.
- Strategy 15.3: Develop ~~"context-sensitive"~~and appropriately site infrastructure improvements to minimize impacts to adjacent habitats.
- Strategy 15.4: Develop projects within the North Bottomlands Stewardship Zone to highlight HBRA conservation vision and education opportunities in a manner~~in high recreation~~ that is accessible to all park visitors ~~use areas~~.
- Strategy 15.5: Sustain and, if warranted, expand operation of the native plant nursery managed by Friends of Buford Park & Mount Pisgah to provide native plant materials (seeds and plants) for restoration projects on HBRA.
- Strategy 15.6: Manage agricultural activities so they are compatible with recreation and conservation goals.
- Strategy 15.7: Restore a configuration of habitats in the North Bottomlands that is compatible with and complementary to the planned Desired Future Conditions for habitat restoration in adjacent portions of The Nature Conservancy's Willamette Confluence Preserve.
- Strategy 15.8: Work with partners to identify ecologically appropriate ~~routes~~corridors to extend the trail system to afford access along the northwest boundaries of the park~~, if and when the~~ and to the Willamette Confluence Preserve if (and when) it becomes open to the public.

~~6.2 Chapter 6 References~~

Chapter 7: Enhancing Visitor Experience While Managing Habitats

7.1 Recreational and Educational Values of Healthy Native Habitats

Howard Buford Recreation Area is the most visited park in the Lane County park system. The park annually receives an estimated 400,000 visits by people who enjoy its diverse natural beauty. There is also diversity in how these hundreds of thousands of visitors use the park. Every time a visitor enters HBRA, he or she has an opportunity to enjoy and learn about these diverse and valuable native habitats.

- Many park users hike or ride horses to the summit, enjoying vistas of the Willamette Valley to the west and the snow-capped Cascades to the east. The open character of prairie and savanna habitat makes these views possible.
- Others enjoy a leisurely walk on the level trails along the Coast Fork Willamette River in the Mount Pisgah Arboretum ~~(which is a separate organization from Friends of Buford Park & Mount Pisgah)~~ or along the ~~the~~ South Bottomlands ~~area of the park~~trails.
- Some people seek vigorous exercise, training daily with hikes or runs on the park's 27-mile trail network, winding through forest, savanna, and prairie habitats.
- Other visitors come to enjoy the remarkable birds and other wildlife that inhabit HBRA. The park's habitat diversity supports more than 100 bird species, and Mount Pisgah is recognized by the Audubon Society as an official Important Bird Area.
- Spring wildflower displays are spectacular. Artists, photographers, botanists, and naturalists find inspiration in

the myriad wildlife and botanical species and varied landscapes present in the park. Each year, thousands of visitors attend Mount Pisgah Arboretum's Spring Wildflower and Fall Mushroom Festivals.

- Mount Pisgah Arboretum (the Arboretum) has developed~~,~~ and is implementing a comprehensive interpretive plan for its 209-acre lease area. The Friends of Buford Park & Mount Pisgah (FRIENDS) and Lane County Parks Division support that effort and have collaborated with the Arboretum to develop interpretive sign standards for all of HBRA. The goal is to enable park visitors to more easily learn about native habitats throughout the park, no matter what their primary reason for visiting.
- HBRA also serves as an educational resource for children and adults from pre-school through graduate school and beyond. Whether enrolled in formal classes or out of personal interest, many visitors study the diverse plants, animals, and habitats in the park. By participating in projects led by the Arboretum or the FRIENDS ~~or the Arboretum~~, school groups and university classes regularly visit the park to learn about botany, wildlife, natural history, and natural resource management. Mount Pisgah Arboretum provides environmental education programs that teach thousands of school children and hundreds of adults each year about the park's native fauna and flora. The restoration activities and ongoing ecosystem management envisioned in this plan will complement these environmental education curricula by providing~~e~~ additional important natural resource learning opportunities ~~for Lane County residents~~.
- Volunteers ~~are~~ form the common thread that ~~runs through~~creates and connects so much of the recreation, education, and community value that HBRA provides. They are key to Mount Pisgah Arboretum's environmental education program~~, as well as caring~~and also help care for the Arboretum's trails and natural habitats. Volunteers are the backbone of the Friends of Buford Park native plant nursery. FRIENDS volunteer Trails Committee is crucial to trail planning, design, and maintenance on several of the park's most popular hiking routes. FRIENDS and Arboretum volunteers are an essential complement to County and both non-profit~~s'~~ staff~~s~~, who together maintain and restore natural habitats throughout the park.

7.2 Balancing Visitor experience with Habitat Management

A key purpose of this *Habitat Management Plan* is to enhance visitor experience while protecting and improving habitat for plants, fish and wildlife. This plan's Goals 1, 2, and 15 (see Chapter 6) seek to sustain and improve recreation by:

- Improving visitor experience at HBRA
- Increasing public understanding and appreciation for "the unique qualities that make HBRA and the broader Mount Pisgah area a priority for conservation" and,
- Expanding habitat management activities in the North Bottomlands Stewardship Zone that are compatible with existing recreational activities as identified within the HBRA Master Plan and other applicable ~~Lane County Parks Division~~ documents such as the Large Event Task Force recommendations~~plans~~.

By raising awareness of the regional importance of ~~the~~ habitats within HBRA, we expect visitors will increasingly choose to tread thoughtfully and lightly on the park. In addition, carefully designed park infrastructure, such as trails that are properly located and constructed, will help minimize the impacts to habitats from park visitors.

7.2.1 Suitable locations for interpretive signage

Interpretive signage can help increase public understanding and appreciation for the park's "unique qualities," but too many signs far from the trailheads would degrade the "wild backcountry" feel of the park's trails that visitors value.

This plan calls for additional interpretation at each of the three main trailheads. Existing kiosks may be used or new signage installed.

Signage to interpret habitat restoration is valuable to help the public understand habitat management. Outside of the Arboretum, this plan calls for temporary signage (posted for up to 3 years) along trails to explain the purpose and benefits of habitat management actions, such as ecological burns, vegetation management, or wetland restoration.

Mount Pisgah Arboretum, in its role as an educational hub for the Mount Pisgah area, has initiated implementation of its own comprehensive interpretive program~~lan~~. The Arboretum interpretive plan envisions permanent interactive interpretive exhibits at each of eight designated habitat "eco-nodes" within its lease area that exemplify the park's varied native ecosystems.

7.2.2 Suitable locations for benches and view points

The summit is the most common destination to take in sweeping views of the Southern Willamette Valley. Visitors to the summit, as well as other areas of the park, perch upon rock outcrops, low hanging branches, or on the ground to take in the view or simply stop and rest as there are few benches within the park outside of the Arboretum. The sheer number of people who visit the park warrants installation of additional benches in carefully selected sites as a means to reduce the impacts of trampling habitat as well as disturbance to wildlife and other users.

Carefully located benches and viewpoints can foster a sense of place at the HBRA. For some visitors, to spend time in the outdoors represents an opportunity to get away from the hustle and bustle of one's daily routine. It is important that the location of benches and viewpoints do not dominate the adjacent landscape. The view, that may frame points of interest near and far away, should be structured in a manner that screens the viewer from other points in the trail as well as to the area beyond the trail.

7.2.3 Dogs On Leash

Many park visitors enjoy bringing their dogs to the HBRA, whether they hike to the summit, stroll through the old fields and prairie in the bottomlands, or swim in the Willamette River on a hot summer day.

No matter the destination, it's important that dog owners manage their dog responsibly so that everyone can enjoy the park and its trails. To this end, dog owners will be required to keep their dogs leashed when visiting the HBRA except in designated off-leash areas or during specified times of the year. Furthermore, dog owners will be required to clean up dog feces and place waste in trash bins located at trailheads and in parking areas.

Why Leash Up?

1. Off-leash dogs can impact visitor experience, jump on other visitors, including children, and can cause accidents or injuries.
2. Off-leash dogs scare and/or chase or otherwise harass wildlife
3. For people who are afraid of or uncomfortable around dogs, an encounter with an off-leash dog can be unpleasant or downright terrifying.
4. Off-leash dogs can instigate aggression or fights with leashed dogs.

5. If an off-leash dog causes a serious issue, the dog owner could be held liable in a lawsuit or face criminal charges, or even loss of ~~your~~the pet.
6. When off-leash, dogs can encounter or ingest ~~quickly eat something that could be bad for them~~harmful substances.
7. Dogs may transfer irritating poison oak oils to owners or others park users.

~~Signage to interpret habitat restoration is valuable to help the public understand habitat management. Outside of the Arboretum, this plan calls for temporary signage (posted for up to 3 years) along trails to explain the purpose and benefits of habitat management actions, such as ecological burns, vegetation management, or wetland restoration.~~

7.3 Habitat Stewardship Zones

The 1994 HBRA Master Plan (p. 33) ~~dedicates the park to "primarily low-intensity recreational use," but seeks to focus "more active uses" in the zones on the west side of the park.~~

~~*The most active uses, those which generate the highest amount of traffic and require infrastructure and structures to support them, will be concentrated on the west side of the park. The highest level of activity will occur on the North Bottomlands and diminish as you move south past the main entrance through the Mount Pisgah Arboretum and into the South Meadow. The hillside will continue to be reserved for the use of hikers and horseback riders.* - 1994 HBRA Master Plan (p.22)~~

~~The Master Plan~~ designated six management "~~zones~~Zones and Elements", including:

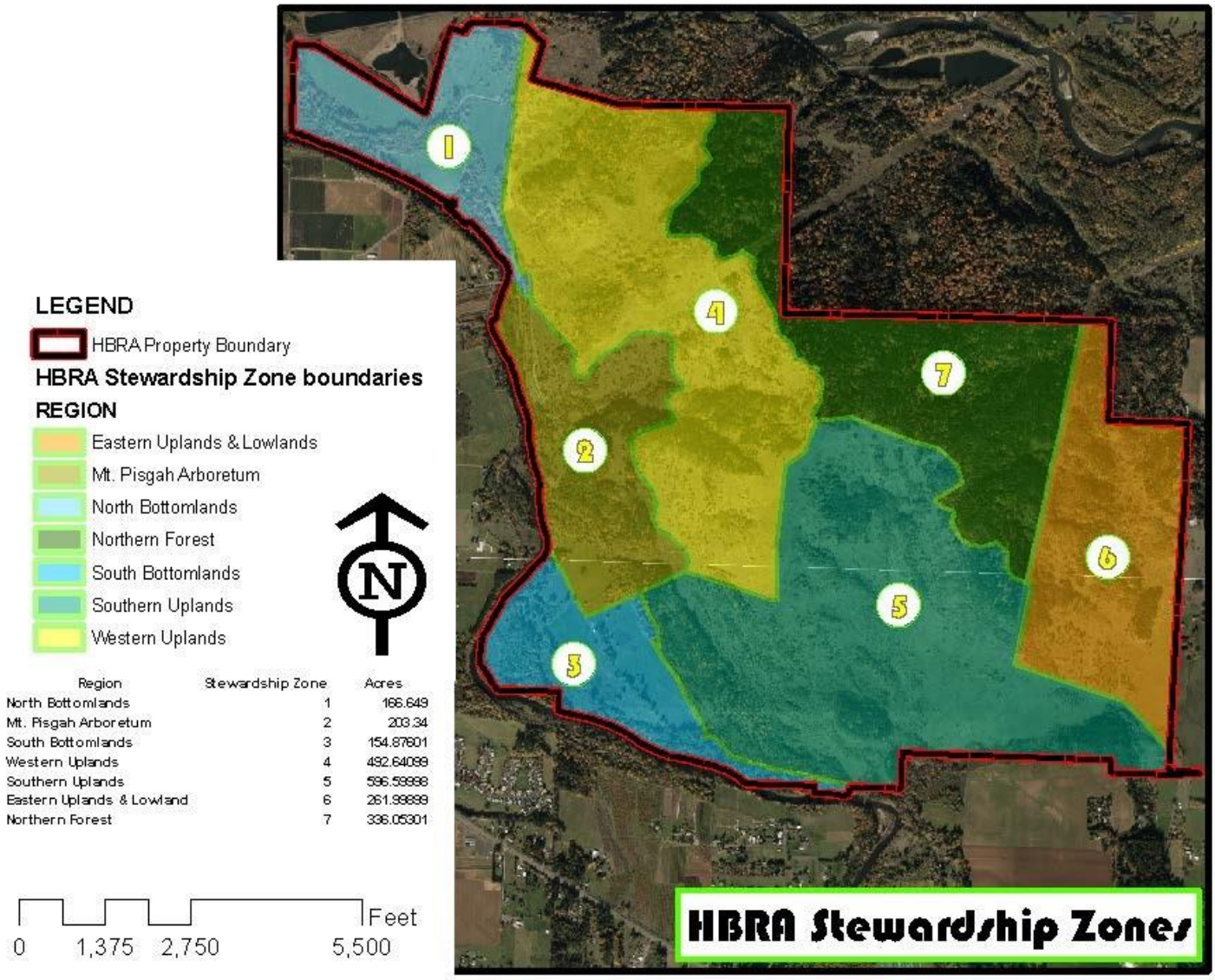
- North Bottomlands
- Main Entrance
- Main Parking Area
- Mount Pisgah Arboretum
- South ~~Bottomlands~~Meadow, and
- Mount Pisgah Trail System (the entire hillside except for an upland portion of the Arboretum).

The South Meadow Zone has been re-named here as the "South Bottomlands", since this zone contains a variety of habitat types. To facilitate habitat stewardship, as shown in Figure 7~~6~~.1, this management plan further divides the largest zone, the "Mount Pisgah Trail System," into four smaller stewardship zones with the following names:

- Western Uplands
- Southern Uplands
- Eastern Uplands
- Northern Forest

In addition, the "Main Entrance" is consolidated here into the North Bottomlands Zone, and the "Main Parking Area" is consolidated in-to the Mount Pisgah Arboretum Stewardship Zone.

Figure ~~6~~7-1: HBRA Stewardship ~~Districts~~ Zones Map



7.4 Brief Descriptions of Stewardship Zones

North Bottomlands Stewardship Zone ***(167~~xx~~ acres)***
This zone encompasses the floodplain of the Coast Fork of the Willamette River at the far northwest corner of the park. The zone's habitat includes various wetland and riparian woodlands and prairies. Part of Thompson Slough, a forested old river meander/seasonal wetland, flows in-to the Willamette Confluence Preserve. Park facilities located within this stewardship zone include the horse arena, the Native Plant Nursery, the Kienzle house and barn, and the North Trailhead/Parking Lot. ~~The North Bottomlands area is a special stewardship zone where more intensive recreational uses (compared to the rest of the park) are planned,~~ These facilities support a variety of recreational uses, consistent with direction provided in the 1994 *HBRA Master Plan*. ~~Currently, a horse arena and native plant nursery is located here, and a future caretaker residence is being considered. The HBRA Master Plan envisioned repurposing the barn to support small events, like weddings and family reunions.~~ Here, habitat management will be compatible with and enhance recreational uses. For example, ~~control~~ removal of blackberry in riparian forests will make the areas more accessible and scenic if additional trails are developed in the future. ~~Habitat on part of Thompson Slough, a forested old river meander/seasonal wetland, will be restored to improve Willamette Valley floodplain habitat, a conservation target, in a manner that enhances visitor experience.~~

Mount Pisgah Arboretum ***~~Lease Area~~Stewardship Zone (209acres)***
Lane County leases 209 acres within HBRA to Mount Pisgah Arboretum, an independent non-profit 501c3 organization ~~(separate from the Friends of Buford Park & Mount Pisgah) that has been working~~founded in ~~the park since~~ 1973. The Arboretum was involved in the original justifications and development of the Park, and has been an active partner with Lane County since HBRA was established. The Arboretum's stewardship zone lies immediately adjacent to the Coast Fork of the Willamette River and encompasses portions of the west slope of Mount Pisgah. This area contains many diverse Willamette Valley plant communities, ~~The Arboretum manages the diverse habitats on this stewardship zone, which range from riparian areas along the Coast Fork Willamette to oak savanna upslope and below the summit. Examples of most of the Southern Willamette Valley's major ecosystems can be found within the Arboretum's 209 acres,~~ including oak savanna, oak woodland, Douglas-fir forest, incense cedar forests, mixed forests, riparian forests, riverine wetlands, and grassy meadows.

Mount Pisgah Arboretum is responsible for habitat management in this stewardship zone~~maintains its unique site as a nature education facility, teaching thousands of people each year about local ecology~~. Over more than four decades, the Arboretum has worked to enhance its native ecosystems by controlling invasive plant species and restoring native habitats. In doing so, the Arboretum seeks to actively engage the public in hands-on stewardship, and to minimize the use of herbicides~~within its boundaries and has also assisted with projects in other areas of the park. Mount Pisgah Arboretum offers a wide range of both structured programs and informal learning opportunities for visitors of all ages~~.

The primary purpose of Mount Pisgah Arboretum is nature education, and habitat management efforts are aimed at providing dynamic outdoor classrooms for teaching about local ecology. The Arboretum offers a wide range of both structured educational programs and informal learning opportunities for visitors of all ages, and is currently developing a series of interactive nature exhibits.

As one of the Park's busier access points, the~~Mount Pisgah~~ Arboretum maintains more than seven miles of all-season trails as well as ~~outdoor nature exhibits,~~ public restrooms~~,~~ and drinking water, parking areas, a picnic area, a covered pavilion, a small visitor center, and on-site offices. The Arboretum's Site Manager ~~also~~ lives on-site and serves as ~~Buford Park's~~HBRA caretaker for Lane County Parks.

South ~~Meadow~~ Bottomlands Stewardship Zone (155~~xx~~ acres)

This zone encompasses the floodplain of the Coast Fork of the Willamette River upstream and south of the Mount Pisgah Arboretum Lease Area. The zone includes a mosaic of restored prairie and savanna, oak woodlands, riparian forest, and shrub thickets. It features enhanced connections between the river and the floodplain along a restored side channel and associated backwater. Miles of fencing were removed and replaced with a network of mowed and graveled trails. Wildlife observation is encouraged at two developed viewing points, including a 'wildlife viewing blind' that provides opportunities to observe beavers, birds, deer, turtles and other species of interest.

Western Uplands Stewardship Zone (493~~(xx~~ acres)

This zone encompasses much of the west-facing slope of Mount Pisgah, from the Arboretum boundary uphill to the main summit ridgeline. This is the most visible side of the mountain to approaching visitors, and its condition impacts the experience of park visitors as they first enter the park.

Southern Uplands Stewardship Zone (597~~xx~~ acres)

This zone is dominated by oak savanna, oak woodland and upland prairie. Much of the park's buckbrush chaparral is found within this zone as well as ~~Some~~ some of the most intact prairie and savanna habitats in the park~~ are located here~~.

Eastern Stewardship Zone (262~~c(xx~~ acres)

This zone extends from wetland prairie and wetland shrub habitats located at the foot of Mount Pisgah, uphill to include both upland savanna and woodland habitats. This zone supports most of the wet prairie within the park as well as extensive ponderosa pine stands.

Northern Forest Stewardship Zone (336~~xx~~ acres)

This zone includes a large, mostly forested area on the northeast slope of Mount Pisgah that will largely be managed as conifer woodland or forest. This zone ~~e forest is~~has a mix of Douglas-fir, bigleaf maple and grand fir overstory, with lesser amounts of and other tree species. Pockets of Oregon white oak communities are also found within this zone in areas of shallow soils. Although not a focal conservation target in this plan, conifer forest~~s~~, which ~~have~~ has not declined in acreage in the Willamette Valley, provides habitat for a variety of native plant and wildlife species, some of which are not found in other habitat types.

Park Facilities (Main Entrance, Roads, Parking Lots, Trails, Utility Corridors)

Some of these infrastructure elements are present in each of the stewardship zones. In general, this plan's best management practices provide guidance for how to manage these infrastructure elements to protect the conservation targets, including visitor experience.

7.5 Chapter 7 References

- Lane County Parks Division & Cameron & McCarthy Landscape Architects. 1994. Howard Buford Recreation Area Master Plan.
- Bend Park & Recreation District. Dogs in Parks (web site reference). www.bendparksandrec.org/parks__trails/dogs_in_parks/

Chapter 8: Fire as a Management Tool

8.1 The Historic Role of Fire in Chaparral, Prairie, Savanna, & Woodland Habitats

8.1.1 Historic Climate Variations

Significant portions of Oregon's ecoregions support habitats that are dependent on fire for their continued health and survival. Climate conditions approximately 5,000 to 8,000 years ago that were warmer and ~~dry~~ drier than today likely influenced the establishment of prairie and savanna habitats in the Willamette Valley ecoregion. As the climate subsequently cooled, frequent low intensity wildland fires maintained extensive prairies and savannas, which would otherwise have declined in the absence of fire. While some fires may have been the result of lightning strikes, deliberate ignition by the indigenous peoples of the area ~~deliberately ignited fires~~ as a land management practice~~, which~~ is ~~believed~~ likely to have been an important ecological influence (Walsh et al. 2010; Walsh et al. 2015).

8.1.2 Observations of Early Explorers

The first Euro-American explorers and settlers who arrived in the Willamette Valley in the early 1800's described the Willamette Valley as having extensive areas of prairie and oak savanna. Land surveys conducted by the General Land Office of the US Government in the 1850's documented that about 1 million acres of the Willamette Valley was prairie, and 500,000 acres were savanna~~, were~~ (Christy and Alverson, 2011). These native prairie and savanna habitats have been greatly reduced in extent due to agriculture, grazing of domestic livestock, residential and urban development, and expansion of forest vegetation into former prairies. Only a few thousand acres of high quality native prairie and savanna are currently known to ~~currently exist~~survive in the Willamette Valley ~~at present~~, a reduction ~~in the extent of prairie and savanna of~~ of 98% or more from the original extent of prairie and savanna.

Thus, it was a "natural" landscape shaped (largely) by human-set fires that the first Euro-American explorers and settlers encountered in the early 1800's (Habeck 1961, Johannessen et al 1970, Towle 1974). Morris (1934), Johannessen (1971) and Boyd (1986) document this practice through reviews of the early Euro-American explorers' and missionaries' journals (David Douglas-1826, John Work-1834, C. Wilkes-1845, B. Hines-1881, etc.). These records report that fires were set annually in late summer and early fall, and covered extensive portions of the Willamette Valley. The main difficulty with ~~the~~ historic observations and ~~record~~ descriptions is that ~~it does~~they do not clearly describe how often fires returned to any ~~given~~ specific location, and that is a pertinent question that remains to be answered.

Drastic population declines resulting from introduced diseases, and ultimately, the removal of the Kalapuya Indians to the Grand Ronde Reservation halted wide scale burning in the Willamette Valley in the 1830s and 1840s. Without fire, wet prairies that have been left undisturbed have in many cases gradually changed into willow and ash forests, while the drier prairies have ~~succeed~~ converted to oak woodlands and maple and Douglas fir forests.

8.1.3 Cultural Use of Fire as a Management Tool

The Winefelly group of the Kalapuya people (a primary tribe in the Willamette Valley), who spoke the Central Kalapuya dialect, were the primary native inhabitants of the Mount Pisgah/Confluence area. The Mount Pisgah area was likely used for seasonal hunting and food plant gathering activities.

Because of the Willamette Falls at Oregon City, the Willamette was not historically a major salmon stream, and the Kalapuya did not utilize salmon as a food source to the extent that tribes along the Columbia River did. Instead, the Kalapuya, hunted game such as deer and elk, and gathered food plants from the native flora. The prairies provided the majority of their food plants, including camas (*Camassia* spp.) bulbs, yampah (*Perideridia* spp.) roots, and tarweed (*Madia* spp.) seeds.

Though they were not farmers in the conventional sense, the Kalapuya used fire to maintain prairie habitats for valued food plants, increase production of native nut and fruit trees, and facilitate harvest of food plants such as tarweed. In addition, they may have found fire useful in hunting game, by attracting animals to browse on the fresh green growth that emerges soon after a fire (Boyd 1986). During the many millennia that the Kalapuya subjected the Willamette Valley to frequent low intensity fires, a diverse flora and fauna evolved that had appropriate adaptations to avoid, withstand, or even depend upon fire. In some cases, these were species occurring nowhere else in the world except the Willamette Valley.

From the mid-1800s, settlers stopped the periodic wild land fires that jeopardized homes and towns and generally discontinued the practice of prescribed burning. Cessation of frequent fires has resulted in significant alteration of habitats and landscapes even if they have not been converted to economic uses such as agriculture and urbanization.

For instance, fire suppression resulted in the development of “closed form” oak forests, and consequently closed form oak habitat (where the tree canopy is continuous) is now relatively more abundant than the open grown trees that were once common within the Willamette Valley’s savannas (Towle 1982). The increased density and extent of conifers such as Douglas fir, which expands in the absence of periodic fire, has also resulted in loss of prairie and oak savanna habitat. The fast growing conifers overtop, shade out and eventually kill the oak trees in a decades-long process of ecological succession. Evidence for this process can be seen in historical aerial photographs of HBRA that go back to 1936 (see Appendix B); even since the park was fist established in 1973, significant ecological changes in habitat types have occurred.

8.1.4 Ecological Fire as a Habitat Management Tool

Since 1999, ecological burning has been used as a management tool in HBRA. Based on careful planning and preparation, prescribed ecological burns are implemented in specific areas of the park to help create and maintain prairie, savanna, and woodland habitat. These burns are conducted in collaboration with the Oregon Department of Forestry (ODF), U.S. Fish & Wildlife Service, Bureau of Land Management, U.S. Forest Service, and The Nature Conservancy. All burns are implemented in compliance with Lane Regional Air Pollution Authority (LRAPA) permit regulations.

8.1.5 Ecological benefits of frequent low intensity fire

Having established that fires likely were a significant feature of the landscape prior to Euro-American settlement, scientists began developing hypotheses regarding the specific roles that fire plays in maintaining prairie and savanna habitats. Historical analyses of vegetation change at individual sites led to the development of a number of hypotheses, including:

A 1999 wildfire (pictured above) closed HBRA. ~~Wildfire~~ Fires in prairies and savannas usually burn ~~cool~~ with low intensity and cause little damage to native forbs or oak trees.

- Fires occurring at frequent intervals maintained open prairie habitats and prevented colonization of trees and shrubs on sites where they would be able to occur if fire was excluded;
- Many native herbaceous prairie species may possess tolerance or even adaptation to fire as a frequent influence; and
- Some non-native plant species, particularly those coming from regions where fires do not occur, may be negatively affected by fire.

Thus, ecological burning can reduce cover of invading woody plants, enhance the populations of native plant species, and help reduce the abundance of some undesirable non-native plants.

Experience with prescribed burning in Willamette Valley prairie and oak habitats began in the 1970s at Finley National Wildlife Refuge, and continued in the 1980's on Corps of Engineers prairies at Fern Ridge reservoir and BLM and Nature Conservancy land in West Eugene. Prescribed burning began in HBRA in 1999. In general, the results of the burns have supported the hypotheses listed above. Typically, new green growth begins to sprout within two weeks after the burn; species such as tufted hairgrass (*Deschampsia cespitosa*), the dominant native grass in wet prairies, grow more vigorously through the fall and winter than in unburned areas. The following year, and often the following two years, see increases in the flowering and seed production of many native prairie plants such as camas.

With increased flowering and seed production, the fire adapted species may gradually increase in population size. For example, a study of the Federally listed endangered Bradshaw's lomatium (*Lomatium bradshawii*) found that within two years of a fire the populations showed an increase in density of vegetative and reproductive plants, and demographic analyses suggest that without fire, Bradshaw's lomatium will not persist (Pendergrass et al., 1999, Kaye et al., 2001). In addition, researchers have observed that some invasive plant species, such as the ox-eye daisy (*Leucanthemum vulgare*), decrease in abundance in the year immediately following a fire (Nuckols et al. 2011).

Woody plants, which have invaded into these native prairie remnants, have also been negatively affected by prescribed burns. Observations suggest that the burns are successful in killing smaller conifers as well as seedlings of deciduous trees and shrubs. Fires also kill the above ground portions of the majority of deciduous woody plants, which are subject to subsequent resprouting from the stump. However, the large oaks that were historically present at low density in savannas, have thick bark and are resistant to damage from fire (Niemiec et al., 1995). Manual or mechanical removal of woody plants may also be needed in conjunction with prescribed burns, to help speed progress toward achieving site management goals.

8.1.6 Potential drawbacks to ecological burning

The main drawback of prescribed burns from the point of the general public is that smoke that is generated. While a prescribed burn may resemble a grass field burn, the amount of smoke produced by a prescribed burn in a native prairie is much less than a burn of an equal area of grass seed field. This is because the amount of fuel present in a grass seed field is typically 2 to 4 times greater per unit area than in a native prairie. Prescribed burns are only conducted under atmospheric conditions that provide for the most efficient upward dispersal of smoke. Generally small burn units also mean that the actual length of time during which the burns occur is quite short. Risk of escape of prescribed burns is minimized by ensuring that conditions the day of the burn are within the designed prescription, and the personnel and equipment used to conduct the burn are sufficient and appropriately trained.

8.1.7 Wildfire versus ecological burning:

Public safety is the number one goal of wildfire management at HBRA. Unlike controlled fire used as a management tool (ecological burns), wildfire is a significant safety threat for park patrons and neighbors. It also has the potential for devastating impacts on important natural habitats throughout HBRA. The ~~last~~ most recent large wildfire in HBRA occurred in September 1999. The fire started in the Mount Pisgah Arboretum and moved upslope toward the summit. The fire was suppressed along the summit ridge in the Southern Uplands Stewardship Zone. 119 acres burned in total through prairie, savanna, and woodland. Several Douglas-fir trees were killed by the fire or by subsequent fire suppression actions.

Decades of fire suppression has resulted in larger "fuel loads" in the park's forest and woodlands. The dense woody vegetation increases the risk of a catastrophic "crown fire" that will damage or destroy mature oak trees and large conifers.

Lane County contracts with the Oregon Department of Forestry (ODF) for development of wildfire plans and wildfire control services at HBRA. Because of the threat fire poses to park visitors, as well as the park's location in the midst of rural residential properties, the primary objective of wildfire control is suppression. It is important to note that much of the prairie and oak savanna restoration work identified in this *Habitat Management Plan* will also serve to reduce wildfire risks in HBRA by reducing potential fuels and reducing the likelihood of high severity wildfire. Implementation of the *Habitat Management Plan* will help reduce the risk of wildfire in the years ahead. In addition, Lane County Parks and park partners will continue to work with ODF to reduce, as much as possible, negative impacts on native habitat caused by fire suppression activities.

8.2 Ecological Burn Strategy

Utilize ecological burning (prescribed fire) to maintain chaparral, upland and wetland prairie, savanna, and oak woodlands following recommended fire return intervals identified for each conservation target within Chapter VI (Goals and Objectives).

8.2.1 Implement ecological burns annually in accord with habitat management plan

- Burn 50 to 250 acres/year. (See Figure 8-1: Ecological Burn Units Map)
    - Where feasible keep vehicles and equipment on designated trails and access corridors.
    - Secure annual permit from Lane Regional Air Pollution Authority
        - Collaborate with Rivers to Ridges partnership to prepare and secure annual multi-agency permit.
        - Comply with permit to minimize impact of smoke drifting into the Eugene-Springfield metropolitan area, the City of Pleasant Hill, and the City of Oakridge.
- Coordinate all ecological burn activities with the Oregon Department of Forestry (ODF).
    - Utilize ecological burns to train fire suppression personnel and improve the capacity of local forestry districts, fire protection personnel, and other natural resource agency staff.
    - Collaborate with and utilize non-ODF fire teams and other resources when available.
    - Consider using contract fire crews to implement ecological burns if ODF crews are not available and the burn's timing is important to achieve the desired habitat outcomes.
- Provide public notice of the upcoming ecological burns.
    - Post notice at trailheads and in proximity to the burn unit.
    - Notify adjacent landowners of the upcoming annual ecological burn activities.
    - Release Public Service Announcements in advance of implementation.
- Prepare ecological burn sites.
    - Implement site preparation prescriptions in late June or early July to minimize adverse effects to wildlife, botanical resources, and public safety (resulting from a wild land fire).
    - Follow specified Best Management Practices as described in Chapter XII.
- Implement ecological burn(s)
    - Lane County Parks Manager or his/her designee reviews and approves the burn plan and coordinates with designated "burn boss" to approve ignition of the burn on HBRA.

8.2.2 Factors to consider when planning ecological burns:

- First, apply research on the effects of prescribed fire and alternate management methods on the vegetation associated with each of the conservation targets identified for ecological burning.
    - The timing of burns may affect the response of vegetation.
    - When feasible, participate in and support studies to evaluate the responses of species to fire and to evaluate the efficacy of alternative management manipulations in stewardship efforts. These alternatives may include but are not limited to mowing with removal of cut material, "flash grazing," hand-removal of woody species, and no manipulation.
- Second, evaluate populations of nonnative plants occurring within each management unit where ecological burns will occur.
    - Implement site preparation strategies to neutralize the threat posed by those species that have the capability to change the species composition and structure of the conservation target if left untreated.
        - Site preparation and associated stewardship tasks may occur for several years preceding implementation of the ecological burn to provide adequate control.
- Third, consider smoke-management rules and variable weather conditions when planning and implementing ecological burns.
    - Give preference to scheduling burns during the season when fires most commonly occurred within the given conservation target.
    - ~~o~~ If appropriate, implement burns during a non-traditional season to minimize adverse impacts to air quality, such as during a cold, dry period in winter.
    -

8.3 Chapter 8 References~~*8.2.3 Chapter 8 References*~~

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Chapter 9: Management of Non-Native Invasive Species

9.1 What is a Non-Native Invasive Species?

The U.S. Department of Agriculture defines "invasive species" as:

- non-native (or alien) species to the ecosystem under consideration, and
- whose introduction causes or is likely to cause economic or environmental harm or harm to human health.

Invasive species can be plants, animals, insects and other organisms (e.g., microbes). Only a subset of non-native species ~~are~~is considered invasive, due to their negative impacts to native species and ecosystems. Human actions are the primary means of invasive species introductions.

9.2 Non-Native Species at HBRA

Over 200 species of wild plants that have been documented at HBRA are considered to be non-native species~~,~~ and did not occur in Oregon prior to the arrival of Euro-American settlers. These species were either intentionally or accidentally introduced to the area after the mid-1800's.

Some non-native plant species provide resources to native wildlife, including shelter and food ~~(fruits, seeds for vertebrates, nectar and pollen for invertebrates)~~. However, the invasive non-native plant species that are prioritized for management in this plan substantially alter habitat structure or displace native species that in many cases provide greater habitat function for wildlife. When certain non-native plants are generally acknowledged as not belonging in the HBRA, it can be detrimental to the visitor experience if the plants are highly visible ~~in the park~~, creating an overall impression of a lack of stewardship of the park. ~~An~~For example, ~~of this are~~ the large areas and patches of Armenian Blackberry seen covering the open slopes of the mountain and infesting the floodplain woodlands.

~~In fact, F~~fewer than 25% of the 200+ non-native plant species in HBRA are identified here as priorities for management because they can significantly degrade habitat functions and values. Strategy 11.1 references a methodology that can identify the invasive plant species that are priorities for management (Hiebert and Stubbendieck, 1993).

The goal of invasive plant management is not just to eliminate problematic~~the~~ non-native plants, but to also to promote and maintain high quality native plant communities. Managing invasive non-native plant species at HBRA provides opportunities, on a park-wide scale, to gradually replace any ecological functions or resources provided by non-native species with the increased abundance and function of native species.

In most cases, complete eradication of a particular non-native species is not feasible. Rather, the objective is to substantially reduce their ecological influence. Complete eradication of particular invasive non-native plant species will be sought only in a select few cases where the species has established only recently, or is present only in small numbers. As such, early detection and treatment of new invaders is perhaps the most important step in the management of invasive non-native plants.

Non-native animals can also have negative impacts on native species and habitats, through predation, competition, or direct habitat disturbance. For example, feral cats may hunt native birds in a natural area, which is particularly problematic for ground nesting grassland birds. Non-native bullfrogs can swallow a rare native western pond turtle hatchling. Managing non-native animals can be challenging due to the simple fact that animals are mobile compared to a plant, which once located can be treated by manual removal, mowing to interrupt seed maturation, etc.

9.3 Problematic Native Species

Native species can also cause economic or environmental harm or harm to human health. For example, poison oak, a native plant, is a common associate of the plant communities that compose each of the Conservation Targets. However, poison oak may cause mild to significant harm to human health. For that reason, this *Habitat Management Plan* recommends the Best Management Practice of ~~controlling~~ clearing ~~populations of~~ poison oak ~~occurring in proximity to~~along trails.

Over time, native species such as Douglas-fir trees can overtop, shade out and kill oak trees in rare oak woodlands and savannas. For the purpose of this plan, native species that expand into conservation target habitats are referred to as "encroaching" species to distinguish them from exotic "invasive" species.

9.4 Management of Invasive Non-Native Species in the HBRA

Efforts to manage exotic invasive species in the HBRA will follow the principles of Integrated Pest Management, which utilizes a variety of methods (manual, mechanical, chemical) to achieve the best result and minimize environmental impact.
Invasive species are considered in two categories:

- species known to occur within the HBRA, and
- species that do not occur in the HBRA but are known to occur in other areas of Lane County, in the State of Oregon, or in the Pacific Northwest.

9.5 Integrated Pest Management

Integrated Pest Management (IPM) is an approach to ~~control~~ reduce or eliminate a wide spectrum of noxious flora and fauna utilizing a combination of common-sense practices. IPM fuses a diversity of pest ~~control~~ management methods and strategies (identified in the Stewardship Tool Box, Chapter XI), describes an organism's life history and ecological context, and takes into account the most recent scientific research to manage populations of targeted pests in a cost-effective and environmentally sensitive manner. As outlined by the US Environmental Protection Agency, IPM practitioners follow a four-tiered approach to ~~control~~ management of noxious organisms.

1. **Set Action Thresholds:** Identify the parameters for which a population of introduced organisms occurring within the ecoregion or ecosystem under management will be tolerated. If the size of the population exceeds this outside limit, treatment actions ~~to control the pest of concern~~ are initiated. The threshold at which pests become an economic threat is critical to guide future pest ~~control~~ treatment decisions.

2. **Monitor and Identify Pests:** IPM programs work to monitor for pests and identify them accurately, so that appropriate treatment~~control~~ decisions can be made in conjunction with action thresholds.

3. **Prevention:** IPM programs seek to prevent pests from becoming a threat while minimizing risk to people or the environment.

4. **~~Control~~Treatment:** Once monitoring, identification, and action thresholds indicate that pest treatment~~control~~ is required~~,~~ and preventive methods are no longer effective or available, IPM programs then evaluate the proper ~~control~~ method(s) both for effectiveness and risk. Effective, less

risky ~~pest~~ treatment ~~controls~~ methods are chosen first, including highly targeted chemicals, such as pheromones to disrupt pest mating, or mechanical ~~control~~methods, such as mowing, trapping or weeding. If further monitoring, identifications and action thresholds indicate that less risky ~~controls~~ methods are not working or are not feasible, then additional ~~pest control~~ methods would be employed, such as targeted spraying of pesticides. Broadcast spraying of non-specific pesticides is a last resort.

9.6 Early Detection and Rapid Response: Prevention and Suppression of "New" Invasive Species

Early Detection and Rapid Response (EDRR) seeks to prevent establishment and spread ~~and control~~of new noxious species introductions before they become widespread. EDRR is the most cost effective and environmentally benign program to successfully ~~control~~ manage threats to the viability of the conservation targets from invasive species within ~~the~~ HBRA. If new invasive noxious species are left unmanaged, economic losses will exponentially exceed the present ~~control~~ costs of eradication ~~(~~or containment~~)~~. The EDRR strategy seeks to:

- Identify new invaders prior to widespread establishment or introduction.
- Eradicate or contain new invading animals and weeds.
- Increase awareness of new invaders with partners and public.

Early Detection and Rapid Response (EDRR) is a primary strategy of the Oregon Department of Agriculture's Noxious Weed ~~Control~~ Program. Weeds are listed and targeted for early detection and rapid response activities. The goal is to prevent their introduction or eradicate them before they become widespread, or to ~~control~~ contain limited populations to prevent their widespread occurrence in Oregon.

9.7 Invasive Plant Species Lists

The following plant lists were formulated with consideration of Oregon Department of Agriculture (State Weed Board) lists of noxious invasive weeds. Both lists below should be reviewed and updated at least every three years in response to monitoring for new invasive plants that may appear in the park.

Figure 9-1: Invasive Plants Known to Occur in the HBRA

Herbaceous Plants:	
~~*Cirsium arvense*~~	~~Canada thistle~~
Carduus pycnocephalus	Italian thistle
Carduus tenuiflorus	Slender thistle
Centaurea × moncktonii	Meadow knapweed
Centaurea melitensis	Maltese star thistle
Cirsium arvense	Canada thistle
Cirsium vulgare	Bull thistle
Conium maculatum	Poison hemlock
Convolvulus arvensis	Bindweed
Datura stramonium	Jimson weed

Daucus carota	Queen Anne's lace
Digitalis purpurea	Foxglove
Dipsacus fullonum	Teasel
Geranium lucidum	Shining geranium
Geranium robertianum	Herb Robert
Geranium spp.(several other non-native species occur within HBRA)	Crane's bill geranium
Heracleum mantegazzianum	Giant hogweed
Hypericum perforatum	St. John's wort
Lactuca serriola	Prickly thistle
Lapsana communis	Nipplewort
Leucanthemum vulgare	Ox-eye daisy
Melissa officinalis	Lemon balm
Mentha pulegium	Pennyroyal
Mycelis muralis	Wall lettuce
Parentucellia viscosa	Yellow glandweed
Phytolacca americana	Pokeweed
Polygonum x bohemicum, P. -japonicum, P. sachalinense	Giant knotweeds
Ranunculus ficaria	Lesser celandine
Ranunculus repens	Creeping buttercup
Rumex crispus	Curly dock
Senecio jacobaea	Tansy ragwort
Silybum marianum	Blessed milk thistle
Sonchus spp. (several species occur within HBRA)	Sow thistle
Trifolium spp.(several non-native species occur within HBRA)	Clover
Verbascum blattaria	Moth mullein
Verbascum thapsus	Mullein

Grasses:

~~*Agrostis capillaris*~~	~~Bentgrass~~
Agrostis capillaris	Bentgrass
Aegilops cylindrical	Jointed goatgrass
Agropyron repens	Quackgrass
Arrhenatuerum elatius	Tall oatgrass
Avena fatua	~~False~~ Wild oat ~~grass~~
Brachypodium sylvaticum	False brome
Cynosurus echinatus	Hedgehog dogged tail grass
Phalaris arundinac~~a~~ea	Reed canarygrass
Taeniatherum caput-medusae	Medusahead rye

Shrubs, Trees, and Vines:

Cotoneaster sp.	Cotoneaster
Crataegus monogyna	English hawthorn
Cytisus scoparius	Scot's broom

Hedera hibernica	Atlantic ivy
Hedera helix	English Ivy
Ilex aquifolium	Holly
Juglans nigra	Black walnut
Juglans regia	English walnut
~~*Polygonum x bohemicum, japonicum, sachalinense*~~	~~Giant knotweed~~
Malus domestica	Apple (domestic)
Photinia serratifolia	Chinese photinia
Prunus avium	Cherry (domestic)
Prunus cerasiformis	Plum (domestic)
Pyrus communis	Pear (domestic)
~~*Rubus armeniacus*~~	~~Armenian blackberry~~
Rosa rubiginosa (R. eglanteria)	Sweetbriar rose
Rosa multiflora	Multi-flowered rose
Rubus anglocandicans	English blackberry
Rubus armeniacus	Armenian blackberry
Rubus laciniatus	Evergreen blackberry
Rubus vestitus	Velvet~~European~~ blackberry
Ulmus procera	English elm
Vinca major	Greater periwinkle
Vinca minor	Lesser periwinkle

Figure 9-2: Non-Native Invasive Plants Not Currently Known to Occur in the HBRA (Watch List)

Early detection and monitoring efforts should be alert to these potential "new arrivals" at HBRA.

Herbaceous Plants:

~~*Alliaria petiolata*~~	~~Garlic mustard~~
Aegopodium podagraria	Goutweed
Alliaria petiolata	Garlic mustard
Anchusa officinalis	C~~c~~ommon bugloss
Centaurea diffusa	D~~d~~iffuse knapweed
Centaurea solstitialis	Yellow starthistle
Centaurea stoebe	Spotted knapweed
~~*Cetaurea jacea x nigra*~~	~~Meadow knapweed~~
Chaerophyllum temulum	Rough chervil
Cyperus esculentus	Yellow nutsedge
~~*Digitalis purpurea*~~	~~Foxglove~~
Echium plantagineum	Paterson's curse
Foeniculum vulgare	Fennel
Geum urbanum	Herb Bennett
~~*Heracleum mantegazzianum*~~	~~Giant hogweed~~
Hieracium aurantiacum	Orange hawkweed

Hieracium floribundum	Yellow hawkweed
Hieracium pilosella	Mouse-ear hawkweed
Hydrilla verticillata	Waterthyme
Impatiens capensis	Orange jewelweed
Impatiens glandulifera	Policeman's helmet
Iris pseudacorus	Yellow flag iris
Lamiastrum galeobdolon	Yellow archangel
Lathyrus latifolius	Everlasting pea
Lathyrus sylvestris	Flat peavine
Linaria vulgaris	Yellow toadflax
Lotus corniculatus	Birdsfoot trefoil
Lotus uliginosus	Greater birdsfoot trefoil
Ludwigia hexapetala.	Willow primrose
Lythrum salicaria	Purple loosestrife
Myriophyllum aquatica	Parrot's feather
Nymphoides peltata	Yellow floating heart
Pentaglottis sempervirens	Evening bugloss
Picris echioides	Bristly oxtongue
Polygonum polystachyum (*Persicaria wallachii*)	Himalayan knotweed
Potentilla recta	Sulfur cinquefoil
Soliva sessilis	Lawn burrweed
Tribulus terrestris	Puncturevine
Valerianella eriocarpa	Italian Cornsalad

Grasses:

~~*Phalaris aquatica*~~	~~Harding grass~~
Eragrostis curvula	Weeping lovegrass
Glyceria declinata	Waxy mannagrass
Holcus mollis	Creeping velvetgrass
Phalaris aquatica	Harding grass
Stipa tenuissima	Mexican feather grass

Shrubs and Trees:

Acer platanoides	Norway maple
Aesculus hippocastanum	Horse chestnut
Ailanthus altissima	Tree of heaven
Arum italicum	Italian lords and ladies
Buddleja davidii (B.variabilis)	Butterfly bush
Clematis vitalba	Old man's beard
Cytisus striatus	Portugese broom
Daphne laureola	Spurge laurel
Elaeagnus umbellata	Autumn olive
Genista monspessulana	French broom

Juniperus virginiana	Eastern Juniper
Lonicera maackii	Amur honeysuckle
~~*Polganum polystachyum* (*Persicaria wallachii*)~~	~~Himalayan knotweed~~
Prunus laurocerasus	English Laurel
Pueraria lobata	Kudzu
Robinia pseudoacacia	Black locust
Ulex europaeus	Gorse
Viburnum opulus var. *opulus*	Snowball bush

Figure 9-3: Documented or Potential Harmful Non-Native Animals of Howard Buford Recreation Area
Actions to reduce the presence of animal species that impact native wildlife should be explored.

Non-Native Animals documented on HBRA

- Feral cat (*Felis catus*)
- Opossum (*Didelphis virginiana*)
- Bull frogs (*Rana catesbeiana*)
- Nutria (*Myocastor coypus*)
- Fox squirrel (*Sciurus niger*)
- (Rio Grande) turkey (*Meleagris gallopavo intermedia*)

Non-Native Animals Known in Willamette Valley but not documented within~~on~~ HBRA

- Feral Swine (*Sus scrofa*)
- Eastern Cottontail rabbit (*Sylvilagus floridanus*)
- Common Starling (*Sturnus vulgaris)*
- Red Swamp crayfish (*Procambarus clarkia)*
- Ringed Crayfish (*Orconectes neglectus)*
- Red-eared Slider (*Trachemys scripta elegans)*
- Common Snapping Turtle (*Chelydra serpentina)*
- Chinese and Japanese Mystery Snails (*Cipangopaludina chinensis and Cipangopaludina japonica)*

9.8 Chapter 9 References

- Oregon Department of Agriculture. Oregon Noxious Weed Profiles (web site reference). www.oregon.gov/oda/programs/weeds/oregonnoxiousweeds/pages/aboutoregonweeds.aspx
- Oregon Department of Fish & Wildlife. Invasive Species, stop their spread (web site reference). www.dfw.state.or.us/conservationstrategy/invasive_species.asp
- US Department of Agriculture. Introduced, Invasive, and Noxious Plants (web site reference). www.plants.usda.gov/java/noxiousDriver
- US Environmental Protection Agency. Introduction to Integrated Pest Management (web site reference). www.epa.gov/managing-pests-schools/introduction-integrated-pest-management

Chapter 10: Stewardship Projects to Protect and Enhance Conservation Targets

This chapter presents recommendations for habitat projects to improve the viability of the conservation targets and to enhance visitor experience at HBRA. These projects are presented in table organized by:

- Focal Conservation Target, and later by
- Stewardship Zone.

The project table shows which plan goal the project will advance (though some projects advance two or more goals). The table also prioritizes the project for implementation by assigning it one of three five-year periods in the next 15 years (i.e., 0-5 years, 6 ~~to~~ -10 years, or 11 ~~to~~ -15 years).

Land management is normally site specific, and the seven stewardship zones are the habitat planning units. For each of the park's seven (7) stewardship zones, two maps are provided after the table:

- An "existing condition" map shows the present habitat or vegetation.
- A "desired future condition" map ~~showing~~ shows the habitat conditions following restoration.

As noted in Chapter VI, ~~although~~ funding for project implementation may not be in hand for the ~~fifteen~~ 15-year horizon of this plan. However, this park-wide habitat management plan will help Lane County or its partners secure grants and other funding~~,~~ since the plan provides a clear "road map," which is key to marshaling the resources and partnerships necessary to accomplish this collective vision.

~~10.2 Chapter 10 References~~

Insert Existing and DFC Stewardship Zone Maps Here

14 Maps total

Chapter 11: Best Management Practices and Stewardship Tool Box

11.1 Use of the Best Management Practices

The intent of this chapter is to document and describe the protocols and procedures that will be incorporated into implementation of ongoing stewardship projects, to ensure that stewardship actions are conducted in a safe and effective manner, and do not create unacceptable harm to other conservation targets. To a considerable extent the Best Management Practices ("BMPs") listed below capture the expertise and practices that have been developed as a part of ongoing stewardship actions since the park was established.

Lane County managers and operational staff, as well as staff from partner agencies, such as Friends of Buford Park, Mount Pisgah Arboretum, and Lane County Sheriff's Posse ("STAFF") are expected to become familiar with this section of the HBRA Habitat Management Plan. STAFF will review this section when planning and implementing projects so that actions are consistent with the avoidance and minimization ~~and avoidance~~ measures, as well as the ~~Best Management Practices (~~BMPs~~)~~. Whenever an organization that is approved to work within HBRA initiates a project, it is the responsibility of that organization to ensure that it complies with any and all local, state, and federal regulatory and permitting requirements associated with the project.

The purpose of this Habitat Management Plan is for Lane County Parks and its partners to identify goals, strategies, and projects to effectively conserve a diversity of native habitats and species throughout HBRA, while effectively meeting demand for recreational use of the park. It should be noted that Mount Pisgah Arboretum holds a long-term lease on 209 acres within HBRA~~,~~ and has developed its own policies and practices. T~~t~~here is no intention on the part of Lane County or its partners to reduce the Arboretum's current level of autonomy in the management of its leased area. The Arboretum ~~has developed its own policies and practices. Arboretum~~ policies and practices are generally compatible with those described in this chapter, but may vary in some cases to meet the specific needs of ~~the~~its ~~Mount Pisgah Arboretum's~~ mission and programs.

11.2 Professional Judgment

Within this section, words and phrases such as "~~"~~where feasible"~~"~~, "~~"~~where appropriate"~~"~~, and "~~"~~where practicable"~~"~~ are used in conjunction with some minimization and avoidance measures, BMPs, and techniques. These phrases, which allow some exercise of professional judgment by STAFF, are not to be used for convenience or ease of operation. Rather, these words are included to depict the unique nature of habitat management at the HBRA, which may be either scheduled, dependent on site conditions, or responsive to unexpected events (such as wildfire, windstorm, flood, etc.).

Projects or other treatments will be planned and implemented in selected locations based on an analysis of conditions and needs. Funds are limited, and the intention is to treat areas where the benefits are greatest, or the risk of negative impacts is greatest if action is not taken.

11.3 Habitat Advisory Team (HAT)

Lane County Parks Manager shall create and seek advice from a Habitat Advisory Team (HAT). The HAT ~~may~~ will be composed of representatives from Lane County Parks (Manager, Superintendent, Natural Areas Coordinator), Friends of Buford Park, Mount Pisgah Arboretum, Sheriff's Posse, ~~Oregon Dept. of Forestry, Oregon Dept. of Fish & Wildlife, Bonneville Power Administration,~~ and The Nature Conservancy. The HAT may also include ~~and~~ other stakeholders, such as Oregon Dept. of Forestry, Oregon Dept. of Fish & Wildlife, Bonneville Power Administration,~~-~~ as appropriate. The HAT ~~would~~ will meet at least annually to review implementation of the *Habitat Management Plan* and recommend changes for plan improvement. The HAT ~~would~~ will annually assess previous project outcomes, report on projects planned for the upcoming year, and discuss future project priorities.

11.4 Training

Understanding and correctly implementing BMPs for maintenance and stewardship activities is the responsibility of every employee and anyone who supervises volunteers from each organization approved and authorized to work within the HBRA. Stakeholders may collaborate on trainings where appropriate, or when more appropriate, implement training opportunities individually.

Examples of training opportunities include:

- Stewardship Academy: For new employees and volunteers, includes presentation of the Habitat Management plan, associated environmental issues, and the HBRA Master Plan
- Herbicide applicator trainings
- Wildland fire suppression and management training
- Participation in professional symposiums and conferences
- Continuing education classes
- New product trials and equipment demonstrations
- Rivers to Ridges Field Operations Group project tours and site visits
- HBRA quarterly meetings with special interest groups
- Team meetings

11.5 Documentation and Reporting

Stewardship staff involved with plan implementation will brief the Habitat Advisory Team (HAT) about plan-related activities that occurred during the year prior to each annual meeting. HAT members will review and discuss this information as the basis for developing any possible recommendations for changes to the plan. Elements that may be addressed during this review include:

- Summary of routine work accomplished throughout the year.
- Challenges, controversies, and successes affecting implementation of the BMPs.
- Results of research and any recommendations for modifications to BMPs.
- Summary of Stewardship Project accomplishments.
- Summary of storm damage or accidental ~~fire~~ incidents such as fire, including unanticipated ecological damage and associated outcomes.
- A summary of projects that could not use the BMPs and actions taken to inform future revisions of this section of the Habitat Management Plan.

11.6 Best Management Practices by Category

11.6.1 Trails (TR)

In General

TR-1. When maintaining trails, if feasible, prioritize activities during the weekday (M-Th: 9-3pm and Friday 10-2pm) when tasks have the potential for causing ~~to minimize~~ adverse impacts to park patrons during periods of peak ~~(weekly)~~ use.

TR-2. Post temporary precautionary signage to advise park patrons ~~of~~ as they are approaching hazard(s).

When managing vegetation adjacent to trails:

TR-3. Remove vegetation encumbering trail corridors.

- Prune and remove limbs from shrubs, small trees, and trees in ways that minimize visible evidence, such as flush cuts.

TR-4. Manage and remove invasive vegetation.

- ~~a.~~ Incorporate recent EDRR reports for each trail segment when implementing vegetation management actions.

TR-5. Remove ~~noxious~~ undesirable woody vegetation (such as blackberry and poison oak) growing adjacent to the trail edge.

- ~~a.~~ Mechanically or chemically manage vegetation growing adjacent to (typically within 3') ~~of~~ the trail edge.
  - ~~i.~~ ○ ~~Prioritize~~ Schedule treatments for a time of year that ~~during the late summer – fall to~~ will minimize impacts to native herbaceous species, such as during the late summer – fall.
  - ~~ii.~~ ○ Identify and treat any invasive herbaceous species that occur under cover of the targeted vegetation.

TR-6. If planning (non-routine) maintenance or trail improvements that will alter vegetation growing adjacent to the trail (new switch backs, trail alignment, overlooks, etc.) coordinate with appropriate experts to conduct surveys for sensitive species in selecting alignments, salvage and/or transplant native plant materials, and take other precautionary actions to minimize impacts.

Maintain trail bed

TR-7. When removing branches and/or organic debris (leaf litter, twigs and branches, etc.) from trail segments,

- ~~a.~~ • Place organic debris in unobtrusive piles at least 3' from the edge of the trail, or~~.~~
- ~~b.~~ • Cut and scatter branches in forest understory at least 3' from trail, if quantity of material is small, or

- Place branches in discreet piles at least 15' from the edge of the trail, or

~~c.~~ - Scatter debris - across a larger area, if quantity of material is large.

~~d.~~ Avoid placing debris and branches within prairie, savanna, and oak woodland habitats if at all possible. ~~such~~ Such debris should be hauled off site, or can be placed in nearby conifer forest habitat instead.

TR-8. When preventing vegetation from establishing or growing up within the trail bed.

- Apply wood chips where feasible to create a vegetation-free trail surface
- Mow trails occasionally during the mowing season where appropriate.

~~c.~~ ~~c.~~ Utilize thermal treatments in the winter, spring, and fall to eliminate vegetation, particularly annual seedlings.

~~d.~~ ~~d.~~ If necessary and appropriate, ~~Utilize~~ utilize chemical treatments to eliminate persistent perennial vegetation attempting to colonize the trail bed.

TR-9. When agitating and re-compacting trail surfaces to maintain an even trail surface.

~~e.~~ Source gravel products from trustworthy vendors who can guarantee that the gravel is "weed free."

Management of hazard trees or fallen trees

TR-10. Contact Lane County Parks Division to report trees that may pose a potential threat to public safety. Contact Number: (541) 682-2000. Following a storm event causing tree damage, Lane ~~e~~ County Parks Division will determine whether to implement a temporary park closure, and will coordinate with stakeholders to identify roles and responsibilities for cleanup implementation within the park. Providing safe access to the public will be the first priority in storm response efforts.

TR-11. When County operations employees, park partners, and/or contractors remove hazard trees:

~~a.~~ Prior to ~~any~~ project work, photo-document and describe any potential tree hazard risks. This will aid in minimizing safety risks and provide for hazard abatement prior to the start of any project. ~~Documentation and photos of the surrounding habitat would also be beneficial in revealing other concerns or hazard risks~~Photo documentation is also desirable to accompany FEMA reimbursement requests for clean-up costs after federally declared disaster storm events.

~~b.~~ Consult with appropriate experts to determine if sensitive animal or plant species are known to occur in proximity to the hazard tree, and if so, take action to minimize collateral impacts to ~~those~~ these ~~botanical or other~~ natural resources.

~~c.~~ Priority should be given to reducing the potential hazard by means of hazard mitigation and assessment. Not all tree hazards require removal and can be eliminated or reduced through pruning, crown cleaning and other approved arboricultural practices. These methods should be evaluated prior to the removal of an assessed hazard tree.

~~d.~~ For those trees warranted for removal because of hazard risk, if feasible leave as much "standing snag habitat" while insuring no further hazard remains at the site. This can be

done by designing snags so that if they were to fall, they would not hit a trail, road, or other public gathering place.

~~e.~~• When practicable, manage (using manual, mechanical ~~/~~or chemical treatments) patches of blackberry or other invasive woody species prior to placement of removed hazard tree logs or debris.

~~f.~~• When feasible, place large woody debris and/or logs adjacent to trails, or other areas that would provide for suitable habitat or benefit to the natural area. Consult with appropriate staff to insure the best use of the downed wood prior to completion.

~~g.~~• When feasible, utilize removed portions of the hazard tree to obstruct unauthorized trails from within a reasonable proximity of the removal. Outside the Arboretum, ~~This~~ this should require the authorization of appropriate County staff prior to implementation.

TR-12. Following significant storm events (including high winds, excessive rain, lightning strikes) patrol high use trail corridors to identify and remove trees or branches that obstruct the trail corridor.

11.6.2 Stormwater Management

In General

TR-13. Promote trail design that maintains storm water sheet flow across the trail bed and/or minimizes hydrologic changes to adjacent wetland habitats when and where appropriate. Example methods for maintaining sheet flow include grading and/or utilization of a French drain structure to re-establish sheet flow in areas where storm water is being concentrated.

TR-14. If necessary to allow a desired trail alignment, ~~Incorporate~~ incorporate boardwalks or similar infrastructure in trail design in areas where site hydrology may otherwise be affected by trail construction.

TR-15. If planning (non-routine) maintenance or trail improvements that will alter the trail bed (new switch backs, trail alignment, overlooks, etc.) or change the existing drainage (new rolling dip, rolling grade, culvert) coordinate with appropriate experts to determine if formal design, permits, etc. are required to modify existing storm water management facilities.

TR-16. Implement seasonal closure of trail segments where trails traverse areas of sensitive habitat, hydrology, or other biological, ecological, or geological features of concern.

TR-17. Upon discovery of trail corridor damage caused by erosion or storm events, contact the Lane County Parks Division (or Mount Pisgah Arboretum staff for trails located inside the Arboretum lease area) to report the problem and to coordinate trail abatement measures.

11.6.3 Parking Areas and Access Roads (PR)

When County operations employees, park partners, volunteers, and/or contractors carry out management of parking areas and access roads:

In General

PR-1. Utilize Lane County's Routine Road Maintenance Best Management Practices (RRM BMP) Guide.

PR-2. Manage vegetation within parking areas (and within 100 yards along roadsides ~~in~~ on the approach to parking areas) to enhance and maintain visibility, to deter theft, and protect the safety of park patrons.

PR-3. ~~Where refuse facilities are provided for the use by park patrons in parking areas m~~Manage refuse to minimize impact on wildlife where refuse facilities are provided.

~~a.~~• Collect and remove refuse at a regular frequency.

~~b.~~• Use refuse containers that are sealed and designed in a manner to prevent access to wildlife.

PR-4. Manage herbaceous vegetation by mowing annually (ideally in late June or early July) near parking areas and along roadsides to reduce fuels that could carry and spread wildfire.

PR-5. Manage problematic vegetation, such as poison oak, near parking areas to protect park patrons.

PR-6. When re-vegetating disturbed soils, utilize native seed from the Mount Pisgah provenance (such as that produced through Friends' nursery program) and/or other native seed that has an identified collection source located within 20 miles of the park.

11.6.4 Utility Corridors (BPA powerlines, natural gas lines, EPUD powerlines) (UC)

For BPA right of way, please refer to "Transmission System Vegetation Management Program Final Environmental Impact Statement (FEIS), May 2000" and the Memorandum of Understanding between BPA and 'Pisgah Partners'.

When utility company employees and/or contractors, County operations employees, park partners, and/or contractors carry out management within utility corridors:

In General

UC-1. Prioritize maintenance activities during the weekday (M-F: 9-3pm) to minimize adverse impacts to park patrons during periods of peak (weekly) use.

UC-2. Post ~~-~~temporary precautionary signage to advise park patrons as they are~~of~~ approaching hazard(s).

Season

UC-3. Prioritize timing of vegetation management activities for seasons that minimize collateral impacts or risks. To the extent possible, mowing should be timed to avoid impacts to nesting songbirds, reptiles, and reproduction of native herbaceous plants. ~~;~~C ~~c~~hemical treatments should be timed to avoid impacts to pollinators, minimize impacts to actively growing native herbaceous species, and minimize seed set of invasive plants.~~;~~ T~~t~~hermal treatments should be timed to avoid wildfire risk.

~~**Access**~~

UC-4. Utilize the existing trail system to access easements. Minimize ~~off~~ off-trail travel including pedestrian and vehicle traffic.

Vegetation Management

UC-5. Coordinate with utilities to seek advance notice of planned work.

~~UC-4.~~ Minimize and abate disturbance to soil or vegetation.

~~**Vegetation Management**~~

~~Coordinate with utilities to seek advance notice of planned work.~~

UC-6. ~~Minimize and abate disturbance to soil or vegetation~~

~~UC-5.~~UC-7. When re-vegetating disturbed soils, utilize native seed from the Mount Pisgah provenance (such as produced through Friends nursery program) and/or other native seed that has an identified collection source located within 30 miles of the park.

11.6.5 Ecological Tree Removal (for habitat restoration purposes) (ER)

Recommended guidelines and BMPs for ecological tree removal activities are presented for reference only. All potential tree removal activities within HBRA are evaluated on a project-by-project basis by Lane County, and the recommendations identified below are not intended to limit the discretion of Lane County Park Manager, County Administrator, or Board of County Commissioners when making policy decisions. Tree removal and related actions within the Mount Pisgah Arboretum's lease area will be governed by the lease and associated agreements based on the lease intent. The recommendations under Item 3 are presented in a prioritized~~y order~~sequence. If the first recommendation is not available, or is fully met with additional material remaining, then the next recommendation in the list is to be considered.

ER-1. All trees proposed for removal as part of a County-approved project (outside the Arboretum) will be appropriately marked to assist Lane County staff field inspections prior to any work activities.

ER-2. Utilize appropriate erosion control BMPs that prohibit the movement of disturbed soils from the identified work area

ER-3. Recommendations for the disposition of trees determined to have commercial value.~~:~~

a. Utilize logs for restoration and habitat conservation purposes or park facility improvements:~~.~~

i. ~~Within~~ within the boundaries of the restoration project from which they are cut, or

ii. ~~On~~ on another restoration project within HBRA.

~~ii.~~iii. Mill logs on site with a portable mill to produce materials for fences, benches, siding, and other park facilities.

b. Use proceeds from the sale of the merchantable material to offset costs directly related to the ~~tree~~ tree-removal activities on the restoration project from which the trees are cut.

c. If funds remain after direct tree removal costs are paid, ~~deposit remaining proceeds from the sale of the merchantable material into the Lane County Parks Natural Areas Program Fund and~~ use ~~to~~ proceeds to support ~~HBRA~~ habitat and ~~trail~~ visitor infrastructure improvement projects within HBRA.

11.7 HBRA Stewardship Zones

S-1 Protect the Best Habitats.

i. In prairie and oak habitats, identify areas with~~here concentrations~~ a

1. high richness of high fidelity native ~~prairie~~ herbaceous plant species ~~occur~~.
2. Abundance of features associated with native reptiles such as nesting areas, basking areas, or hibernacula
3. Sites with unique or diverse examples of the native invertebrate fauna

ii. In riparian and conifer forest habitats, identify areas with

1. a high richness or cover of spring wildflowers, or~~f~~

a high density of nesting neotropical migrant songbirds.

~~i.~~2.

~~ii.~~iii. Minimize adverse impacts to populations of plant and animal species in high quality habitats.

1. Follow appropriate BMPs for restoration and/or maintenance activities in these areas.
2. Utilize appropriate site preparation activities at the onset of large scale enhancement and restoration projects.
3. When performing ecological burns, treat no more than half of the target areas in a single year ~~(~~to allow invertebrates and other inhabitatnts in the untreated half to complete their life cycles.~~)~~

S-2 Minimize soil disturbance and compaction.

i. When feasible, implement soil-disturbing restoration, construction or maintenance activities when soils are dry.

ii. Minimize the creation of new maintenance corridors (subject to repetitive use) into or through a management unit.

S-3 Minimize hydrological disturbance.

i. When feasible, implement soil-disturbing restoration, construction or maintenance activities when soils are dry.

ii. Minimize the creation of new maintenance corridors into or through a management unit, particularly corridors that follow the fall line.

S-4 Minimize disturbance of native vegetation.

i. When feasible, implement vegetation disturbing activities between July 15 (after seed set and bird nesting) and November 15.

ii. Minimize the creation of new maintenance corridors into or through a management unit.

~~ii.~~iii. Where necessary, locate maintenance corridors utilized by mechanized equipment in areas already invaded by non-native species such as blackberry and Scotch broom, so as to avoid impacting prairie habitats.

S-5 Minimize adverse impacts on native animal species, including nesting birds.

i. When feasible, avoid noise and vegetation disturbance from March 15 – July 15, except where it can be demonstrated that adverse impacts will be minimal.

ii. When feasible, plan significant activities according to seasonal sensitivity of species of interest.

iii. Protect and enhance invertebrate species

1. When feasible, time use of herbicides to minimize adverse impacts on pollinators and other invertebrates.
2. When reintroducing native plants, provide many individuals of each species.
3. Provide native plants that flower throughout the growing season and provide pollen or nectar for all types of pollinators.
4. During maintenance of restored habitats, use management techniques that do not affect an entire habitat patch in the same year.
5. Provide different sizes of standing and down wood (snags and logs).
6. Provide small areas of bare soil for ground nesting bees.

S-6 Minimize transport of invasive plant species.

i. Identify how invasive species are being introduced to the Park.

ii. Identify actions to reduce introduction, including both on-site and off-site movement.

iii. Wash soil, seeds, and vegetative debris from all classes of equipment, as well as from individual operators or technicians when entering or leaving any portion of the site where invasive species are present.

S-7 Minimize adverse impacts of stewardship activities on park patrons.

i. Prioritize stewardship activities in high use areas ~~during~~ to non-peak times, such as ~~weekdays (~~M-F, 7 am – 5 pm~~)~~.

ii. Post temporary precautionary signs to advise park patrons of potential hazards associated with stewardship activities.

iii. Remove temporary signage as promptly as safety considerations will permit

S-8 ~~S-8~~ Avoid impacts to cultural resources.

i. plan projects so as to avoid impacting cultural resources documented in the 1994 HBRA Master Plan or subsequent surveys.

~~iii.~~ ii. Incorporate an appropriate level of cultural resource monitoring to any stewardship project that has potential to impact cultural resources through soil disturbance (excavation, tilling/disking, etc.).

11.8 Stewardship Toolbox

11.8.1 Stewardship, Site Preparation and Invasive Management Methods

The following section details stewardship methods that can be implemented to maintain conservation targets, to manage invasive vegetation and prepare project areas for enhancement or restoration actions, such as floodplain channel excavation, ecological burns, etc.

When feasible, assign a botanist or lead steward to track progress and effectiveness of site preparation activities and evaluate methods of the Stewardship Tool Box to manage populations of invasive plants occurring on a micro-site scale. Working at this scale, being flexible, and employing a combination of site preparation and methods can help ensure project success.

11.8.2 Equipment Cleaning Guidelines

All equipment utilized (by staff, contractors, or volunteers) during implementation of site stewardship must be thoroughly cleaned (preferably with compressed air and/or a pressure washer) prior to site entry to remove all dirt and debris to reduce the possibility of introduction of invasive ~~vegetation~~ plants not currently existing within the project area. If cleaning occurs within the HBRA, the area in which the cleaning takes place should be noted or mapped so it can be monitored and checked for any future weed growth.

11.8.3 Invasive Plant Management Methods

1) **Bradley Method.** In areas of high quality habitat (where native species cover is relatively high with respect to total cover), small patches of invasive species are removed manually. The area relieved of invasive vegetation is not replanted; rather the area is left for natural colonization by adjacent native plants. The treated area is periodically re-visited by work groups who remove any and all seedlings and/or root sprouts of undesirable species. In time the area is colonized by native species. In some circumstances plants (either salvaged from the project area or grown by local native plant nurseries) may be planted in these areas when a particular habit, character, or presence not currently represented within the area is desired. This method may also be applied in habitats adjacent to a project site to support the larger project area and prevent further spread.

2) **Repetitive mowing.** In areas where noxious woody perennial species cover is both dominant and high (relative cover greater than ~~60~~80%~~) with respect to total cover~~, the area is mowed periodically with a tractor mounted ~~- flail~~ mower or with a ~~walk~~ walk-behind rotary mower (depending on the size of the area to be treated). Treatments may be applied at any time in the year but it is recommended that treatments occur between May-November to avoid the potential for soil disturbance and compaction that may result during the rainy season. In some sites with well drained soils, it may be possible to implement mowing in early spring before native plants emerge. In those areas where relative cover by native species is at least ~~35~~10-20% with respect to total cover (depending upon native species composition), the first treatment should not be applied until ~~those~~ the native plants have set seed. It is expected that an area may be treated 2-7 times before the prescription may be considered successful. Following several cycles of mowing, a brush rake may be used to dislodge root crowns and root masses from the treatment area. If it is determined that the treatment will adversely affect roots of desirable vegetation, root crowns of invasive woody plants (primarily Armenian blackberry) should be

removed manually. If a brush rake is used, the ground is then dressed/rolled following disturbance. The area should be seeded with a mix of herbaceous native annual pioneer species intrinsic to the particular ecotype that will develop as the noxious species are managed. Native hay may be broadcast over the disturbed soil as well to minimize soil erosion. Following the final treatment, desirable native perennial shrubs and trees will be planted in accordance with the Future Conditions Plan for the specific area.

3) **Removal of seed heads**. In some cases, manual or mechanical removal of seed heads may be an important interim measure, if more permanent treatments methods are not feasibly given available resources. This will at least prevent an increase in the quantity of non-native seed being added to the seed bank.

~~3)~~4) **Repetitive shallow dis~~k~~king, tilling & irrigation.** Within areas of non-native pasture grasses and forbs, where native species are absent, a field is mowed through the growing season. In early summer the field ~~is~~ may be chemically treated with either a ~~gator~~ gator-mounted boom sprayer or brush monitor. A few weeks later the field is shallowly ~~disked~~ disked and tilled several times. The field ~~is~~ may be irrigated following tillage. Tillage is repeated after a week or ~~(10~~ten~~)~~ days following germination from the seed bank. The treatment is repeated until germination is sparse across the field. After tilling is complete, the restoration area should be seeded heavily with an aggressive native seed mix. Spot herbicide treatment (ideally using selective herbicides), followed by broadcast seeding, may be needed within some parts of the restoration area.

~~4)~~5) **Solarization.** In areas where invasive herbaceous species cover is both dominant and high ~~(greater than 60%) with respect to total cover~~, and high-fidelity native prairie species are absent, Solarization may be appropriate. ~~the~~ The area is first mowed short and then tilled with either a ~~tractor~~ tractor-mounted~~-~~ roterra device or with a rototiller. The soil should be ~~well~~ well-churned when tilling is complete. Larger areas may be graded for desirable micro-topography following tilling. The area of treatment is then covered with a 4-year/6 mil clear plastic. The plastic edge should be sealed to retain heat, and anchored to ensure that it is not adversely affected by wind. The plastic is left in place for ~~4-7~~8-12 weeks. It is critical that ambient air temperatures are at least 90°~~o~~F for a period of not less than three~~3~~ days during the time of treatment. This prescription is applied in the summer months. It is recommended that plastic be laid no later than the third week of June. Plastic should be removed prior to the return of regular fall precipitation. Following treatment, a native seed mix is broadcast within the footprint. Herbaceous plugs and woody plants may be planted as well.

~~5)~~6) **Smothering.** Summer-Fall application: In small areas (less than 100 sq. ft.) within a prairie/meadow or forested ecotype where invasive species cover is both dominant and high (greater than 60%) with respect to total cover, the area is mowed very short and then covered with heavy black nursery fabric or non-woven road fabric. The fabric should be secured in place with landscape staples. The fabric is then removed in the fall of the following year (fabric may be left in place for multiple years). The area is then planted with plugs, salvaged plant materials and/or broadcast with a mix of native seed.

~~6)~~7) **Herbicide Application.** Those areas dominated by ~~habitat~~ habitat-altering, invasive vegetation for which other means of control have not been successful may be treated with chemical herbicides. Herbicide will be applied by licensed applicators. Applicators will strictly follow the rules and regulations as directed on the label. Furthermore, selection of herbicide will closely follow those products approved under the biological opinion developed for Bonneville Power Administration by the federal National Marine Fisheries Service. Herbicide may be applied by

wiper applicator, brush, backpack spray, motorized hand gun, and motorized boom spray applicator.

~~7)~~8) **Infrared (propane) burner.** In areas where annual or perennial herbaceous species cover is both dominant and high (greater than 60%) with respect to total cover, the area is flamed with an infrared (propane) burner. The treatment is applied to wilt the invasive vegetation, not consume it. Treatments are applied when fire danger is low and when plant growth or seed production will be impacted. Subsequently, the area should be seeded with a mix of herbaceous native pioneer species associated with the particular habitat that will develop as the invasive species are reduced. In addition, desirable native perennial shrubs and trees will be planted in accordance with planting plan for the specific area.

~~8)~~ **Biological Control.** Biocontrol agents destroy plant tissues and cause stress to the weeds, making them less competitive against desirable flora. It may take 10-20 years for a biocontrol project to successfully manage a weed at the regional scale. ~~Work~~ Managers should work with the Oregon Department of Agriculture to collect and redistribute biocontrol agents to other infested areas throughout the park. ~~Monitor~~ T~~t~~reatment areas are to be monitored to ensure populations of biological control agents remain at optimal levels to control select species of invasive vegetation within the HBRA and the greater Mount Pisgah Area. ~~Do not utilize~~ B~~b~~iological control agents are not to be used ~~that~~ if they have been determined to create adverse effects to native (and endemic) species related to the target of control.

9)

11.9 Chapter 11 References

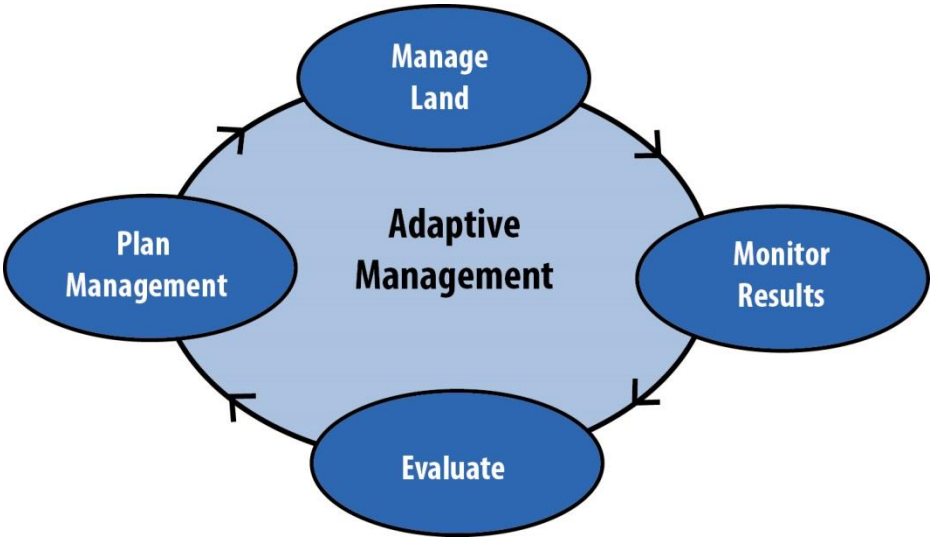
- Bonneville Power Administration. 2000. Transmission System Vegetation Management Program Final Environmental Impact Statement. Chapter II: The Methods.

Chapter 12: Monitoring and Adaptive Management

12.1 What is Adaptive Management?

Adaptive management is an approach that incorporates monitoring of past management into the planning of subsequent management actions, and systematically tests assumptions in order to learn and adapt. First, a management objective is identified. Next, a best management option is selected and stewardship actions are implemented. Stewardship results are monitored and compared with expectations so that subsequent management actions can be adjusted after considering insights gained and lessons learned from previous management actions. The following flow chart image suggests the cycle of adaptive management.

Figure 12-1: Adaptive Management Diagram



Monitoring within HBRA should focus on two basic questions:

1. ~~(1)~~ Strategy effectiveness - Are the conservation actions being taken within HBRA achieving their desired results?~~; and~~
2. ~~(2)~~ Status assessments - What is the ~~general~~ status and what are the trends of ~~the~~ conservation target~~ss, and associated threats,~~ within HBRA?

More specifically, monitoring tasks should be linked to the plan objectives, conservation targets, key ecological attributes, and threats outlined in this plan. Implementation of the HBRA *Habitat Management Plan* will incorporate the practice of adaptive management to ~~assure~~ ensure that lessons learned improve the results of future management.

Following approval of the HBRA *Habitat Management Plan*, a ~~monitoring schedule~~comprehensive monitoring plan will be developed by Lane County Parks Division and ~~Friends of Buford Park & Mount Pisgah~~partners, which will identify a realistic set of monitoring tasks and time frames, based on the monitoring categories described below, to provide information to guide adaptive management. At 5

year intervals, a review of habitat management accomplishments and conservation target status will be completed, to provide direction for planning of subsequent management actions.

In addition, each project proposal approved by Lane County Parks for implementation of stewardship activities will include both a monitoring component and a maintenance component, to describe the process for identifying and implementing follow-up stewardship tasks as identified through monitoring and adaptive management.

12.2 Funding for Monitoring

Funds for the monitoring activities specified in this chapter are not secured. However, monitoring of habitat conditions has been ongoing since at least the 1980s by volunteers. For example, botanists mobilized by Friends of Buford Park & Mount Pisgah have developed a database of over 500 plant species identified and located in the park, and have conducted annual monitoring of the Bradshaw's ~~Lomatium~~ lomatium population nearly every year since 1993. Amateur ornithologists have documented over 100 bird species using the park. In more recent years, as grants have been secured for habitat improvement, modest funding for monitoring, combined with volunteer labor has enabled monitoring of fish, herpetiles, birds and hydrology along the Coast Fork Willamette, as well as invasive removal in the park. With clear priorities and more effective partnerships, limited funding for monitoring can be focused to better inform future management.

12.3 Monitoring Conservation ~~targets~~Targets

Documenting the status and trends of individual focal conservation targets is an important benchmark for determining whether the goals of the plan are being met. Status of habitat types can be quantified over time by mapping their extent from aerial photographs and other historic data. Condition of habitat types can be most efficiently documented in a qualitative way by use of permanent photo points; supplemented, where appropriate, ~~but~~ by data from vegetation plots. Status and trend of species targets requires some documentation of distribution and population size (preferably but not necessarily annually), with a monitoring intensity sufficient to document change over time. For monitoring nested targets, documenting presence/absence (ideally on a Management Unit basis) will be valuable documentation. This need not be done annually, but if done by volunteers at 3 to 5 year intervals, this would be sufficient.

12.4 Monitoring Key Ecological Attributes

The "Key Ecological Attributes" identified in Chapter 5, Figure 5.1, represent important factors for the viability of the habitat types and species listed in this plan as focal and nested conservation targets. Figure 5.1 lists specific indicators for each KEA, and monitoring should provide information, where appropriate, sufficient to update indicator ratings (poor, fair, good, or very good) over time. The necessary intensity of data collection varies for different indicators. For particular indicators that require intensive data collection, it may only be appropriate to invest resources in collecting such data where the level of treatments or management effort is correspondingly high. Visitor experience KEA's will guide monitoring for this target, but in addition, occasional visitor surveys could supplement other monitoring and, if implemented consistently over time, may provide data on trends.

12.5 Monitoring Threats

Threats to conservation targets are identified in Chapter 5, Figure 5.2. The status of threats with an overall threat rank of "High" or "Very High" should be done in a ~~qualitatively~~ qualitative way on an annual basis. If there is uncertainty as to whether threat abatement practices in place are adequate, a more intensive assessment of the threat's impacts may be warranted.

12.6 HBRA Species Inventory/Monitoring

Baseline species inventory provides important data related to viability and threats of conservation targets within HBRA. Documenting the species of plants and animals present within HBRA, as well as change over time, informs ongoing management planning and implementation. For some types of organisms, species lists developed over the years are fairly complete, but for others only partial species lists exist. Compiling existing species presence data and improving completeness, where feasible, should be an ongoing endeavor. For nested species conservation targets, documenting locations of populations with GIS should be a priority. For other species, documenting presence/absence by Stewardship Zone or other appropriate sub-unit of the park will be beneficial. Introduced non-native species are a particular category for which strategic tracking of distribution and abundance will benefit conservation management.

12.7 Project Effectiveness Monitoring

Project effectiveness monitoring is likely to be a requirement of grant funding to support habitat restoration work at HBRA. In a general sense, project effectiveness monitoring should help us determine whether the conservation actions being taken within HBRA are achieving their desired results. More specifically, project effectiveness monitoring tasks can be selected to provide useful information to feed the adaptive management cycle described above, by improving the effectiveness, efficiency, quality, or cost of restoration and management activities.

~~12.8 Chapter 12 References~~