PRAIRIE AND OAKS PEOPLE

A conservation business plan to revitalize the prairie-oak habitats

OF THE PACIFIC NORTHWEST

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Photo: Bruce Taylor

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Cover Photo: Bruce Taylor

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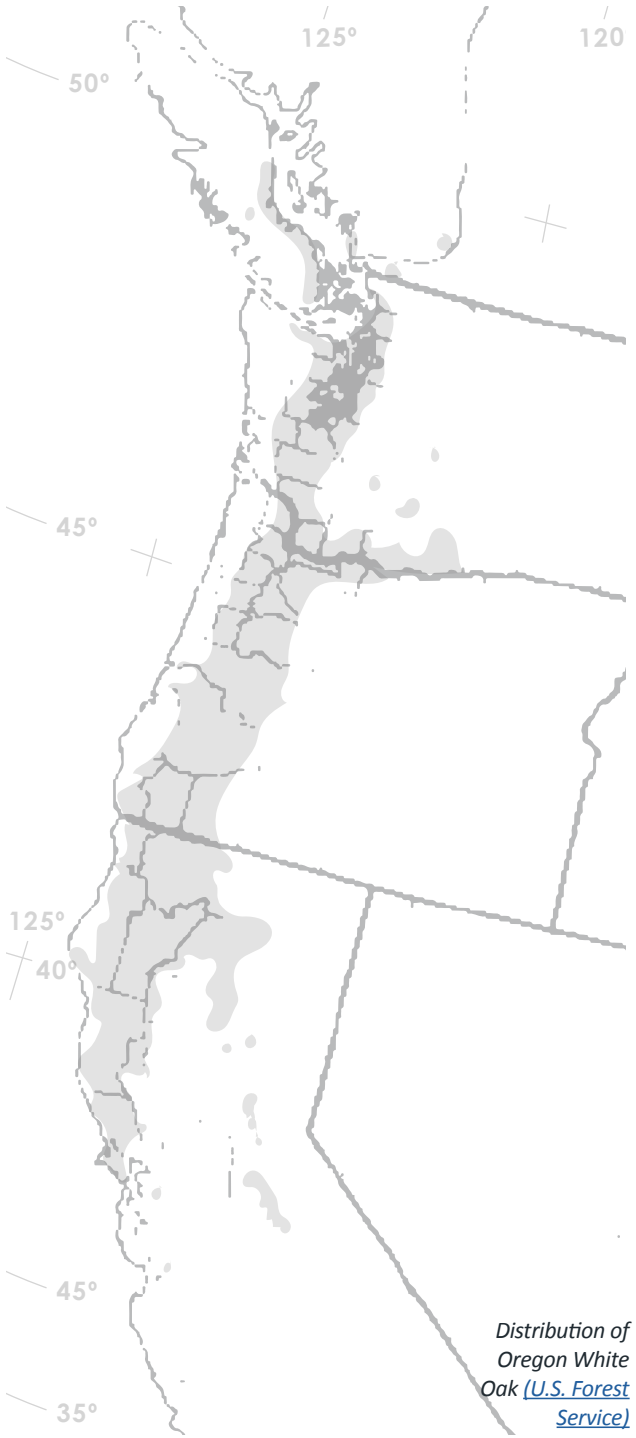
FOREWORD

Prairie, Oaks, and People

Surrounded by the vast conifer forests of the Pacific Northwest, prairie-oak habitats were once a haven of open spaces and big oak trees. People historically had a strong connection with the prairie-oak ecosystem in a unique and a mutually beneficial relationship. Native peoples needed resources provided by the prairie-oak ecosystem – acorns, camas bulbs, deer and elk, shelter and cover of the big oak trees – that were essential for their survival. The prairie-oak ecosystem needed people to regularly initiate the process of renewal through fire. Today, however, that bond between people, prairies, and oaks is tenuous in many places, and completely gone in others. These have always been the places where people have wanted to live. Over time, however, the historic partnership has been fractured and nearly lost with the expanding impact of the human footprint.

The prairie-oak ecosystem needs help. In some places it is on life support – species are gone or barely hanging on, and in others, the native habitat has been so overwhelmed by invasive species as to become unrecognizable. Rescue is now dependent on us to step up with the necessary resources to start rebuilding the relationship. It will never be the same as before; the shift to human dominance is complete. However, in some places with immediate intervention and regular nurturing, the human connections to prairies and oaks can be reestablished, not only to save this imperiled ecosystem and its species, but to rekindle a lost heritage.



Distribution of Oregon White Oak (U.S. Forest Service)

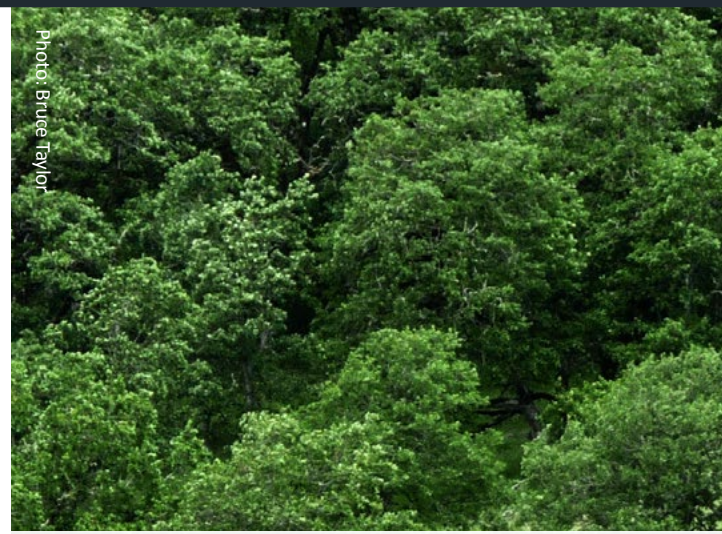


Photo: Bruce Taylor

THE VISION

The Pacific Northwest has an interconnected network of prairie-oak habitat that sustains native species across the region and provides ecological services for future generations.

“When I think about oak trees I think about a really important cultural plant to our people. Myself, I’m Kalapuya. My family signed the Willamette Valley Treaty of 1855. Oak trees are something you need to manage for generations to produce food. So one generation produces enough food for a person. 25 years. 50 years enough for 3 people. 75 years, then a whole family of people can live off the food.”

—DAVID HARRELSON,
TRIBAL HISTORIC PRESERVATION OFFICER,
CONFEDERATE TRIBES OF GRAND RONDE

SOURCE: *From Oregon’s Oak – A Vanishing Legacy. 2015. Produced by Yamhill Watershed Stewardship Fund and AH Creative.*

Meredith Rafferty © South Sound Prairies

INTRODUCTION

Two iconic features define the prairie-oak ecosystems of the Pacific Northwest. First is the signature oak tree – typically Oregon white oak (*quercus Garryana*) from northern California to British Columbia, and California black oak (*quercus Kelloggii*) at the southern end of the region. Oak trees provide nesting habitat for almost 200 wildlife species, representing all classes of terrestrial vertebrates, sustaining a reservoir of native biodiversity.

The second feature is the open prairies that dominate some parts of the landscape and are scattered among the oak habitats in other areas. Prairies support the most vulnerable elements of the region's biodiversity, including endangered butterflies whose survival is inextricably linked to the flowers of threatened and endangered plant species found only in these increasingly rare habitats.

Many other vulnerable and threatened plants and animals that depend on Pacific Northwest's prairie-oak habitats, including birds and squirrels, are already listed as threatened or endangered in the U.S. or Canada.

Prairie-oak landscapes also support the majority of the human population in the Pacific Northwest – from settlement to today, these continue to be the places where people want to live and farm. As a result, these intertwined mixes of meadows, tree-dotted savannas and dense woodlands extending from northern California to British Columbia are disappearing at an alarming rate and are among the region's highest priorities for conservation.

Without proactive approaches to maintain and restore important prairie-oak habitats, the endangered species list will grow, resulting in ecological crisis and regulatory conflict. With a sound conservation business strategy, strong partnerships, and carefully targeted investments, however, we can protect and restore the habitat needed to sustain species as these landscapes change.

We have started by bringing together a network that unites participating organizations, agencies, tribal sovereign governments, private landowners, and land managers around a common vision for long-term conservation of prairie-oak habitats in the Pacific Northwest.

Integrating the more specialized needs of vulnerable prairie species into conservation of oak habitats creates holistic strategies that optimize biodiversity conservation benefits. By bringing together people with common goals that transcend geographic and organizational boundaries, we can align and unite our efforts to achieve larger conservation gains across the region.

This business plan seeks to create the economic, social, and political climate to fund and support the interventions necessary to preserve and enhance prairie-oak habitat and the species that rely on it throughout the Pacific Northwest for the use and enjoyment of future generations. With this overarching strategic framework, this document presents the business case for a 10 to 15-year investment strategy for prairie-oak conservation.

– Bob Altman, Sara Evans-Peters, Elspeth Hilton Kim, Nicole Maness, Jaime Stephens, and Bruce Taylor, on behalf of the Cascadia Prairie-Oak Partnership, Klamath-Siskiyou Oak Network, Pacific Birds, and our many participating partners.

Photo: Bruce Taylor

"By bringing together people with common goals that transcend geographic and organizational boundaries, we can align and unite our efforts to achieve larger conservation gains across the region."

Adele Buttolph © 2016 Common Nighthawk

PRAIRIE-OAK BIRDS AND THE PACIFIC FLYWAY

Migratory birds traveling from their breeding sites in prairie-oak habitats of the Pacific Northwest to their ultimate wintering destinations to the south and back again are both a shared natural resource and a shared responsibility. Most of the approximately 50 species highly associated with these habitats make this journey every year along the Pacific Flyway. Some, like Oregon vesper sparrow and Lewis's woodpecker, spend their winters in California, but many go well into Mexico and Central America and some, like common nighthawk, all the way to South America. These birds link our prairie-oak conservation efforts with other peoples and places on their journey and amplify the impact of our work far beyond the Pacific Northwest. The shared international responsibility to support the full life cycle needs of migratory birds extends to the cultural heritage of the many places they go.

Need for a conservation business plan

Across the Pacific Northwest, from Mendocino County, California to Vancouver Island, British Columbia, dozens of partners are working to protect and restore prairie-oak habitats and implement recovery actions for species listed under the United States' Endangered Species Act (ESA) and Canada's Species at Risk Act (SARA). For many species, population and habitat objectives based on science quantify the magnitude of work needed. Although the required investments are substantial, and available funding remains far short of levels needed to achieve objectives, public and private funding is beginning to flow into conservation efforts across the region.

What we need now is a shared vision and overarching framework to coordinate conservation actions and investments across geographic and institutional boundaries and the silos created by narrowly focused missions and mandates. Without a common framework, we risk duplication of efforts and inefficient allocation of scarce conservation resources to meet our goals. We also risk failure.

To attract investment, we are presenting our strategies in the form of a conservation business plan. Conservation business plans present clear strategies, outline the resources necessary to meet conservation goals, and create accountability by defining measurable outcomes.

This conservation business plan is intended to showcase our vision for healthy and abundant populations of native prairie-oak plants and animals within the context of human needs and a changing climate. The business plan demonstrates our collective capacity to respond to real-world demand for products and services around prairie-oak conservation and generate outcomes that are important to people as well as to a naturally functioning ecosystem.

Anne Schuster © South Sound Prairies 2015

Goal and Objectives

The goal and objectives we have established define our vision for success

A holistic systems approach addresses conservation goals within a changing landscape and the context of human needs, maintaining the region's natural biological diversity as habitats evolve and species shift over time, and preserving our cultural heritage.

GOAL:

Healthy and resilient prairie-oak habitats

across the Pacific Northwest that sustain all of their native species and generate benefits for current and future generations.

Providing security for the most vulnerable species is critical to the success of broader efforts to conserve regional biodiversity.

OBJECTIVE 1:

Recover populations

of 41 imperiled species and establish the ecological and social foundations to support their persistence over time.

OBJECTIVE 2:

Restore and maintain habitats

needed to conserve the biological diversity of prairie-oak ecosystems throughout their historic range.

Conservation needs for most species can be addressed through broader and more flexible strategies targeted to lands that offer the best opportunities for maintaining the diversity and abundance of prairie-oak habitats over time.

Challenges

To achieve our conservation goals, significant ecological, social, and political challenges need to be addressed:

- Existing habitat is fragmented and insufficient to support target populations of priority species.
- Populations of many imperiled species are isolated and continue to decline.
- Key components of the ecosystem, such as large oak trees and large, open prairie landscapes, are being lost and will take decades to replace.
- The majority of remaining habitat is on private lands, where owners have few incentives to take conservation actions.
- Support for essential and ongoing maintenance following initial restoration is inadequate.
- Organizational capacity and supporting infrastructure are inadequate to meet conservation needs and limit opportunities for more efficient action across multiple geographic and political scales. Engagement strategies are needed to foster partnerships with federal and state agencies, tribal sovereign governments, and private landowners.
- Policy and regulatory support are weak or non-existent across most of the region, and in some cases create disincentives for needed conservation actions.
- Funding, policy, and resources devoted to conservation fall far short of those needed to address the widespread losses of prairie-oak habitats and the continuing decline of imperiled species.

Anne Schuster © South Sound Prairies 2015

CHANGING CLIMATE

Pacific Northwest prairie-oak habitats are expected to see warmer temperatures, drier summers, and an increased likelihood of drought and summer wildfire. Because prairie-oak plants are fairly drought tolerant and fire resistant, healthy systems may weather well in a changing climate. For example, persistent drought conditions could negatively affect less drought tolerant tree species like Douglas-fir, resulting in prairie expansion. But although fires may be advantageous to prairie-oak systems, years of fire suppression has allowed abnormal amounts of flammable vegetation and ground cover to accumulate, making normal fires potentially devastating. Incorporating climate adaptation strategies into our restoration activities and choices can increase the potential of oak ecosystems to withstand the likely effects of climate change. Investing in thinning, reintroduction of beneficial fire, and generally reducing fuel loads can prepare prairie-oak habitats to benefit from the changing climate while reducing wildfire risks to local communities.

BY THE NUMBERS

Prairie-Oak Species

Native prairie-oak species are at a crossroads. Populations are declining, ranges are contracting, and many species are gone from parts of their historic range. Some have received official status to assist in conservation, many others have not. Our goal is to save the most imperiled, and keep the rest from becoming imperiled.

41 SPECIES

listed as Threatened or Endangered at Federal, State, or Provincial levels

13 SPECIES

Threatened or Endangered species have been extirpated or near-extirpated from Canada

4 SPECIES

listed as Threatened or Endangered in both United States and Canada

23 SPECIES

have been extirpated or near-extirpated from at least one ecoregion in their range

+50 OTHER SPECIES

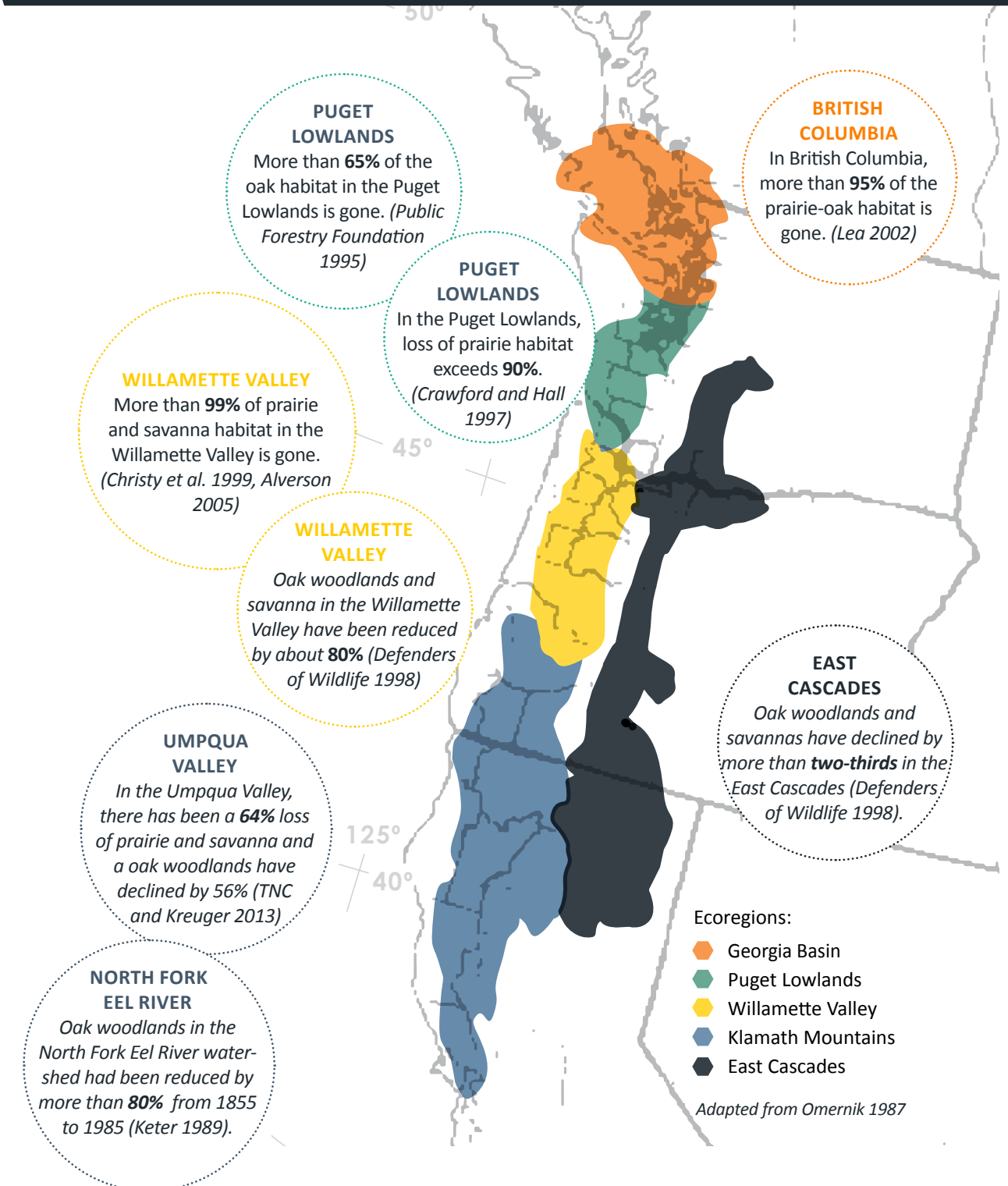
are vulnerable and at risk of continued decline to levels qualifying for listing as Threatened or Endangered

BY THE NUMBERS

Prairie-Oak Habitats

The remnant habitats of the prairie-oak landscape are greatly reduced in area, degraded in structure and composition, fragmented and isolated in distribution. An expanding human footprint and the spread of invasive plant competitors present continuing threats. Remaining habitats in many areas are deficient in biodiversity, and inadequate to support populations of imperiled species. Our goal is to protect what we have, and restore what we can to preserve this natural legacy.

Habitat losses are difficult to quantify precisely in many areas, but mapping of historic conditions suggests that reductions in prairie-oak habitat are widespread and substantial.



Opportunities

However, a foundation for success is already in place for conserving prairie-oak species and habitats:

- Prairie-oak habitat is a high conservation priority among natural resource managers and conservation interests in the Pacific Northwest.
- Public support is relatively strong, with a concerned and active constituency.
- Many partners have been working on prairie-oak habitat protection and restoration and species conservation efforts for more than a decade.

Several ecological factors also favor successful conservation of prairie-oak species and habitats:

- Many imperiled prairie-oak species can persist in relatively small areas and in conjunction with a range of land uses.
- Conservation actions that benefit individual imperiled species can also address broader prairie-oak conservation priorities, providing opportunities for efficient investment on a regional scale.
- Climate change is projected to enhance long-term prospects for prairie-oak habitats in the Pacific Northwest, if we are able to sustain species as these ecosystems shift across latitude and elevation.

Adam Martin © South Sound Prairies

ACTION

Strategic Framework

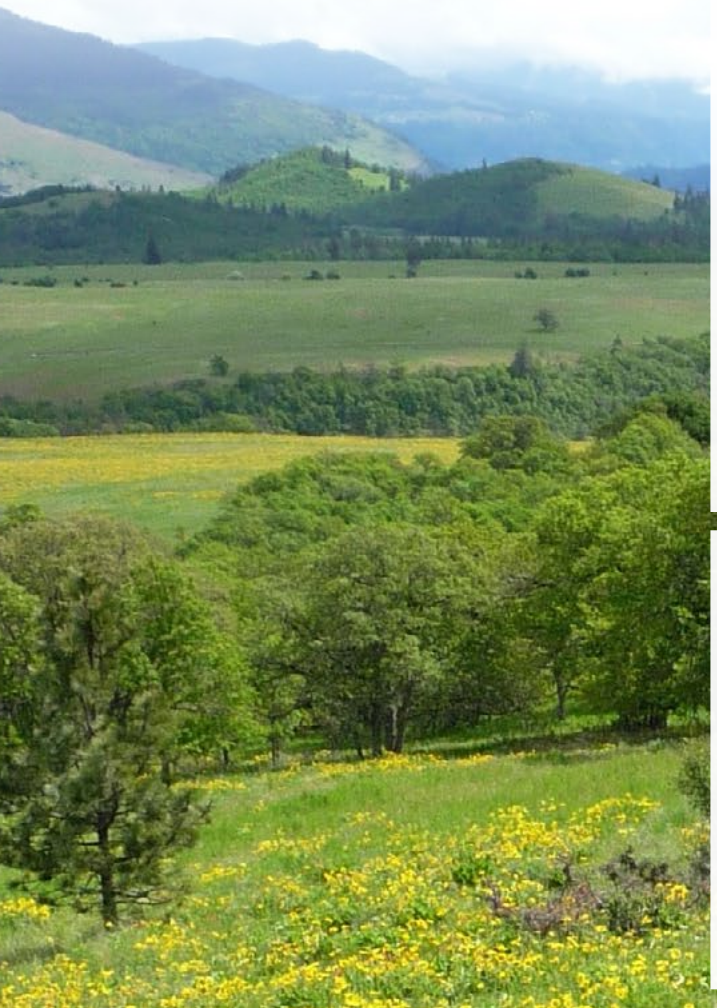
This conservation business plan identifies priority strategies that address the major threats to prairie-oak systems. These include: conserving and managing habitat; supporting species recovery efforts; strengthening conservation infrastructure; improving our understanding of limiting factors; and expanding policy and financial support.

Photo: Bruce Taylor

- PROTECT PRAIRIE-OAK HABITAT
- RESTORE AND MANAGE PRAIRIE-OAK HABITAT
- SUPPORT RECOVERY OF IMPERILED PRAIRIE-OAK SPECIES
- STRENGTHEN CONSERVATION INFRASTRUCTURE
- INFORM CONSERVATION EFFORTS THROUGH MONITORING AND RESEARCH
- EXPAND SOCIAL, POLITICAL, AND FINANCIAL SUPPORT FOR PRAIRIE-OAK CONSERVATION

ACTION

Strategic Framework



PROTECT PRAIRIE-OAK HABITAT

Secure long-term protection for lands with high conservation value to prevent activities that degrade habitat. Create a network of public and private conservation lands that sustain functioning ecosystems across the landscape.

PRIORITY ACTIONS:

- Protect a network of lands capable of supporting healthy habitats through fee title acquisitions, conservation easements, and other legal mechanisms.
- Target land conservation efforts to increase connectivity and resilience of habitats across the range of imperiled and vulnerable species.

RESTORE AND MANAGE PRAIRIE-OAK HABITAT

Manage habitats to improve natural ecosystem processes and functions, improve connectivity, and ensure that desired habitat conditions are maintained over time.

- Manage habitat to support desired native habitat conditions, incorporating traditional ecological knowledge and removing or reducing threats that compromise those conditions.
- Work with landowners, land managers, and tribal governments to achieve desired habitat conditions on lands managed primarily for agriculture, forestry, subsistence, and other economic purposes.

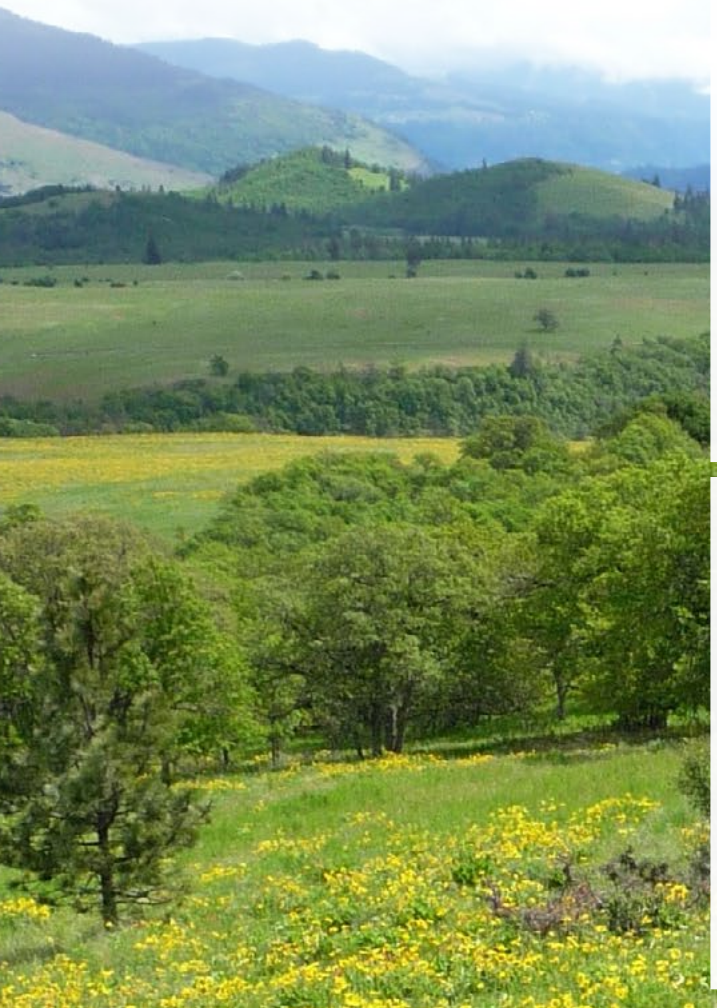
SUPPORT RECOVERY OF IMPERILED PRAIRIE-OAK SPECIES

Increase populations of priority species and stabilize populations of declining species before they become imperiled.

- Implement site-specific habitat restoration and enhancement actions designed to increase populations of priority species.
- Improve genetic diversity of priority species' populations through species translocations and reintroductions.

ACTION

Strategic Framework



STRENGTHEN CONSERVATION INFRASTRUCTURE

Expand use of effective conservation tools and develop the conservation workforce needed to support implementation.

PRIORITY ACTIONS:

- Increase access to shared conservation tools such as specialized equipment and plant materials.
- Strengthen organizational capacity and expertise to foster a regional network of practitioners with unique qualifications and specialized training.
- Build a community-based workforce to support implementation of conservation actions and leverage benefits to local economies.

INFORM CONSERVATION EFFORTS THROUGH MONITORING AND RESEARCH

Improve understanding of management effects on species and habitat conditions, as well as species' population status and limiting factors to prioritize actions that will be most efficient and cost-effective.

- Monitor species and habitat response to restoration actions and progress toward population objectives.
- Determine limiting factors for persistence of species and habitats.
- Understand potential climate change impacts to species' population and habitat targets.
- Evaluate the cost-effectiveness of conservation actions and share information and lessons learned to support adaptive management.

EXPAND SOCIAL, POLITICAL, AND FINANCIAL SUPPORT FOR PRAIRIE-OAK CONSERVATION

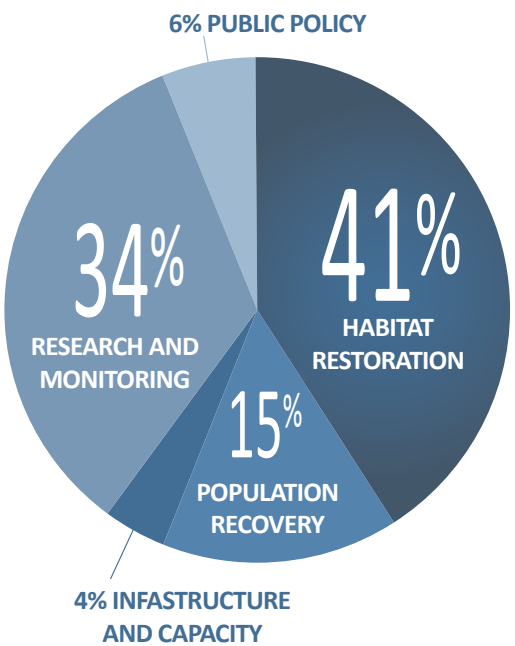
Raise awareness to increase support for prairie-oak conservation and increase conservation commitments and actions in the private sector and at all levels of government.

- Advocate for policies that encourage conservation actions and remove policy barriers that inhibit conservation actions.
- Build relationships with tribal sovereign nations to advance restoration of vital, traditional subsistence resources.
- Build a compelling case and educate policy makers about the important ecological and economic role of prairie-oak species and habitats and the implications of their continuing decline.
- Advocate for increased investment and more strategic targeting of public and private funding in habitat conservation.

Cost of Recovery and Restoration

In these graphics, we have estimated how we think resources will be needed by objectives and type of projects. These projections are presented to show the magnitude and distribution of the effort required, and the range of opportunities for investments.

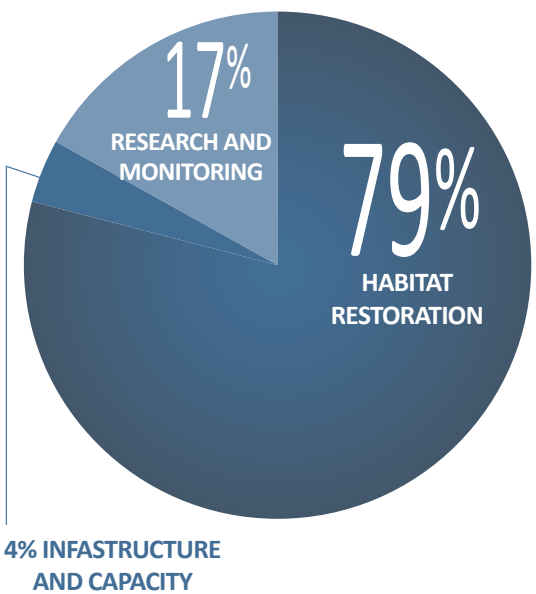
SPECIES RECOVERY



$55,250,000

TOTAL NEED SPECIES RECOCVERY

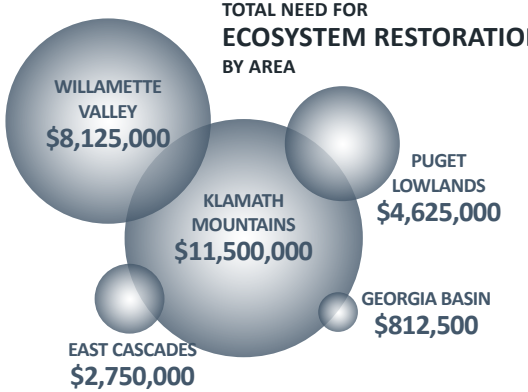
ECOSYSTEM RESTORATION



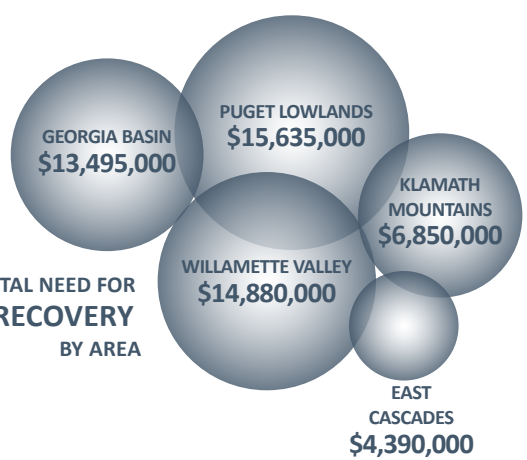
$27,812,500

TOTAL NEED ECOSYSTEM RESTORATION

TOTAL NEED FOR
ECOSYSTEM RESTORATION
BY AREA



TOTAL NEED FOR
SPECIES RECOVERY
BY AREA



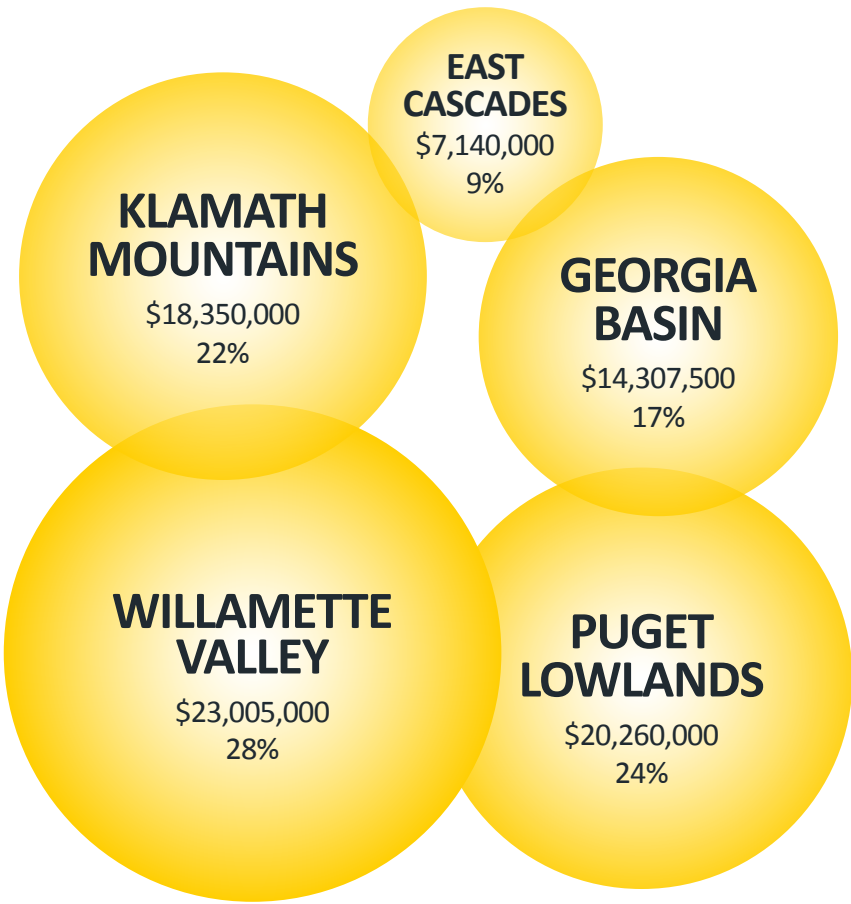
Cost of Recovery and Restoration

$83,062,500

SPECIES RECOVERY AND ECOSYSTEM RESTORATION

OBJECTIVE 1 + 2

We envision implementation occurring in many forms, ranging from major initiatives or campaigns to smaller-scaled regional and local partnerships and projects.

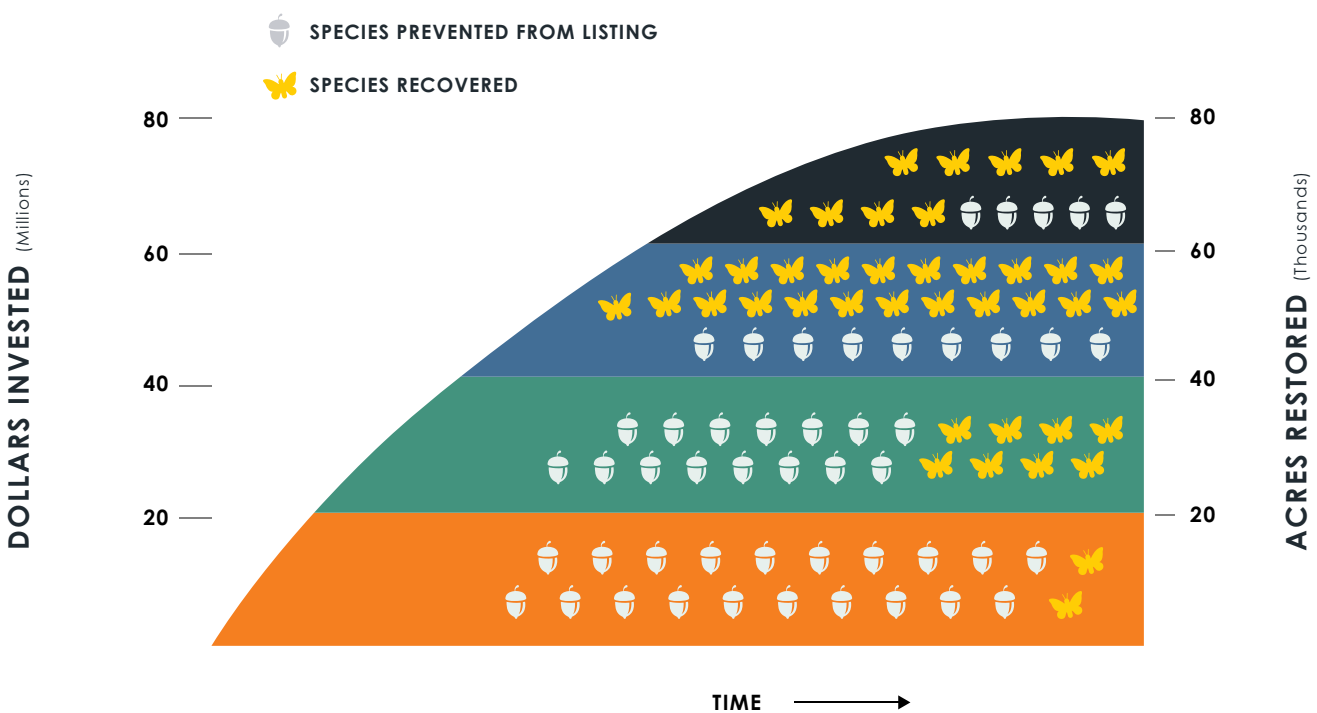


Moving Forward

The conservation effort we are promoting in this document is challenging, important, urgent, and – most significantly – large in scope. It will take significant resources to rebuild a meaningful and functional prairie-oak ecosystem. We estimate costs of approximately $83 million over the next 10-15 years to achieve sustainability for the vulnerable species and desired habitat conditions across several ecoregions. This figure is based on approximations of effort and costs by tasks from examples of species recovery and general prairie-oak restoration and does not include habitat protection. We fully recognize the need for habitat protection as a conservation strategy, but consider it an activity that has been and will continue to be done by various agencies and organizations as opportunities present themselves independent of the impetus generated by this document for species recovery. Further, costs for habitat protections are highly variable within and among ecoregions (compared to habitat restoration), and thus difficult to project in costs analyses.

COST POINTS:

- Research is a significant need for species recovery since we know little about limiting factors for the 41 imperiled species.
- Species recovery is a much greater need in the Georgia Depression, Puget Lowlands, and Willamette Valley ecoregions; ecosystem restoration is the dominant need in the Klamath Mountains and East Cascades ecoregions.
- There is overlap between habitat restoration for species recovery and general habitat restoration for the prairie-oak ecosystem, since habitat restoration for species recovery is also helping to achieve ecosystem restoration objectives.



This conceptual figure shows how financial support to accomplish business plan objectives of species recovery and habitat restoration can be cost-effective, rapid, and extensive. Greatest gains are early where multi-taxa and habitat objectives overlap, and longest for most imperiled and most unique taxa.

Population recovery for individual species will take more resources and time, with the most imperiled listed species and the most sensitive at-risk species taking the most resources and longest time to recover. **The visual demonstrates the added value of this multi-taxa approach, where individual population recovery will also benefit a number of at-risk species.**

Cross-Cutting Strategies

In concert with the priority actions, these complementary strategies are intended to amplify the effectiveness of our conservation actions through collaboration with private landowners, public outreach and community engagement, and improved coordination and targeting of resources to maximize the efficiency of conservation investments.

Photos left to right: © South Sound Prairies 2011, Vines and Oaks © Creative Commons, Ann Schuster © South Sound Prairies 2015, © South South Prairies 2012, Thomas Munson, Moonjass © Creative Commons

ACTION

Cross-Cutting Strategies

MULTI-SPECIES APPROACHES

Target conservation investments and design projects to benefit multiple prairie-oak species where appropriate to manage ecosystems holistically and reduce per-species recovery costs.

Habitat needs for at-risk species (e.g., endangered plants and butterflies) can often be addressed on sites where management can also contribute to broader conservation goals for birds and other wildlife with relatively little additional investment.

WORKING LANDSCAPES

Partner with private landowners (ranchers, farmers, and timberland owners among others) to maintain and expand the habitat base for prairie-oak species that also generates direct economic benefits for landowners and local communities.

Many prairie-oak species can persist on landscapes that support livestock grazing, commercial forestry, hunting, and other relatively low-intensity human uses. Landowner assistance and incentives to maintain these habitats and their traditional cultural values can reduce the need for costly land protection and restoration measures.

WORKFORCE DEVELOPMENT AND TRAINING

Train local foresters, practitioners, tribal members, and underserved communities in oak restoration practices.

Existing expertise in the Pacific Northwest often is rooted in timber management. Training current practitioners and developing new workforces with expertise needed to achieve ecological goals will expand social and economic opportunities in local communities.

ECOCULTURAL AND TRADITIONAL SUBSISTENCE

Partner with tribal sovereign governments to maintain and promote cultural practices that sustain food and water sources and integrity for future generations.

Traditional ecological knowledge provides historical and cultural insights that can be woven into oak restoration on all lands.

ACTION

Cross-Cutting Strategies

PARTNER COORDINATION

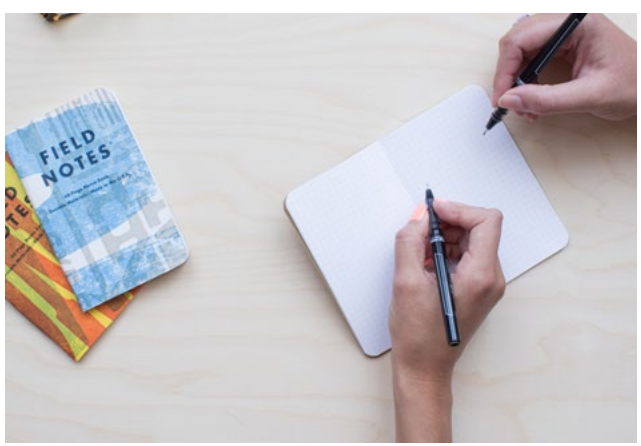
Strengthen relationships and improve networking and coordination among partners at multiple levels to leverage funding and communicate outcomes. Facilitate sharing of expertise, labor, and equipment to improve efficiency and reduce project costs.

Minor investments in coordination and communications can generate significant cost savings for partners and funders as conservation efforts are scaled up.

COMMUNITY ENGAGEMENT

Engage diverse communities to increase understanding of and support for conservation by reconnecting people to prairie-oak ecosystems, increasing public access for compatible recreation and education, and fostering volunteer science.

Few natural landscapes hold more intrinsic cultural appeal for people than prairie-oak habitats, which survive in many areas only as small fragments in urban and agricultural settings. Reconnecting people to this part of their natural heritage is critical to building public support for prairie-oak conservation.



ADAPTIVE MANAGEMENT

Institutionalize effectiveness monitoring to support implementation of conservation strategies and actions. Coordinate monitoring to fill shared information gaps, involve stakeholders in programmatic evaluation, and promote collaboration in developing new approaches to improve implementation.

It is easy to celebrate successes, harder to acknowledge failures. Partners and stakeholders need to be able to learn from both and recalibrate their strategies to improve outcomes. Monitoring is critical to understanding why actions did or did not work, and a comprehensive approach is needed to improve and build on current practices.

Partnerships

A handful of local and ecoregional partnerships focus on coordination of prairie-oak conservation work within the Pacific Northwest. These partnerships provide a vehicle for coordinated implementation of on-the-ground efforts by individual agencies and organizations, outreach, and advocacy for funding and policy. Partners with scientific and technical expertise help shape conservation design and assist with monitoring and research. A broad range of funders – including private foundations, individual and corporate donors, and local, state and federal agencies – provide financial support through grants, programmatic investments and in-kind contributions.

Initial work by Pacific Birds, CPOP, and other partners will focus on organizing additional local partnerships including the **Northwest California Oak Network, the Willamette Valley Oak and Prairie Cooperative, the East Cascades Oak Network, and the Intertwine Alliance Oak and Prairie Working Group;** strategic planning for those partnerships; development of policy, funding, and outreach strategies; and expanding and improving communications among partners. Fundraising efforts will seek to expand capacity for implementation of these strategies through the local partnerships.

Highlighted in the following section are Success Stories that are strong examples of projects and the power of partnerships.

CASCADIA PRAIRIE-OAK PARTNERSHIP

CPOP facilitates information sharing and brings together the prairie-oak conservation community of the Willamette Valley, Puget Trough, and Georgia Basin ecoregions through workshops, conferences, and online resources. CPOP's website is the primary clearinghouse for technical information sharing around prairie-oak conservation in the region. The partnership also maintains a 700-member listserv that supports dialogue on restoration and research. CPOP is coordinated by the Center for Natural Lands Management.

KLAMATH-SISKIYOU OAK NETWORK

The Klamath Siskiyou Oak Network conserves oak habitats on private and public lands in southern Oregon and northern California. The collaborative regional partnership provides a forum for education and community engagement; encourages science, adaptive management, and development of best management practices; and integrates social, economic, and eco-cultural perspectives into our understanding of oak plant communities.

PACIFIC BIRDS HABITAT JOINT VENTURE

Pacific Birds is an international partnership of federal, state, provincial, local, and non-governmental organizations with a 25-year record of success in advancing large-scale efforts to conserve important habitats for migratory birds from the north coast of California to Alaska and island habitats in the Pacific, including Hawaii.

Photo: Bruce Taylor

Photo: Natural Resource Conservation Service

OUTCOMES FOR PEOPLE

Conservation of prairie-oak habitats is important not only for imperiled species and the legacy of a natural heritage, but also for people throughout the Pacific Northwest. A functioning prairie-oak ecosystem provides numerous other values and services that benefit society, including:

Open space and scenic values, reduced stress, improved quality of life

Recreation opportunities, including birding, photography, hiking, nature watching, hunting

Native American cultural resource harvest

Forage production and shade for cattle and other livestock

Wood and other forest products

Increased property values

Improved air quality, oxygen production and carbon storage

Improved water quality, with reduced runoff and erosion

ENLISTING THE WINE INDUSTRY IN PRAIRIE-OAK CONSERVATION

Focusing primarily on the wine industry, the Willamette Valley Oak Accord brings together landowners around a commitment to protect and restore some of the last remaining oak habitat in the region. The voluntary agreement is inspired by local landowners' vision for management of vineyards and forestland in harmony with healthy, resilient oak habitat. Signatories of the Accord commit to undertaking a baseline assessment of oak habitat on their property and then to improving habitat condition through either onsite or offsite restoration. Periodic assessments will help landowners to quantify the benefits of their stewardship activities and communicate their commitment to oak conservation. Led by the Willamette Partnership, the accord creates a mechanism to introduce current and new Willamette Valley landowners to the importance of oak woodland and prairie conservation, and creates a stewardship standard for land managers and owners. Leaders hope to have 50 landowners signed up and implementing restoration activities within the next three years.

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IMPROVING OAK RESTORATION SUCCESS THROUGH ADAPTIVE MANAGEMENT

Over the past five years, the Klamath Siskiyou Oak Network (KSON) partnership has spent $3 million restoring more than 3,000 acres of oak woodland across federal and private lands in southern Oregon and northern California, with an additional $4.65 million secured for restoration of an additional 3,400 acres. The partnership is pursuing an adaptive management strategy that relies on both implementation review and effectiveness monitoring to quantify how species respond to vegetation changes associated with restoration practices. For example, as birds have well established habitat relationships, respond quickly to habitat change, and are easily surveyed, biologists can reliably monitor changes in oak habitat conditions by monitoring changes in the oak-associated songbird communities. KSON partners have also initiated long-term monitoring to better understand restoration outcomes under future climate change scenarios. Monitoring change and measuring success will inform future restoration projects.

Meredith Rafferty © South Sound Prairies

REMOVING POLICY BARRIERS TO OAK RESTORATION IN CALIFORNIA

In northwestern California, where invading conifers are one of the biggest threats to the region's oak woodlands, habitat restoration efforts have long been hindered by regulatory restrictions. Landowners who were willing to work through long and expensive permitting processes to remove conifers from their oak woodlands often faced requirements to replant conifers to replace the ones they wanted to cut. Thanks to the efforts of members of the Northwestern California Oaks Network and a receptive state legislator, those roadblocks have now been removed. The California Board of Forestry adopted new rules in July 2016 that eliminate requirements for replanting of conifers when timber harvests are designed to restore oak woodlands in northern California. Legislation specifically authorizing the exemption won final approval and was signed into law in September 2016.

Photo: Bruce Taylor

SCALING UP FOR MORE AFFORDABLE SEED

With funding support from U.S. Fish and Wildlife Service, Department of Defense, and conservation partners, and in cooperation with Evergreen's Sustainability in Prisons Project, the Center for Natural Lands Management (CNLM) has built a conservation nursery program that provides native seed to partners throughout the South Sound. The physical infrastructure required to produce native seed is substantial. By having a centralized complex of seed fields, greenhouses, equipment, seed cleaning facilities, and storage, CNLM has been able to achieve an economy of scale, making seed available at a more affordable cost to the multiple conservation partners implementing prairie and oak conservation in the South Sound. In recent years, the conservation nursery has expanded to provide seed to additional regions by obtaining genetically appropriate seed sources and implementing grow-out in a separate field. This maintains the genetic material of the regional seed but utilizes the equipment and processing infrastructure that helps keep costs low.

Meredith Rafferty © South Sound Prairies

WORKING ON A LANDSCAPE SCALE TO BENEFIT MULTIPLE SPECIES

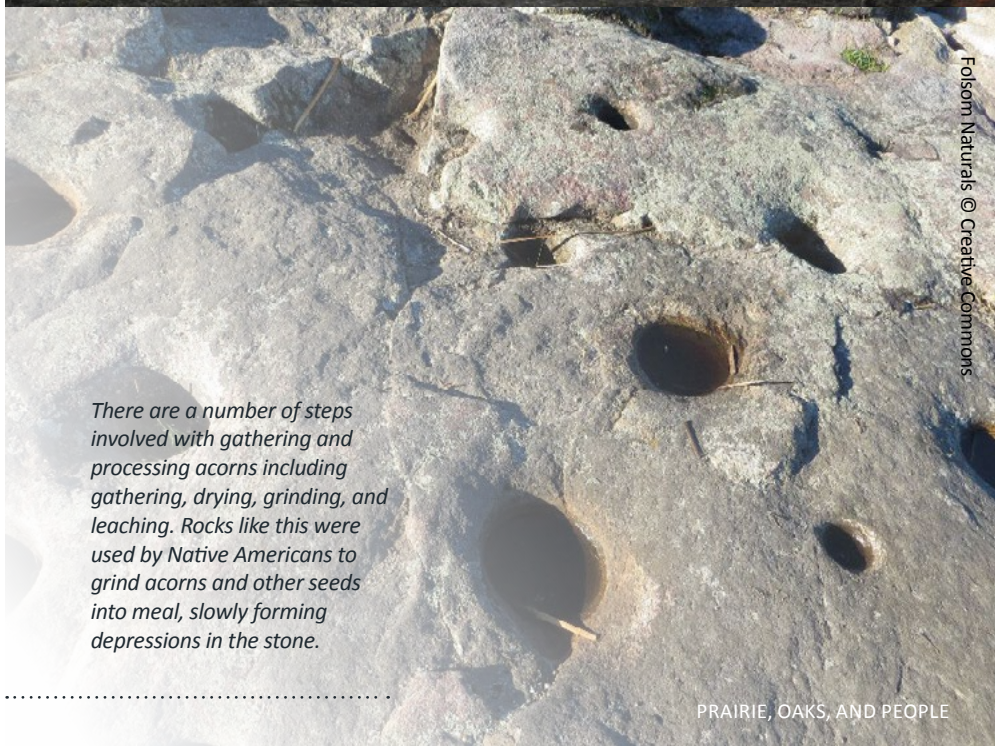
The U.S. Fish and Wildlife Service's Competitive State Wildlife Grant provides funding to state agencies and partners to support actions outlined in State Wildlife Action Plans (SWAPs). Washington Department of Fish and Wildlife and Oregon Department of Fish Wildlife, along with The Center for Natural Land Management and the American Bird Conservancy applied for and received two rounds of funding to implement habitat restoration, standardized monitoring, and outreach to conservation partners and the public, with a focus on prairie-oak habitats and species. This funding allowed the two state agencies to partner with over ten non-profit and local agencies to implement work on a landscape scale, working together to share strategies, methods, and information, and to benefit over 20 bird, butterfly, and mammal Species of Greatest Conservation Need across multiple sites.

Photo: Elspeth Kim

INDIGENOUS RESTORATION OF OAK HABITATS IN SHASTA COUNTY CALIFORNIA

Through a collaborative partnership between the Illmawi Band of the Pit River Tribe and Lomakatsi Restoration Project, partners are restoring California black oak and Oregon white oak habitats in Northern California. Located on Illmawi ancestral lands, tribal crews are enhancing oak resilience by removing encroaching conifers and reducing wildfire risk that would impact acorn crops. The aboriginal fire process is being reintroduced and herbaceous understory restoration implemented. Objectives focus on survival of both the indigenous oak ecosystem and cultural beneficial use of resources. Twenty-four tribal members have been employed by Lomakatsi over the past three years restoring this ecocultural oak landscape.

Anne Schuster © South Sound Prairies 2015



Folsom Naturals © Creative Commons

There are a number of steps involved with gathering and processing acorns including gathering, drying, grinding, and leaching. Rocks like this were used by Native Americans to grind acorns and other seeds into meal, slowly forming depressions in the stone.

REGULATORY STATUS OF PRIORITY PRAIRIE-OAK SPECIES

Priority species are those listed as endangered, threatened, or candidate at federal, state, or provincial levels.

* = Extirpated (breeding status for birds)
[1] only applies to Columbia River population

KEY:
E Endangered
T Threatened
C Candidate

TABLE 1. PART 01/03





SPECIES	U.S. FEDERAL			CANADA SPECIES AT RISK			WASHINGTON			OREGON			BRITISH COLUMBIA	
	E	T	C	E	T	C	E	T	C	E	T	C	R	B
MAMMALS														
Mazama Pocket Gopher (4 subspecies)		✓						✓						
Columbian White-tailed Deer		✓[1]												
Western Gray Squirrel								✓						
Gray-tailed Vole									✓					
BIRDS														
Streaked Horned Lark		✓		✓*			✓					✓		
Oregon Vesper Sparrow				✓*					✓					
Lewis's Woodpecker					✓*				✓					
Slender-billed White-breasted Nuthatch									✓					
Common Nighthawk					✓									
HERPTILES														
Western Pond Turtle				✓*			✓							
Pacific Gopher Snake				✓*										
Sharp-tailed Snake				✓										
California Mountain Kingsnake									✓					

REGULATORY STATUS OF PRIORITY PRAIRIE-OAK SPECIES

KEY:
* = Extirpated (breeding status for birds)
1 only applies to Columbia River population
E Endangered
T Threatened
C Candidate

TABLE 1. PART 02/03





SPECIES	U.S. FEDERAL E	U.S. FEDERAL T	U.S. FEDERAL C	CANADA SPECIES AT RISK E	CANADA SPECIES AT RISK T	CANADA SPECIES AT RISK C	WASHINGTON E	WASHINGTON T	WASHINGTON C	OREGON E	OREGON T	OREGON C	BRITISH COLUMBIA R	BRITISH COLUMBIA B
BUTTERFLIES														
Taylor's Checkerspot	✓			✓										
Fender's Blue	✓													
Island Marble				✓*				✓						
Island Blue				✓*										
Mardon Skipper			✓				✓							
Puget Blue									✓					
Valley Silverspot									✓					
INVERTEBRATES														
Vernal Pool Fairy Shrimp		✓												
PLANTS														
Willamette Daisy	✓									✓				
Bradshaw's Lomatium	✓						✓			✓				
Golden Paintbrush	✓			✓				✓		✓				
Kincaid's Lupine		✓					✓				✓			
Nelson's Checkermallow		✓					✓				✓			
Deltoid Balsamroot				✓									✓	

REGULATORY STATUS OF PRIORITY PRAIRIE-OAK SPECIES

KEY:
* = Extirpated (breeding status for birds)
1 only applies to Columbia River population
E Endangered
T Threatened
C Candidate

TABLE 1. PART 03/03





SPECIES	U.S. FEDERAL E	U.S. FEDERAL T	U.S. FEDERAL C	CANADA SPECIES AT RISK E	CANADA SPECIES AT RISK T	CANADA SPECIES AT RISK C	WASHINGTON E	WASHINGTON T	WASHINGTON C	OREGON E	OREGON T	OREGON C	BRITISH COLUMBIA R	BRITISH COLUMBIA B
PLANTS (...CONTINUED)														
Fragrant Popcornflower				✓									✓	
White-topped Aster		✓			✓						✓		✓	
Small-flowered Tonella				✓									✓	
Yellow Montane Violet				✓									✓	
Gentner's Fritillaria	✓									✓				
Large-flowered Wooly Meadow-foam	✓									✓				
Cook's Lomatium	✓									✓				
Rough Popcorn Flower	✓									✓				
Pale Larkspur							✓			✓				
Willamette Valley Larkspur												✓		
Peacock Larkspur	✓									✓				
Shaggy Horkelia												✓		
White Meconella								✓				✓		
Marigold Navarretia								✓						

ECOREGIONALPOPULATIONSTATUSOF PRIORITY PRAIRIE-OAK SPECIES

KEY:

- Extirpation or near-extirpation (breeding status for birds) with reintroduction potential (some have been initiated)
- Substantial population declines and/or small, vulnerable populations; recovery needed
- Populations generally stable; no recovery emphasis needed at this time

**Blank cells indicate range generally does not include this ecoregion*

TABLE 2. PART 01/03

SPECIES	ECOREGION							
	GEORGIA DEPRESSION	PUGET LOWLANDS		WILLAMETTE VALLEY		KLAMATH MOUNTAINS		EAST CASCADES
		NORTH	*SOUTH*	*NORTH*	*SOUTH*	*UMPQUA*	*ROGUE/CA*	
MAMMALS								
Mazama Pocket Gopher (4 subspecies)			🟡					
Columbian White-tailed Deer				🟡		🟢		
Western Gray Squirrel			🟡	🟢	🟢	🟢	🟢	🟡
Gray-tailed Vole				🟡	🟢			
BIRDS								
Streaked Horned Lark	🔴	🔴	🟡	🟡	🟡	🔴	🔴	
Oregon Vesper Sparrow	🔴	🔴	🟡	🟡	🟡	🟡	🟡	
Lewis's Woodpecker	🔴	🔴	🔴	🔴	🔴	🔴	🔴	🟡
Slender-billed White-breasted Nuthatch			🔴	🟢	🟢	🟢	🟢	
Common Nighthawk	🟡	🟡	🟡	🟡	🟡	🟢	🟢	🟢
HERPTILES								
Western Pond Turtle	🔴	🔴	🟡	🟡	🟡	🟢	🟢	🟡
Pacific Gopher Snake	🔴	🔴	🔴	🟡	🟢	🟢	🟢	
Sharp-tailed Snake	🔴	🔴	🔴	🟡	🟢	🟢	🟢	🟢
California Mountain Kingsnake						🟢	🟢	🔴

ECOREGIONALPOPULATIONSTATUSOF PRIORITY PRAIRIE-OAK SPECIES

KEY:

- Extirpation or near-extirpation (breeding status for birds) with reintroduction potential (some have been initiated)
- Substantial population declines and/or small, vulnerable populations; recovery needed
- Populations generally stable; no recovery emphasis needed at this time

**Blank cells indicate range generally does not include this ecoregion*

TABLE 2. PART 02/03

SPECIES	ECOREGION							
	GEORGIA DEPRESSION	PUGET LOWLANDS		WILLAMETTE VALLEY		KLAMATH MOUNTAINS		EAST CASCADES
		NORTH	*SOUTH*	*NORTH*	*SOUTH*	*UMPQUA*	*ROGUE/CA*	
BUTTERFLIES								
Taylor's Checkerspot	●	●	●	●	●			
Fender's Blue				●	●			
Island Marble	●	●						
Island Blue	●							
Mardon Skipper			●				●	●
Puget Blue	●	●	●					
Valley Silverspot	●	●	●	●	●			
INVERTEBRATES								
Vernal Pool Fairy Shrimp						●	●	
PLANTS								
Willamette Daisy				●	●			
Bradshaw's Lomatium			●	●	●			
Golden Paintbrush	●	●	●	●	●			
Kincaid's Lupine	●	●	●	●	●	●		
Nelson's Checkermallow			●	●	●			
Deltoid Balsamroot	●	●	●	●	●			●

ECOREGIONALPOPULATIONSTATUSOF PRIORITY PRAIRIE-OAK SPECIES

KEY:

- Extirpation or near-extirpation (breeding status for birds) with reintroduction potential (some have been initiated)
- Substantial population declines and/or small, vulnerable populations; recovery needed
- Populations generally stable; no recovery emphasis needed at this time

**Blank cells indicate range generally does not include this ecoregion*

TABLE 2. PART 03/03

SPECIES	ECOREGION							
	GEORGIA DEPRESSION	PUGET LOWLANDS		WILLAMETTE VALLEY		KLAMATH MOUNTAINS		EAST CASCADES
		NORTH	*SOUTH*	*NORTH*	*SOUTH*	*UMPQUA*	*ROGUE /CA*	
PLANTS (...CONTINUED)								
Fragrant Popcornflower	🔴	🟢	🟢	🟢	🟢			🟢
White-topped Aster	🟡	🟢	🟢	🟢	🟡			
Small-flowered Tonella	🟡	🟡	🟡	🟡	🟡	🟢	🟢	🟢
Yellow Montane Violet	🟡	🟢	🟢	🟢	🟢	🟢	🟢	
Gentner's Fritillaria							🟡	
Large-flowered Wooly Meadow-foam							🟡	
Cook's Lomatium							🟡	
Rough Popcorn Flower						🟡		
Pale Larkspur			🔴	🟡				
Willamette Valley Larkspur				🟡	🟡			
Peacock Larkspur				🟡	🟡			
Shaggy Horkelia				🔴	🟡	🟡		
White Meconella	🟡	🟡	🟡	🟡	🟡	🟡	🟡	🔴
Marigold Navarretia				🟢	🟢	🟢	🟢	🔴

GENERALHABITATASSOCIATIONS OFPRIORITYPRAIRIE-OAKSPECIES

KEY:
- Habitat type that typically has highest occurrence/density if habitat conditions are suitable and within species range
- Habitat type that has regular or occasional occurrence if habitat conditions are suitable and within species range

**Blank cells indicate species generally does not occur in this habitat type*

TABLE 3. PART 01/03

SPECIES	HABITAT TYPE: WET PRAIRIE	UPLAND PRAIRIE	OAK-SAVANNA	OPEN OAK WOODLAND	CLOSED OAK WOODLAND	OAK FOREST	OAK CONIFER
MAMMALS							
Mazama Pocket Gopher (4 subspecies)		▲	▲				
Columbian White-tailed Deer		▲	▲	▲	▲	▲	▲
Western Gray Squirrel				▲	▲	▲	▲
Gray-tailed Vole	▲	▲	▲				
BIRDS							
Streaked Horned Lark	▲	▲					
Oregon Vesper Sparrow		▲	▲	▲			
Lewis's Woodpecker			▲	▲			
Slender-billed White-breasted Nuthatch			▲	▲	▲	▲	
Common Nighthawk		▲	▲				
HERPTILES							
Western Pond Turtle	▲	▲	▲				
Pacific Gopher Snake		▲	▲	▲	▲		
Sharp-tailed Snake		▲	▲	▲	▲	▲	▲
California Mountain Kingsnake			▲	▲	▲		

GENERALHABITATASSOCIATIONS OFPRIORITYPRAIRIE-OAKSPECIES

KEY:
- ▲ Habitat type that typically has highest occurrence/density if habitat conditions are suitable and within species range
- ▲ Habitat type that has regular or occasional occurrence if habitat conditions are suitable and within species range

**Blank cells indicate species generally does not occur in this habitat type*

TABLE 3. PART 02/03

SPECIES	HABITAT TYPE						
	WET PRAIRIE	UPLAND PRAIRIE	OAK-SAVANNA	OPEN OAK WOODLAND	CLOSED OAK WOODLAND	OAK FOREST	OAK CONIFER
BUTTERFLIES							
Taylor's Checkerspot		▲	▲				
Fender's Blue	▲	▲	▲				
Island Marble		▲					
Island Blue		▲	▲				
Mardon Skipper		▲	▲				
Puget Blue		▲	▲				
Valley Silverspot		▲	▲				
INVERTEBRATES							
Vernal Pool Fairy Shrimp	▲						
PLANTS							
Willamette Daisy	▲	▲	▲				
Bradshaw's Lomatium	▲						
Golden Paintbrush		▲	▲				
Kincaid's Lupine		▲	▲	▲			
Nelson's Checkermallow	▲						
Deltoid Balsamroot		▲	▲	▲	▲		

GENERALHABITATASSOCIATIONS OFPRIORITYPRAIRIE-OAKSPECIES

KEY:
- Habitat type that typically has highest occurrence/density if habitat conditions are suitable and within species range
- Habitat type that has regular or occasional occurrence if habitat conditions are suitable and within species range

**Blank cells indicate species generally does not occur in this habitat type*

TABLE 3. PART 03/03

SPECIES	HABITAT TYPE						
	WET PRAIRIE	UPLAND PRAIRIE	OAK-SAVANNA	OPEN OAK WOODLAND	CLOSED OAK WOODLAND	OAK FOREST	OAK CONIFER
PLANTS (...CONTINUED)							
Fragrant Popcornflower	▲						
White-topped Aster	▲	▲	▲	△	△		
Small-flowered Tonella			△	▲	▲		
Yellow Montane Violet		▲	△				
Gentner's Fritillaria		△	▲	▲			
Large-flowered Wooly Meadow-foam	▲						
Cook's Lomatium	▲						
Rough Popcorn Flower	▲						
Pale Larkspur		▲	▲	△			
Willamette Valley Larkspur	▲	▲					
Peacock Larkspur	▲	▲	△				
Shaggy Horkelia	▲	▲	▲	△			
White Meconella	△	▲	▲	▲			
Marigold Navarretia	△	▲	▲	△			

NOTE: Species may also occur in other habitats that are not addressed here (e.g., riparian, wetlands).
NOTE: Wet prairie also includes vernal pools.

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