Proposed priority consideration for the OWEB Focused Investment Partnership: Oak woodlands in Southern Oregon

Submitted by Klamath Bird Observatory
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Proposed Priority Description

a) What is the native fish or wildlife habitat to be conserved or other natural resource issue to be addressed?
Klamath Bird Observatory (KBO) proposes that oak woodlands within southern Oregon, including the Rogue and Klamath Basins be included as a priority in OWEB's Focused Investment Program (FIP). The most extensive remaining woodlands in Oregon are found in southern Oregon; this habitat is at high risk from fragmentation, degradation or loss due to development, encroachment of coniferous forest, severe wildfire due to fire suppression, invasion of exotic species, and lack of oak regeneration due in part to overgrazing by livestock and native ungulates. More than 300 vertebrate species are known to use Pacific Northwest oaks, including dozens of resident and migratory birds. Oak habitats are important contributors to biodiversity in the region, supporting communities of plants and animals that are remarkably different from the suburban areas, agricultural fields, and conifer forests that dominate the southern Oregon landscape. Applied conservation activities in the proposed FIP will preserve, enhance, and restore structural diversity, ecological function, and overall health and persistence of oak habitats in the Rogue and Klamath watersheds.

b) What are the specific expected ecological outcome(s) to be achieved after this priority is addressed?
The desired ecological outcomes from FIP priority designation are to improve the natural function of oak ecosystems in southern Oregon, increase the availability of critical resources and habitat to oak-dependent wildlife and plant species by improving the quality of oak habitats, promote stable wildlife and plant populations through connectivity of oak woodland areas across Oregon, and decrease the threats and risks that currently jeopardize the integrity of these systems.

c) What is the defined geographic location within which this proposed priority can be successfully addressed?
Oak woodlands in the Rogue and Klamath basins of southern Oregon, the defined geographic location of the proposed FIP, are unique in their vegetation structure and composition relative to oak habitats in the Willamette and further north. Southern Oregon includes the northernmost range extent for several oak associated birds, emphasizing the importance of this region for connectivity which will be critically important as vegetation and wildlife adapt to climate change. Oak restoration within this region has been prioritized for areas projected to support oaks under several future climate change scenarios (Schindel et al. 2013). Conservation and restoration actions implemented throughout the proposed FIP will improve the resiliency of oak ecosystems to natural disturbances like wildfire, as well as to the uncertainties of climate change. Such planning requires a multi-disciplinary approach to ensure that the most critical objectives are being addressed and met. Existing partnerships focused on oak restoration, adaptive management, and multi-faceted effectiveness monitoring in southern Oregon demonstrate a strong built-in capacity for engagement and success in the efforts necessary to achieve these ecological outcomes.

Significance to the State

a) Why is this proposed priority of ecological significance to the state, even though it may not be present everywhere in the state?

Oak savannahs, woodlands, and forests once covered a largely contiguous expanse of western Oregon and the Pacific Northwest between the Coast Range and the Cascade Range. Loss of oak habitats state-wide may be as much as 90% over the past 150 years, primarily due to development for housing and agriculture. The Oregon white oak (*Quercus garrayana*) and California black oak (*Quercus kelloggii*) woodlands and forests of southern Oregon are unique in the state, representing a convergence of Pacific Northwest and California plant associations, and are the richest ecologically of all Pacific Northwest oak communities (Altman and Stephens 2012). Compared to Oregon as a whole, southern Oregon has likely retained a greater percentage of historic oak habitats (Oregon Department of Fish and Wildlife 2006), 65% of which are estimated to be in private landholding and 45% in public ownership (Altman and Stephens 2012). What currently remains of this once-vast ecological system is largely characterized by degraded fragments of oak forest and woodland in valley floors and foothills, coinciding with intense and accelerating pressures such as from development, agriculture, timber harvest, and fuels management.

According to the *Partners in Flight North American Landbird Conservation Plan* (Rich et al. 2004), oak woodlands have the highest percentage of bird "Species of Concern" in our biome (the Pacific Avifaunal Biome), which is unsurprising given the massive declines that oak woodlands have undergone in the past century. Many federal and state listed species and Partners in Flight "Watch List" and "Stewardship" species (at-risk species that have multiple reasons for conservation concern) are highly dependent on or often inhabit oak woodlands in this area, and have been negatively affected by threats to oak habitat quality, quantity, and connectivity. These species include birds (e.g., Lewis' woodpecker, oak titmouse, black-throated gray warbler, California towhee, western scrub-jay), mammals (e.g., Pacific fisher); and plants (e.g. Gentner's fritillary). Of these species, several have experienced extirpations from areas in their range which no longer contain sufficient quantity or quality of oak habitats to support their populations (e.g., breeding Lewis's Woodpecker from western Oregon and Washington) (Rich et al. 2004). Some oak-associated species are also Species of Continental Importance (Rich et al. 2004), such as the oak titmouse. In our biome, we are responsible for 99% of both the breeding and wintering population of the oak titmouse; a 50% population increase is needed for this species to return to a stable population (Rich et al. 2004).

b) Are there any social and/or economic considerations that the Board should understand regarding this proposed priority?

In additional to a loss of ecological integrity, reduction of the extent and function of southern Oregon oak systems represents a critical cultural loss; oak ecosystems have great importance to native peoples in this region, and their beauty and biology are valued by today's urban and rural residents of Oregon. Even as southern Oregon oak forests and woodlands face extreme threats, they represent an excellent opportunity for multi-landowner and multi-agency collaboration to have significant positive impacts on the integrity of these natural communities state-wide and regionally. In additional to increasing ecological integrity, restoration and management activities can provide economic benefits in creating jobs, extracting value from forest products (e.g., Douglas fir and oak removed in thinning projects), and supporting the increasingly economically important sector of bird-watching and other ecotourism activities.

c) In addition to its significance to the state, identify how the proposed priority fits within regional & local ecological priorities.

Several assessments (listed below) identify threats to wildlife habitat for oak dependent species, including loss of habitat structure and connectivity from encroachment and conversion, and projected loss of mature habitat structure due to uncharacteristically severe wildfire. These assessments cite the necessity of oak conservation and enhancement at scales from local [e.g., *The Rogue Basin Action Plan for Resilient Watersheds and Forests in a Changing Climate*(Myer 2013)], to state [e.g., *Oregon Conservation Strategy* (Oregon Department of Fish and Wildlife 2006)*; Partners in Flight Conservation Strategy for Lowlands and Valleys of Western Oregon and Washington* (Altman 2000)]; to regional (*Partners in Flight North American Landbird Conservation Plan* (Rich et al. 2004); U.S. Fish and Wildlife Service's recovery plans for the federally listed Gentner's Fritillary). The oak resources in southern Oregon addressed by these various conservation plans and strategies are critically valuable, providing a "refuge" to a unique biodiversity that is in critical condition across Oregon and the Pacific Northwest as a whole. Improving the extent and ecological function of remaining oak woodlands in southern Oregon will benefit the entire state and surrounding region by supporting and restoring populations of oak-dependent species that are in rapid decline or at risk of extirpation.

Limiting Factors

a) What ecological limiting factors exist that relate to the proposed priority identified? Limiting factors are the physical, biological, or chemical conditions and associated ecological processes and interactions (e.g., population size, habitat connectivity, water quality, water quantity, etc.) experienced by the habitat that may influence viable population parameters (i.e. abundance, productivity, spatial structure, and diversity).

A number of ecological limiting factors are important to the integrity of the oak systems in the proposed FIP. Both the quantity and quality of extant oak systems in southern Oregon, as well as across the Pacific Northwest region, is well below what is necessary to support healthy and sustainable populations of oak-associated plant and animal species. Fire suppression, which altered the natural disturbance regime of frequent low-intensity fires that shaped and maintained these oak stands, has allowed the establishment of both conifer-oak forests and dense, young oak stands in place of the open stands of large old trees that provide some of the most valuable wildlife habitat. Trees in these stands typically lack structural diversity; for example they do not form the large cavities, platforms, mistletoes, and other microhabitat features required by many wildlife species adapted to using oaks for nesting, sheltering, and foraging habitat. Over-shading of the understory and invasion by exotic weeds crowds out native shrubs and bunchgrass species, reduces the structural and biological diversity of the understory, and degrades habitat suitability for wildlife. These combined effects create a strong limiting factor to population size of oak-dependent species in the remaining oak habitat, and also limit their ability to successfully reproduce and contribute to greater regional populations. A high degree of habitat fragmentation and loss of connectivity of oak stands across the proposed FIP creates challenges for dispersal of oak-dependent plant and animal species, limiting gene flow among populations and contributing to low resilience to natural and human-caused disturbance.

Encroachment by conifers and over-crowding in oak woodlands and forests has resulted in oaks across the landscape experiencing a decline in health, vigor, and wildlife benefits; such oaks produce fewer acorns and are potentially more susceptible to stressors such as drought. Encroaching conifers and exotic vegetation have affected watershed function by reducing water yield and increasing the potential for high severity fire and subsequent erosion and sediment delivery to streams, which may negatively impact habitat for fishes and aquatic invertebrates and plants throughout the Rogue and Klamath watersheds. Finally, dominant ownership

of the remaining oak woodland of southern Oregon by private landowners makes consistent, coordinated, and well-funded management and monitoring challenging.

b) Reference any framework(s) that exist (Recovery Plans, Implementation plans, etc.).
There are several frameworks that guide oak restoration in southern Oregon. A Conservation Implementation Strategy (CIS) for oak ecosystems in southern Oregon was recently developed by Natural Resources Conservation Service (NRCS), KBO, Lomakatsi Restoration Project (LRP), The Nature Conservancy (TNC), U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management (BLM). NRCS and project partners will use the CIS as a guiding framework for expansive and long term oak habitat restoration throughout this biologically important region. A recently developed Regional Conservation Partnership Program (RCPP) proposal for the Klamath-Rogue Oak Woodland Health and Habitat Conservation Project further describes an existing framework for recovery, restoration, and long-term adaptive management of southern Oregon oak systems. Funding from multiple sources at the federal, state, and private levels is needed to achieve habitat restoration goals. If implemented across the proposed FIP, the recommendations and goals of the CIS and RCPP would contribute significantly to addressing the threats and limiting factors outlined in this proposal.

The Oak Woodland Bird Conservation Plan (CalPIF 2002) provides guidance for both prioritizing oak woodland sites for protection and restoring oak woodland systems. Restoration designed in accord with the Partners in Flight (PIF) recommendations will demonstrate far reaching benefits to the system as a whole and provide habitat for healthy bird populations. The recommendations of the PIF conservation plan, which align with the RCPP and CIS strategies, include promoting oak regeneration, restoring understory and tree species structure and composition, replacing exotic grasses with native bunchgrass species, reintroducing natural fire regimes, and encouraging a mosaic of treatments to mimic landscape-level disturbance and succession processes. The PIF framework uses birds, which are easy to monitor and highly responsive to changes in habitat structure and composition, to indicate a trajectory of successful restoration that will benefit the entire community of oak-associated organisms.

Threats and Benefits

a) What overall threats exist to the proposed priority identified? Threats are the human actions (e.g., fishing, development, road building, etc.) or natural (e.g., flood, drought, volcano, tsunami, etc.) events that cause or contribute-to limiting factors. Threats may be associated with one or more specific life cycle stages and may occur in the past, present, or future.
The oak systems in the proposed FIP face a diversity of complex and interacting threats. Numerous factors contribute to the ongoing loss of extent and size of oak woodlands and forests in southern Oregon, including continued removal of oak woodlands for housing, vineyards, and other development activities in lowlands, and replacement of oaks with commercially valuable timber such as Douglas fir in foothills and montane areas. Climate change is also expected to result in direct loss of oak woodlands and their associated biological communities through changing temperature, precipitation, and hydrological patterns. Threats causing direct loss of total area of oak forests also result in increasing fragmentation and isolation of the stands that remain, creating a cascade of negative consequences for associated plant and wildlife populations.

Other threats cause a loss of the biological integrity of oak stands, and increase the risk that disturbance such as fire or insect outbreaks will have overwhelming negative consequences for the remaining intact oak stands. Oregon white oak and California black oak are highly adapted to fire, and require a regime of frequent, low intensity ground fire to maintain the health and vigor of individual large trees by removing fire-intolerant species

such as conifers, and providing sufficient light and open substrate for young oak recruitment. The ecological communities of plants and animals that evolved around oak stands consequently also require these conditions. More than a century of intensive fire suppression has allowed encroachment of conifers, junipers, chaparral, and exotic invasive plants, increasing fuel loads and posing a risk of uncharacteristically severe wildfire in the proposed FIP, while resulting in a severe and increasing risk of direct and indirect habitat loss for oak-dependent species. Interactions with the effects of climate change may further exacerbate the impact of the most important threats to oak systems, including increased fire severity, damage from insect and disease outbreaks, and the invasive potential of exotic organisms.

b) What will happen if the threats aren't addressed?
If the stakeholders in the proposed FIP do not address the threats of direct removal and fragmentation of oak stands, increased fire risk due to conifer encroachment and fuels build-up, and degradation of tree vigor and habitat quality due to oak overcrowding and exotic species invasion, additional oak habitat will be lost and associated wildlife will continue to decline.

c) Describe the economic, social, iconic and cultural benefits of addressing the outcome and impacts of not addressing it.
The economic, social, and ecological benefits of working toward resolution of these threats and limitations to oak ecosystems in the proposed FIP are great. Though often underappreciated compared to the lush, towering conifer forests of the Pacific Northwest, oak systems represent a special, unique, and important part of the ecology and cultural identity of western Oregon. Maintaining this rich and highly biodiverse ecosystem on the landscape will contribute to the patterns of biological richness and diversity across the region. Oak forests have a critical role in the life cycles of hundreds of species of resident and migratory wildlife that otherwise could not persist in southern Oregon. Given the massive declines in oak habitat amount and connectivity across the Pacific Northwest, any action to increase wildlife benefits of oaks in the proposed FIP will contribute significantly to regional maintenance and resilience of oak-dependent species. In addition, maintaining healthy, productive oak woodlands and forests on the landscape will honor the cultural history of southern Oregon's native peoples, and provide a valuable natural resource for current and future generations of Oregon residents to enjoy.

d) Briefly summarize how much has been done already, how much is remaining.
A recent analysis by The Nature Conservancy estimated potential for retaining oak habitat by comparing the current extent of Oregon white oak to predicted distributions under three potential long-term climate change models (Schindel et al. 2013). The results of this effort identified approximately 170,000 acres that have high likelihood to support oak currently and into the future, 52,000 acres as high priority for monitoring and maintenance, and approximately 12,000 acres as high priority for application of restoration treatments. To date, 2,500 acres of oak habitat have been treated under the Central Umpqua Mid-Klamath Oak Habitat Cooperative Conservation Partnership Initiative (CCPI) and an additional 2,500 acres are proposed for treatment within the next five years under the CIS. This initial treatment effort seeks to identify and reduce threats such as conifer encroachment and densification to the highest quality oak habitat. Additional priority locations are continually identified resulting an estimated 10,000 additional acres to be targeted for treatment over the next two decades.

e) What is your best estimate of cost to address the priority, and as a result, how economically feasible do you believe it is to address this priority over time?
Removal of competing vegetation from oak stands (e.g., encroaching conifers, invasive shrub species) is the primary management approach to be used in the proposed FIP, along with the application of low intensity prescribed fire; these treatments will improve the health of the oak canopy and increase habitat value for wildlife.

Regional operational costs for oak conservation implementation range between $700 -$1,500 dollars per acre in woodlands that have experienced 50 years or more of fire suppression and densification, as have the majority of the stands within the project area. A combination of operational approaches may be utilized, including manual thinning and slash treatments with hand crews, or the use of mechanized equipment.

Opportunities
a) Ecological

1) *What are the measures of ecological success? What's the likelihood of ecological success in the short (6-year), medium and long-term (define the term lengths)?*
KBO has been studying oak ecosystems of the Klamath-Siskiyou Bioregion for over a decade, has created Decision Support Tools specific to oak woodland land management, published papers on bird response to various treatment regimes, and is currently contributing to an international oak woodland conservation project through work in the Rogue and Umpqua Basins. By understanding how restoration affects focal bird species known to be highly responsive to changes in specific aspects of oak vegetation composition and structure, we can quantify the success of restoration efforts in terms of improvement of ecological health and function.

Achievement of the ecological objectives described above can be specifically measured through vegetation and bird monitoring in terms of acres treated, reduced conifer encroachment and fuel loading, and changes in bird guilds from conifer-associated to oak-associated species. Bird monitoring, informed by Partners in Fight conservation plans, has been used in southern Oregon to effectively evaluate ecological effects of management in oak woodlands (Alexander et al. 2007). Vegetation monitoring would include establishment of pre- and post-treatment plots in areas undergoing active restoration to quantify level of conifer encroachment, fuel loads, trees per acre, basal area, species composition, diameter distribution, and understory cover. Reduced threats to oak habitat and improved habitat quality and resilience to drought and fire can be quantified by decreased conifer, juniper and other tree and shrub encroachment and density, and changes to ground cover composition and fuels conditions. KBO and their partners have a strong history of using a combination of bird and vegetation monitoring to examine immediate short-term (~3 years) and medium-term (up to 10 years) effects of management activities to oak communities, including increased use by oak-dependent wildlife species, increased fire permeability and fire safety for nearby communities, and improved stand structure. Continued monitoring should be employed to track the long-term (10-50+ years) processes of recovery and change post-restoration, which may include the effects of reintroduction of a frequent low-intensity fire regime, continued development of tree and shrub layer structure and composition, reestablishment of extirpated plant and animal native species, and response to changes in climate conditions. Work by KBO and partners has demonstrated a high likelihood to successfully meet ecological goals in the short-term after addressing threats (e.g., exotics removal, oak release through conifer thinning). Bird and vegetation monitoring methods, in combination with project reviews and assessments by partners, have also been applied to a framework of adaptive management in these systems, increasing likelihood of project success and cost-effectiveness in the long-term.

2) *What types of voluntary conservation actions could be undertaken to address the proposed priority?*
In additional to targeted restoration activities in defined project areas, there is a great potential for voluntary conservation action to have a positive impact on oak system health in southern Oregon. Two newly available resources, one at the scale of the Pacific Northwest [*Bird Habitat and Populations in Oak Ecosystems of the Pacific Northwest* (Altman and Stephens 2012)] and another for southern Oregon [*Restoring Oak Habitats in Southern Oregon and Northern California: A Guide for Private Landowners* (Klamath Bird Observatory and Lomakatsi Restoration Project 2014)], provide the groundwork for advancing voluntary oak conservation actions. For

example, public agencies and private landowners responsible for management of oaks in areas of high conifer encroachment can simply favor the retention of oaks in treatment prescriptions such as industrial thinning or fuels reduction. Passive restoration techniques, for example use of temporary fencing in areas of high grazing pressure to encourage the recruitment of young oaks and recovery of the shrub layer, could reap both immediate and long term benefits in the wildlife habitat value of oak woodlands. More active techniques may include light thinning to remove encroaching conifers, removal of exotic weed and shrub species, or release of individual trees in over-dense oak stands. Such actions may have dual benefits in reducing fire risk on public and private property while improving the structure and composition of oak stands for dependent wildlife and plant species.

3) *Should the proposed priority be divided into geographic areas that are appropriate for partners to address?*
As described above, improvement of the health and function of oak woodlands and forests in this region would have state-wide benefits, and could likely be informed by work throughout Oregon and the Pacific Northwest where oak conservation is a high priority. However, the uniqueness of the oak communities of southern Oregon, and the necessity of separate restoration guidelines developed specifically for this area (because of unique structure and composition of oak woodlands relative to areas of the Willamette Valley and further north), argues for its appropriateness as a distinct geography in which efforts to meet ecological objectives are more likely to succeed. Additionally, the network of partnerships (described below) already built around shared ecological characteristics and social history in the proposed FIP is an important asset in the challenging work of landscape-wide conservation of an ecosystem that is simultaneously rich in biodiversity, culturally significant, and imminently threatened.

b) Social

1) *Do partnerships exist to address the proposed priority? If so, briefly describe. If not, note why this proposed priority is important enough that partnerships may form to address it.*
Strong partnerships to address this proposed FIP are already in place. Successful partner collaboration and engagement in oak ecosystem conservation has been previously galvanized by the above-mentioned multi-agency and bi-state Central Umpqua Mid-Klamath Oak Habitat Cooperative Conservation Partnership Initiative (CCPI), a partnership between KBO, LRP, NRCS, USFWS, and 23 other entities. The Department of Interior brought national recognition to this project, with the Partners in Conservation Award in 2012 for Lomakatsi's leadership and sponsorship of this 2,000 acre landscape project. Since the successful implementation of the above CCPI, partners have gone on to form the Klamath Siskiyou Oak Network (KSON), with a vision to develop a long-term, holistic, and strategic approach to oak habitat conservation in the region. This proposed FIP is part of a larger KSON-driven regional oak habitat conservation initiative which targets thousands of acres across southern and central Oregon. In addition, a Conservation Implementation Strategy (CIS) for oak ecosystems in southern Oregon was recently developed by Natural Resources Conservation Service (NRCS), KBO, Lomakatsi Restoration Project (LRP), The Nature Conservancy (TNC), U.S. Fish and Wildlife Service (USFWS), and Bureau of Land Management (BLM).

2) *What social opportunities exist to address the proposed priority? Is there momentum built?*
Success of this proposal and future regional oak restoration plans builds not only on strategic targeting of critical oak habitat, but also depends on the good relationships partners have cultivated with public and private landowners. For example, KSON has been involved with the OSU extension service in providing education on managing oak habitat through short courses, presentations, and field days. In addition, KBO, Lomakatsi, and partners recently published the 55 page guide: *Restoring Oak Habitats in Southern Oregon and Northern California: A Guide for Private Landowners* (Klamath Bird Observatory and Lomakatsi Restoration Project 2014), which offers

guidance to landowners for the application of conservation practices in Oregon white oak and California black oak habitats.

3) *Describe educational benefits, if any.*
The Table Rocks in the Rogue Basin, co-managed by TNC and the Medford District BLM, is an excellent example of the types of educational opportunities that exist within the proposed FIP. Table Rocks is a BLM Area of Critical Environmental Concern and an America's Great Outdoor Site, containing 5,000 acres of oak habitat protected for an array of sensitive species of birds, reptiles, bats, lichens, bryophytes, and flowering plants. The Table Rocks also lie within the historic range of the Cow Creek Tribe, and hold significant eco-cultural significance for several sovereign Tribes of the region. An active environmental education and outreach program reaches some 40,000 visitors annually, and is an excellent model for educating the public regarding the ecological and cultural significance of oak systems. Additionally, a series of landowner outreach events and youth programs conducted by KBO, LRP, and their partners have been very successful in engaging people personally with the effort to increase the quantity and quality of oak habitats in southern Oregon. Programs such as these, expanded throughout the proposed FIP, would be an impactful and cost-effective way to leverage public concern for conservation into concrete action for oak woodlands.

4) *Summarize the social, community, political, regulatory or other factors that will help lead to the success of this proposed priority.*
As discussed in *The State of the Birds 2013 Report on Private Lands* (North American Bird Conservation Initiative 2013), most oak habitats across the Pacific Northwest are in private ownership. This does present a challenge for consistent, landscape-scale conservation of oak resources. However, the dominance of private ownership also presents an exciting opportunity to engage individuals in the conservation and restoration of oak woodlands and their dependent wildlife populations. Past work by KBO and partners has demonstrated that private landowners are highly interested in contributing to wildlife habitat, and enjoy knowing they are making a measureable difference to an important conservation challenge. In the course of oak restoration work with private owners, we have observed a strong "domino effect" whereby the successes of one landowner catalyze the involvement of adjacent owners, and increases participation by neighbors in landowner outreach events. The value of societal ownership in the long-term success of oak conservation and restoration efforts cannot be overstated, and has strong potential in the proposed FIP. In addition, the ability for consistent and efficient enactment of restoration and mitigation measures for oak improvement on public lands is critical where possible. The Medford District BLM has been an invaluable member of strategic planning and partnership efforts (e.g., KSON) focused on maintaining and improving the ecological function of oak systems in southern Oregon. Given that the BLM is the largest public owner of oak in the proposed FIP, their interest and active participation in oak conservation will continue to be a critical asset going forward.

5) *What can be leveraged to address the proposed priority (funding, acreage impacts, other resources*)?
Ultimately, success in improving and restoring the ecological function of southern Oregon oak systems is likely because these efforts are already succeeding in areas where capacity and funds are being leveraged by KBO and partners. Over the last five years 4.5 million dollars of combined federal and non-federal resources have been leveraged to restore oak woodlands in southern Oregon and northern California, the majority within the proposed FIP. Participating partners are bringing significant contributions in the form of financial assistance, technical assistance, and in-kind contributions that will accomplish project objectives in a cost effective manner through an expanded suite of conservation actions. We have received strong funding support through NRCS and USFWS Partners for Fish and Wildlife Program. Additional funding was recently secured through the Wildlife Conservation Society to restore 400 acres of high-value oak habitat at the Table Rocks Management Area. Proposals have also

been submitted to the NRCS Regional Conservation Partnership Program and are being developed for the Neotropical Migratory Bird Conservation Act.

c) Economic

1) *Describe the economic benefits of addressing the ecological proposed priority, including ecosystem services*
The primary direct economic benefit of oak restoration is reduced risk of unnaturally severe wildlife, which will reduce future fire suppression costs and potential loss of both structures and woodlands. Secondary economic benefits include job creation and in some instances resource extraction (conifer tree removal).
Oak woodlands provide numerous valuable ecosystem services; oak trees produce acorns (an important food source for wildlife and a culturally important crop) and provide important habitat components for wildlife (e.g., cavities, mistletoe). For human communities, oak woodlands provide shade and increase fire safety at low elevations. Oak woodlands maintain a diversity of plants and wildlife that are not supported by other ecosystems. Birds that inhabit oak woodlands also provide important ecosystem services including practical solutions to environmental problems (e.g., pest control) and critical ecological function (e.g., pollination of native plants and agricultural crops), as well as providing economic benefits (e.g., tourism) and inspiration (e.g., art). Additionally, birds serve as excellent indicators of environmental change, are well studied, and as a community can serve as a surrogate for other important aspects of an ecosystem.

FOR ALL SUBMISSIONS: *Assess the proposed priority by locating the proposed priority in one of the quadrants.*

Oak woodland restoration in southern Oregon would fall directly in the center of the schematic. A wealth of regional land management planning tools have established the need, and prioritized focal areas, for oak restoration in southern Oregon. Many aspects of restoration are well understood and recently documented in *Restoring Oak Habitats in Southern Oregon and Northern California: A Guide for Private Landowners* (Klamath Bird Observatory and Lomakatsi Restoration Project 2014). Predicted responses of wildlife to restoration have been researched and described in *Bird Habitat and Populations in Oak Ecosystems of the Pacific Northwest* (Altman and Stephens 2012). In addition, ongoing bird and vegetation monitoring programs currently being implemented will facilitate continued learning and improved practices through an adaptive management framework. Monitoring is designed to both assess whether our understanding and hypotheses regarding the impact of restoration efforts hold true, and also to provide insight on less understood aspects of restoration (i.e., chaparral encroachment, oak thinning). On-the-ground restoration also falls along the gradient of easy to complex, as many applied restoration actions are straightforward (i.e., conifer removal) while others are complex (i.e., prescribed burning).

In lieu of attaching letters of support for this proposal, please submit a list of other supporting individuals or organizations:

- American Bird Conservancy
- Bureau of Land Management, Medford District
- Klamath Siskiyou Oak Network
- Lomakatsi Restoration Project
- Oregon Habitat Joint Venture
- Pacific Coast Joint Venture
- Rogue Basin Partnership
- The Nature Conservancy
- USFWS Partners for Fish and Wildlife Program

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