

Strategic Plan for the Partners for Fish and Wildlife Program

Habitat Restoration Division
Pacific Southwest Region




Fiscal Years 2022-2026

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Signature Page

Pacific Southwest Region Partners for Fish and Wildlife Program Strategic Plan

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Executive Summary

This strategic plan provides a vision, strategy, and accountability for the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program (Partners Program; the Program) in the Pacific Southwest Region for fiscal years 2022-2026. The Partners Program was established to provide habitat restoration projects on privately owned lands to advance the Service's conservation efforts. Its mission is: "to restore, protect, and enhance fish and wildlife habitat cooperatively through voluntary partnerships with private landowners, Tribes, and other entities". The Service strives to implement science-based, sustainable, and economically viable habitat restoration projects through the Partners Program.

This document represents the fourth version of strategic plans for the Partners Program in this region. It builds on previous successes while modernizing and coalescing the Program. For this revision, we used the widely accepted Conservation Standards Practice aligning Program goals with the Service's overall mission and conservation needs across the Region's geography. This method enabled us to apply a set of principles, practices, and terminology that advanced program planning to include prioritized targets and situation models for the conservation concerns across the Region. Our use of Conservation Standards will enable a more formal integration of a Strategic Habitat Conservation-based (SHC) approach into Region-wide program operations. These changes add an additional layer of scientific rigor allowing a more comprehensive adaptive management approach at both the project- and landscape conservation scales.

This plan adheres to national and regional priorities for the Partners Program. It describes our systematic linkage of these broad priorities to local project-scale threats and strategies. We utilized the five goals that were nationally established and identical to previous Partners Program strategic goals: Conserve Habitat; Broaden and Strengthen Partnerships; Improve Information Sharing; Enhance Our Workforce; and Increase Accountability. Goal 1--Conserve Habitat--is the mainstay of the Partners Program in the Pacific Southwest Region, and it sets forth a strategy and framework. This is outlined in Objective 1.1 for continuing habitat restoration projects that contribute to fulfilling the Service's responsibilities to its trust resources.

The conservation need in this region can be overwhelming, and the Partners Program utilized regional priorities to establish projects that provide immediate and direct benefits to: (1) species listed under the Endangered Species Act and those considered at-risk to be listed; (2) current Refuge objectives as provided in legislatively determined Refuge Purposes and Comprehensive Conservation Plans; and (3) interjurisdictional fish, which in this region is primarily anadromous fish. Objectives 1.2 and 1.3 of Goal 1 anticipate the development of a comprehensive adaptive management framework that will be advanced across the Region to ensure Program compatibility with the predominant landscape conservation efforts. These efforts are expected to be supported by the Service broadly. The remainder of the goals, objectives, and targets in this plan are designed to support Partners Program functions necessary to implement Goal 1. Establishing a formal adaptive

management framework will increase Program capacity to accomplish these goals as well by adding programmatic scientific rigor at the Ecoregion-scale.

This plan capitalizes on the previously established six Partners Program Ecoregions across the region that mimic the provinces described by Bailey (1991) and used by the California Department of Fish and Wildlife. Several other key conservation partners in California and Nevada also utilize these Ecoregions as functional units including the states and non-profit conservation organizations among others. The Ecoregional design for the Partners Program in this region will enable more seamless collaboration with various conservation partners at the landscape scale while considering similarities within (and diversity among) landscapes. The design also enables us to capitalize on similarities across landscapes to more effectively employ Conservation Standards and identify strategies that advance our adaptive management framework design for the Program across the region. This approach will enable us to increase our accountability and improve our ability to communicate and collaborate with others.

This plan establishes a series of habitat restoration priorities, strategies, and actions for the next five years that was developed in collaboration with Service practitioners and leaders as well as outside partners from across the region. The priorities and actions herein are justified ecologically and depicted geographically in the form of Focus Areas. Focus Areas are defined in this plan as geographic areas where priorities and actions will be implemented. This sets forth a strategic path for refinement once the adaptive management framework is developed and advanced to address habitat restoration needs.

Introduction

“There can be no purpose more inspiring than to begin the age of restoration, reweaving the wondrous diversity of life that still surrounds us.”

E.O. Wilson

This strategic plan is a vision document designed to guide the U.S. Fish and Wildlife Service’s Partners for Fish and Wildlife Program (Partners Program; Program) within the Pacific Southwest Region for the period 2022-2026. The mission of the Partners Program is:

“to restore, protect, and enhance fish and wildlife habitat cooperatively through voluntary partnerships with private landowners, Tribes, and other entities”.

Through this mission statement, the Service strives to implement science-based, sustainable, and economically viable habitat restoration projects. In general, these are “natural-based solutions” to conservation challenges providing direct, timely, measurable, and lasting benefits to the Service’s trust resources while concurrently improving ecological conditions across the Region.

National and Regional Program Priorities

In a memo to Regional Directors dated May 5, 2021, the National Wildlife Refuge Chief issued three national priorities for the Partners Program. These are founded in program legislation and policy.

1. **Species Conservation:** Implement habitat projects within priority areas that prevent decline or support recovery of species of greatest conservation concern, including federal listed species, Birds of Conservation Concern, pollinators, and interjurisdictional fish. This priority supports the Service’s conservation mission and our role as stewards of Federal Trust species with intent to make improvements in select species status.
2. **Habitat Connectivity:** Integrate projects at a landscape level to improve habitat connectivity and functionality. This priority recognizes that interconnected habitats and migration corridors are vital to fish and wildlife conservation and the work of these programs can support and leverage other conservation efforts including National Wildlife Refuges and other protected lands.
3. **Resilient Ecosystems:** Advance ecosystem health and resilience to climate change related impacts benefitting communities of fish, wildlife, plants, and people. This priority acknowledges that climate change affects all parts of the

ecosystem including those in which humans depend upon, and these Programs can work with diverse partners to support conservation actions to help them respond to climate change stressors.

The Service's Pacific Southwest Region encompasses California, Nevada, and the Klamath Basin (Figure 1). Conservation threats, issues, and concerns in this geography are diverse, considerable, and widespread. Habitat restoration solutions implemented by the Partners Program require careful thought, coordination, planning, follow-up, and analysis. For example, this region has critical conservation need that includes almost 350 species listed under the Endangered Species Act (ESA), 47 National Wildlife Refuges, and a long list of major threats to natural resources that the program could address using habitat restoration on private lands. A key purpose of this plan is to systematically narrow the regional conservation needs and identify the highest priority conservation strategies where the Partners Program will have a measurable benefit. Therefore, this plan steps down these national priorities to the Regional and local levels to set project priorities and strategies for the next five years.

Habitat restoration and habitat enhancement are the primary practices used by the Program to achieve conservation results. The need for these practices in this region is far greater than can be implemented with available funding and resources in any given year. Therefore, this plan describes our approach to purposeful project prioritization and selection, continued effectiveness evaluations, and adaptive management that are critical to ensuring that the Program's projects are meaningful and successful toward meeting the Service's mission and goals. Partners Program restoration efforts in the region are ideally aimed at addressing the Service's highest priority conservation concerns; relevant to local, regional, and landscape-scale conservation; and efficiently implemented to produce lasting and sustainable conservation results.

The Partners Program in the Pacific Southwest Region is committed to developing strategies that link priority species and habitat types to broader landscapes. To establish this linkage, this plan developed a set of priorities collaboratively with other Service programs and partners using Conservation Standards. This process considered that landscape-scale planning efforts are underway, and project-scale priorities need to provide direct and immediate benefits to: (1) ESA listed species and those identified as "at-risk"; (2) migratory waterbirds identified as part of National Wildlife Refuge purposes; and (3) interjurisdictional fish (most notably, anadromous fish). The Partners Program will also continue its collaborative contributions to landscape conservation objectives in conjunction with other Service programs and outside partners. Program contributions will be accomplished by planning and implementing habitat restoration projects that simultaneously support site-specific goals as well as broader collaboratively developed landscape objectives.

Strategic Planning

This document is the fourth consecutive five-year strategic plan developed by the Partners Program regionally and nationally (Version 4). For the past five years, Program

Figure 1. The Pacific Southwest Region of the U.S. Fish and Wildlife Service encompasses California, Nevada, and the Klamath Basin.



implementation adhered to the 2017-2021 Regional Partners Program Strategic Plan. This previous version in the Pacific Southwest Region identified a broad array of restoration project types implemented primarily in Focus Areas with a diverse array of partners. There are five goals listed in that strategic plan to guide Program implementation: (1) Conserve Habitat; (2) Broaden and Strengthen Partnerships; (3) Improve Information Sharing; (4) Enhance Our Workforce; and (5) Increase Accountability.

Version 4 Revisions and Updates: 2022-2026

The purpose of this current national strategic effort is to update the Regional Partners Program strategic work plans and objectives to better address the conservation challenges currently faced by the Service using the same five goals from the previous version. This Pacific Southwest Region Strategic Plan explains in detail how the Partners Program will utilize established conservation philosophy and tools developed and adopted by the Service nationally. This Program strategy is again directed toward integrating more effectively with the Service's landscape-level prioritization efforts using a science-based adaptive management operating framework called Strategic Habitat Conservation (Adaptive Management; See Box 1). Operating under an adaptive management approach will enable the Partners Program to pursue all five established goals more effectively in the Region simultaneously. It is important to note that most functional changes described in this revision (Version 4) occur in the section describing Goal 1 (Conserve Habitat) and characterized in more detail throughout the Ecoregion sections. These adjustments and revisions ensure that the Partners Program will continue its leadership role in implementing effective and meaningful habitat restoration projects with private landowners and other partners across the Pacific Southwest Region for the five-year period: 2022-2026.

Developed New Conservation Priorities using Conservation Standards

For this revision, we adopted and employed a well-established conservation planning tool, *The Open Standards Practice of Conservation* (Conservation Standards, hereafter). This process was collaboratively executed to systematically establish and prioritize a new set of project-scale habitat restoration targets and strategies. These priority targets and strategies are described in detail in the Ecoregional sections of this plan

We utilized Conservation Standards to identify and prioritize restoration targets and ensure compatibility across scales. Regional program leadership adopted and adapted from the "Chief's Challenge" protocols developed for conservation planning on the Region's National Wildlife Refuges in implementing the Conservation Standards methods. A more detailed description of our Conservation Standards process is described in the Methods section later in this plan.

"The Conservation Standards (CS) are a widely adopted set of principles and practices that bring together common concepts, approaches, and terminology for conservation project design, management, and monitoring. Developed by the Conservation Measures Partnership and regularly updated in

collaboration with the broader community, this open-source, strategic process helps conservation teams achieve lasting impact.”

There are several benefits of employing the Conservation Standards as part of the Partners Program strategic plan. One is to enable the systematic establishment of specific restoration strategies that are specifically tied to Conservation Targets while reversing their specific threats. This defines connections between resource concerns and impacts to reversal mechanisms such as restoration strategies. It is an effort to ensure that the right projects are installed for the right reasons. Secondly, this process enabled us to better dovetail with other conservation efforts across California, Nevada, and the Klamath Basin by serving as a communication tool where this plan is compatible with the efforts of various partners that are employing Conservation Standards. Finally, Conservation Standards provides the framework to establish a more rigorous adaptive management framework for the Partners Program that more effectively focuses project tracking and improves biological monitoring efforts. This will also improve compatibility with both internal and external conservation efforts.

Established a Program Goal to Align National, Regional and Local Priorities

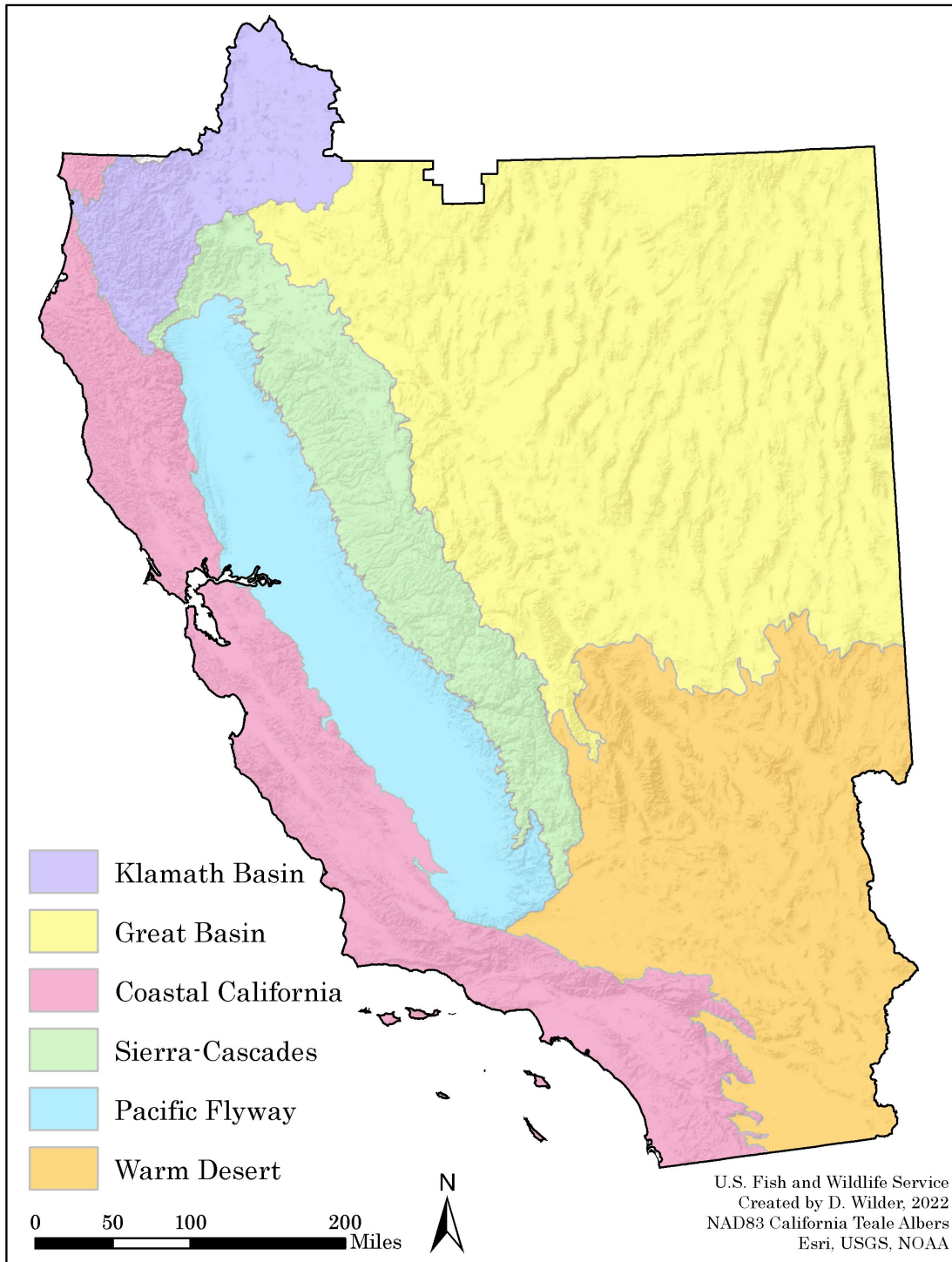
Conservation Standards enabled us to establish a more rigorous set of priorities and strategies. Therefore, we set a goal that follows the 80/20 rule, for Partners Program efforts. We set a program-level regional goal to focus 80% of our collective resources on what we defined as our highest-level priorities. We define those as Tier 1 priorities, and they are linked to national and regional priorities for the Service. This program goal provides a simple benchmark for evaluating how local conservation decisions support national and regional level priorities.

Revised Focus Areas within Previously Established Ecoregions

The need for conservation and habitat restoration in the Pacific Southwest is considerable. State boundaries are not necessarily practical for breaking down conservation needs nor solutions. In subdividing this problem, we realized the need to identify landscapes for the Program that align with the predominant landscape-scale planning and science efforts in the Region as closely as practical (i.e., the State Wildlife Action Plans (California Department of Fish and Wildlife (2015); Nevada Wildlife Action Plan Team (2012)). As is described in the Program Version 3 revision, the Partners Program established six Ecoregions within the Region in 2016. These Ecoregions follow the Provinces described originally by Bailey (1991 with later updates) and are based on geologic and floristic characteristics of these areas (Figure 2). The Partners Program Ecoregions are slightly modified from Bailey’s Provinces to accommodate specific administrative needs for the Partners Program.

We established Focus Areas within each Ecoregion to ensure compatibility with national program priorities and direction. Focus Areas are nationally defined as locations where most restoration projects are expected to occur based on established interim habitat restoration priorities (See Program Priorities, Ecoregions, and Focus Areas section). In the Pacific Southwest Region, Focus Areas are geographic depictions of the highest priority

Figure 2. Partners Program Ecoregions within the Pacific Southwest Region. These are modified Bailey's (1991) Provinces and closely align with those in use by the California LCC and the California State Wildlife Action Plan.



Conservation Targets established through the Conservation Standards process. Our Regional goal is to expend at least 80% of our habitat restoration efforts on the highest priority Conservation Targets as is described in later sections in more detail.

The main functional purpose of the Partners Program Ecoregions is to create landscapes where conservation priorities, challenges, and opportunities will be similar and closely coordinated within the Program in the Pacific Southwest Region. Since the 2017 strategic plan effectively created these ecoregions, they became our functional operational units for planning and accountability. This enabled Partners Program projects to align in support of Service conservation priorities and Trust resources within these landscapes. Ecoregions also make the Service's efforts more conducive to collaborating across the program and with certain outside partners particularly those operating at the landscape scale. Ecoregions provide an important link in the prioritization hierarchy that enables Partners Program priorities and accomplishment targets to be set at the Regional, Ecoregional, Focus Area, and project scales simultaneously. Finally, adopting the Ecoregional concept for the Partners Program facilitated the development of a manageable Conservation Standards process to develop a Region-wide adaptive management framework that will account for variability among Ecoregions and enable consistent application at a practical scale where conservation issues are similar.

Overall, the Version 4 revisions to the Pacific Southwest Partners Program strategy intends to advance the Partners Program strategic vision for 2022-2026 by:

1. Using Conservation Standards to establish a hierarchy of priorities and objectives for habitat restoration project selection and implementation that connect Regional and local priorities using conservation targets, threats, and strategies to develop conservation objectives.
2. Set new goals for the Program that increases our ability to focus on the highest habitat restoration priorities for the Service in this Region.
3. Advancing a conservation business model (as is described in the Strategic Habitat Conservation Handbook (U.S. Fish and Wildlife Service 2008)) that produces results, continually evaluates success, and encourages adaptive management
4. Ensuring better project compatibility with broader partner-based, landscape scale conservation initiatives; and
5. Improving communication to provide a clear basis for communicating objectives and accomplishments within the Service and especially with partners.

Strategic Goals

Goal 1: Conserve Habitat

The mainstay of the Partners for Fish and Wildlife Program in the Pacific Southwest Region is planning, designing, and implementing habitat restoration projects on private lands in support of the Service's local, regional, and national priorities. Two key challenges confronting program efforts are: (1) determining which restoration projects are most beneficial or have the greatest desired effect in a particular area; and (2) ensuring that completed projects are functioning as intended. To systematically pursue solutions to these challenges, the Partners Program is committed to developing and integrating a formal adaptive management framework using Conservation Standards as an operating foundation for the Program. Operating under this framework will: (1) embed adaptive management as a firm component in the Program's conservation and restoration; (2) continue the transition from an opportunistic to a more strategic approach to restoration project selection; and (3) ensure program compatibility with the predominant landscape-scale conservation planning efforts across the Region. We recognize that there will always be an opportunistic component to the Partners Program efforts due to its reliance on private landowners' willingness to collaborate on restoration projects. Our goal with this approach is ensure that Partners Program participants have clear vision of our collective priorities to 'tip the scale' toward strategy while working within the confines of the opportunities present to implement those priorities.

Goal 1 includes a series of three objectives for the Pacific Southwest Partners Program that will: (1) guide ongoing habitat restoration efforts on private lands; and (2) promote a migration toward an adaptive management operational framework; and (3) improve landscape-level planning that is integrated with other conservation planning efforts. For the near term, a set of restoration priorities was collaboratively established within each Ecoregion using Conservation Standards during 2021. The outcomes from this process will guide decisions about habitat restoration project development, selection, and implementation across the Region. Over the longer-term, we intend to continue developing an adaptive management framework to improve upon and highlight the Program's scientific integrity and strategic capacity from the project-scale to the landscape-scale. These more sophisticated efforts in pursuit of Goal 1 will also enable the Partners Program to be maximally compatible with the Service's other conservation efforts as they develop across the Region.

Goal 1 Objectives

Objective 1.1. Strategically develop and implement habitat restoration projects with private landowners to support trust resources according to established national, Regional, Ecoregional, and local priorities expending 80% of Program effort and funding on Tier 1 priority projects.

Key Strategic Activities:

- Align the Partners Program with other landscape-scale conservation efforts (or other landscape plans) by utilizing Ecoregions as program geographic units to facilitate the implementation of the Partners Program projects in a landscape context.
- Develop and implement habitat restoration projects according to collaboratively developed priorities in each Ecoregion to the extent listed in the “Priorities, Ecoregions, and Focus Areas” section of this plan, whereby 80% of project efforts and funds are directed toward identified Tier 1 restoration Targets as described in the Ecoregions sections of this plan.
 - This will result in total estimated accomplishments that include (GPRA):
 - 15,153 Acres of wetlands habitat
 - 14,930 Acres of uplands habitat
 - 89 Miles of instream habitat

This objective is to strategically conserve, restore, and enhance key habitats that support or pursue the Service’s priorities and mission in California, Nevada, and the Klamath Basin. The Service priorities are defined above in the “National and Regional Priorities” Section and in accordance with those listed in the Service’s policy for the Partners for Fish and Wildlife Program (640 FW 1).

To implement this objective most effectively and in a manner that simultaneously pursues the Service’s national and Regional priorities, these project-scale priorities will eventually be based on those more formally established by relevant landscape-scale planning efforts within the Region (See Objective 1.3). These connections are ongoing but likely years away in most Ecoregions. Current priorities were developed as collaboratively as possible with other Service programs and partners using Conservation Standards. These priorities reflect current resource needs that the Partners Program can best address in each respective Ecoregion. The details related to the established priorities are presented in the Ecoregion sections of this plan with a more comprehensive list is located on the strategic planning SharePoint site.

We utilized the Conservation Standards Process to establish specific Habitat Restoration Conservation Targets and Strategies that are shown in the Ecoregional Priorities Section of this plan. The Conservation Standards process involved identifying and ranking the various elements of the process specific to priorities for this Region. These elements are (as defined in the Strategic Planning Methods section): Conservation Targets to establish priorities, Key Ecological Attributes (establishing current conditions of the Targets), and Threats to

create situational models and establish priority Restoration Strategies to be implemented as restoration treatments (project types). The Partners Program biologists all participated directly in establishing these key features and developing the situation models. A series of meetings and interviews were also held with key Service personnel as well as external conservation partners external in each Ecoregion to solicit their feedback and input regarding where the Partners Program can be most effective. The results of these collaborative discussions were processed by the Partners Program personnel in each Ecoregion and collaboratively overlain with administrative goals, capacity, and limitations to develop the Partners Program priorities by Ecoregion. The priorities established during the Conservation Standards process were divided into Tier 1 (and Tier 2 priorities), whereby we established a regional goal to dedicate at least 80% of Program efforts and funds on Tier 1 priorities. This prioritization will be the baseline for guiding project decision processes in each Ecoregion until the adaptive management framework for the program is fully completed and more landscape-scale relevant plans are available in each Ecoregion. The details of the Conservation Standards process, and its resultant priorities, are described in more detail in the Strategic Planning Methods and Ecoregions sections of this plan.

Focus Areas are an essential component to the priorities design in the Pacific Southwest Region. These are the geographical depictions of where the priority Restoration Strategies can benefit the Conservation Targets on privately-owned lands. They are shown and described in detail later in the Ecoregions sections of this report. Focus Areas are based on locations where projects can be implemented to accomplish conservation objectives while maximizing the effects on priorities in established and functional work areas. Focus Areas are geographical depictions of where 80% of project selection and development will be targeted to best implement restoration projects that address the key priorities.

Objective 1.2. Establish conservation business plans in each Ecoregion that utilize a landscape-scale adaptive management framework.

Key Strategic Activities

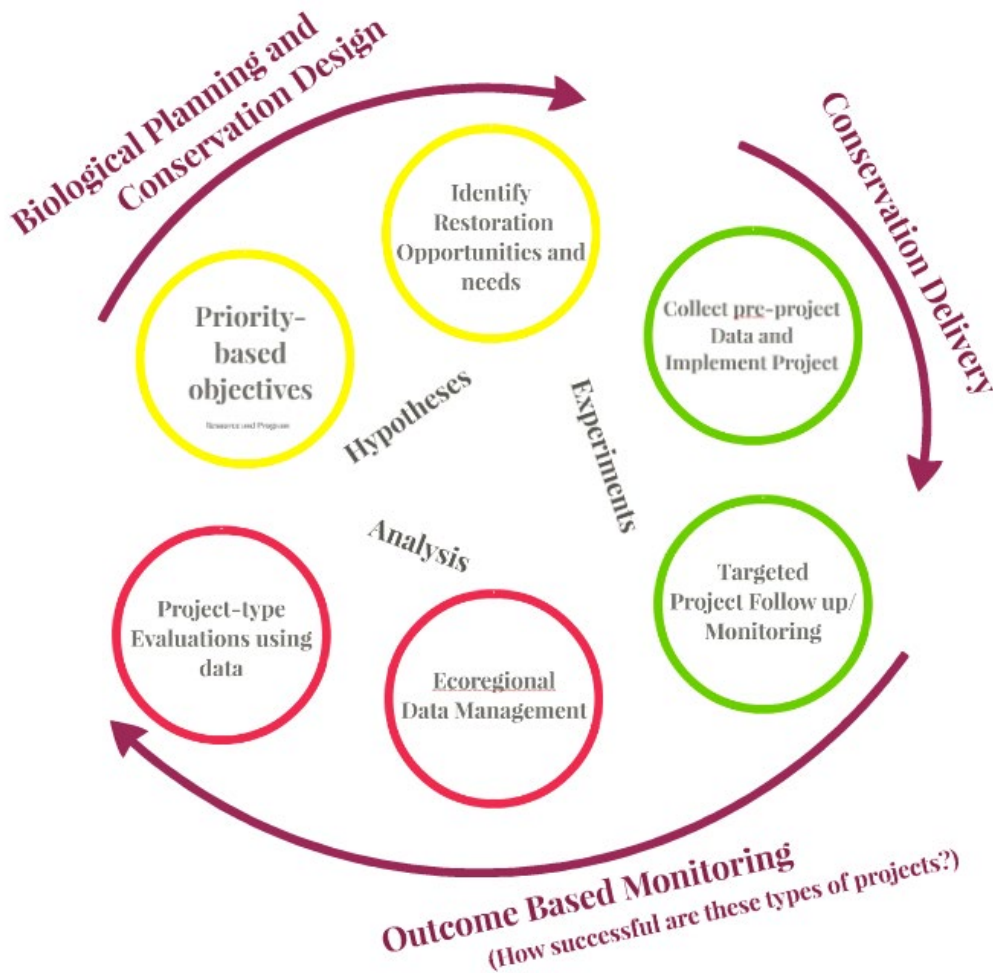
- Collaboratively develop conservation business plans in at least three Ecoregions by 2026.
- Establish Ecoregional data management capacity that catalogues relevant data necessary to fully implement an adaptive management framework in each Ecoregion.

Adaptive management is a key concept that will be a central tenet of the Partners program in this Region. The Strategic Habitat Conservation (SHC) framework is the Service's primary adaptive management model and was adopted by the Service as a recommended approach to conservation implementation (U.S. Fish and Wildlife Service 2008). SHC operates at multiple scales and moves away from opportunistic, program-specific activities to an approach that features a strategic focus. This adaptive management approach has several elements that align closely with the scientific method with an emphasis on learning from conservation actions. Broadly, the framework involves planning, implementation, and

evaluation elements (Figure 3), where “implementation” for the Partners Program includes habitat restoration delivery, and the SHC framework considers these as scientific “experiments” as much as conservation actions.

Previously, the Partners program in the Pacific Southwest Region was appropriately focused on habitat restoration project *implementation*---the Conservation Delivery element of the SHC framework (Figure 3). We now recognize the critical need to consistently include all aspects of the cycle in one form or another. This scientific approach is essential as program funding is limited, conservation threats continue to expand, and pressure mounts to demonstrate restoration project relevance and biologically significant outcomes that fit into a landscape-scale context. The Pacific Southwest Region Partners Program made previous efforts to work at the landscape scale in conjunction with partners and other programs. This plan will advance and formalize those efforts by working under a formal SHC framework.

Figure 3. Partners Program habitat restoration project elements are compatible with the Strategic Habitat Conservation (adaptive management) framework. Several aspects of the project implementation will be improved and described in Ecoregional Conservation Business Plans. Colors indicate where the Partners Program currently has a well-established process (Green); where some components exist, but more need developed (Yellow); where all components will need developed (Red).



Our approach going forward includes developing at least three conservation business plans within each Partners Ecoregion (Box 2). Conservation business plans will have a broad reaching purpose within each respective Ecoregion including, but not limited to:

- (1) Better aligning Program conservation strategies with administrative and financial program management;
- (2) Actively anticipating the Partners Program role in the Service's future strategy and effort;
- (3) Establishing a detailed course for collaboratively developing and operating within in a formal adaptive management framework that will build on the existing scientific knowledge-base related to habitat restoration projects success and impact; and
- (4) Providing clarification on expectations regarding funding, roles, and responsibilities for Partners Program personnel and management.

The Ecoregion conservation business plans will be an effort to collectively implement the Partners Program in conjunction with the other Service programs: Refuges, Ecological Services, Fisheries, etc. These plans will help situate the Partners Program in a direction that is more easily coordinated with these other programs as well as non-Service entities thereby maximizing collaborative opportunities and minimizing duplicative efforts, confusion, controversy, and contention. An example business plan for the Klamath Basin Ecoregion is in draft form and attached as Appendix B. Key elements of this first example include: a program overview; strategic direction including interim priorities and an SHC framework design; annual funding allocation methods; workforce planning; accountability, roles, and responsibilities; and processes for resolving conflict, making decisions, and revising the document.

Conservation business plans will fully establish and describe a complete adaptive management framework to be implemented by the Partners Program and its Project Biologists in each Ecoregion. Future Ecoregion conservation business plans will include:

- (1) Biological planning components that set clear priorities and appropriate justifications. These should include climate smart objectives and have relevance at the landscape scale as well as the project scale.
- (2) Conservation designs that are adaptively managed and utilize the results of restoration opportunities analyses.
- (3) Conservation delivery that includes restoration project design and implementation using goals and objectives that tier directly and clearly to biological planning elements.
- (4) Implementation monitoring components that are simple to measure (in most cases), standardized by project type, relevant to assessing project outcomes, and compatible with (possible) ongoing effectiveness efforts and biological outcomes.
- (5) Data management plans and structures that enable cataloguing of all project records and data enabling comparison between projects of the same type. Data to be collected include at a minimum: stated goals and objectives, project purposes, design rationale, project design, construction records, as-built surveys, project completion reports, and monitoring data.

- (6) An evaluation strategy that utilizes collected data to assess project outcomes in reference to stated goals and objectives at the project and (possibly) landscape scales; provides useful information for consideration on future project designs.

In addition to Ecoregional conservation business plans, field stations will develop annual “Office Action Plans” that are compatible with conservation business plans (Figure 4; Box 2). Office Action Plans will articulate how and why each field station will contribute to the overall implementation of the Ecoregion conservation business plan. They will include proposed projects, priorities, accomplishments, and direction for each field station and be evaluated and revised on annual basis. Habitat restoration project accomplishments and metrics will be estimated annually in these documents along with other key contributions that station will make to conservation business plan implementation. Figure 5 illustrates the relationship among this Regional Strategic Plan, Ecoregional Conservation Business Plans, and Office Action Plans as a hierarchy or plans that connect local project priorities and objectives to landscape and Regional priorities and objectives.

Objective 1.3. Establish a formal connection between larger landscape conservation efforts concepts, tools, and products to a Partners Program Adaptive Management framework.

Key Strategic Activities

- Integrate closely and often with ongoing landscape conservation efforts in the Pacific Southwest Region by sharing ideas, data, and other important collaborative resources.

Over the next five years, the Pacific Southwest Partners Program is committed to close integration with other landscape conservation efforts. Partners Program Project Managers are involved with the processes and development for those that are ongoing. However, expectations are that it will be some time before portions of the Program are fully integrated with others at the landscape scale. This issue provides the basis for the need to develop priorities for this strategic plan as the previous objectives indicate. Pursuing this objective in the future will establish more broadly applicable priorities to be adopted based on individual projects and recommendations developed for habitat restoration efforts on private lands. Figure 5 illustrates how these Goal 1 objectives are directed at integrating with these landscape efforts eventually using the conservation business plans to align Partners Program. Finally, the Partners Program will make every effort to collaborate and integrate with the predominant landscape-scale conservation efforts in each Ecoregion that are addressing the Service’s trust resources and priorities.

Goal 1 Summary

These three objectives detailed above are intended to guide the Partners Program towards a more strategic adaptive management approach to conservation and restoration decision-making by implementing a formal adaptive management framework for Program operations that is relevant at the landscape scale. This approach will be further described

Figure 4. The various Partners Program planning process in the Pacific Southwest Region include three types of plans that will be integrated yet operate at different scales and purposes. The various scales are the Regional Partners Program Strategic Plan, Ecoregion conservation business plans, and field station action plans.

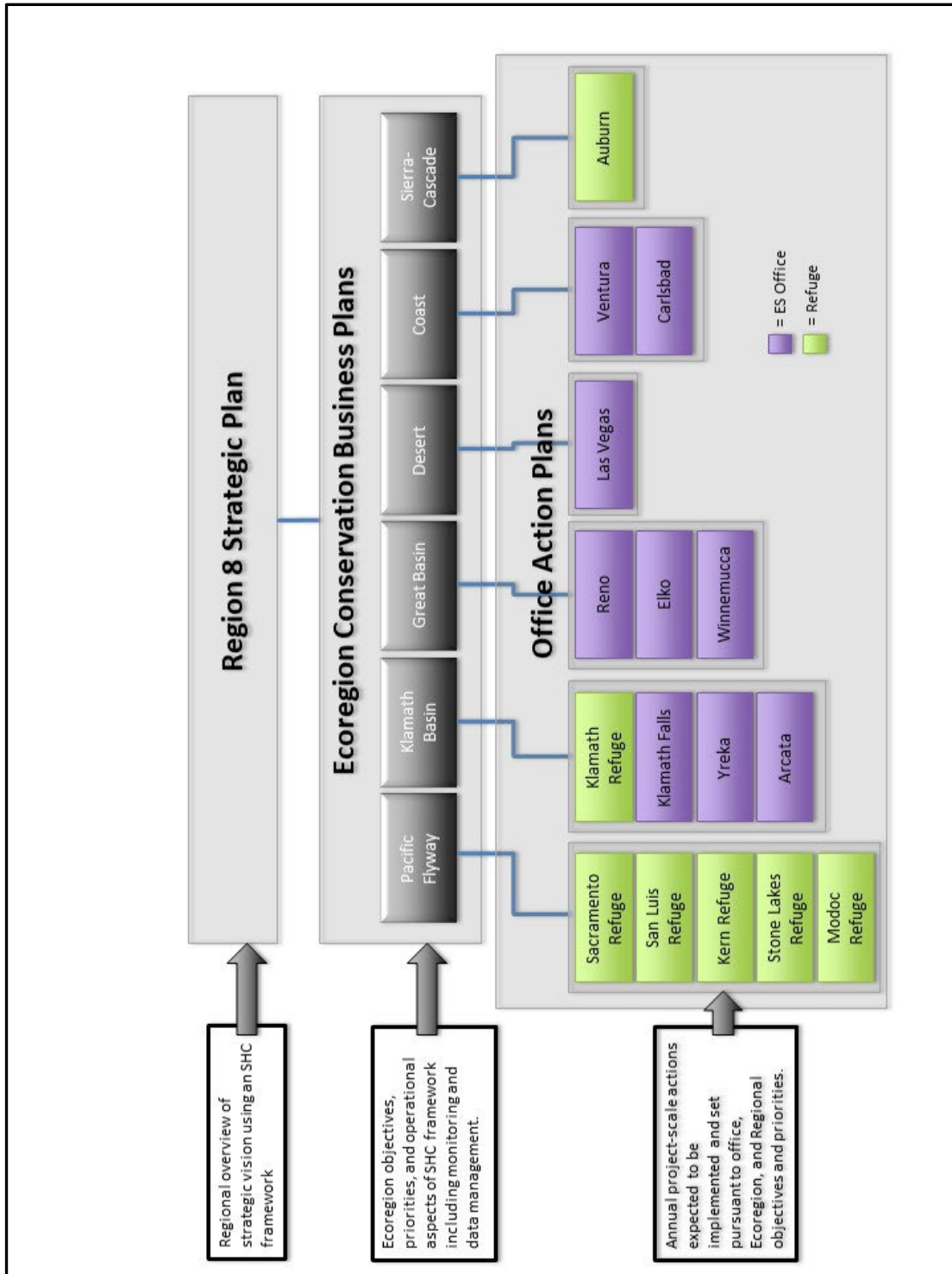
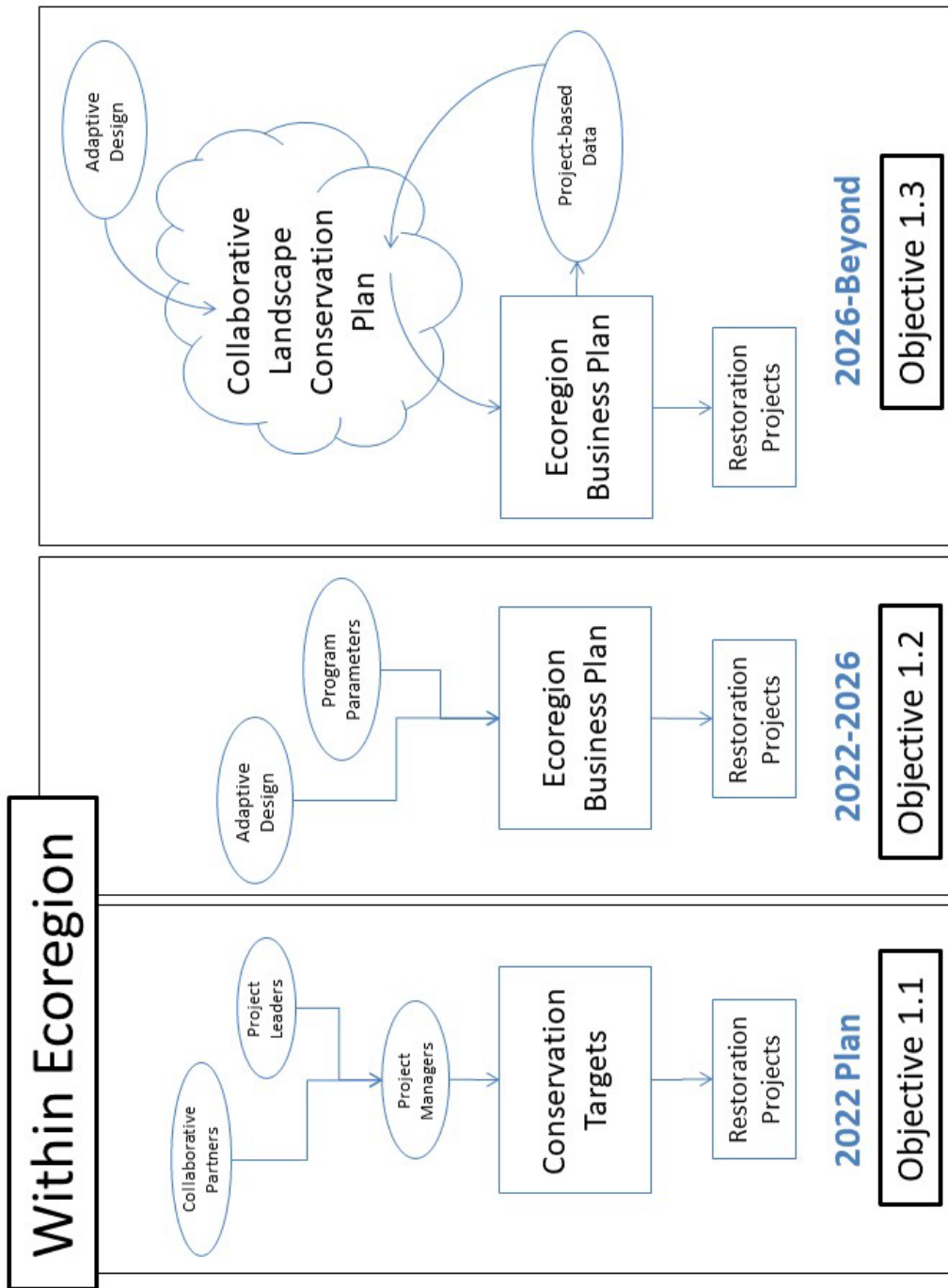


Figure 5. The goal to Conserve Habitat (Goal 1) and its three objectives will be implemented over the next several years using a progressive approach to align priority conservation activities with the relevant larger landscape conservation efforts in each Ecoregion once they are fully established.



in Ecoregion conservation business plans. Figure 5 illustrates how these three objectives progressively move the Program forward ensuring compatibility with the predominant landscape conservation efforts in each Ecoregion. The Partners Program Project Managers will continue to implement high quality habitat restoration projects according to their collaboratively developed priorities in pursuit of habitat restoration performance targets.

Goal 1 Performance Targets

- Develop, design, and implement priority habitat restoration strategies with 80% of the Partners Program efforts and funding at each field station directed at Tier 1 Conservation Strategies.
- Complete Partners Program Ecoregion conservation business plans in at least three Ecoregions.
- Continue building on the Conservation Standards models to establish a program-wide adaptive management framework for at least two more Ecoregions.

Goal 2: Broaden and Strengthen Partnerships

The mission of the Partners Program is to efficiently achieve voluntary habitat restoration on private lands through financial and technical assistance for the benefit of Federal Trust resources. Partnerships are an essential component of success and result in improved projects by pooling all available resources for greater conservation benefits, increased efficiency, improved communication, more innovative solutions, and increased public support. The foundation of the Partners Program is building partnerships based on the shared interest in habitat conservation.

Goal 2 Objectives

Objective 2.1. Cultivate existing partnerships and develop new ones to create incentives and opportunities for future conservation activities.

Key Strategic Activities

- Maintain cooperative relationships with private landowners, tribes, states, local governments, non-profit groups, and industry to conserve trust resources.
- Maintain and develop new resource-based collaborations with other programs within the Service to focus on conservation priorities and build synergy to address conservation challenges.
- Expand Regional partnerships and increase collaboration with other agencies focused on landscape or local conservation issues related to habitat conservation.

Ongoing investment in existing productive partnerships will be a priority for the Partners Program in the Pacific Southwest Region. These partnerships are certainly a key to past success and will be as important going forward. Concepts in this planning process such as using Conservation Standards to an Ecoregion-based program design and using an SHC framework Region-wide will open opportunities to stronger and broader collaboration and partnerships. These program changes will develop new tools, data sets, and opportunities related to restoration project planning and implementation while drawing wider attention

to successes at the landscape-scale. This will facilitate the development of new collaborative partnerships on projects as well as on other aspects of conservation.

There are about 139 Native American tribes in the Pacific Southwest Region. Successful habitat restoration efforts require maintaining and building strong partnerships with tribes. Tribes manage or influence some of the most important terrestrial and aquatic ecosystems both on and off reservations. The Partners Program has unique opportunities to build lasting partnerships around restoring Federal trust species habitat, protection of cultural resources and spiritual land values, and integrating traditional land ethics and management approaches across a broad landscape. In this capacity the Partners Program plays a critical role in providing Service support to tribes as they exercise their sovereignty and management of fish and wildlife resources. The Partners Program is especially committed to increasing restoration capacity at Native American Tribes in the Klamath Basin.

Partnerships with private landowners, conservation stakeholders, tribes, and others on projects will continue to be the mainstay for the Partners Program in the Region. The number of partners engaged over the term of this plan will be an indicator of success for this objective. This demonstrates the complexity and engagement of partner organizations across the Region. It is a reflection that conservation projects are most effective when implemented with a diverse group of project partners.

Goal 2 Performance Targets

- Establish at least 250 cooperative agreements with private landowners or other cooperators during the five-year period.
- Engage with more than 350 total non-landowner partners during the five-year period.
- Establish a formal collaboration with ongoing landscape conservation efforts within the Region to ensure overlapping priorities with the Partners Program: Klamath, Central Valley, Warm Desert, and Great Basin.
- Establish data sharing relationships with at least four new groups that will enhance our ability to understand project effects across the landscape.
- Strive to maintain a 10:1 match Region-wide for partner and other agency funds to Partners Program funds.
- Increase Tribal Partners restoration capacity by supporting restoration positions and increasing tribal capacity within the Klamath Ecoregion.

Goal 3: Improve Information Sharing and Communication

A fundamental tenet of any partnership is effective communication, which includes both providing and receiving information successfully. It is essential that important information is shared with partners, decision-makers, the scientific community, and the public, but it is also critical that we listen to and consider the priorities and needs of others. Partners Program project managers are skilled listeners and effective communicators. They will continue to build trust with landowners and other key partners.

Goal 3 Objectives

Objective 3.1. Improve internal communication within the Partners Program and across programs within the Service.

Key Strategic Activities

- Regularly assemble and engage Partners Ecoregion working groups to collaborate and communicate common objectives and project success pointed toward landscape-scale accomplishments and successes.
- Develop meaningful summary reports and presentations of program direction accomplishments for sharing with Program Biologists, Project Leaders, and other program personnel at least once per year.
- Continually communicate and engage other Service programs and integrate with their activities related to habitat restoration on private lands.
- Accurately enter project information into HabITs database to ensure that project details and accomplishments are recorded and available for sharing and summarizing.

This objective includes defining and formalizing ecologically and geographically distinct areas that will be referred to as Ecoregions and tracking project selection decisions in the context of this plan in the year that they are funded. Operating within Ecoregions will enable the Partners Program to better function at the landscape-scale as well as the Regional-scale. Activities to accomplish this objective are focused on: (1) improving project (and agreement) tracking and analysis within the Ecoregions; (2) sharing and communicating within and across the Ecoregions to ensure that the Partners Program is compatible with the ongoing landscape-scale conservation efforts within the Region while continuing to collaborate within the Partners Program and with other Service programs.

Objective 3.2. Improve communications with partners, the public, the scientific community, and Congress.

Key Strategic Activities

- Improve outreach with concerted entities through increasing social media presence by distributing and highlighting project specific efforts.
- Maintain traditional outreach efforts with partners, the public, and Congress such as fact sheets, conference attendances, meetings, etc.
- Seek out, establish, and utilize data sharing opportunities that will be created as the adaptive management framework evolves.
- Create data management structures in each Ecoregion that facilitate connections with other entities that can integrate Partners program data sets into their restoration, climate, habitat, or other analyses.

Outreach communications remains a critical component of a successful Partners Program in the Pacific Southwest Region. The world of communication is changing rapidly, and we will strive to use the most effective communication tools to deliver messages to the public

and our partners going forward. This includes sharing project stories through traditional means as well as utilizing social media outlets.

Goal 3 Performance Targets

- Collaborate with External Affairs to highlight project postings at least twice monthly.
- Collaborate with External Affairs to highlight newsworthy projects and events at least once quarterly.
- Find new collaborative project opportunities with other Service programs at least twice per year.
- Create annual and other presentations and reports summarizing and describing project- and landscape-scale efforts.
- Seek or attend at least three Congressional visits or interactions within the Region.

Goal 4: Enhance Our Workforce

Successful implementation of the Partners Program requires a diverse and highly skilled workforce that is motivated and inspired by their jobs. Partners Program project managers deliver habitat restoration projects in close cooperation with private landowners and other non-governmental and private entities. These relationships involve extensive interaction and respectful negotiation. Therefore, Partners Program project managers must have a unique skill set enabling them to act with integrity to build trust and successful partnerships as well as have the necessary technical skills to lead the design and implementation of habitat restoration projects in often complex and sensitive sociopolitical environments.

Goal 4 Objectives

Objective 4.1. Strategically align program workforce to improve cost effectiveness, reduce administrative complexity, and maximize resources directed toward restoration project implementation in priority Ecoregions.

Key Strategic Activities

- Evaluate the results of the Ecoregion adaptive management frameworks and the resultant priorities to ensure Partners Program success and effectiveness.
- Put forth every effort to strategically establish new (and refill) positions with people possessing the right skill sets in the right place at the right time.
- Continue to develop ideas and mechanisms encouraging healthy dialogues that promote success with Project Leaders and Assistant Regional Directors and others in supervisory chains managing program personnel and resources.

Objective 4.2. Continue to foster and develop existing workforce skill sets to ensure that the Partners Program maintains the most current institutional knowledge of habitat restoration science.

Key Strategic Activities

- Provide Program Project Managers with access and opportunity to attend relevant training and development courses.
- Coordinate with field station Project Leaders to ensure that the right personnel are attending the right courses for them.
- Ensure that training opportunities and institutional knowledge is shared among field stations.
- Share this expertise with other Service programs where private lands or restoration expertise is needed and valued. This also promotes development for Program Project Managers offering a view of other Service programs.

Goal 4 Performance Targets

- Project data analysis will be compared with strategic objectives to make program decisions on location and objectives.
- All program personnel will attend at least 40 hours of relevant training per year.
- Partners Program personnel will attend and host teleconferences, webinars, and in-person informative presentations quarterly or more often as opportunities arise.
- Regional Office personnel will organize and help facilitate Regional-level sharing of technologies and tools among field offices.

Goal 5: Increase Accountability

With the institution of an adaptive management framework described in Goal 1, a series of new accountability measures at the field station, Ecoregion, and Regional levels will be established to evaluate whether habitat restoration projects are meeting their objectives or not. Projects will be tracked and evaluated in a more scientific manner under this design using Ecoregion conservation business plans. This is in addition to the traditional program accountability that will be enhanced due to this proposed redesign of Goal 1. We began this framework and tracking process in 2016 with success. However, we will continue to develop it and analyze the data in more effective ways for the 2022-2026 period.

Goal 5 Objectives

Objective 5.1. Conduct or oversee project evaluations in each Ecoregion that investigate the degree to which projects and project types meet stated objectives in accordance with the current state of the adaptive management framework.

Key Strategic Activity

- Each Ecoregion will develop a monitoring and evaluation protocol for its conservation business plan during the period of this strategic plan as stated in Goal 1. These protocols will include clear objectives, specific monitoring protocols, organized data management structures, and targeted evaluation processes.

Monitoring and research are a key part of the adaptive management framework as described by the U.S. Geological Survey (2006) and later by U.S. Fish and Wildlife Service (2008). This was historically somewhat of a controversial topic as it relates to the Partners Program in this Region. Going forward, project success and program-level monitoring will be included in a framework to be instituted under the adaptive management framework. This is in addition to the monitoring that partner entities are conducting across the Region that should also be considered in project development and success.

Monitoring for this objective includes simple and directed project follow-up in an organized manner to capture whether projects are meeting stated objectives (implementation monitoring). This will create an Ecoregional monitoring protocol that utilizes implementation and compliance monitoring (as much as possible) as a source to measure success across the Ecoregion. As part of Goal 1, monitoring protocols will be established during the conservation business plan development in each Ecoregion. These protocols will be designed in such a way that all projects conducted for the same purpose will be monitored and tracked in the same manner within the Ecoregion. Data will then be compiled and stored in a common database. These data can then be analyzed to evaluate and determine project performance using implementation monitoring information as much as possible. Project performance measures will then be tracked by geography, project type, or other parameters to feed an adaptive management process as per the adaptive management framework. This monitoring effort will be designed to be commensurate to restoration project complexity and expense. For example, simple and inexpensive projects will use simple monitoring metrics, and more complex and expensive projects will be more involved. As the adaptive management protocols develop, we intend to add elements of landscape-scale program effects and biological outcomes.

Objective 5.2. Institute accountability measures that track Partners Program project results in relation to funding and other administrative aspects of the Partners Program.

Key Strategic Activities

- Track spending annually in concert with field stations to ensure that funding targets are met according to Partners Program policies.
- Produce an annual accomplishment report that describes: (1) restoration project accomplishments; and (2) provides program and administrative data to summarize the status of the Partners Program Region-wide.
- Ensure that accomplishment reporting (into HabITs) is accurate, thorough, and consistent across the Region.

Tracking and reporting progress using Partners Program accomplishment, funding, partnership, and administrative data is an important component of program management and success. This strategic plan and the metrics described herein will serve as the foundation for tracking program progress. In many cases, more specific accountability measures will be established further in the conservation business plans developed in each Ecoregion.

Goal 5 Performance Targets

- Implementation and compliance monitoring will be completed for each project.
- Each Ecoregion will establish a conservation business plan inclusive of key elements necessary to evaluate project results at the project and landscape scales for biological outcomes. This effort will be based on the Conservation Standards method used to develop the restoration strategies in Goal 1.
- One comprehensive restoration project evaluation (involving the review of many projects) will occur in one Ecoregion within the period of this plan following a modified Post Project Appraisal method described by NewFields and Kondolf (2012) or the Beaver Restoration Assessment Tool model.

Strategic Planning Methods: Developing Program Priorities and Focus Areas

Restoration Priority Identification

Introduction

Habitat conservation needs in the Pacific Southwest Region are many and diverse. Listed species, Refuges, water availability, catastrophic wildfire, among others are the conservation challenges the Program faces across the Region. Habitat restoration on private lands is the mainstay of the Partners Program, and our goal in creating this strategic plan was to create a scope that identified and aligned national and regional conservation need with the Partners Program capabilities that also meet the Service's key priorities. There is a specific need to narrow the scope of the problem by clearly identifying the Partners Program role in this Region to include habitat restoration on private lands in reversing key threats and supporting the important conservation priorities for the Service overall. In short, at the outset of developing this plan, we recognized the need to develop specific priorities. We defined "priorities" for the purposes of this plan as those Conservation Targets, Threats, and Restoration Strategies on which the Partners Program will strive to expend 80% its respective resources on privately-owned lands. The analysis that we conducted using our collaborative Conservation Standards process guided our development program-specific priorities.

In the 2016-2021 strategic plan version, we found narrowing the scope of the Partners Program to be one of the biggest challenges, and we used our previous efforts to inform this current plan. We also decided to incorporate an adapted version of the Open Standards for the Practice of Conservation (Conservation Standards). This decision support framework was developed by the Conservation Measures Partnership, which is a broad partnership of conservation non-governmental organizations and funders. This group seeks ways to better design, manage, and monitor the impacts of conservation actions to learn and improve collective conservation efforts, and out of that, they developed Conservation Standards. Conservation Measures Partnership used existing best practices, evidence-based research, adaptive management, and decision support tools to create a

robust and standardized method for conservation planning, implementation, and monitoring. This enables outputs and results to be more shareable across programs and scales (Conservation Measures Partnership 2020)

We chose to use Conservation Standards as our primary framework and process because: (1) it is widely accepted around the world (2) it allows planning across scales; (3) many of our closest partners utilize it in their own processes; and (4) it provides a systematic framework and structured decision-making tool that enabled us to break-down the complexities of the conservation need in this region and apply it to Partners Program capabilities specifically.

Operationally, we used the Conservation Standards process to establish Targets, Key Ecological Attributes, Threats, and Restoration Strategies. We used these parameters to develop situation models that identify the relationships among these elements. Then, we used the outputs to define the conservation scope of the Partners Program efforts for the next five years. This process will eventually enable us to build and incorporate a more sophisticated, well-organized monitoring program and more detailed work plans that are better focused on conservation outcomes.

We collaborated at two scales to complete the Conservation Standards process: one within the Service; and one that incorporated the expertise of our closest partners. We created a “Pacific Southwest Region Field Guide to Strategic Planning” (Appendix C) that outlines how the Partners Program adapted and tailored the Conservation Standards process to meet the Partners Program and the Service’s needs. This field guide also described how our Ecoregional groups operated to complete the process using internet-based collaboration tools. This guide broke the collaborative meetings into six two-hour online sessions. It also outlined all the collaborative tools to be utilized to implement the process. Those tools included various MS Excel spreadsheets, Microsoft Forms, spreadsheets, Miro, and others.

Conservation Standards

According to the Conservation Measures Partnership, “The Conservation Standards are a widely adopted set of principles and practices that bring together common concepts, approaches, and terminology for conservation project design, management, and monitoring. Developed by the Conservation Measures Partnership and regularly updated in collaboration with the broader community, this open-source, strategic process helps conservation teams achieve lasting impact.” (Conservation Measures Partnership 2020)

The Conservation Standards have been in development and evolving since 2002. They are open-source, shared, used, and adapted by organizations and entities worldwide. The Conservation Standards describe ideal practices for planning and implementing conservation using a “mutually defined lexicon” that draws on standards and practices across several fields that have been adapted over time. One of the key aspects to utilizing Conservation Standards is that they are customizable for individual circumstances.

The primary elements of Conservation Standards are: Assess, Plan, Implement, Analyze and Adapt, and Share. A perfectly complete Conservation Standards outcome will include all the elements in the process. However, this is a goal to work towards rather than an expectation that all steps will be completed at one time. There is no right place to start, and practitioners are encouraged to begin the process at an appropriate step for their work. Then build at an appropriate scale.

For this strategic plan, we utilized Conservation Standards to focus on the Assess, Plan, and Implement phases. We built our plan to fit within the confines of the Partners Program in particular, where Service-priority habitat restoration projects on privately-owned lands are the focus of these efforts. That did not restrict our thinking and consideration of outside factors and forces. One of the primary benefits to utilizing Conservation Standards is that it enables improved consideration of conservation and economic concerns operating at the periphery of the Partner Program efforts to better enable collaboration and role identification on bigger conservation problems. We clearly identified the Partners Program role in the conservation efforts in this Region at the outset and considered how other collaborative opportunities might intersect with these Partners Program efforts to help us identify our focal points and set priorities.

Partners Program Field Guide to Strategic Planning Using Conservation Standards

Implementing a Conservation Standards based planning process is part science and part art. Therefore, we adapted the framework as we needed to accomplish the goals of the Partners Program strategic planning process. The structure of the Partners Program in the Pacific Southwest Region is somewhat complex. Clarifying a working process as well as roles and responsibilities is important. We viewed the Regional role as guiding the process, setting Regional priorities, and ensuring that the national priorities were met in the outcomes. This resulted in identifying the need for a regionally-developed framework into which Partners Program Project Managers establish and incorporate their local priorities and strategies. The Regional framework included the utilization of Conservation Standards to organize and prioritize the locally developed conservation targets.

The focus of this effort was strategic planning, which drew our focus to begin the Conservation Standards process at “Assess” and focus on the “Plan” element. To add to this, the Partners Program has a solid reputation for “Implementing” projects. That leaves us to look forward to advancing our “Analyze and Adapt” portion of the Conservation Standards process to progress on during the next five-year period as is stated in the Goals sections of this plan.

Ecoregional Groups and Facilitators

The State and Regional Coordinators for the Program created a Sharepoint site and a Field Guide to Strategic Planning that organized the process and the framework. The process was implemented within the Ecoregions that were established in 2016 and have been the functional units for the program since that time. These groups were facilitated by their respective Regional Coordinator, and the Conservation Standards implementation process was divided into six two-hour virtual sessions during which Program project managers

were guided through a series of evaluations to solicit necessary elements to complete the Conservation Standards process.

Table 1. Ecoregion Conservation Standards meeting and sessions organization showing group setup and facilitators.

Ecoregion	Primary Facilitator	Support Facilitator*
Klamath Basin	Mike Edwards	Samantha Marcum
Great Basin/Southern Nevada	Susan Abele	Varies
Pacific Flyway/Sierra Meadow	Matt Hamman	Mike Edwards
Coastal Program/Coastal California	Samantha Marcum	Matt Hamman

Each of the elements of the process were selected based on the needs of the strategic planning process and aligned with the appropriate steps in Conservation Standards. These were also tailored by Ecoregion and there was slight variation by Ecoregion depending on circumstances and available data and information. The primary elements described below are the process by which we arrived at those elements. Outputs from each session were recorded on a group Miro board and ultimately in the Excel workbook that was established for each Ecoregion. The data, outputs, and restoration strategies for each Ecoregion from these sessions are described in the Ecoregions sections that follow in this plan.

Purpose and Scope

Identifying a scope is an essential first step to successfully implement Conservation Standards. This was addressed during the first session for each Ecoregion. While the overall purpose for the Partners Program may seem somewhat obvious based on program parameters and policies, each Ecoregion developed their own purpose that encompassed the overall scope of this effort for their Ecoregion specifically. This is functions as a mission statement articulating the purpose and intent for the Ecoregion to serve as a guide for the process and future of the Partners Program in each Ecoregion.

Planning Teams and Collaboration

Collaborative planning is a critical element to both the Partners Program success and the Conservation Standards process. For the purposes of this plan, each Ecoregion established three types of teams: a core team; an advisory team, and a group of stakeholders.

Core Team

The Core Team was defined as the primary group responsible for creating the data associated with establishing the elements of the plan. This group did the actual work following the Conservation Standards process that we established. They were regularly engaged at gathering information and data as well as making decisions to support this planning effort. This group was comprised almost entirely of Partners Program Project Managers and the State Coordinator.

Advisory Team

The primary purpose of the Advisory team was to provide technical support and input into the process where needed by the Core Team. This team was not an actual functioning team, rather it consisted of a list of key contacts who provide technical species or habitat information. Throughout the process, Recovery plans, refuge CCP's or other technical sources informed the development of targets, thresholds, and current and future conditions. Members of the Advisory Team were asked to be available to provide technical input to various parts of the process as they were developed depending on interest and needs. Members of this group were also able to provide input on drafts for technical adequacy.

Stakeholders

Other internal or external partners that have an interest in the outcomes and ultimately need to accept and support the ultimate outcomes were valued as stakeholders in this process. Their input on various drafts were solicited at less frequent occurrences throughout the process. Members of this team were consulted on draft work products, and their input was seriously considered as the process unfolded. The stakeholders needed to buy-in to the products and the plan overall. If outcomes differed from stakeholder desires, there was clear justification and documentation of why decisions were made in contrast. Stakeholder input was solicited regularly during the planning phase in some instances, but participation was likely limited to brief conversations or review of the prior week's developments. We created a survey that formed the basis for having conversations with stakeholders that provided early input to the process. Partners Program project managers held conversations to gather this input early on the process in most cases.

Conservation Targets

According to Conservation Standards, Conservation Targets are defined as: "specific, tangible entities that the project is working to conserve that represent and encompass the ultimate aims of the project. They form the basis for setting goals, selecting actions, and measuring effectiveness" (Conservation Measures Partnership 2020).

There are many types of Conservation Targets that enable a practitioner to select their specific scales and themes. For the Partners Program in the Pacific Southwest Region, the scale and themes were defined by habitat restoration on private lands in support of the Service's priorities. The Project Managers selected place-based Conservation Targets that were defined by either an ecosystem or habitat type or specific species. In many cases, these were interchangeable but defined by one or the other: species or habitat type essential to that species.

Within each Ecoregion, Conservation Targets ("Targets") were carefully identified based on the ecosystems, habitat types, or species that will become the priorities focal points for the remainder of the planning process. Each Ecoregion established several Conservation Targets that were ranked and considered according to their importance to the Service as fulfilling the Regional or national priorities. We ultimately focused on species or habitats that support local, regional, and national priorities. Those species and habitats were

defined as potentially benefitting from habitat restoration on private lands and were considered as: (1) habitats that support species which are listed (or at risk for being listed) under the Endangered Species Act; (2) habitats or species that support National Wildlife Refuge Purposes; or (3) habitats or species that support interjurisdictional (ie. anadromous) fish.

The identification of Conservation Targets was a multi-step process originating at the Field Office level. The first step in the process was a data gathering exercise where biologist placed proposed targets into one of three regional/Program priority categories: Threatened/Endangered Species, Refuge Purpose, and Interjurisdictional Fish Species. Proposed targets outside of these categories were placed in their own categories titled 'other' for further consideration and discussion. The list was discussed and considered extensively by the Core Teams and narrowed into a semi-final list of Targets based on their collective perceptions regarding importance and relevance, which was then ranked.

Target Ranking: Establishing Tier 1 Targets

The primary goal of the Target ranking process was to establish Tier 1 priority Targets for the Partners Program. These Tier 1 Targets became the foundation for the rest of the Conservation Standards process. We followed the 80/20 rule and set a goal for the program whereby 80% of the Region's resources are dedicated to these Tier 1 Targets. The purpose behind setting this goal was to focus the Partners Program efforts on a short list of priorities to increase the program effectiveness overall by targeting certain priorities that align with the Service's Regional and National priorities.

The Target ranking process was challenging in that Partners Program Project Managers had thorough discussions grappling with the importance of each habitat type and the effectiveness of habitat restoration projects to support those habitat types. After and during these discussions, the State Coordinators developed a ranking tool that was intended to operationalize the ranking process based on a set of criteria. Project Managers used the ranking to individually prioritize the habitat types in their areas, and the ranking results were compiled and evaluated by the State Coordinators to establish a draft set of Target ranks.

The ranking criteria utilized were:

- The Target habitat provides documented benefits for ESA listed and/or At-Risk species in this Ecoregion.
- The Target habitat provides documented benefits that support National Wildlife Refuge fundamental purposes or goals as stated in the Ecoregion Section.
- Project Leaders and other Service Programs in the local field stations currently have efforts dedicated to conservation of this target.
- Conservation partners in the local area for this Target rank this as a high priority conservation need exhibited through conservation plans, conservation efforts, and/or other documented efforts.
- Habitat restoration is an appropriate tool identified in citable and documented sources (or by citable experts).

- Opportunities exist for habitat restoration relevant to the Programs (e.g., on private lands for the Partners Program) and are identified as an high priority tool for this Target.
- Target condition impacts local community economic and social conditions.
- Probability for improving overall Target status using habitat restoration.

Core Team members' ranking results were collected and subsequently evaluated using one quantitative and one qualitative method to identify potential bias and inconsistencies that may have arose. Other considerations, such as statistically weighting the ranking criteria, were used to evaluate the effects of the more important ranking criteria. Our analysis determined that weighting ranks had no significant effect on the overall rank outcomes. That led us to use both a statistical averaging method (that calculated an average rank score for each target) and a ranked score method. The statistical averaging method calculated the proportion of Core Team members that scored a particular ranking target as "High" or "Yes" for a given criteria and Target. For example if 10 out of 10 Core Team members responded that "Habitat Restoration is an appropriate tool . . ." for a Target as "High", that averaged 100% for that criteria and Target. Those averages were summed across Targets, and those results were compared and ranked. For the rank score method, proportional results for each criterion were sorted high to low for each Target. The number of times a Target scored as the highest rank for a criterion were summed across all criteria. This was repeated for the second highest scores, which were summed across the criteria as well. As an example, if a Target had the top score for all eight criteria, it would score eight. Those scores were compared across the Targets until they were in rank order. We then compared the rank score method with the statistical average method to identify differences in the two methods. We did not detect differences between the two methods that were not explainable, but those noted differences were points of discussion, which informed the final ranks and Tier 1 Target establishment. Ultimately, the ranking and establishment of Tier 1 Targets was a decision that was made by the Core Team, and the ranking results and analyses were tools used to guide that decision.

Target Viability

Target Viability was defined by the current status and estimated the desired future status of the established Targets. We conducted a Target Viability assessment for the selected Tier 1 Targets based on existing literature and current state of knowledge of the Core Team members. Advisory Team and Stakeholders were also consulted on this when necessary and desirable. Results from the viability assessment were recorded, compiled, and used to further establish restoration potential as well as set five-year and future goals for each Target.

Key Ecological Attributes

Defining the Target attributes that are influential, relevant, and measurable is a key step in the Conservation Standards method. Key Ecological Attributes are the vital signs of the Targets that can be used to evaluate Target Viability now and into the future. The main point in identifying these attributes for the purposes of this strategic plan was to quantitatively assess the Target Viability and to establish a basis for a future monitoring

plan that will operate at the Key Ecological Attribute scale at first. We will return to refine and build on these Key Ecological Attributes when we formally pursue a monitoring plan for the program that will evaluate restoration effects on the Tier 1 Targets as measured by their Key Ecological Attributes.

Direct Threats

Threats, or Direct Threats (“Threats”), are defined by Conservation Standards as primarily human activities that degrade the Conservation Targets, but Threats can also consist of natural phenomena altered by human activities. Climate change effects on hydrology that causes flooding can be example of this type of threat.

For this strategic plan, we considered the Threats as the key factors that habitat restoration will reverse if successful. We developed a list of Threats for each Conservation Target. These threats were considered and ranked (in some Ecoregions) to facilitate the development and ranking of Restoration Strategies. In other words, we used the Threats and their ranks to help inform which restoration projects will be most important and have the greatest effect on Conservation Targets.

Restoration Strategies

The Partners Program has a long history in the Pacific Southwest Region of implementing projects, and the program is filled with restoration practitioners that are experts in developing habitat restoration projects that reverse Threats and support Conservation Targets. As part of this plan, we identified restoration strategies that will be implemented over the next five years. These strategies then have specific treatments which are project types that will focus on improving conditions for Conservation Targets and the species that depend on them. These Restoration Strategies were both discussed and developed as a list and later incorporated in Situation Models to ensure that they are clearly linked to the Conservation Target and addressing the appropriate Threats.

Situation Models

We developed Situation Models to identify and depict the relationships between Targets, Threats, and Restoration Strategies. These models are simplified and presented in the Ecoregion sections of this plan. They provide the basis for further conversations and analysis about the decisions made throughout this process and the restoration project planning process. These models serve as our working hypotheses for how the restoration strategies we identified will influence the Threats and Targets. Going forward, these will enable us to improve our understanding about each Conservation Target and the impact that the Partners Program may have in these conservation situations. These are adaptable and dynamic based on future implementation and evaluations that we may conduct related to Program effectiveness.

Internal and External Input

Internal and external partners were consulted throughout this planning process. A standard set of “interview questions” (Appendix D) were developed and intended to initiate and guide discussions with partners about the current and future Partners Program priorities. Partners Program Project Managers met with various groups to collect input by

completing the interviews using the interview questions as a guide. Meetings were held with: Service field station leadership and personnel from across the Region (e.g., Project Leaders and other program leads including from Service offices without Partners Program employees); Regional Office program leads (Refuges; Ecological Services; Science Applications; External Affairs; and the Director's Office); local external partners such as private non-profit conservation organizations, landowners, resource conservation districts, state agencies among others. These interviews and discussions provided valuable input that better informed all elements of the Conservation Standards process. This component also allowed Program project managers with an opportunity to reconnect with their partners about their priorities.

Focus Areas

Geographic Focus Areas are a key requirement of this strategic plan. For this revision, we made key adjustments to our Focus Areas that link them to the Conservation Standards design that we implemented. We defined these Focus Areas as aerial depictions of locations where restoration projects should be targeted to support the Tier 1 Conservation Targets. As a result, these Focus Areas aim to capture 80% of the restoration project effort for the next five years.

As such, Focus Area maps were developed and established by Partners Program Project Managers by applying the outcomes of the Conservation Standards process to the geography in their areas. The revised areas are very similar to previous Focus Areas in some cases and very different in others. Quantitative establishment of these Focus Areas was possible in some Ecoregions (Appendix D) and were created based on best professional judgment in others. Our goal was to adaptively adjust these Focus Areas based on adaptive learning about implementation effects on Targets, Threats, and Restoration Strategy.

Summary: The Basic Strategy

Overall, this document defines the strategy for the Partners Program for each Ecoregion within the Pacific Southwest Region. It sets a very clear goal that 80% of the Program's resources will be directed at the Tier 1 Targets, which were selected based on Regional conservation needs and prioritized using Conservation Standards. Established outcomes will help simplify our decision-making when it comes to selecting and prioritizing restoration projects and determining their relevance.

This plan represents a renewed focus for the Partners Program aimed at four or five specific Conservation Targets within each Ecoregion. We evaluated the potential for the Partners Program to be effective in addressing the conservation needs associated with these Targets through habitat restoration of private lands in cooperation with landowners and other partners. Within each Ecoregion, these Targets are linked now to Threats, Restoration Strategies, and techniques intended to offset Threats and improve conditions for the Targets. Our efforts in this plan were to connect those local strategies with

anticipated effects on Threats that are relevant at the Regional and national scales and defined by the Service's priorities at those scales.

This document also ensures that the Tier 1 Conservation Targets identified represent specific priorities for the Partners Program in this Region and that these align with the Service's goals and mission. We took great care in developing this plan to incorporate rigor and base decisions on the best available scientific information. To accomplish this, we followed the protocols and process established by Conservation Standards. The outcomes and results that we produced will facilitate the establishment of improved accountability and adaptive management.

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- U.S. Fish and Wildlife Service. 2016. Strategic Habitat Conservation in the Pacific Southwest: Five landscape-scale demonstration projects. Unpublished white paper.
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Ecoregional Summaries, Targets, and Strategies

This section contains for each Ecoregion (presented north to south):

- An overview description of the Ecoregion
- A map showing the Focus Area within the Ecoregion
- A description of the results from the Conservation Standards process executed for each Ecoregion including:
 - Habitat Targets including Tier 1
 - Threats affecting those Targets
 - Key Ecological Attributes
 - Restoration Strategies
 - Accomplishment Goals
 - Supporting Documents referenced for the development of the Ecoregional sections are in Appendix C

Klamath Basin Ecoregion

Introduction

Ecological Setting

The Klamath Basin Ecoregion is situated in northern California and southern Oregon and encompasses the entire Klamath River watershed (Figure KE-1). The Upper Klamath Basin has a high-elevation semi-arid climate and consists of broad fault bounded valleys with large shallow lakes and wetlands including numerous spring-fed streams and rivers. The Middle Klamath Basin is dominated by mountains with steep slopes and alluvial valleys with grasslands, chaparral, and mixed conifer forest and woodlands. The Lower Klamath Basin is comprised of the mainstem Klamath River and all tributaries downstream of the Trinity River confluence, encompassing a drainage area of approximately 450 square miles.

There are four dams situated in the Klamath River that are slated for removal in 2024. These dams block fish passage for salmonids and affect the water quality in the mainstem Klamath River. A major event such as dam removal will likely force revision of various aspects of this plan. Those changes will be incorporated into the office actions plans for the Klamath Basin and likely affect the Focus Area for the mid-Klamath especially.

The Klamath Basin Ecoregion contains numerous priority species and critical habitats including federally listed coho and Chinook salmon, Pacific lamprey, Lost River and shortnose suckers. Fresh water wetlands (natural and managed), marshes, and wet meadow habitats within the ecoregion are critical for the waterbirds of the Pacific Flyway.

Partners Program Overview

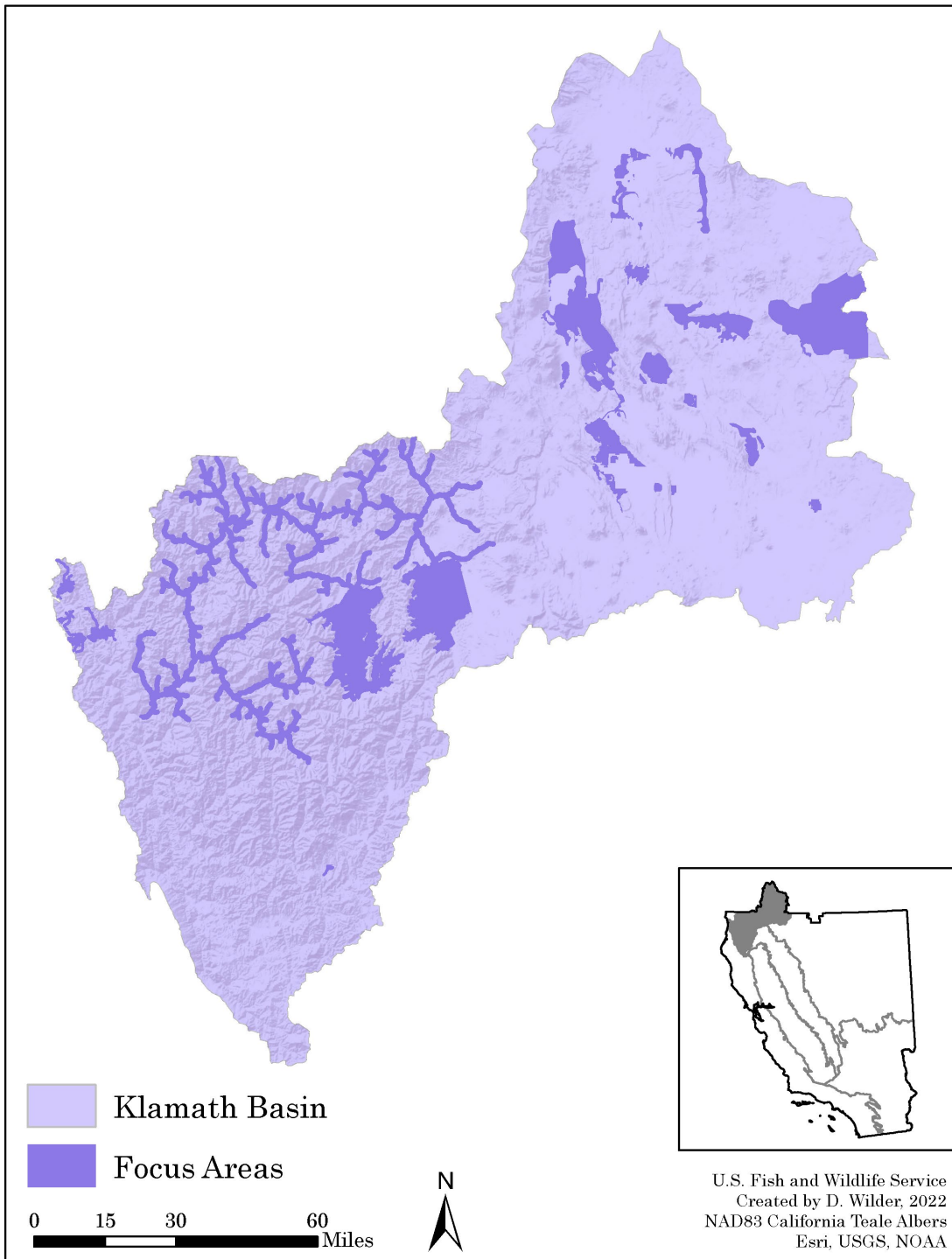
The Partners Program in the Klamath Basin is delivered by approximately 12 Project Managers located across four field stations; the Klamath Falls Fish and Wildlife Field Office; the Klamath Basin National Wildlife Refuge Complex; Yreka Fish and Wildlife Field Office; and the Arcata Fish and Wildlife Field Office. The Partners Program in the Klamath Ecoregion is the largest in the Pacific Southwest Region accounting for over two-thirds of the Regions funding with an estimated annual allocation of \$1.8 million. In fiscal years 2020 and 2021 the Klamath Ecoregion received an additional \$5.1 million in funding to be directed towards Klamath River restoration efforts. Additionally, the Program in the Klamath Ecoregion currently supports Tribal restoration capacity in supporting restoration positions with The Klamath Tribes and the Yurok Tribe, with plans to expand this capacity to two additional Tribes (the Hoopa and the Karuk Tribes) within the Ecoregion.

Conservation Planning

Ecoregion Scope and Vision

In the development of this plan Core Team members agreed that a Target-based scope for this plan is most appropriate for the Partners Program. This means that Service priorities are best met within the geographic focus of the Klamath River Watershed (excluding the mainstem of the Trinity River, which has its own restoration program) using a Target-based approach for setting habitat restoration priorities. The scope sets the boundaries of

Figure KE-1. Map of the Klamath Ecoregion with field office Focus Areas.



the Partners Program work for the life of the plan and the vision statement describes what the Partners Program will strive to achieve. The Klamath Ecoregion vision statement is:

To restore and create habitats across the Klamath Ecoregion that support Federal Trust Resources such that prioritized habitats and species show improved conditions at the end of the plan's timeframe.

Conservation Targets

In the Klamath Ecoregion eight habitat types and 32-species were proposed for consideration as priority Conservation Targets. Proposed targets were analyzed with two methods, one habitat-based and one species-based. Using two methods were used to add rigor and enable us to consider bias based on species targets or habitat targets. The goal of this analysis was to refine this proposed list of targets based on Service and Program priorities, resulting in the identification of the highest priority targets (Tier 1. Conservation Targets) for the Program.

The identification of Tier 2. targets was used to document all the habitat/species that were considered during the prioritization process. Our goal for this plan is that over course of its five-year period, 80% of project efforts and funding will be directed towards Tier One targets. This enables the Program Project Managers to focus on the targets while retaining flexibility desired to meet many conservation needs in the Klamath. Program Policy still applies to the remaining 20% efforts. We did not prioritize within the Tier 1. Conservation Targets nor did we develop all the details for the Tier 2. or other targets.

The habitat-based target selection process is detailed in the methods sections of this plan and resulted in four Tier 1. targets for the Klamath Basin, Instream, Semi-Permanent Wetlands, Permanent Wetlands, and Riparian. The Instream Habitat and Semi-permanent Wetland Habitat scored the highest in the habitat-based process (0.71) and the remaining target scores ranged from 0.56 to 0.13 Table KE-1 shows the Targets and the results of the ranking process.

Table KE-1. Results of two Conservation Target ranking processes used to establish Tier 1. and Tier 2. Conservation Targets for the Klamath Ecoregion.

Tier 1. Targets	Species Scoring	Habitat Scoring
(in Rank order)		
Instream Habitat	0.62	0.71
Semi-permanent Wetland Habitat	0.52	0.71
Seasonal Wetland Habitat	0.56	0.56
Riparian Habitat	0.54	0.51
Tier 2. Targets		
Forested Habitat	0.29	0.33
Wet Meadow Habitat*	0.56	0.31
Rare-declining Habitat	0.41	0.13

The proposed species targets were ranked using a SMART (Specific, Measurable, Achievable, Realistic, and Anchored within a Timeframe) Survey Prioritization Tool developed by the Pacific Southwest Region Inventory and Monitoring Program. The State Coordinator established criteria categories and individual criteria within each category (Table KE-2) to rank species targets.

Table KE-2. Criteria categories and individual criteria used to rank proposed species conservation targets for the Klamath Ecoregion. Mean criteria scores were used to calculate target ranks and percentage of maximum standard deviation indicates agreement among biologist on the weighing of each criteria (grater the percentage = less consensus).

Criteria Category	Criteria	Mean Weight	% of Maximum Standard Deviation
Listed and At Risk Species	Target is or supports a threatened or endangered species or Region 8 at risk species	76.00	22
	Recovery plans identify habitat restoration as recovery task	80.33	11
	Majority of critical habitat is on private lands	72.00	15
	Immediacy of restoration needs for target	83.67	15
Partner Priorities	Conservation Partners identify target as high priority	62.00	30
	Conservation Partners implementing restoration actions on target	62.00	17
NWR Purpose	Target is identified and consistent with Refuge purpose as stated in CCP	65.00	27
	Current Refuge management actions are directed at Target	70.71	24
Interjurisdictional Fish Species	Target is or supports IJ fish species	69.33	25
	Fisheries & Aquatic Conservation Program actions are directed at target	65.33	26
Additional Criteria	Office leadership considers target high priority for habitat restoration	56.00	18
	Opportunity for habitat restoration to affect target	82.00	12
	Target condition affects local economy and or social conditions	47.00	30

Partners Program Project Managers assigned individual weights to each individual criterion and the Prioritization Tool calculated mean weight for each criterion which was used in establishing the final score for each species target. Additionally, the Prioritization Tool calculated the percentage of maximum standard deviation across the individual weighting scores (greater the value = less consensus), there was notable agreement on most criteria weighting except for two: (1) target condition effects on local economy; and (2) conservation partners identify target as a high priority. These criteria weights were in the bottom third of all weights and did not appear to influence the final target scores and their weights were not adjusted.

Partners Program Project Managers provided a score for each of the 14 individual criteria per species resulting in a calculated score ranging from 0-10 for each target. The list of species was grouped under the seven habitat types used in the habitat ranking process and then the average score by species per habitat type were calculated, where appropriate species were included in multiple habitat types. All raw data are shown in Appendix F.

The Tier 1. Conservation Targets were determined by comparing the two sets of target scores, all targets with a score above 0.50 in both habitat and species score were identified as Tier 1. Conservation Targets (Table KE-1).

Across all targets there was agreement between the two ranking scores for all targets except the Wet Meadows habitat type. The Wet Meadows species score was 0.56, and this score was heavily influenced by Sage Grouse. After discussions with the Project Managers, it was determined that efforts directed towards this species should not be considered a Tier 1. priority for the Klamath Basin. Sage grouse was to Tier 2. because of the highly localized nature of that species and previous restoration completed. Tier 1 targets established through this process includes: Instream Habitat, Semi-permanent Wetland Habitat, Seasonal Wetland Habitat, and Riparian Habitat.

National and Regional Priorities

The process used to select Conservation Targets and the implementation of habitat restoration projects directed at Tier 1. targets over the lifespan of this Plan will ensure that the Partners Program is working in support of both National and Regional Partners priorities.

Target Viability Assessment (Current Conditions)

In assessing the current conditions of the Conservation Targets Key, Ecological Attributes were established for each. (Table KE-3). Biologists were surveyed to determine the current condition of the targets using best professional judgement. Indicators that the highest percentage of Project Managers selected were chosen as the current condition rating for a given Conservation Target. Instream, Seasonal Wetland, and Riparian Habitat were all considered to be in fair condition, which is outside of the acceptable range of variation and requiring actions. The Semi-permanent Wetland Habitat was determined to be in poor condition indicating that restoration of the target is more challenging than the other targets.

Table KE-3. Assessment of current conditions using Key Ecological Attributes (KEA) of the Conservation Targets for the Klamath Ecoregion. Indicator rankings are based on the percentage of biologists who scored the ranking categories using their best professional judgement.

Conservation Target	KEA	KEA Type	Indicator	Indicator Ranking		
				Poor	Fair	Good
Instream Habitat	Extent of functioning spawning, rearing, and migratory habitat	Landscape Context	Miles of unimpacted habitat		60%	
Seasonal Wetland Habitat	Extent of habitat available during key life stages of Pacific Flyway Waterbirds	Landscape Context	Acres of functioning habitat		56%	
Riparian Habitat	Extent of functioning habitat	Landscape Context	Acres/miles of unimpacted habitat		80%	
Semi-permanent Wetland Habitat	Acres of functioning wetland habitat	Landscape Context	Acres of functioning habitat	56%		

Ideally indicator ratings would be quantified with existing data to add rigor. For example, we would estimate acres/miles of habitat necessary to support healthy targets, and there would be quantifiable metrics for the future desired condition of the targets. These data are currently lacking at the Ecoregional scale in the Klamath Basin and this data gap has been identified as a goal to be addressed during the life of this plan.

Threats to Conservation Targets

Program Project Managers initially identified over 80 items as threats to the Conversation Targets during threats assessment planning sessions. These threats were summarized down to eight human caused threats, and the resulting biophysical effects on the targets were identified (Table KE-4).

Table KE-4. Direct threats and biophysical factors for Klamath Ecoregion Conservation Targets.

Threats	Biophysical Factors
<u>Instream Habitat</u>	
Channel modification	Loss of floodplain connection, stream incision, loss of overbank flooding, loss of fluvial processes
Dredging	Loss of instream habitat, loss of fluvial processes, loss of spawning habitat
Incompatible grazing	Sedimentation, loss of riparian vegetation, loss of woody vegetation recruitment, invasive plants, stream incision
Riparian Logging	Sedimentation, loss of riparian vegetation, loss of woody Vegetation recruitment
Improper road-stream crossings/incompatible roads	Habitat fragmentation, sedimentation, loss of instream habitat
<u>Riparian Habitat</u>	
Incompatible grazing	Sedimentation, loss of riparian vegetation, loss of woody vegetation recruitment, invasive plants, stream incision
Riparian Logging	Sedimentation, loss of riparian vegetation, loss of woody vegetation recruitment
Land use conversation	Loss of wetlands, loss of riparian habitat
Hydrology alteration	Subsidence, draining/shallowing of wetlands, removal of beaver/dams, loss of fluvial processes, loss of riparian habitat
<u>Semi-permeant Wetland Habitat</u>	
Incompatible grazing	Sedimentation, loss of riparian vegetation, loss of woody vegetation recruitment, invasive plants, stream incision, degradation of wetlands
Land use conversation	Loss of wetlands, loss of riparian habitat
Hydrology alteration – water availability, timing of water availability	Subsidence, draining/shallowing of wetlands, loss of wetland type
Fire suppression-no Prescribed fire	Increased wetland plant density
<u>Seasonal Wetland Habitat</u>	
Incompatible grazing	Sedimentation, loss of riparian vegetation, loss of woody vegetation recruitment, invasive plants, stream incision, degradation of wetlands
Land use conversation	Loss of wetlands, loss of riparian habitat
Hydrology alteration – water availability, timing of water availability	subsidence, draining/shallowing of wetlands, removal of beaver/dams
Fire suppression-no Prescribed fire	Increased wetland plant density

A Threats-Ranking analysis was conducted on the direct threats which indicated that all Conservation Targets are very highly or highly threatened (Table KE-5). The threats analysis also indicated most threats were rated either high or very high. Channel modification was rated a medium threat while fire suppression (lack of prescribe fire) rated as a low threat.

Table KE-5. Threat ranking scores for individual threats and conservation targets for the Klamath Ecoregion. Threats and targets scores are very high (VH), high (H), medium (M), or low (L).

Direct Threat	Conservation Targets				Summary Threat Rating
	Instream habitat	Riparian habitat	Semi-permanent wetland habitat	Seasonal wetland habitat	
Channel modification	H	M	L	L	M
Dredging	H	H	L	L	H
Incompatible grazing	H	H	M	M	H
Riparian Logging	H	H	L	L	H
Improper road-stream crossings/incompatible roads	H	H	L	L	H
Land use conservation	M	H	H	H	VH
Hydrology alteration	H	H	H	H	VH
Fire suppression-no Prescribed fire	L	L	L	L	L
Target Summary Ratings	VH	VH	H	H	

Strategies, Objectives, and Goals

A total of six restoration strategies were identified during the planning process (Table KE-6. ecoregion table, Appendix F). These strategies will guide the development of specific restoration projects aimed at remediating the effects of the threats to the Conservation Targets. Table KE-6 provides an overview of the connection between the Conservation Targets, restoration strategies, and some key treatments to be implemented under a given restoration strategy.

Table KE-6. Summary tables showing five-year performance goals and key elements associated with the Conservation Targets that were developed and utilized to create Situation Models for the Klamath Ecoregion.

Conservation Target (Key Species)	Threats	Restoration Strategy	Treatments	Five-Year Goals
Instream-Riverine (<i>Lost River/Shortnose Suckers, native salmonids</i>)	Channel modification Dredging Incompatible grazing Riparian logging Improper road-stream crossings/Incompatible roads	Instream Habitat Restoration	Channel realignment, instream habitat enhancement, floodplain reconnection	65 miles
Riparian (<i>Lost River/Shortnose Suckers, native salmonids, Oregon Spotted Frog</i>)	Incompatible grazing, riparian logging, land use conversion, channel modification	Riparian Habitat Restoration	Grazing Management, Fencing, Plantings, Vegetation Management	3 miles – 135 acres
Semi-permeant Wetlands (<i>Dabbling Duck species, Oregon Spotted Frog, Shorebird species</i>)	Hydrology alteration - water availability and timing of water availability, land use conversion, sedimentation, subsidence, invasive plant species	Wetland Habitat Restoration	Wetland establishment/restoration, restore wetland hydrology, Prescribed fire	1,578 acres
Seasonal Wetland Habitat (<i>Shorebird species, Lost River/Shortnose Suckers, Oregon Spotted Frog, Yellow Rail Shorebird species</i>)	Hydrology alteration - water availability and timing of water availability, land use conversion, sedimentation, subsidence, invasive plant species	Wetland Habitat Restoration	Wetland establishment, increase hydrologic retention,	1,649 acres

Additionally, Table KE-6 identifies key species associated with the Conservation Target and the 5-year performance goals per Conservation Target. Appendix F provides in-depth detail of treatments and the biophysical condition the treatments are designed to remediate.

Situation models were collaboratively developed to guide discussions and graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies (Figure KE-2). These models align the logic pathways between

national, regional, and local priorities demonstrating connections between higher level threats and restoration strategies.

Klamath Ecoregion Conservation Targets

Instream/Riverine Habitat

Instream/Riverine habitat was identified as one of the most important resources biologically, socially, and economically in the Ecoregion. This habitat type supports several species of anadromous and resident fish that are of cultural and economic significance and provides critical ecosystem services. Project Managers working in these habitats are focused on reestablishing geomorphic process, providing in-stream habitat complexity, off-channel habitat, and improving water quality.

Key Species:

Shortnose Sucker
Chinook Salmon

Lost River Sucker
Redband Trout

Bull Trout
Coho Salmon

Riparian Habitat

Riparian habitats are the critical interface between our riverine and upland habitats and when fully functioning, mediate negative impacts to the aquatic resources of the Ecoregion. Additionally, these habitats provide a variety of ecosystem services such as, delivering allochthonous productivity to aquatic systems, stabilizing stream banks, and providing habitat for a variety bird, mammal, and plant species. Project Managers restore these habitats by developing grazing plans, installing fence, planting native trees, shrubs, and grasses, and removing invasive species.

Key Species:

Shortnose Sucker
Chinook Salmon
Oregon Spotted Frog

Lost River Sucker
Redband Trout

Bull Trout
Coho Salmon

Semi-permanent Wetland Habitat

Semi-permanent wetlands are shallow aquatic systems dominated by emergent and submergent hydrophytes. They do go through periodic drying however, the period between drying events can be long depending on climate cycle and location within a watershed. These wetlands occur independently or as part of other aquatic systems including lakes, rivers, streams, and both open and terminal basins. Permanent wetlands provide important ecosystem services including ground water recharge, stream attenuation, wind abatement, flood control, sediment deposition, carbon, and nutrient sequestration. Their presence on the landscapes provides important climate and hydrologic resiliency. Semi-permanent wetlands are a subclass of permanent wetlands. These wetlands have a much shorter wet/dry cycle but during drying events, the soils remain saturated. Semi-permanent wetlands can occur as part of a permanent wetland system where drying is more common or independently as well as part of other aquatic systems. Semi-permanent wetlands are critical habitat for fish, waterbirds, herptiles, aquatic mammals and other wetland obligate species. Project Managers restore these

habitats by developing water management plans, implementing disturbance regimes every 5-10 years via fire or pesticide application, removal of levees, refurbishment of levees, installation of water control structures, construction of macro- and microtopography, excavation of filled or plugged channels, and reversal of channel incision.

Key Species:

<i>Dabbling Duck species</i>	<i>Oregon Spotted Frog</i>	<i>Shorebird species</i>
<i>Coho Salmon</i>	<i>Bull Trout</i>	<i>Chinook Salmon</i>
<i>Shortnose/Lost River Suckers</i>	<i>Yellow Rail</i>	

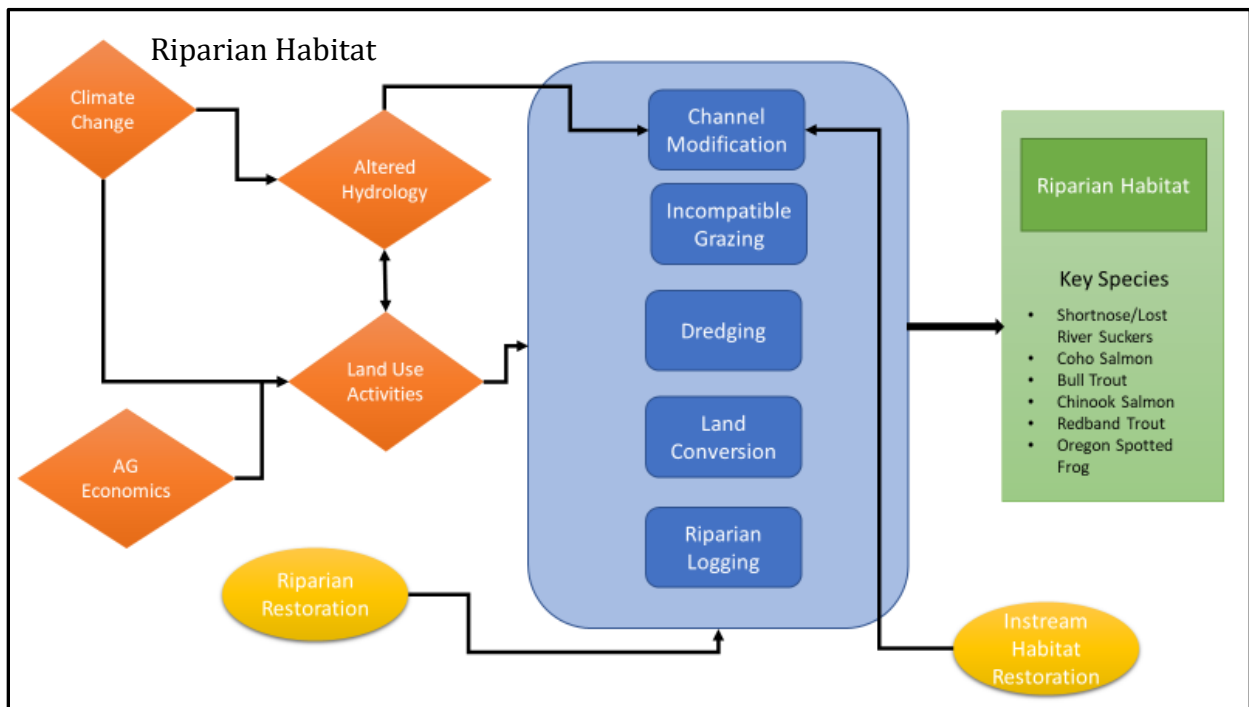
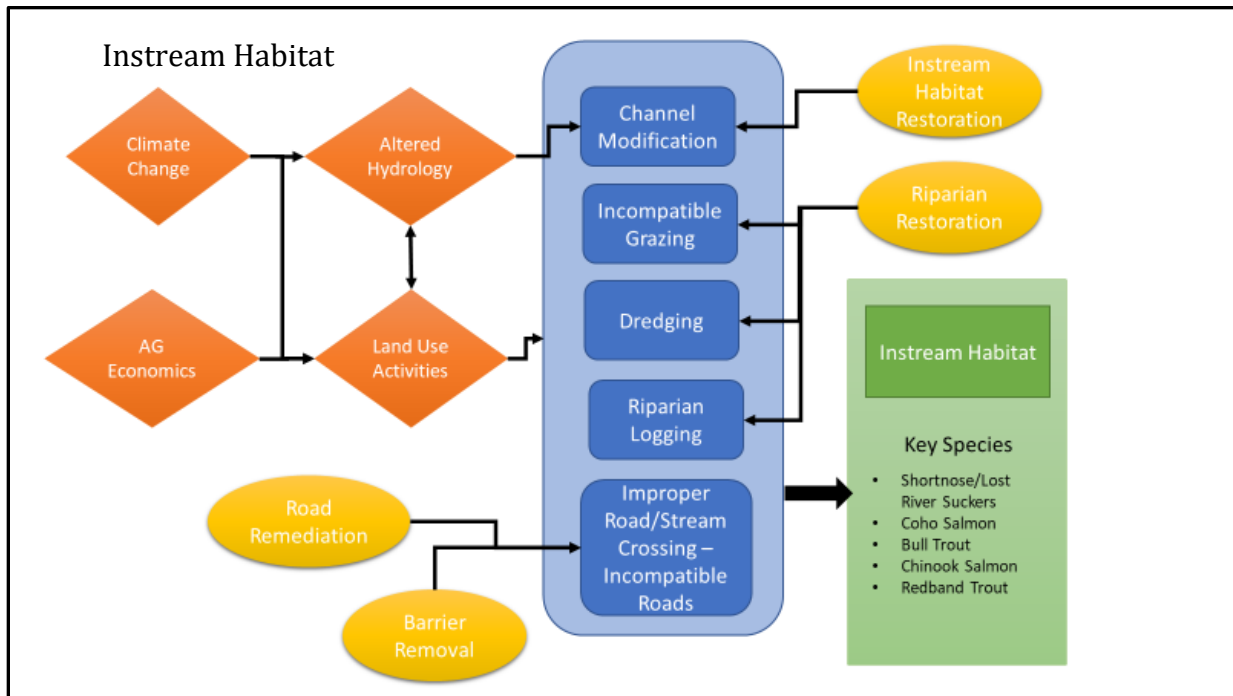
Seasonal Wetland Habitat

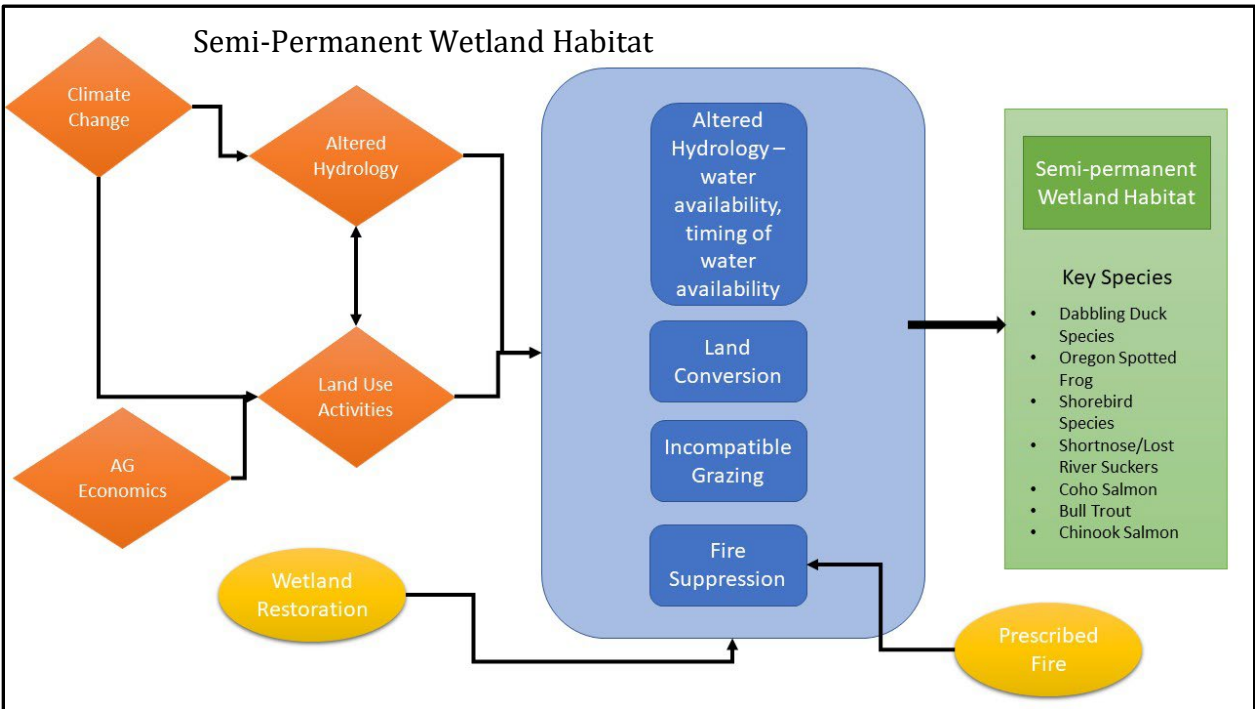
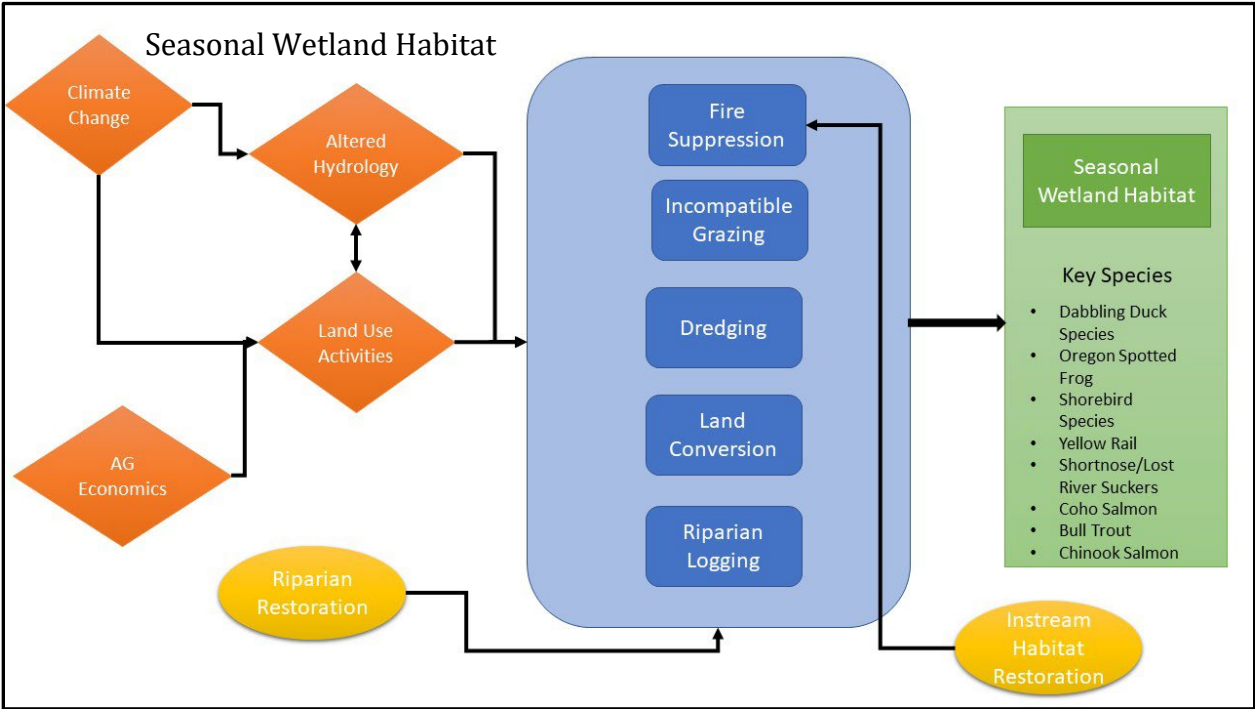
Seasonal wetlands go through annual periods of flooding and soil saturation a portion of which occurs during the growing season. Plant communities include seasonal and perennial grasses, sedges, and rushes as well herbaceous perennial and annual plants. These wetlands can occur independently or as part of other aquatic systems including lakes, rivers, streams, both open and terminal basins, and permanent/semi-permanent wetlands where annual drying occurs. Seasonal wetlands provide soil saturation, sediment deposition, and flood control. Because of water depth and robust plant growth, these wetlands provide important energetic resources (plant and invertebrate) for migratory waterbirds and important seasonal habitat for herptiles, fish, and other wetland species. Project Managers restore seasonal wetland habitat by developing water management plans, implementing disturbance regimes every 5-years via disking or fire, installation of water control structures, development or refurbishment of levees, laser leveling to reduce the water budget, excavation of filled or plugged channels, removal of levees, and reversal of channel incision

Key Species:

<i>Dabbling Duck species</i>	<i>Oregon Spotted Frog</i>	<i>Shorebird species</i>
<i>Coho Salmon</i>	<i>Bull Trout</i>	<i>Chinook Salmon</i>
<i>Shortnose/Lost River Suckers</i>	<i>Yellow Rail</i>	

Figure KE-2. Situational models for Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), and the Restoration Strategies to be implemented by the Partners Program to reduce the effects of the Threats on Targets.





Pacific Flyway Ecoregion

Introduction

Ecological Setting

The Pacific Flyway Ecoregion extends 400 miles through the state of California, and is largely comprised of three main hydrologic basins, including the Sacramento River Basin, the San Joaquin River Basin, and the Tulare Basin. California's Mediterranean climate, paired with the unique geology of the Coastal and Sierra-Nevada Mountain ranges, and the gentle slopes of the valley floor, has developed a unique checkerboard of historically flooded wetlands, uplands, and dynamic riparian systems. This diverse combination of habitats provides a uniquely valuable resource for both resident and migratory wildlife that depend on it (Figure PFE-1).

The Pacific Flyway Ecoregion is one of the most threatened landscapes in the Pacific Southwest Region. Approximately 95% of the wetlands within this ecoregion have been modified for urban development (CA population expected to grow from 39 million to 44 million by 2025), wind and solar development, and conversion to non-compatible agriculture (orchard and vineyard). These direct habitat losses and degradations amplify concerns about species resiliency and mobility throughout the valley in the face of climate change. Restoration and enhancement of priority habitats within this ecoregion are critical to mitigating the effects of climate change by reducing habitat fragmentation, maintaining habitat connectivity, and promoting fish and wildlife migration or movement to adapt to climate-change-induced habitat dynamics.

Partners Program Overview

The Partners Program in the Pacific Flyway is implemented by six Project Managers located within the Ecoregion on National Wildlife Refuges (Modoc, Sacramento, Stone Lakes, San Luis and Kern) and the Habitat Restoration Division (Auburn). Of these six Project Managers, four operate exclusively within the Pacific Flyway Ecoregion and two function across other ecoregions as well. Approximately \$450,000 are obligated annually to habitat improvement projects within the ecoregion.

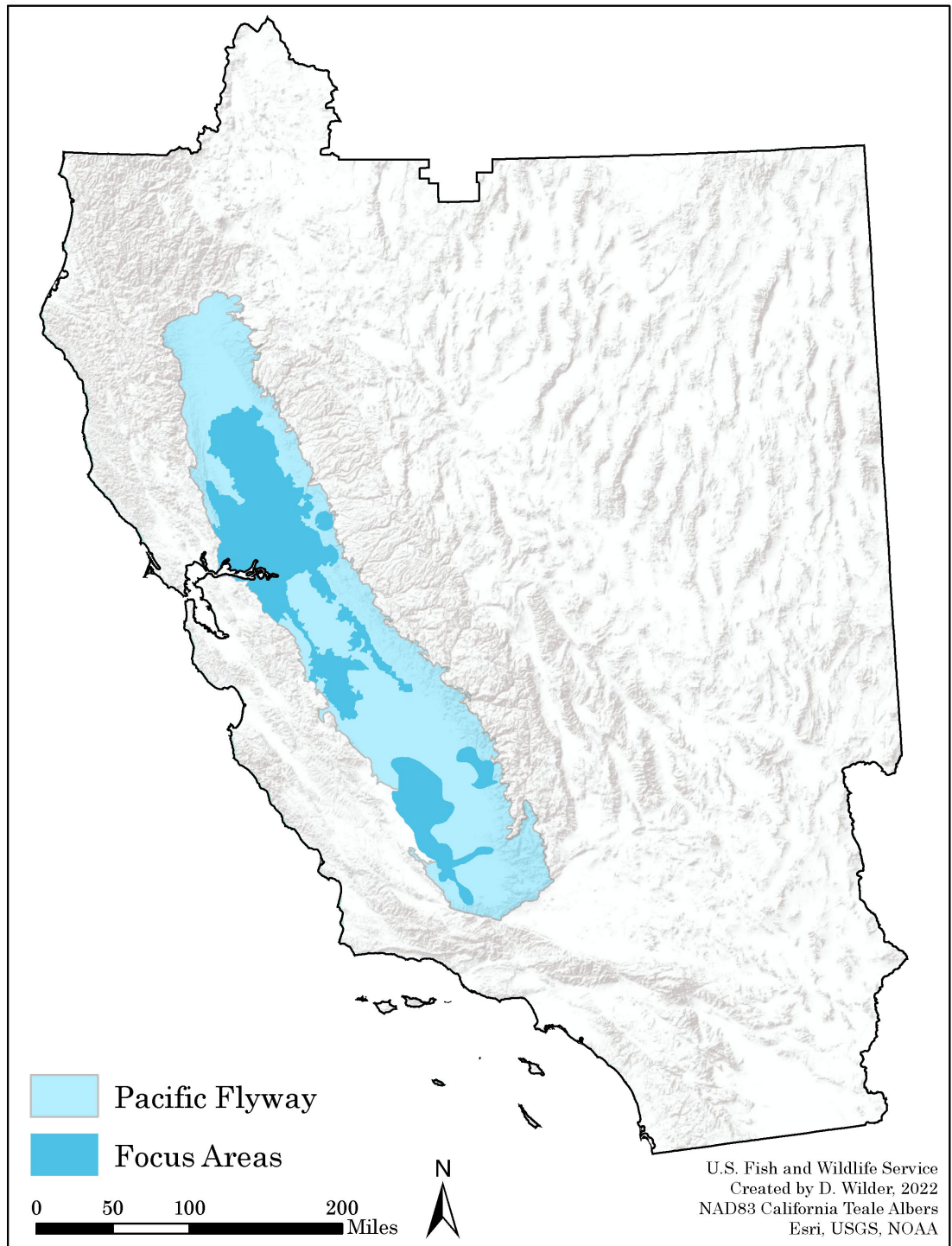
Conservation Planning

Ecoregion Scope and Vision

The scope of the Pacific Flyway Ecoregion is to create a strategic plan to guide conservation efforts by identifying priority habitats and delineating corresponding focus areas to set measurable objectives for the Partners for Fish and Wildlife Program from 2022-2026. The scope sets the boundaries of the Partners Program efforts for the life of the plan, and the vision statement anticipates what the Partners Program will strive to achieve within the ecoregion. The Pacific Flyway Ecoregion vision statement is:

Within the next five years, we will work with private landowners and partners to restore and enhance a mosaic of wetland systems connected by healthy riparian and

Figure PFE-1. Map of the Pacific Flyway Ecoregion with field station Focus Areas.



priority upland corridors to meet the habitat needs for migratory waterfowl, shorebirds, and other federal trust species within California's Great Central Valley.

Conservation Targets

The Pacific Flyway Ecoregion proposed several habitat types as Conservation Targets using the Conservation Standards process. These include the respective species associated with each Target. As with the other Ecoregions, all proposed habitat type Conservation Targets were ranked by the Core Team within the ecoregion with consideration of specific criteria (number of Listed Species, Refuge Purposes, Existing Service Effort, Partner Priority, Supporting Plans, Restoration Opportunity, Social/Economics, and Ability to Improve Status) and given an average score. From this process, four conservation targets were selected as Tier 1. priority and two were considered lower priority targets and identified as Tier 2. This ranking process is detailed in the methods sections of this plan, and results are shown Table PFE-1. As mentioned previously, one key goal for this plan is that 80% of Partners Program efforts during the plan will be directed towards Tier 1. Targets. Tier 2. targets that were considered are still eligible to be considered for projects, but effort will be made to limit effort to 20% while still adhering to existing Partners Program policies.

Table PFE-1 Results of Conservation Target ranking processes used to establish Tier 1. and Tier 2. Conservation Targets for the Pacific Flyway Ecoregion.

Tier 1. Targets	Habitat Scoring
Managed Seasonal Wetlands	0.61
Stream/Riparian	0.63
Perm/semi-permanent Wetlands	0.49
Grasslands	0.51
Tier 2. Targets	
Vernal Pools	0.33
Ponds	0.25

Target Viability Assessment (Current Condition)

In assessing the current conditions of the conservation targets, Key Ecological Attributes were established for each target (Table PFE-2. viability assess table). Partners Program Project Managers were surveyed to determine the current condition of the targets using best available data and professional judgement, and indicator rankings were selected as the current condition rating for each Conservation Target based on group consensus. The conservation targets Managed Seasonal Wetland, Permanent/Semi-Permanent Wetlands, Stream/Riparian, and Grasslands were all considered to be in fair condition, outside of the acceptable range of variation, and requiring actions.

Table PFE-2. Assessment of current conditions using Key Ecological Attributes (KEA) of the Conservation Targets for the Pacific Flyway Ecoregion. Indicator rankings are based on the percentage of biologists who scored the ranking categories using their best professional judgement.

Conservation Target	KEA	KEA Type	Indicator	Indicator Ranking		
				Poor	Fair	Good
Managed Seasonal Wetlands	Extent of available wetlands during migration (Oct 1-March 1)	Landscape Context	Acres of functional habitat	20%	80%	
Permanent/Semi-permanent Wetlands	Extent of available wetlands during key Spring/Summer months (April 1 – Aug 1)	Landscape Context	Acres of functioning habitat		100%	
Stream/Riparian	Extent of functioning habitat	Landscape Context	Acres/miles of unimpacted habitat	33%	67%	
Grasslands	Extent of functioning habitat	Landscape Context	Acres of functioning habitat	33%	67%	

Ideally, the indicator ratings would be quantifiable with data for current and future conditions. However, much of this data is not available at the Ecoregional scale. The lack of quantifiable data to establish current and desired conditions during this planning process represents a data gap, and we set a goal to fill during the span of this plan.

Threats to Conservation Targets

Program managers initially identified over 18 items as threats to the Conversation Targets during planning sessions. These threats were summarized to 11 human caused threats and linked to their respective habitats and species (Table PFE-3. Direct threat table).

Table PFE-3. Direct threats for Pacific Flyway Ecoregion Conservation Targets.

Habitat	Species	Direct Threat
<i>Managed Seasonal Wetland</i>	wintering waterfowl, migratory shorebirds, wading birds	Land use conversion, lack of funding and staff to purchase easements, water availability, water delivery timing, Agriculture, invasive plant species, disturbance, lack of staff/funding to update infrastructure, water quality
<i>Permanent/Semi-Permanent Wetlands</i>	Giant Garter Snakes, Tricolored Blackbirds, migratory waterfowl, resident breeding and post breeding waterfowl, overwater nesting birds	Land use conversion, water availability, water delivery timing, agriculture conversion, invasive species, disturbance, lack of staff/funding to update infrastructure, water quality, mosquito abatement costs, high water pumping costs
<i>Stream/Riparian</i>	Western yellow-billed cuckoo, valley elderberry longhorn beetle, least Bell's vireo, riparian brush rabbit, Central Valley steelhead, winter-run chinook, spring-run Chinook, native pollinators/ monarchs	Land use conversion, invasive plant species, herbicide/pesticide drift, altered hydrologic regime
<i>Native Grasslands</i>	San Joaquin kit fox, CA tiger salamander, blunt-nosed leopard lizard, Tipton's kangaroo rat, native pollinators/monarchs, CA condors, Alameda whipsnake, giant kangaroo rat, T&E herbaceous plants	Lack of fire, invasive plant species, land use conversion, herbicide/pesticide drift, lack of appropriate grazing management, altered hydrology

Strategies, Objectives, and Goals

Seven restoration strategies were identified during the planning process (Table PFE-4, Appendix G). These strategies will guide the development of projects aimed at remediating the effects of the threats to the Conservation Targets. Table PFE-4 provides an overview of the connection between the Conservation Targets, restoration strategies, and some key treatments to be implemented under a given restoration strategy. Additionally, Table PFE-4 identifies key species associated with the Conservation Target and the five-year performance goals per Conservation Target. Appendix G provides in-depth detail on treatments and the biophysical condition the treatments are designed to remediate.

Table PFE-4. Summary tables showing five-year performance goals and key elements associated with the Conservation Targets that were developed and utilized to create Situation Models for the Pacific Flyway Ecoregion.

Conservation Target (Key Species)	Restoration Strategy	Treatments	Five-Year Performance Goals
Managed Seasonal Wetlands (wintering waterfowl & shorebirds, wading birds)	Wetland Habitat Restoration	Wetland restoration, wetland enhancement	2,670 acres
Permanent/Semi-Permanent Wetlands (giant garter snakes, southwestern pond turtles, tri-colored blackbirds, nesting waterfowl, overwater nesting birds)	Wetland Habitat Restoration	Wetland restoration, wetland enhancement	195 acres
Grasslands (CA tiger Salamander, San Joaquin kit fox, blunt-nosed leopard lizard, Buena Vista Lake shrew, Tipton's kangaroo rat, monarchs/native pollinators, Alameda whipsnake, giant kangaroo rat, T&E herbaceous plants)	Grassland Habitat Restoration	Upland establishment/restoration, grazing management, Prescribed fire	1,775 acres
Stream/Riparian (least Bell's vireo, yellow-billed cuckoo, valley elderberry longhorn beetle, riparian brush rabbit, winter-run chinook, spring-run chinook, Central Valley steelhead, monarchs/native pollinators)	Riparian Habitat Restoration	Riparian Restoration, stream channel restoration, modify instream infrastructure	215 acres

Situation models were developed to graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies. The situation models for each Conservation Target are shown in Figure PFE-2.

Pacific Flyway Ecoregion Conservation Targets

Managed Seasonal Wetland Habitat

The managed seasonal wetlands found in the Pacific Flyway Ecoregion provide critical habitat for millions migrating waterfowl and shorebirds. Moist soil vegetation and aquatic

invertebrates produced by the water management of these wetlands are the vital food source for migratory birds. Additionally, the annual spring drawdown of these wetlands provide important foraging areas for non-migratory wading birds and threatened reptiles such as giant garter snakes. These wetlands also function as filters to improve the water quality and help to recharge the groundwater aquifers. Project Managers restore and enhance wetland habitats by providing a more open water habitat type, creating a diversity of water depths, improving water management capabilities, and increasing hydrologic connectivity.

Key Species:

Migratory Waterfowl
Giant Garter Snakes

Migratory Shorebirds

Resident Wading Birds

Regional Priority: Refuge Purposes, Listed/At Risk

National Priority: Species Conservation, Resilient Ecosystems

Permanent/Semi-permanent Wetland Habitat

Permanent/semi-permanent wetlands remain flooded during the summer months. Because of California's Mediterranean climate and lack of summer precipitation, permanent and semi-permanent wetland habitats play a key role in sustaining resident wildlife populations during the dry-hot season. Many of these species are threatened, endangered, and/or are in decline. These wetland habitats are typically much deeper and generally less productive than the managed seasonal wetlands but are often the only water sources found in the summer. Dense emergent vegetation associated with permanent wetlands also serves as thermal cover to migratory bird species in the colder winter months. Water availability and reliable water delivery can be an issue when restoring these wetlands. Due to these factors, Project Managers prioritize restoring these wetlands in strategic locations.

Key Species:

Giant Garter Snakes

Tricolored Blackbirds

Western Pond Turtles

Locally Nesting Waterfowl

Overwater Nesting Birds

California Red-legged Frogs

Regional Priority: Listed/At Risk, Refuge Purposes

National Priority: Species Conservation, Resilient Ecosystems

Stream/Riparian Habitat

Instream/Riverine habitat is one of the most important resources biologically, socially, and economically in the Ecoregion. This habitat type supports several species of anadromous and resident fish that are of cultural and economic significance and provides critical ecosystem services. Project Managers restoring and enhancing these habitats are focused on reestablishing geomorphic process, providing in-stream habitat complexity, off-channel habitat, and improving water quality.

Key Species:

Chinook Salmon

Least Bell's Vireo

Locally Nesting Waterfowl

Central Valley Steelhead

Overwater Nesting Birds

Yellow-billed Cuckoo

California Red-legged Frogs

Regional Priority: Listed/At Risk, Interjurisdictional fish

National Priority: Species Conservation, Habitat Connectivity, Resilient Ecosystems

Grasslands Habitat

Native grassland habitats contain some of the greatest diversity of federally threatened and endangered species in the Region. Nearly 90 percent (197) of California's rare and endangered species inhabit the State's grassland ecosystems (California Native Grasslands Association, <http://www.cnga.org>). Degradation of these habitats occurs through changes in plant composition and structure from encroachment by conifers, fire suppression, urban development, and the conversion of land to agriculture. Project Managers commonly use prescribed burns, mowing, controlled grazing, and hand removal to control the overload of annual grass thatch and/or the spread of non-native invasive plant species.

Key Species:

San Joaquin Kit Fox

Alameda Whipsnake

Blunt-nosed Leopard Lizard

Native Pollinators

California Tiger Salamander

Tipton's Kangaroo Rat

CA Condor

Listed Herbaceous Plants

Giant Kangaroo Rat

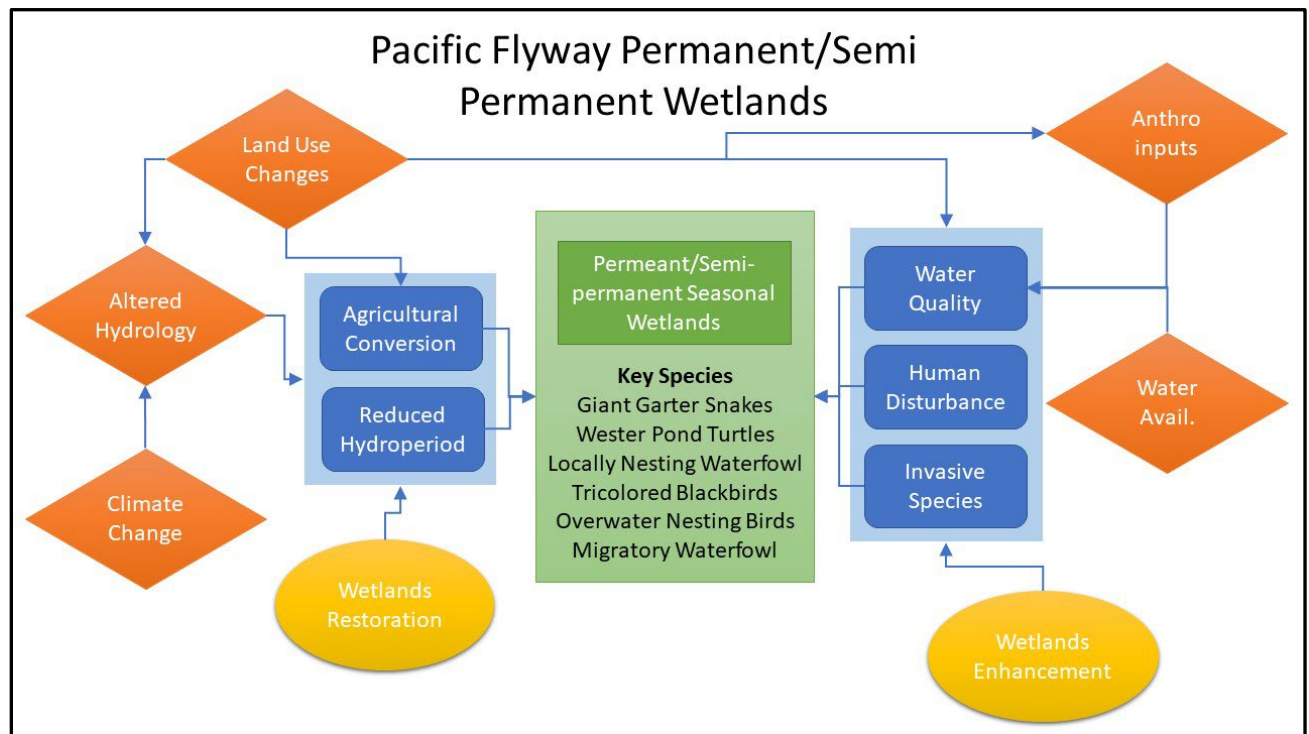
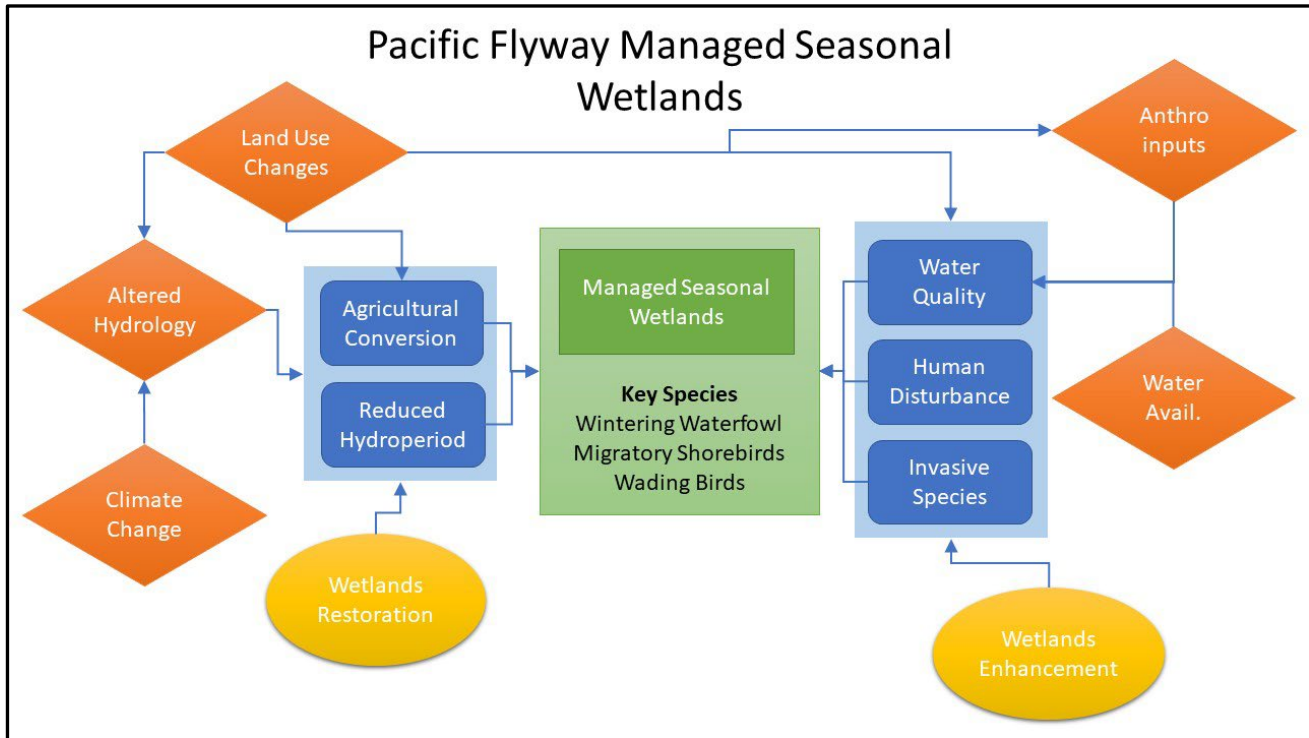
Buena Vista Lake Shrew

Monarch Butterfly

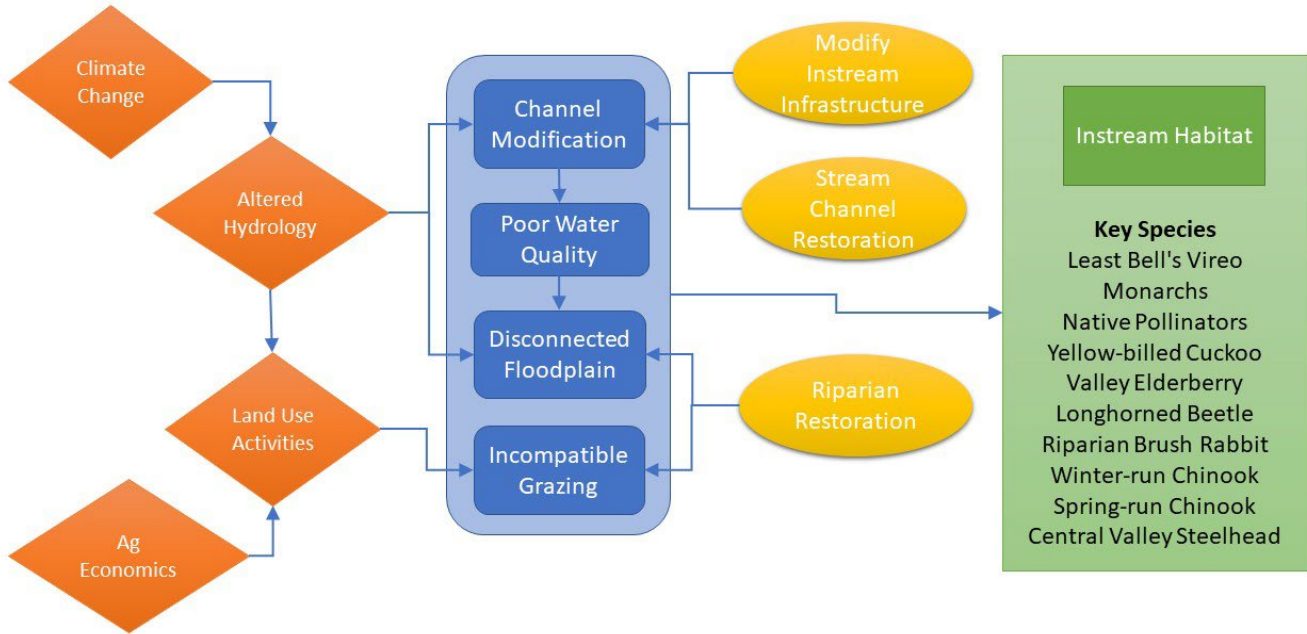
Regional Priority: Listed/At Risk Species

National Priority: Species Conservation, Resilient Ecosystems

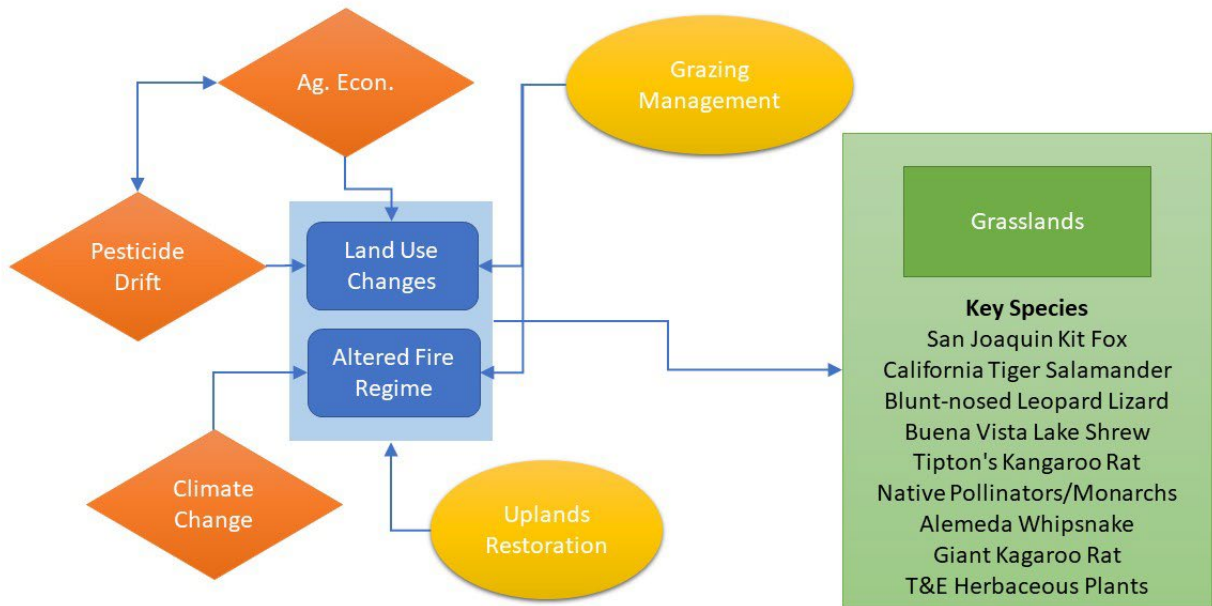
Figure PFE-2. Situational models for the Pacific Flyway Ecoregion showing Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), and the Restoration Strategies to be implemented by the Partners Program to reduce the effects of the Threats on Targets.



Pacific Flyway Stream/Riparian



Pacific Flyway Grasslands



Sierra-Cascades Ecoregion

Introduction

Ecological Setting

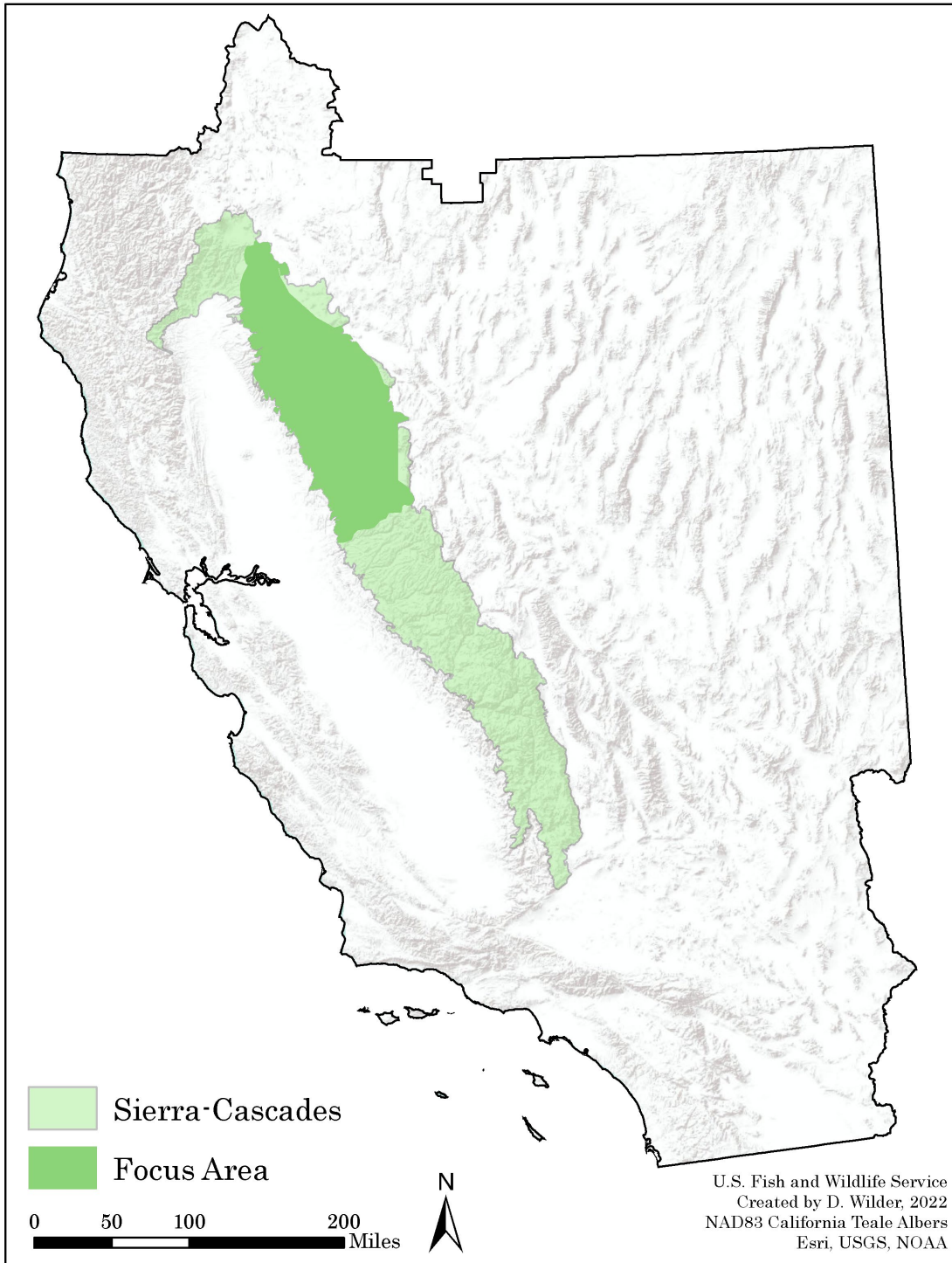
The Sierra-Cascades Ecoregion encompasses most of the westward-draining Southern Cascade and Northern Sierra Nevada Mountain ranges and separates the Central Valley to the west and Great Basin to the east (Figure SCE-1). This Ecoregion is a significant source water area to the California Central Valley and San Francisco Bay Delta through a system of stream and river corridors. Low gradient and broad valley meadows and floodplains are diversity hotspots of the Sierra-Cascades Ecoregion. Although these meadows and floodplains make up a disproportionately smaller area than surrounding forested habitats, they have unique hydrology that supports habitat areas and migration corridors for high concentrations of aquatic, terrestrial, avian, and plant species. These two environments also provide important ecosystem services including water storage, groundwater recharge, flood attenuation, fertile soils, and carbon sequestration.

Meadows and floodplains of the Sierra-Cascades Ecoregion are generally characterized by low gradient areas of finer grained soils, frequent periodic flooding, and migrating stream channels. They additionally have greater productivity and herbaceous cover than the surrounding mountainous grassland and forested landscape. These unique conditions result in habitat areas that shift between terrestrial and aquatic with a high diversity of plants and animals including sensitive species and migratory birds. Degradation of these ecosystems have resulted from a variety of past land management practices and naturally occurring disturbance events causing stream channel incision, disconnections between stream and riparian areas, and overall dryer meadow and floodplain conditions. Since the late 1800's over-grazing, road building, mining, logging, ditching, urbanization, water management, levee construction and climate change have contributed to a decline in habitat quality and hydrologic function of these ecosystems. Restoration actions will focus on identifying and addressing causes of degradation at the watershed and project site scales and restoring components of dynamic fluvial and ecosystem process along stream and river corridors.

Partners Program Overview

The Partners Program in the Sierra-Cascades is implemented by three Project Managers located within the Ecoregion at Modoc NWR and the Habitat Restoration Division in Auburn. Two of the three project managers work exclusively within the Sierra-Cascades Ecoregion and one works across multiple ecoregions. Approximately \$225,000 are obligated annually to habitat improvement projects within the ecoregion.

Figure SCE-1. Map of the Sierra-Cascades Ecoregion with field station Focus Areas.



Conservation Planning

Ecoregion Scope and Vision

Sierra-Cascades Ecoregion Core Team agreed that the scope of this plan would be target-based and focused on the conservation of high priority habitats found in the northern Sierra Nevada and southern Cascade Mountain ranges. The scope sets the boundaries of the Partners Program the duration of the plan and the vision statement describes what the Partners Program will strive to achieve, The Sierra-Cascades Ecoregion vision statement is:

Over the next 5 years, we will work collaboratively with landowners and stakeholders to restore hydrologic function and sediment processes in degraded meadow complexes and stream habitats within the Sierra-Cascades Ecoregion for the benefit of habitat diversity and resiliency; water quality and quantity; and wildlife refugia during and after wildfires.

In the Sierra-Cascades Ecoregion, four habitat types were proposed for consideration as Conservation Targets. All proposed habitat type Conservation Targets were ranked by the Partners Program Project Managers within the Ecoregion by considering specific criteria including number of listed species; refuge purposes; U.S. Fish and Wildlife Service effort; partner priority; supporting plans; restoration opportunity; social/economics; and ability to improve status. Each Target was rated against these criteria and scored following the description in the Methods section of this plan. From this process, three conservation targets: Meadow Complexes, Streams, and Riparian were selected as Tier 1 priorities and one Target (Timber) was determined to be a Tier 2 priority. The ranking process is detailed in the methods section of this plan, but Table SCE-1 illustrates the results from the ‘average rank’ method. The goal of this plan is to direct 80% of the Partners Program efforts towards Tier 1 Conservation Targets. Tier 2 Targets can still be considered on an as needed basis with the remaining 20% of Program efforts.

Table SCE-1 Results of Conservation Target ranking processes used to establish Tier 1 and Tier 2 Conservation Targets for the Sierra-Cascades Ecoregion.

Tier 1 Targets	Habitat Scoring
Meadow	0.72
Stream	0.65
Riparian	0.47
Tier 2 Targets	
Timber	0.26

National and Regional Priorities

The processed used to select Conservation Targets and the implementation of habitat restoration projects directed at Tier 1 targets over the lifespan of this plan will ensure that the Partners Program is working in support of both National and Regional Partners for Fish and Wildlife Program priorities.

Target Viability Assessment (Current Condition)

In assessing the current conditions of the Conservation Targets, Key Ecological Attributes were established for each target (Table SCE-2. viability assessment table). Biologist were surveyed to determine the current condition of the targets using best professional judgement. The current condition rating with the highest number of votes was selected as the Indicator Ranking for each Conservation Target. Instream and Riparian Habitat types were considered to be in fair condition, outside of the acceptable range of variation and requiring actions. Wet meadow habitat was determined to be in poor condition indicating that restoration of the target is more challenging than others.

Ideally, the indicator ratings would be quantifiable data (i.e., acres/miles) and there would be quantifiable metrics for the future desired condition of the targets, this data is lacking at the Ecoregional scale. The lack of quantifiable data to establish current and desired conditions data-gap identified during this planning process is a goal to be addressed during the life of this plan.

Table SCE-2. Assessment of current conditions using Key Ecological Attributes (KEA) of the Conservation Targets for the Sierra-Cascades Ecoregion. Indicator rankings are based on the percentage of biologists who scored the ranking categories using their best professional judgement.

Conservation Target	KEA	KEA Type	Indicator	Indicator Ranking		
				Poor	Fair	Good
Wet Meadow Habitat	Number of meadows with connected floodplain	Landscape Context	Acres of functional habitat		60%	
Riparian Habitat	Extent of habitat available during key life stages of Pacific Flyway Waterbirds	Landscape Context	Acres of functioning habitat		56%	
Instream Habitat	Extent of functioning habitat	Landscape Context	Acres/miles of unimpacted habitat		80%	

Threats to Conservation Targets

Program biologist initially identified over 25 threats to the Conversation Targets during planning sessions. These threats were summarized to 12 human caused threats and linked to their respective habitats and species (Table SCE-3. Direct threat table).

Table SCE-3. Direct threats for Sierra-Cascade Ecoregion Conservation Targets.

Habitat	Species	Direct Threat
<i>Meadow Complexes</i>	Cascades frog, beaver, Sandhill cranes, mountain yellow-legged frog (northern DPS), Sierra Nevada yellow-legged frog, southwestern willow flycatcher, wolves, locally nesting waterfowl, wintering waterfowl	Stream/ ditch incision, over grazing, infrastructure constrictions, undersized culverts, undersized bridges, loss of natural disturbance regimes(i.e., fire), reduced ground water capacity, conifer encroachment
<i>Riparian</i>	southwestern willow flycatcher, migratory birds	Over grazing, cattle trampling of bank form, catastrophic fire, riparian clearing, altered hydrology
<i>Instream</i>	Central Valley steelhead, spring-run chinook, foothill yellow-legged frog, CA red-legged frog, beaver, Shasta crayfish,	Cattle trampling and nutrient-loading, infrastructure constrictions (under-sized culverts, undersized bridge, stream diversions, stream barriers, altered hydrology

Strategies, Objectives, and Goals

Six restoration strategies were identified during the planning process (Table SCE-4), Appendix D), these strategies will guide the development of projects aimed at remediating the effects of the threats to the Conservation Targets. Table SCE-4 provides an overview of the connection between the Conservation Targets, Restoration Strategies, and some key treatments to be implemented under each restoration strategy. Additionally, Table SCE-4 identifies key species associated with Conservation Targets and the five-year performance goals per Conservation Target. Appendix H provides in-depth detail on treatments and the biophysical condition the treatments are designed to remediate.

Table SCE-4. Summary tables showing five-year performance goals and key elements associated with the Conservation Targets that were developed and utilized to create Situation Models for the Sierra-Cascades Ecoregion.

Conservation Target (Key Species)	Threats	Restoration Strategy	Treatments	Five-Year Performance Goals
Wet Meadow (<i>Cascades frog, mountain yellow-legged frog, Sierra Nevada yellow-legged frog, sandhill crane</i>)	Stream incision, water diversions over grazing, faulty infrastructure	Instream Habitat Restoration	Channel reactivation, reconnect floodplains, manage grazing, prescribed fire	1,500 acres
Riparian (<i>Southwestern Willow flycatcher</i>)	Stream incision, water diversion, over grazing, riparian clearing	Riparian Habitat Restoration	Reconnect floodplain, grazing management, riparian fencing, riparian plantings	2 miles
Instream (<i>Shasta crayfish, Central Valley steelhead, spring-run chinook</i>)	Stream incision, water diversion, over grazing, altered fire regime	Instream Habitat Restoration	Channel realignment, instream habitat enhancement, flood plain reconnection	3 miles

Situation models were developed to graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies. The situation models for each Conservation Target and presented in Figure SCE-2.

Sierra-Cascades Ecoregion Conservation Targets

Wet Meadow Habitat

Wet meadows in the Sierra-Cascades Ecoregion are the headwaters to major rivers flowing into the San Francisco Bay Delta. Meadows contain shallow water tables that support wetland, riparian, stream, and lacustrine habitats. These areas are essential for most sensitive species in the high elevations and are also critical areas of climate change refugia. There are approximately 191,000 acres of mountain meadows throughout the high elevations of the Sierra-Cascades Ecoregion, of which an estimated 90,000 acres, or nearly 50%, are in a degraded state. Nearly half of these degraded meadows are estimated to be on private lands, providing excellent opportunities for Partners Program to support restoration and enhancement efforts.

Meadow stream channels change over time and maintain meadow vegetation and habitat diversity through processes of erosion and deposition as stream channels migrate across a meadow. Past management actions often resulted in excessive straightening and downcutting of meadow streambeds leading to a lower local water table and successional changes to drier and less dynamic meadow systems. A variety of restoration actions are currently utilized to restore these habitats including removing or modifying infrastructure such as culverts or road berms to open stream corridors and restore wet meadow hydrology and channel migration; grazing management that promotes diverse riparian vegetation communities; and beaver restoration approaches that increase water and sediment storage and encourage greater stream channel and meadow floodplain interaction.

Key Species:

Mountain Yellow-legged Frog

Sandhill Cranes

Cascades Frog

Sierra Nevada Mountain Yellow-legged Frog

Southwestern Willow Flycatcher

Riparian Habitat

Riparian areas are the critical interface between our riverine and upland habitats and when fully functioning, can mediate negative impacts to the aquatic resources of the Ecoregion. Additionally, these habitats provide a variety of ecosystem services such as, delivering allochthonous productivity to aquatic systems, stabilizing stream banks, and providing habitat for a variety bird, mammal, and plant species. Southwestern Willow flycatchers are dependent on healthy riparian areas within this ecoregion. Project Managers restore these habitats by developing grazing plans, fence installing fence, planting native trees, shrubs, and grasses, and removing invasive species.

Key Species:

Southwestern Willow Flycatcher

Instream Habitat

Instream/Riverine habitat is one of the most important resources biologically, socially, and economically in the Ecoregion. This habitat type supports federally listed species of anadromous fish and crustaceans that are of cultural and economic significance and provides critical ecosystem services. Project Managers working in these habitats are focused on reestablishing geomorphic process through the reconnection of the floodplain, providing in-stream habitat complexity, off-channel habitat, and removal of faulty infrastructure.

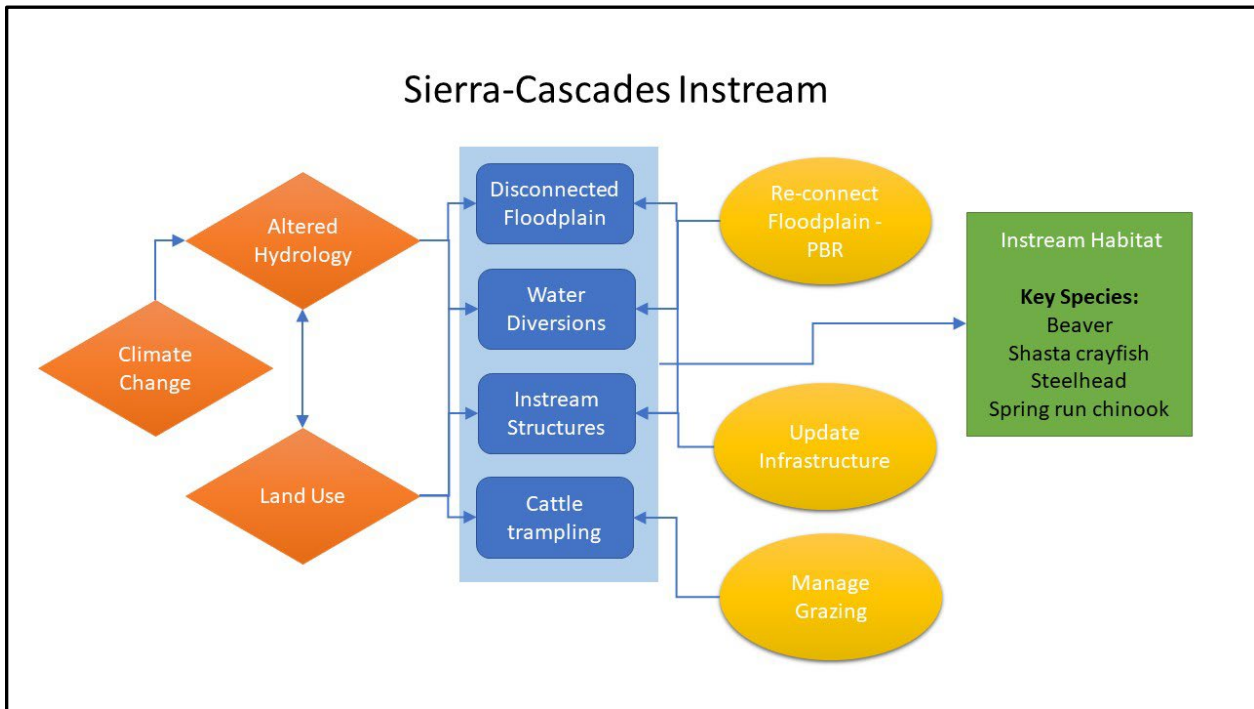
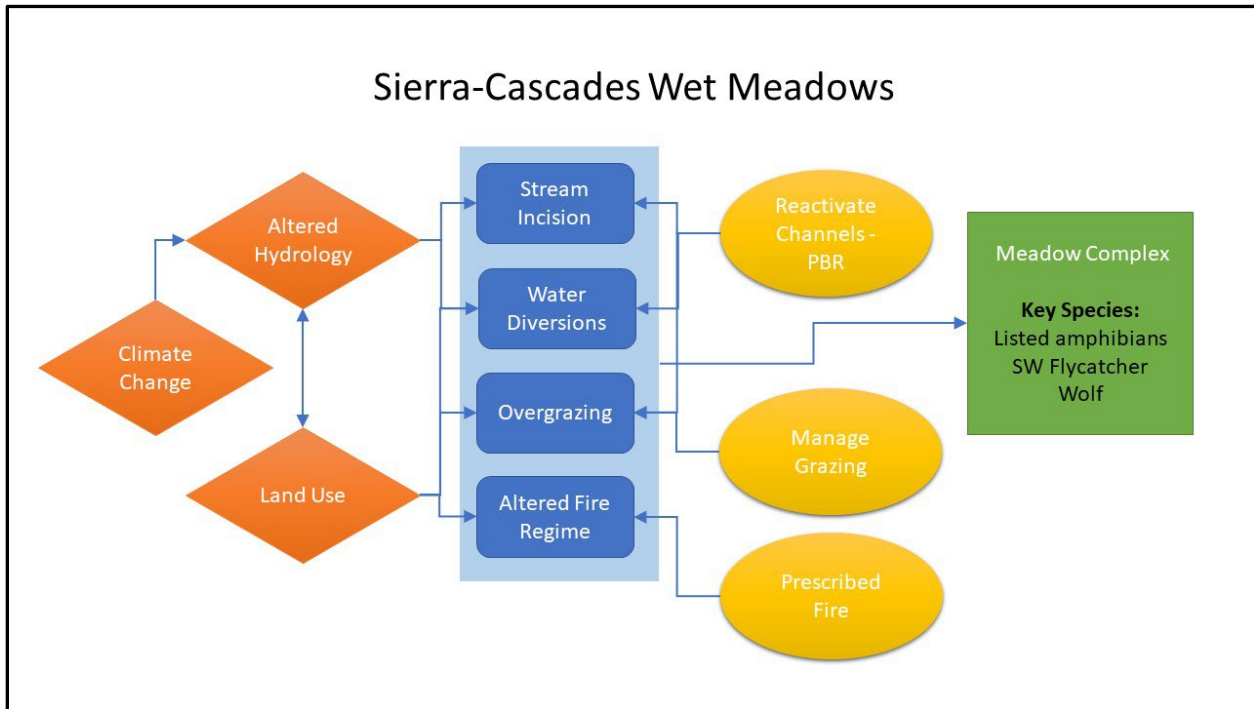
Key Species:

Shasta Crayfish

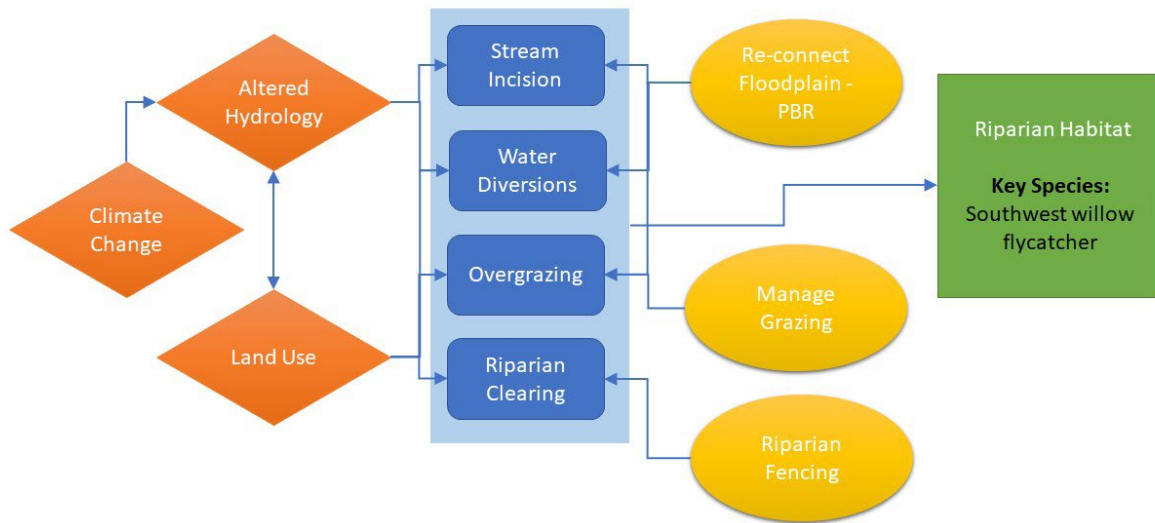
Spring-run Chinook

Central Valley Steelhead

Figure SCE-2. Situational models for the Sierra-Cascades Ecoregion showing Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), and the Restoration Strategies to be implemented by the Partners Program to reduce the effects of the Threats on Targets.



Sierra-Cascades Riparian



Coastal California Ecoregion

Introduction

Ecological Setting

The Coastal California Ecoregion consists of three main components: the San Francisco Bay foothills primarily Napa, Sonoma, Alameda, Contra Costa, and Santa Clara counties; the Central Coast ranging from southern Santa Cruz to northern Los Angeles Counties, and the southern component taking in San Diego and a small portion of Riverside Counties (Figure CCE-1). The northern area is comprised of anadromous fish-bearing streams, oak woodlands, annual grasslands, and chaparral covered hillsides. The Central Coast provides an intact and rural landscape comprised of annual grasslands, vernal pools, oak woodlands, ponds, wetlands, and riparian habitat types. The southern focus area represents the coastal watersheds in northern San Diego County, southern Orange County, and southwestern Riverside County containing coastal sage scrub chaparral, grassland, oak woodland, riparian and freshwater wetland habitat types.

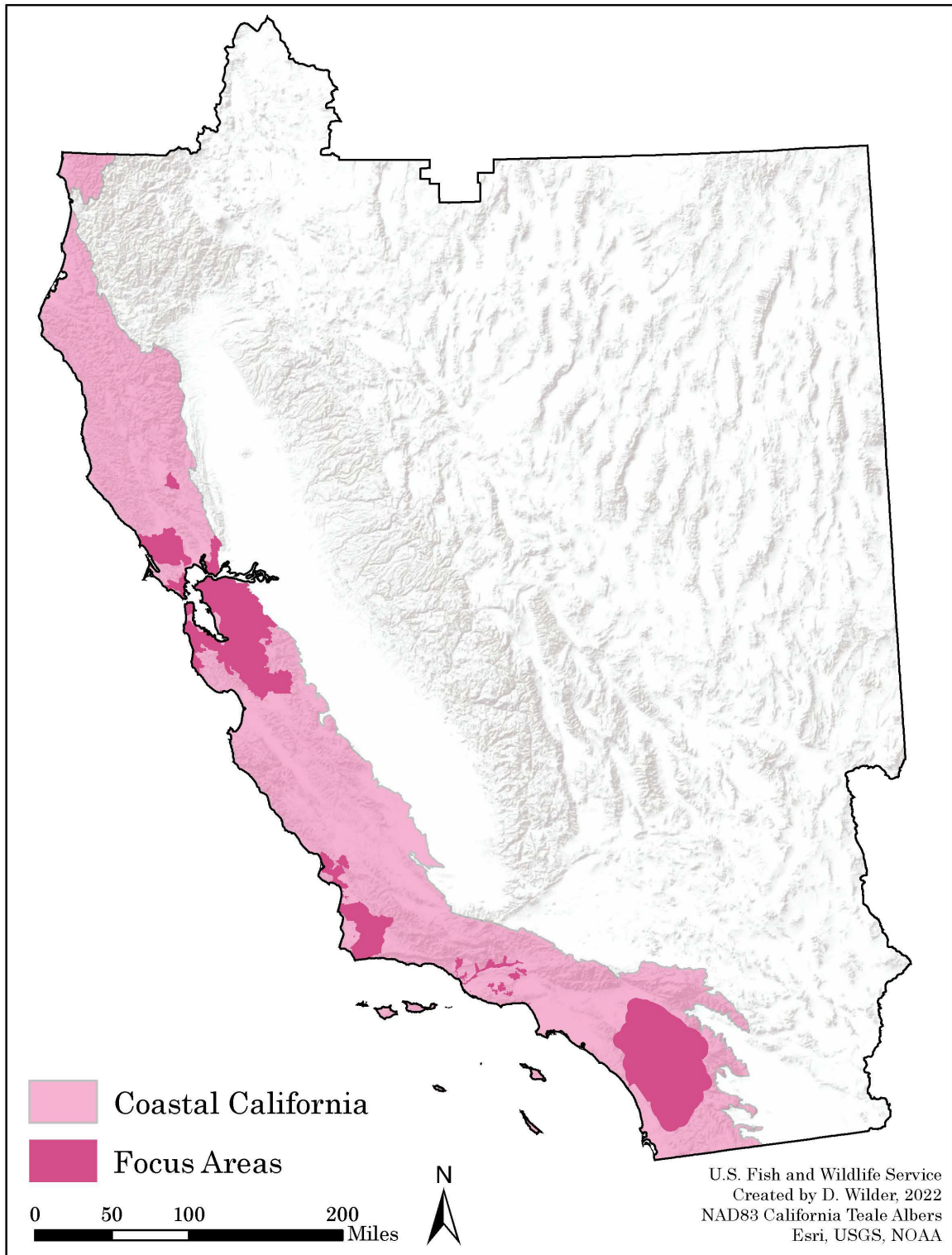
Across the California coast, Partners Program efforts will focus on identifying, enhancing, and restoring priority habitats to benefit Federal trust species, improve habitat connectivity, and restore ecological processes. Restoration and enhancement within the Coastal California Ecoregion are critical to mitigating the effects of climate change by reducing habitat fragmentation, maintaining habitat connectivity, and promoting fish and wildlife migration or movement to adapt to climate-change-induced habitat dynamics.

- The San Francisco Bay focus area provides a unique opportunity to restore and conserve priority habitats in somewhat densely populated areas surrounded by large privately owned cattle ranches and formally designated open space. A mutual desire to preserve the remaining undeveloped lands has led to a shared goal between private landowners and the conservation community to preserve the natural viewsheds and the working agricultural lands with the knowledge that both the economy and fish and wildlife will benefit.

The Central Coast Focus Area consists of 675,000 acres of private lands and spans from northern Los Angeles County to Santa Cruz County. This focus area is comprised of several discrete geographic areas that represent the highest priority restoration potential for the benefit of Federal trust species. These areas include monarch butterfly overwintering groves, Ventura and Los Angeles County wildlife corridors, Santa Barbara County working landscapes, and southern San Luis Obispo County watersheds. Restoration efforts in this Focus Area will center on monarch butterfly overwintering sites, grasslands, freshwater wetlands, oak woodlands, and riparian corridors. These areas include monarch butterfly overwintering groves, Ventura and Los Angeles County wildlife corridors, Santa Barbara County working landscapes, and southern San Luis Obispo County watersheds.

- Within the southern Focus Area, many landscapes remain intact despite the pressure of urbanization. In collaboration with private landowners to conserve and restore these private lands, the Partners Program will focus on the areas between

Figure CCE-1. Map of the Coastal California Ecoregion with field station Focus Areas.



- mitigation lands and larger regional habitat preserves. In recent years, native pollinators and monarch butterflies have become important resources to consider in restoration and public outreach. We have been able to add components to our restoration work such as expanding existing and restoring new areas with the appropriate native milk weed plants to help sustain pollinator and Monarch populations.

Partners Program Overview

The Partners Program in the California Coastal Ecoregion is currently implemented by three Project Managers, stationed at the Habitat Restoration Division (Auburn), the Ventura Fish and Wildlife Office (Ventura) and at Carlsbad Fish and Wildlife Office in Carlsbad. Two of the three (Ventura and Carlsbad) work exclusively within this ecoregion and one works across multiple other ecoregions. Approximately \$225,000 are obligated annually to habitat improvement projects within this ecoregion.

Conservation Planning

Ecoregion Scope and Vision

In the development of this plan, Core Team members agreed that a Target-based scope is most appropriate for the Partners Program. This means that Service priorities are best met within the geographic focus of the California Coast from the San Francisco Bay to the Mexico border using a Target-based approach for setting habitat restoration priorities. The scope of the Coastal California Ecoregion is to develop a 5-year strategic plan running from 2022-2026, with goals and objectives for the Partners Program to support voluntary conservation and resilience of coastal California ecosystems and processes that restore and protect native habitats and species.

The California Coastal Ecoregion vision statement is:

Through partnerships, the health and climate resilience of coastal California ecosystems that support diverse native habitats and species will be improved within the next five years.

Conservation Targets

In the California Coastal Ecoregion, four habitat types and 19-species were proposed for consideration as priority Conservation Targets. All proposed targets were analyzed by a habitat-based type analysis. The goal of this analysis overall was to refine this proposed list of targets based on Service and Program priorities resulting in the identification of the highest priority targets (Tier 1. Conservation Targets) for the Program.

The identification of Tier Two targets was used to document all the habitat/species that were considered during the prioritization process. Our goal for this plan is to direct 80% of project efforts and funding towards Tier 1 targets over the course of its five-year period.. This enables the Program Project Managers to focus on the targets while retaining flexibility desired to meet many conservation needs along the California Coastal Ecoregion. Program Policy still applies to the remaining 20% efforts. We did not prioritize within the

Tier 1. Conservation Targets, nor did we develop all the details for the Tier 2. or other targets.

The habitat-based target selection process is detailed in the methods sections of this plan and resulted in three Tier 1. targets for the California Coastal Ecoregion. They are Riparian and Streams, Freshwater Wetlands and Grasslands. The Riparian and Stream Habitat scored the highest in the habitat-based process (0.74) and the remaining target scores ranged from 0.47 to 0.30. Table CCI-1 shows the Targets and the results of the ranking process.

Table CCE-1. Results of two Conservation Target ranking processes used to establish Tier 1. and Tier 2. Conservation Targets for the CA Coastal Ecoregion.

Tier 1. Targets (in Rank order)	Habitat Scoring
Riparian and Stream Habitat	0.74
Freshwater Wetland Habitat	0.47
Grassland Habitat	0.43
Tier 2. Target	
Woodland Habitat	0.30

National and Regional Priorities

The process used to select Conservation Targets and the implementation of habitat restoration projects directed at Tier One targets over the lifespan of this Plan will ensure that the Partners Program is working in support of both National and Regional Partners priorities.

Target Viability Assessment (Current Conditions)

In assessing the current conditions of the conservation targets, Key Ecological Attributes were established for each target (Table CCE-2). Project Managers were surveyed to determine the current condition of the targets using best professional judgement. The highest percentage of Project Managers that selected a particular indicator ranking determined the current condition estimated rating for each Conservation Target. Riparian/Stream and Grassland Habitats were considered to be in fair condition, which is outside of the acceptable range of variation and requiring actions. The Freshwater Wetland Habitat was determined to be in poor condition indicating that restoration of the target is more challenging than the other targets.

Table CCE-2. Assessment of current conditions using Key Ecological Attributes (KEA) of the Conservation Targets for the California Coastal Ecoregion. Indicator rankings are based on the percentage of biologists who scored the ranking categories using their best professional judgement.

Conservation Target	KEA	KEA Type	Indicator	Indicator Ranking		
				Poor	Fair	Good
Riparian and Stream Habitat	Extent of functioning habitat available for key species within the Ecoregion	Landscape Context	Acres and miles of functional habitat		57%	
Freshwater Wetland Habitat	Extent of functioning habitat available for key species within the Ecoregion	Landscape Context	Acres of functional habitat	100%		
Grassland Habitat	Extent of functioning habitat available for key species within the Ecoregion	Landscape Context	Acres of native vegetation		83%	

Ideally indicator ratings would be quantified with existing data to add rigor. For example, we would estimate acres/miles of habitat necessary to support healthy targets, and there would be quantifiable metrics for the future desired condition of the targets. These data are currently lacking at the Ecoregional scale for these targets in the Coastal California Ecoregion. The lack of quantifiable data to establish current and desired conditions does note a data-gap that was clearly identified during this planning process, which we established as a goal to be addressed during the life of this plan.

Threats to Conservation Targets

Threats to Conservation Targets

Program managers identified over 27 items as threats to the Conversation Targets during planning sessions. These threats were summarized to 16 human caused threats and linked to their respective habitats and species (Table CCE-3, Direct threat table).

Table CCE-3. Direct threats for Coastal California Ecoregion Conservation Targets.

Habitat/Conservation Targets	Species	Direct Threat
<i>Riparian and Streams</i>	Coho salmon, Southern CA steelhead, lamprey, Monarchs/native pollinators, Arroyo toad, Least Bell’s Vireo, Yellow-legged frog, CA red-legged frog, migratory birds, unarmored three-spine stickleback, southwestern pond turtle, Arroyo chub	Invasive plant species, habitat loss, climate change-drought, pollutants-ag and urban runoff, invasive aquatic predators (e.g., bullfrog), catastrophic wildfire, fish passage barriers, flood control, altered hydrology, disconnected floodplain, decrease in water quality, less water availability
<i>Freshwater Wetlands (ponds, springs, vernal pools)</i>	CA tiger salamander, vernal pool fairy shrimp, riverside fairy shrimp, southwestern pond turtle, CA red-legged frog, Monarch butterfly/native pollinators, migratory birds, T&E vernal pool plants	Land use conversion, water availability, invasive species, habitat loss, unauthorized access and off-road vehicle activity, infrastructure altering hydrology
<i>Grasslands</i>	Monarchs/pollinators, Quino checkerspot butterfly, San Joaquin kit fox, Laguna Mountain skipper, short-eared owl, Northern harrier, Stephen’s kangaroo rat	Invasive plant species, land use conversion, herbicide/pesticide drift, poor grazing management

Strategies, Objectives, and Goals

Six restoration strategies were identified during the planning process (Table CCE-4. ecoregion table, Appendix F). These strategies will guide the development of specific restoration projects aimed at remediating the effects of the threats to the Conservation Targets. Table CCE- 4 provides an overview of the connection between the Conservation Targets, restoration strategies, and some key treatments to be implemented under a given restoration strategy.

Table CCE-4. Summary tables showing five-year performance goals and key elements associated with the Conservation Targets that were developed and utilized to create Situation Models for the Coastal California Ecoregion.

Conservation Target (Key Species)	Threats	Restoration Strategy	Treatments	Five-Year Goals
Riparian/Stream (<i>coho salmon, Southern CA steelhead, Pacific lamprey, monarchs/pollinators, T&E amphibians, least Bell's vireo, Unarmored Three-spined Stickleback</i>)	Channel modification, incompatible grazing, dredging, invasive species, improper road/stream crossings	Riparian and Stream Habitat Restoration	Channel realignment, instream habitat enhancement, low impact process based restoration techniques, floodplain reconnection, road remediation, grazing management, native vegetation planting	5 Miles / 200 Acres
Freshwater Wetlands (<i>CA Tiger salamander, fairy shrimp sp., southwestern Pond turtle, CA red-legged frog, monarchs, migratory birds, western spadefoot toad</i>)	Agriculture conversion, reduced hydroperiod, decrease water quality, human disturbance, invasive species	Freshwater Wetland Habitat Restoration	Vegetation management	15 Acres
Grasslands (<i>Quino checkerspot butterfly, CA condor, monarch butterfly, San Joaquin kit fox, Laguna Mountain skipper, short-eared owl, northern harrier</i>)	Land use conversion, incompatible grazing, altered hydrology, herbicide/pesticide drift, invasive plant species	Upland Habitat Restoration	Grazing management, promote land stewardship, Prescribed fire, plant native vegetation, remove invasive plant species	200 acres

Additionally, Table CCE-4 identifies key species associated with the Conservation Target and the 5-year performance goals per Conservation Target.

Situation models were collaboratively developed to guide discussions and graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies. These models align the logical pathways between national, regional, and local priorities demonstrating connections between higher-level threats and restoration strategies. Situation models are shown in Figure CCE-2.

Coastal California Ecoregion Conservation Targets

Riparian/Stream Habitat

Riparian/stream habitat was identified as the most important biological resource in the Ecoregion. This habitat type supports three species of anadromous fish, of which two are federally listed and one federally listed freshwater fish. Project Managers working in these habitats are focused on reestablishing geomorphic process, controlling invasive plant species, reconnecting the streams with their floodplains, replacing faulty infrastructure, and improving water quality.

Key Species:

Coho Salmon

Southern CA Steelhead

Pacific Lamprey

Unarmored Three-spined

Least Bell's Vireo

Monarch Butterfly

Stickleback

Freshwater Wetland Habitat

Freshwater in California is an extremely valuable resource biologically, socially, and economically. The Partners Program will focus on restoring and enhancing vernal pools, freshwater ponds and marsh, wet meadows, and springs. These wetlands provide habitat for priority species including the western pond turtle and the California red-legged frog, as well as various migratory bird species. Vernal pools provide habitat for many rare, state, and federally listed plant species including California tiger salamander and federally listed fairy shrimp species. Project Managers restore, enhance and establish these habitats by influencing hydrological processes, adjusting local topography, invasive species control, fence installation, and developing grazing plans.

Key Species:

CA Tiger Salamander

CA Red-legged Frog

Vernal Pool Fairy Shrimp

Southwestern Pond Turtle

Western Spadefoot Toad

Monarch Butterfly

Riverside Fairy Shrimp

Grassland Habitat

In California the areas that are now wide-open grasslands dominated by annual European grasses were probably a mixed of native perennial grasses and native forbs. These areas provide habitat for wide range of native species such as the California tiger salamander, grasshopper sparrow, burrowing owl, San Joaquin kit fox, and giant kangaroo rat. Targeted restoration projects can improve the biodiversity in these areas by implementing grazing plans, removing invasive plants, and establishing native grasses and forbs (including milkweed plants).

Key Species:

Quino Checkerspot Butterfly

Laguna Mountain Skipper

San Joaquin Kit Fox

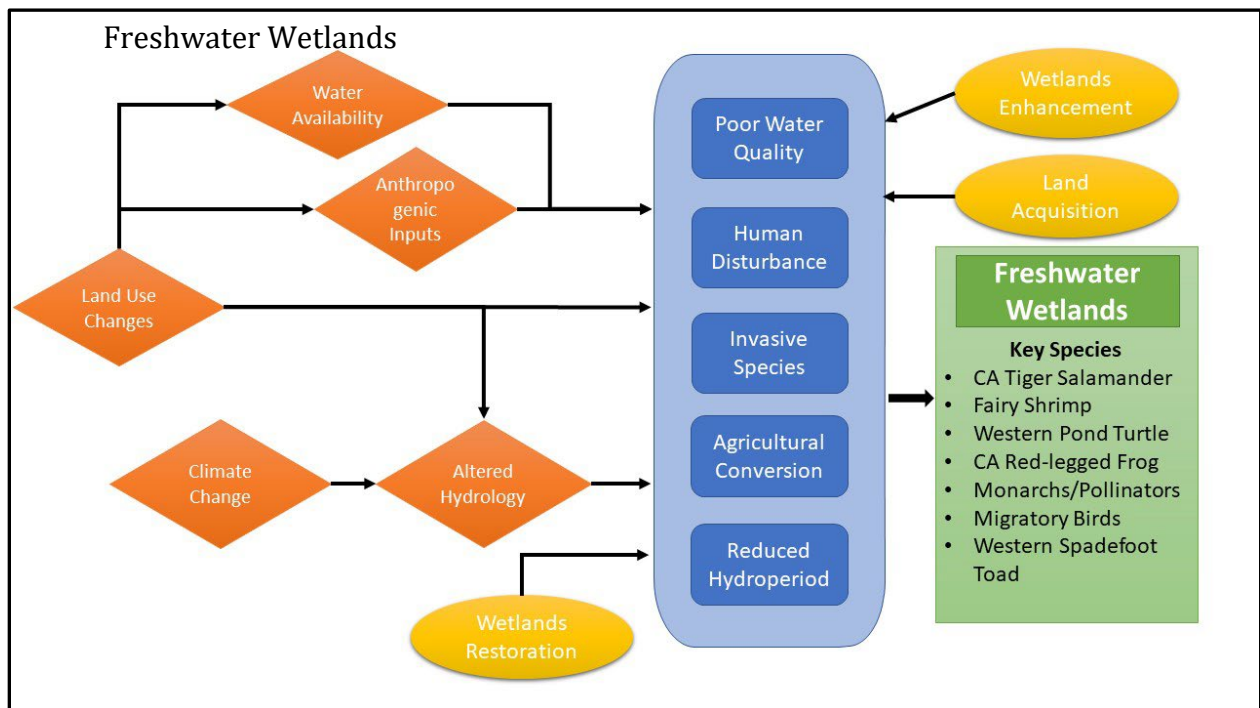
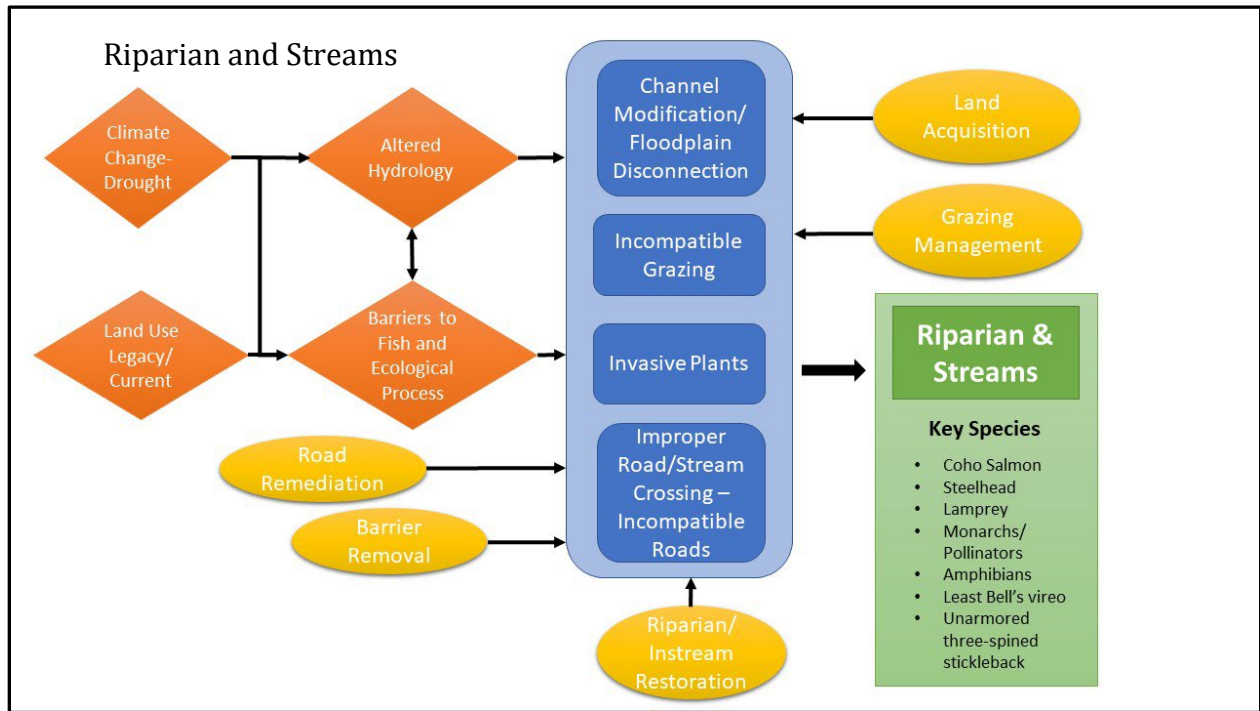
Short-eared Owl

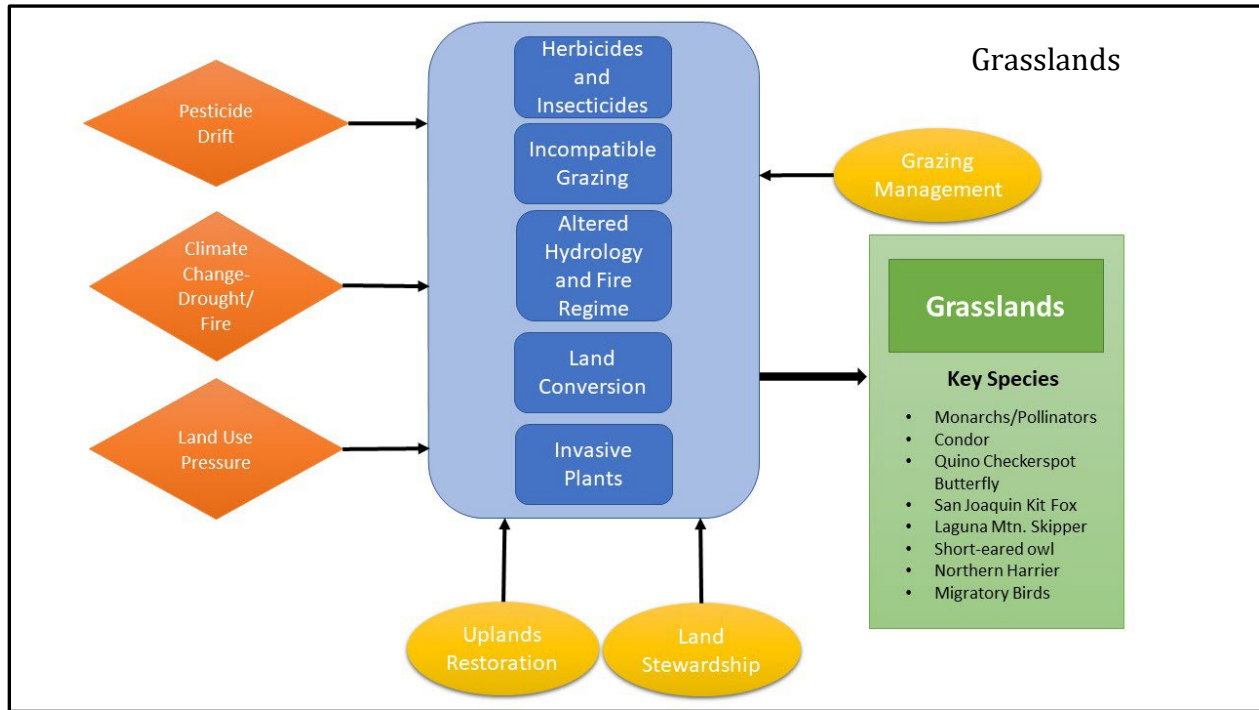
Monarch Butterfly

CA Condor

Northern Harrier

Figure CCE-2. Situational models for the Coastal California Ecoregion showing Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), and the Restoration Strategies to be implemented by the Partners Program to reduce the effects of the Threats on Targets.





Warm Desert Ecoregion

Introduction

Ecological Setting

The Warm Desert Ecoregion encompasses 34 million acres in the Mojave Desert and Colorado Desert (the portion of the Sonoran Desert in California). Gently undulating shrub-scrub plains with isolated abruptly rising low mountains characterize this ecoregion. Elevations range from 280 ft. below sea level to 3,000 ft. above in valleys and basins with elevations around 11,000 ft. in some mountain ranges. The Federal government manages over 81% of this ecoregion with private land concentrated around areas with water. This is the driest ecoregion in the U.S. with rainfall ranging on average from 2 to 10 inches depending on location and topography. Due to the varied topography and isolation of areas with surface water, this ecoregion has high biodiversity and high levels of endemism.

The Warm Desert Focus Area was delineated within the Warm Desert Ecoregion to align the Partners Program efforts to deliver critical habitat conservation and restoration efforts in six habitats that are essential for maintaining biological diversity in the desert as well as maximizing resilience to climate change (Figure WD-1). These areas have more private land than the rest of the ecoregion. Las Vegas, the largest City in this ecoregion, is included in the Focus Area, since it is an Urban Wildlife Refuge Partnership City. There are many opportunities to collaborate with community groups under the Service's Urban Wildlife Conservation Program as well as the Desert National Wildlife Refuge (NWR), which is an Urban NWR. In addition to Desert NWR, four other NWRs are in or adjacent to the Warm Desert Focus Area: Ash Meadows NWR, Moapa Valley NWR, Pahrnagat NWR, and Sonny Bono Salton Sea NWR.

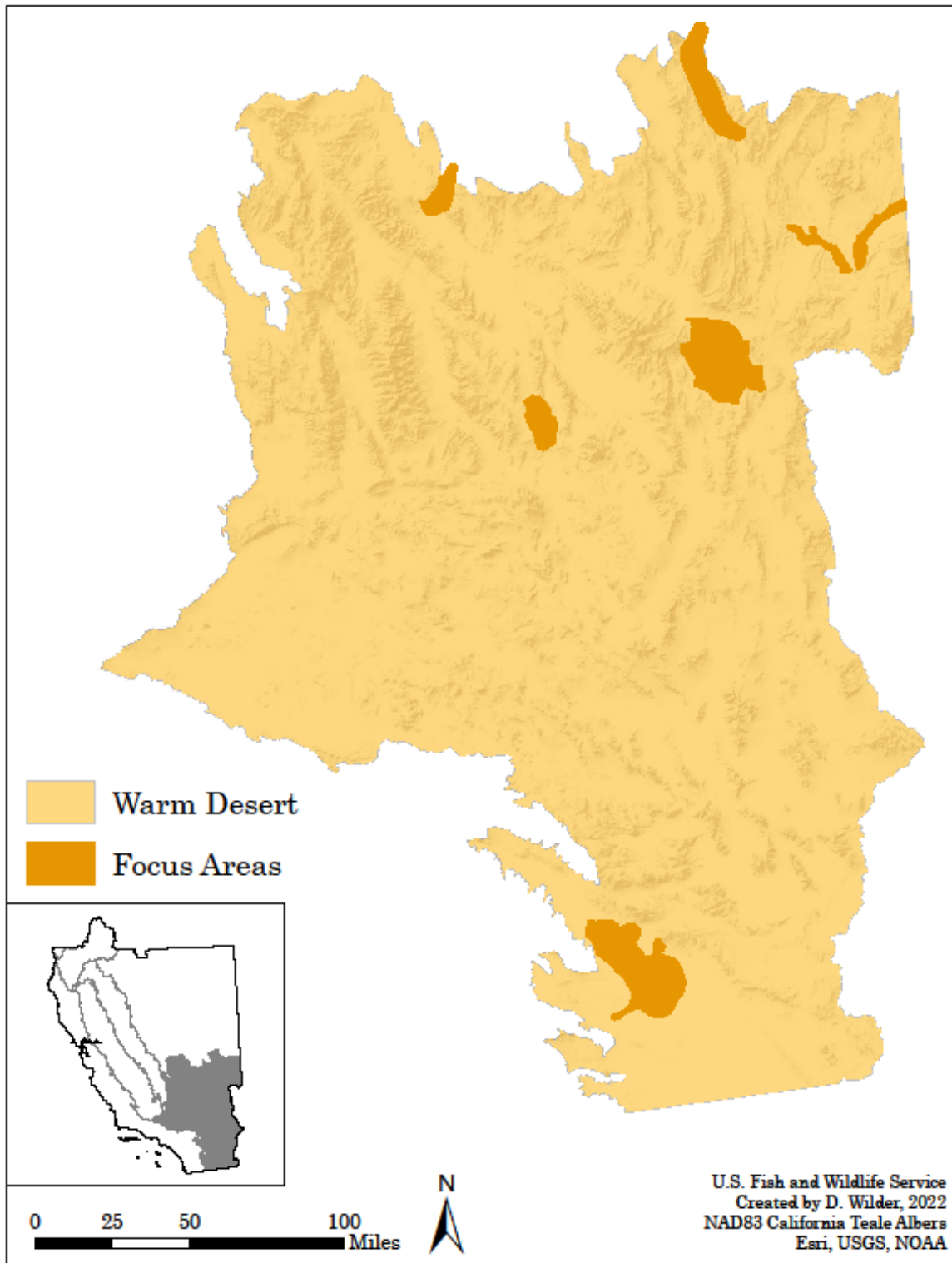
Partners Program Overview

The Partners Program in the Warm Desert Ecoregion is implemented from two field stations within the Service: Southern Nevada Fish and Wildlife Office (FWO), where there is one full time staff person managing Partners Program projects in the ecoregion. In addition, there is one full time Partners for Fish and Wildlife Biologist in the Carlsbad FWO, who occasionally implements projects within the Ecoregion near the Salton Sea.

National and Regional Priorities

Strategies identified for the PFW Program in the Warm Desert directly tie to local, regional and national priorities. National PFW Program priorities include species conservation, habitat connectivity, and resilient ecosystems. These are complimentary to the regional priorities of threatened and endangered species and Refuge purpose. The third regional priority is interjurisdictional fish but there are none in the Warm Desert ecoregion.

Figure WD-1. Map of the Warm Desert Ecoregion with field station Focus Areas.



Conservation Planning

Ecoregion Scope and Vision

Restoration ecology and habitat restoration project implementation are the primary practices used by the Partners Program to achieve conservation results. Priority is given to those projects that benefit Federal trust and regional priority species. As such, these factors were taken into consideration when narrowing the Warm Desert Ecoregion scope to one that would allow efforts to be focused on those key ecosystems (Conservation Targets) which provide a benefit to multiple species of interest. The Warm Desert Ecoregion vision statement is:

For the next 5 years, we will contribute to developing and maintaining resilient ecosystems and livelihoods through restoration of important habitat for listed and endemic species via strong partnerships with private landowners.

Conservation Targets

The habitat-based Conservation Target selection process is detailed in the methods sections of this plan and resulted in six Tier 1. Conservation Targets for the Warm Desert Ecoregion: Springs and Springbrooks, Rivers and Streams, Marshes and Wet Meadows, Salton Sea Wetlands, Riparian Forests, and Pollinator/Monarch Habitat. Each of these habitat types support an array of Federal trust species and carries a unique set of restoration and project challenges. Over course of the next five years, 80% of project efforts and funding will be directed towards these Tier 1. Conservation Targets. That enables the Program Project Managers to focus on the targets while retaining flexibility desired to meet many conservation needs across the Warm Desert ecoregion. Program Policy still applies to the remaining 20% efforts.

The delineation of these Conservation Targets was driven by a review of Federal trust, Refuge, federally listed, and regional priority species occurring within the jurisdiction of the Southern Nevada FWO and Palm Springs FWO. These species were then designated as either Tier 1 or Tier 2 species with Tier 1 being priority. Tier 1 species were those where $\geq 10\%$ of their summer range or wintering range occurred within the jurisdiction of these two offices AND $> 10\%$ of the range was on private land or there was focal species/data availability. Tier 2 species were those where $< 10\%$ of their range occurred within the FWOs jurisdiction and/or $< 10\%$ of their range was on private land. Of the 56 species evaluated, 32 were designated as Tier 1 species with pollinators, migratory birds, and springsnails also identified as key species.

Tier 1 species were assigned to habitats, evaluated through a species ranking process, and habitat scores were created by averaging the individual species scores for each habitat. Ranking criterion were:

- The target is a high priority for the Service because it is a listed species or is considered at-risk,

- The target is a high priority for the Service because it directly supports a National Wildlife Refuge purpose as stated in the founding legislation for that Refuge,
- Project Leaders and other Service programs in the local field stations currently have efforts dedicated to conservation of this target,
- Conservation partners in the local area for this target rank this as a high priority conservation need exhibited through conservation plans, conservation efforts, and/or other documented efforts,
- Habitat restoration is an appropriate tool identified in citable sources (or by citable experts),
- Opportunities exist for habitat restoration relevant to the PFW program (e.g., on private lands) and are identified as a high priority tool for this target,
- Target condition impacts local community economic and social conditions, and
- Probability for improving recovery status or transition to ‘good’ status using habitat restoration.

Table WD-1. Results of the Tier 1. species ranking process used to establish Tier One Conservation Targets.

Tier 1. Conservation Targets	Habitat Scoring
Springs and Springbrooks	5.7
Rivers and Streams	5.6
Marshes and Wet Meadows	5.5
Salton Sea Wetlands	6.1
Riparian Forests	5.7
Pollinator/Monarch Habitat	4

Warm Desert Ecoregion Conservation Targets

Springs and Springbrooks

The Nevada portion of the Warm Desert Ecoregion has over 465 documented springs. In this dry landscape, these springs are critically important to a variety of wildlife species. Springs can discharge water into a stream (springbrook) or into a pool and the water can be cold, warm, or hot. Most of these springs are isolated or are grouped into a small spring fed system(s). This isolation has allowed many endemic species to evolve, including springsnails, aquatic insects, fish, amphibians, and plants. These species have adapted to each spring’s unique habitat based on temperature, water chemistry and flow. Four of these endemic fish are listed as endangered under the Endangered Species Act. Some of these springs are tied to a deep carbonate aquifer fed by water from the Pleistocene. Other springs are more dependent on seasonal flows and recharge and can be impacted by climate change.

These distinct habitats are most threatened by surface water diversions, excessive groundwater pumping, drought, and nonnative animal species. Nonnative animals such as mosquito fish, mollies, bullfrog, snails, and crayfish outcompete and predate upon endemic

fish. Conservation actions in desert springs include moving the point of diversion away from the springhead, improving water delivery systems, instream habitat improvements, fencing, native plantings, and invasive plant species removal.

Key Species:

<i>Amargosa toad</i>	<i>Oasis Valley Speckled dace</i>	<i>Shoshone pupfish</i>
<i>Hiko White River springfish</i>	<i>Pahrnagat speckled dace</i>	<i>Springsnails</i>
<i>Migratory Birds</i>	<i>Pahrump poolfish</i>	<i>White River Springfish</i>
<i>Moapa dace</i>	<i>Relict Leopard Frog</i>	

Rivers and Streams

The major river systems in the Warm Desert Ecoregion are the Colorado River and its tributaries, the Amargosa River, and the Mojave River. Aquatic habitats in these systems vary tremendously with isolation in some systems giving rise to unique aquatic species assemblages. Five endemic stream fish are listed under the Endangered Species Act. Stream segments are generally disconnected segments that may be seasonally ephemeral, such as along Meadows Valley Wash and the Amargosa River or are small spring fed systems such as the Muddy River and Pahrnagat Creek. Rivers and streams are also movement corridors for migrating birds and insects passing through the landscape.

There are many opportunities to work with partners to protect and improve these areas for fish and wildlife. These systems are heavily impacted by water diversions, dams or impoundments, excessive groundwater withdrawal, drought, and nonnative animal species. Restoration projects in these habitat types typically include improving instream habitat, improving water delivery systems, improving channel geomorphology, native plantings, invasive plant species removal, fencing, and providing off-site water for livestock.

Key Species:

<i>Amargosa Canyon speckled dace</i>	<i>Meadow Valley Wash speckled dace</i>	<i>Relict Leopard Frog</i>
<i>Arizona toad</i>	<i>Moapa dace</i>	<i>Virgin River chub</i>
<i>Big Springs spinedace</i>	<i>Pahrnagat roundtail chub</i>	

Marshes and Wet Meadows

Marshes and wet meadows may be small and widely dispersed in this ecoregion, but they provide important habitat for migratory birds and several endemic species. Marshes and wet meadows are associated with springs, seeps, rivers, streams, and man-made ponds. The Amargosa River system provides several important marsh and wet meadow areas that support the endemic Amargosa toad and Endangered Amargosa vole. The endangered Yuma Ridgway's rail and other cryptic marsh bird species use marshes throughout the ecoregion. In addition, flood irrigated pastures in historic floodplains creates wet meadow habitat which is important to a variety of migratory birds.

These important habitats are most threatened by excessive groundwater pumping, drought, invasive plants, and nonnative animal species. Restoration projects include enhancing/restoring the natural flow regime, native plantings, invasive plant species removal, fencing, and providing off-site water to livestock.

Key Species:

Amargosa niterwort
Amargosa toad
Amargosa vole

Migratory birds
Pollinators
Spring loving centaury

Tecopa bird's beak
Yuma Ridgway's rail

Riparian Forests

The Warm Desert Ecoregion is a dry shrub desert with trees occurring only in the mountains and along rivers, streams, and springs. Although small in extent, riparian forest communities are very important to wildlife diversity across the landscape. The riparian forests are critical to migrating birds and to riparian nesting birds. These forests are dominated by cottonwood, Gooding's willow, velvet ash, coyote willow, and honey and screwbean mesquite. Three federally endangered birds nest in these riparian forests.

Riparian forests are heavily impacted by water diversions, excessive groundwater withdrawal, drought, and invasive plant species. In particular, the invasive salt cedar tree has done well in riparian areas where the river hydrology has been modified and can form dense monocultures with low plant diversity. Common restoration projects include native plantings, invasive plant species removal, vegetation management, improving channel geomorphology, fencing, fuel breaks, and providing off-site water to livestock.

Key Species:

Least Bell's vireo
Migratory birds

Pollinators
Southwestern willow flycatcher

Yellow-billed cuckoo

Salton Sea Wetlands

The current Salton Sea was formed in 1905 when Colorado River floodwaters breached the Imperial Irrigation Canal, which was then under construction. For a while, water levels were sustained by agricultural runoff from the Imperial Valley and inflows from the New and Alamo rivers. Since 2000, water levels have been declining and salt levels have been rising. With over 90 percent of California's original wetlands gone, the Salton Sea is still one of the most important nesting sites and stopovers along the Pacific Flyway. In the past, 90 percent of American white pelicans, 50 percent of ruddy ducks and 40 percent of Yuma Ridgway's rails used the Salton Sea. Often found along the sides of irrigation ditches, around 70 percent of burrowing owls in California occur around the Salton Sea and Imperial Valley.

The biggest impacts to the Sea are declining water levels and corresponding decreases in water quality. Agricultural drainage water sustains the Sea and comes with salts, fertilizers, and pesticides. Coupled with a decline in freshwater that comes to the area, the Sea will likely become too saline for fish populations. Additional threats include invasive plant species and nonnative animal species. Restoration strategies include improving wetland

infrastructure (such as dike, levees, pipes), improving water delivery systems, developing new irrigation schedules, constructing vegetated swales to trap sediments and pollutants, manipulating wetland habitat, and removing invasive plants.

Key Species:

American white pelican
Burrowing Owl
California black rail

Desert pupfish
Migratory birds
Shorebirds

Western grebe
Western snowy plover
Yuma Ridgway's rail

Pollinator/Monarch Habitat

Pollinators use all terrestrial habitats in the Warm Desert Ecoregion, but it is important to focus on their habitats around the City of Las Vegas, the largest city in the ecoregion. Working with the Desert NWR, the Service's Urban Wildlife Conservation Program, and community partners, the Partners Program can establish pollinator gardens in urban and suburban areas. Since these areas are often near buildings with water and electricity, gardens can receive supplemental water, increasing and prolonging flowering of native plants. During dry years when there is almost nothing flowering in the desert, these urban and suburban native habitats can provide important resources for pollinators. Other priority habitats are wet meadows and riparian areas where there are more water resources for flowering plants. Native milkweed species are found in these moister areas.

Threats in urban areas include tropical milkweed, invasive plant species, and nonnative animals. Threats in rural areas include drought, wild horses and burros, and degradation of wet meadows and riparian areas. Restoration projects include native plantings, irrigation, fencing, and invasive plant removal.

Key Species:

Blue butterflies
Cactus bees
Costa's hummingbird

Monarch butterfly
Native solitary bees
Native milkweeds

Queen butterfly
Sphinx moths
Swallowtail butterflies

Target Viability Assessment (Current Conditions)

In assessing the current conditions of the Conservation Targets, Key Ecological Attributes (KEAs) were established for each target. Ideally, the indicators would be quantifiable with data for current and future conditions. However, much of this data is not available at the Ecoregional scale for the Warm Desert. The lack of quantifiable data to establish current and desired conditions during this planning process represents a data gap that can hopefully improve during the span of this plan. Meanwhile, the selected KEAs will be used at the project level to determine local site condition, set restoration objectives, and measure project success.

Table WD-2. Key Ecological Attributes and Indicators for the Warm Desert Ecoregion Conservation Targets.

Conservation Target	KEA	Indicator
Springs and Springbrooks	Physical integrity	Degree of physical alteration
Rivers and Streams	Instream condition	Healthy aquatic habitat
Marshes and Wet Meadows	Wetland vegetation	Acres of functioning habitat
Salton Sea Wetlands	Wetland vegetation	Acres of functioning habitat
Riparian Forests	Forested vegetation	Acres of functioning habitat
Pollinator/Monarch Habitat	Native flowering plants	Acres of functioning habitat

Threats to Conservation Targets

Sixteen threats to the Conservation Targets were identified. These included threats that the Partners Program cannot mitigate very well such as drought and development, but we felt it is important to document, since many stakeholders identified these threats as concerns. These threats and the resulting biophysical effects on the targets are documented in Table WD-3.

Table WD-3. Direct threats and biophysical factors for Warm Desert Ecoregion Conservation Targets.

Habitat	Primary Threats	Biophysical Factors
Springs and Springbrooks	Surface Water Diversions Dams and Impoundments Channel Modification Excessive Groundwater Withdrawal Nonnative Animal Species Invasive Plant Species Wild Horses and Burros	Loss of hydrologic features Decreased water volume Loss of channel habitat Decrease in species survival
Rivers and Streams	Channel Modification Surface Water Diversions Dams and Impoundments Incompatible Grazing Practices Nonnative Animal Species Invasive Plant Species	Loss of hydrologic features Decline in bank stability Loss of instream or off channel habitat Decrease in species survival
Marshes and Wet Meadows	Invasive Plant Species Altered Fire Regime	Decline in resilience

	Excessive Groundwater Withdrawal Wild Horses and Burros Surface Water Diversions	Decreased native plant diversity Loss of hydrologic features Increased tree invasion
Salton Sea Wetlands	Invasive Plant Species Nonnative Animal Species Surface Water Diversions	Decline in water quality Declining water levels Increased contaminants Increased salinity Loss of hydrologic features Animal die-offs
Riparian Forests	Invasive Plant Species Altered Fire Regime Incompatible Grazing Practices Wild Horses and Burros Surface Water Diversions Excessive Groundwater Withdrawal	Increase of invasive plants Increased fire frequency and intensity Decreased native plant diversity Decline in alluvial aquifer
Pollinator/ Monarch Habitat	Invasive Plant Species Altered Fire Regime Wild Horses and Burros Surface Water Diversions Nonnative Animal Species Horticultural Species	Increase of invasive plants Increased fire frequency and intensity Decreased native plant diversity Decline in wet meadows

A Threats Ranking analysis was conducted on the 14 threats which indicated that all Conservation Targets are very highly or highly threatened except for Pollinator and Monarch Habitat, which is moderately threatened. The threats analysis also indicated that the highest threats across all targets were excessive ground water withdrawal, surface water diversions, invasive plant species, nonnative animal species, and drought.

Table WD-4. Threat ranking scores for individual threats to conservation targets for the Warm Desert Ecoregion. Threats and targets scores are very high (VH), high (H), medium (M), or low (L).

Direct Threat	Conservation Targets						Summary Threat Rating
	Springs and Spring-brooks	Rivers and streams	Marshes & Wet Meadows	Salton Sea Wetlands	Riparian Forests	Pollinator /Monarch Habitat	
Altered Fire Regimes	L	L	L		L	M	L
Invasive Plant Species	M	M	H	H	H	M	H
Nonnative Animal Species	VH	VH	VH	H		M	H
Incompatible Grazing Practices	L	L	L		L		L
Wild Horses and Burros	L	L	L		L	L	L
Mining and Energy Development	M	M	M	L	L		M
Surface Water Diversions	VH	VH	M	VH	H		H
Channel Modification	M	M			M		M
Operation and Presence of Dams or Impoundments	M	H					M
Excessive Ground Water Withdrawal	VH	VH	VH		VH		VH
Barriers to Movement	L	L					L
Drought	H	H	VH	VH	H	M	H

Incompatible Recreation Use	L	L	L		L		L
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Strategies, Objectives, and Goals

Restoration strategies were identified during the planning process (TableWD-5), and these strategies will guide the development of projects aimed at remediating the effects of the threats to the Conservation Targets. Table WD-5 provides an overview of the connection between the Conservation Targets, restoration strategies, and some key treatments to be implemented under a given restoration strategy. Additionally, Table WD-5 identifies key species associated with the Conservation Target and the 5-yr performance goals per Conservation Target.

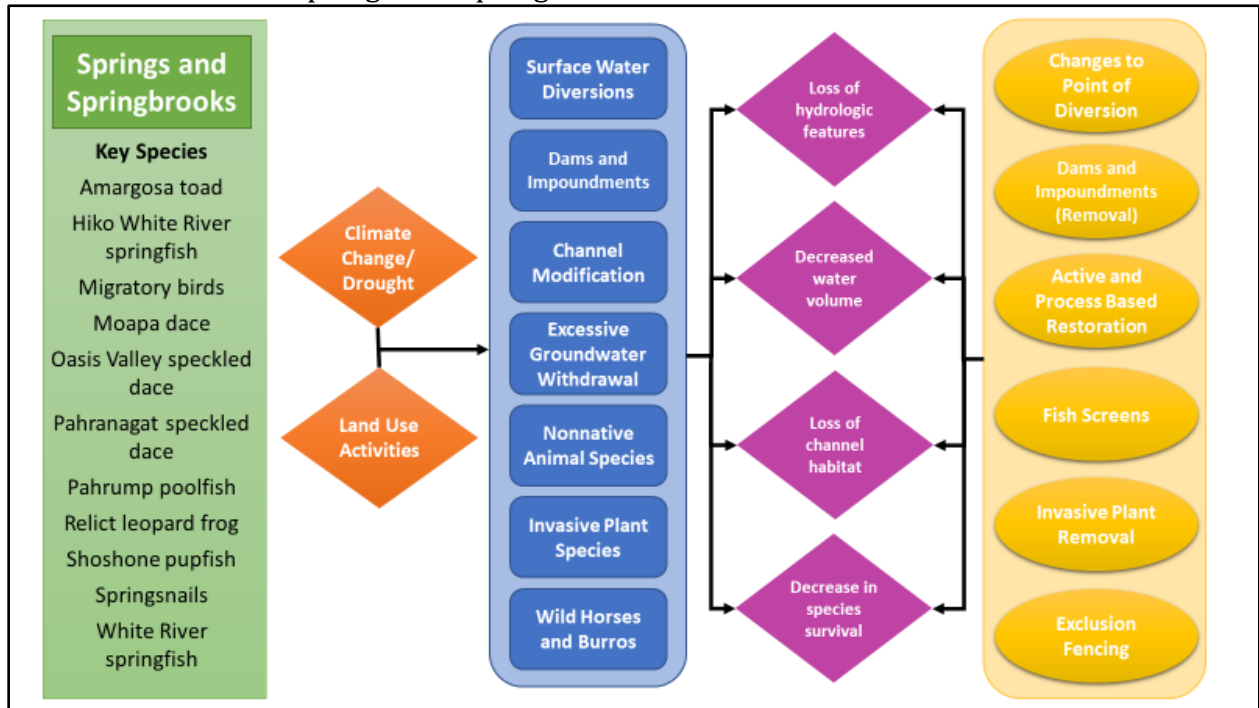
Situation models were developed to graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies. (Figure WD-2)

Table WD-5. Summary of Conservation Targets, objectives and restoration strategies that will be employed to achieve five-year goals in the Warm Desert Ecoregion.

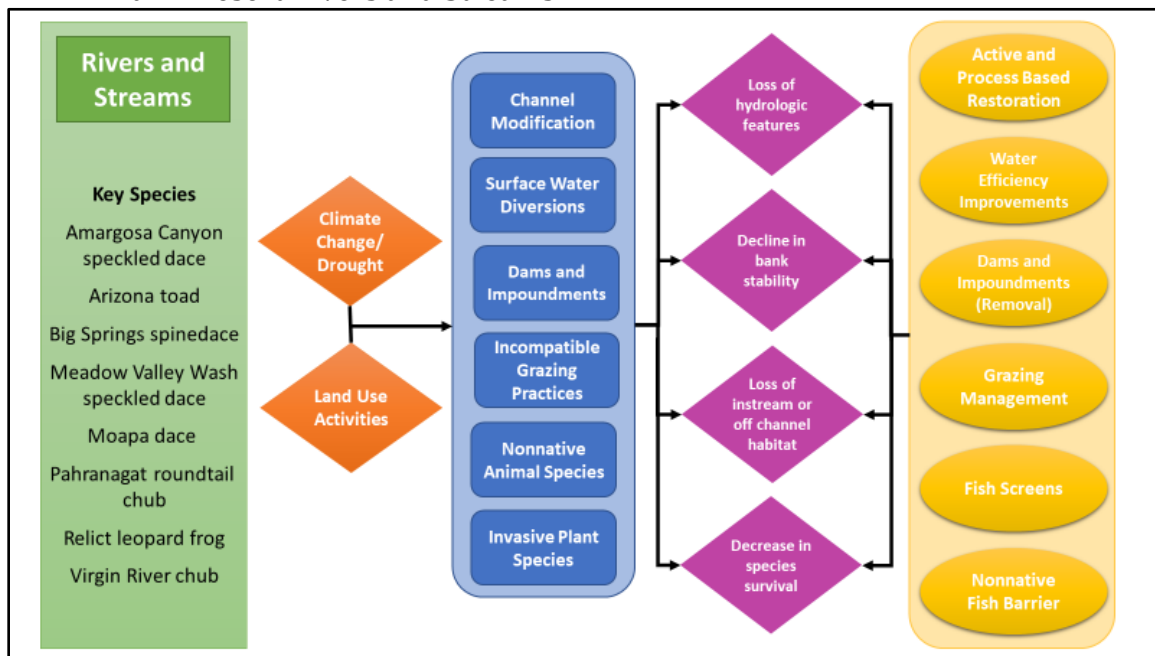
Conservation Target	Objective	Restoration Strategy	Five-Year Goals
Springs and Springbrooks	Enhance aquatic habitat at desert springs and springbrooks to make populations of endemic species more sustainable and resilient over time	Aquatic habitat Restoration; improve/enhance hydrology	1 mile
Rivers and Streams	Create and restore conditions that support self-sustaining populations of endemic fish in perennial reaches of desert rivers and streams	River & stream restoration techniques	5 miles
Marshes and Wet Meadows	Enhance and create marshes and wet meadows to make populations of Amargosa voles and toads more sustainable and resilient over time and improve habitat for marsh birds	Restore hydrology, improve/enhance hydrology, veg & grazing management, native planting	5 acres
Riparian Forest	Provide good quality breeding and migratory bird habitat in riparian areas, particularly for the 3 endangered birds	Veg & grazing management, native planting, improve/enhance hydrology	25 acres
Salton Sea Wetlands	Restore and/or enhance managed wetlands to support migratory waterfowl, shorebirds, and other wetland obligate species.	Wetland restoration, Infrastructure improvements, water efficiency improvements	40 acres
Pollinator/Monarch Habitat	Create native habitat gardens to educate the public about pollinators	Native planting	5 acres

Figure WD-2. Situational models for Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), biophysical factors (purple), and the Restoration Strategies (yellow) to be implemented by the Partners Program to reduce the effects of the Threats on Targets.

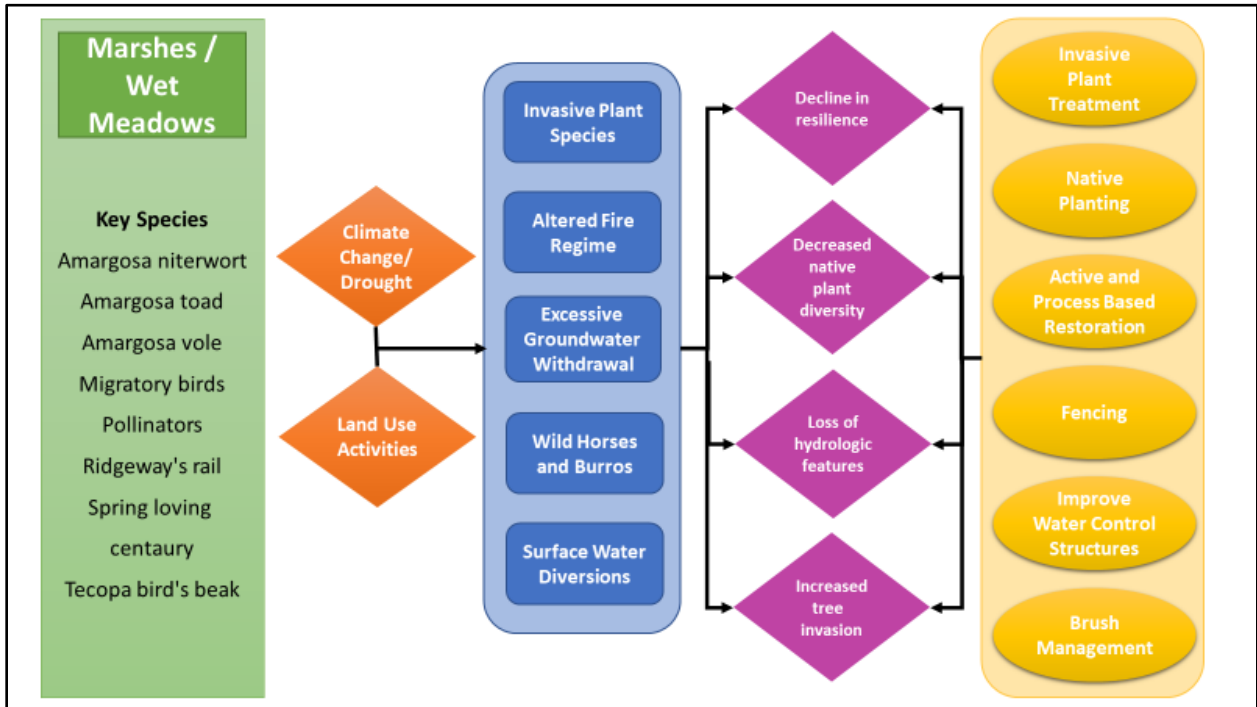
Warm Desert Springs and Springbrooks



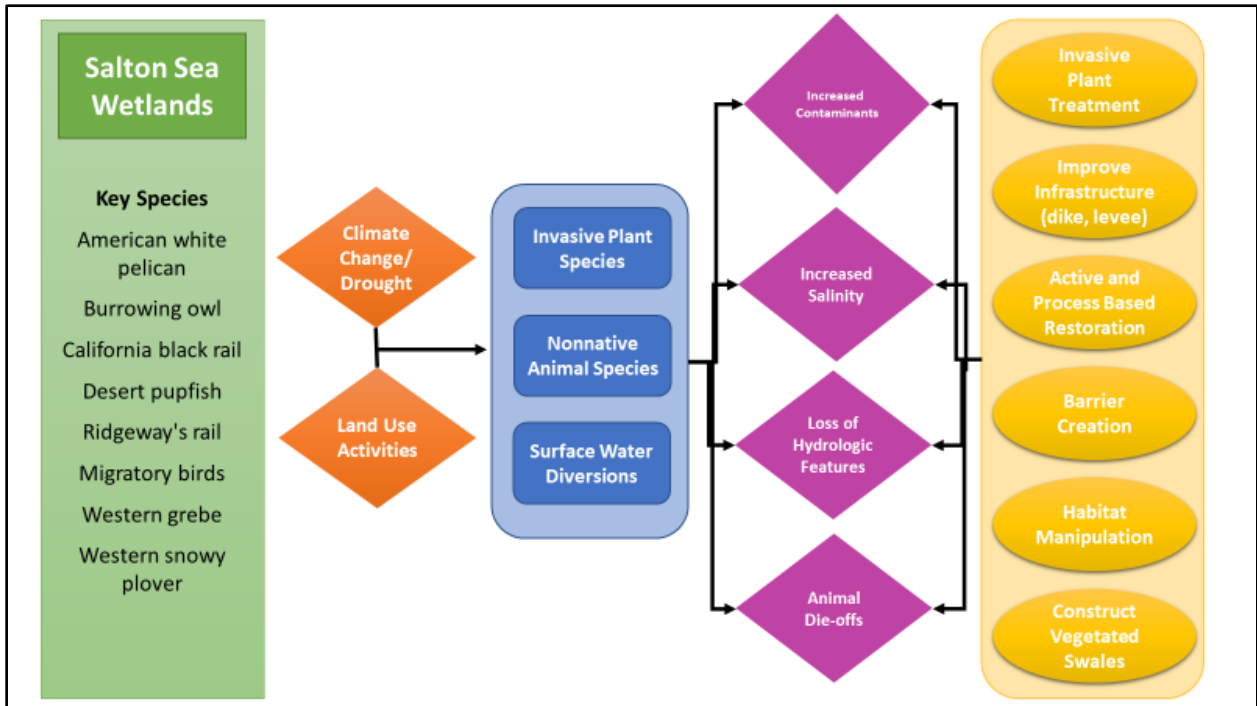
Warm Desert Rivers and Streams



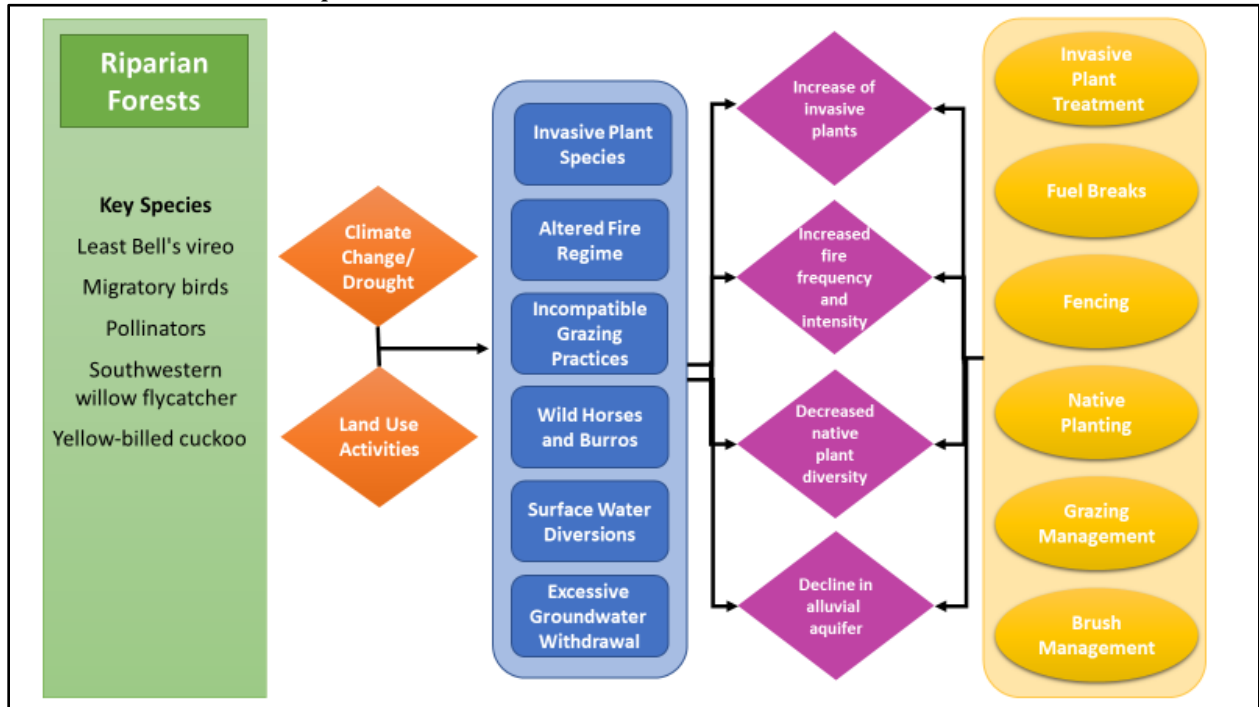
Warm Desert Marshes and Wet Meadows



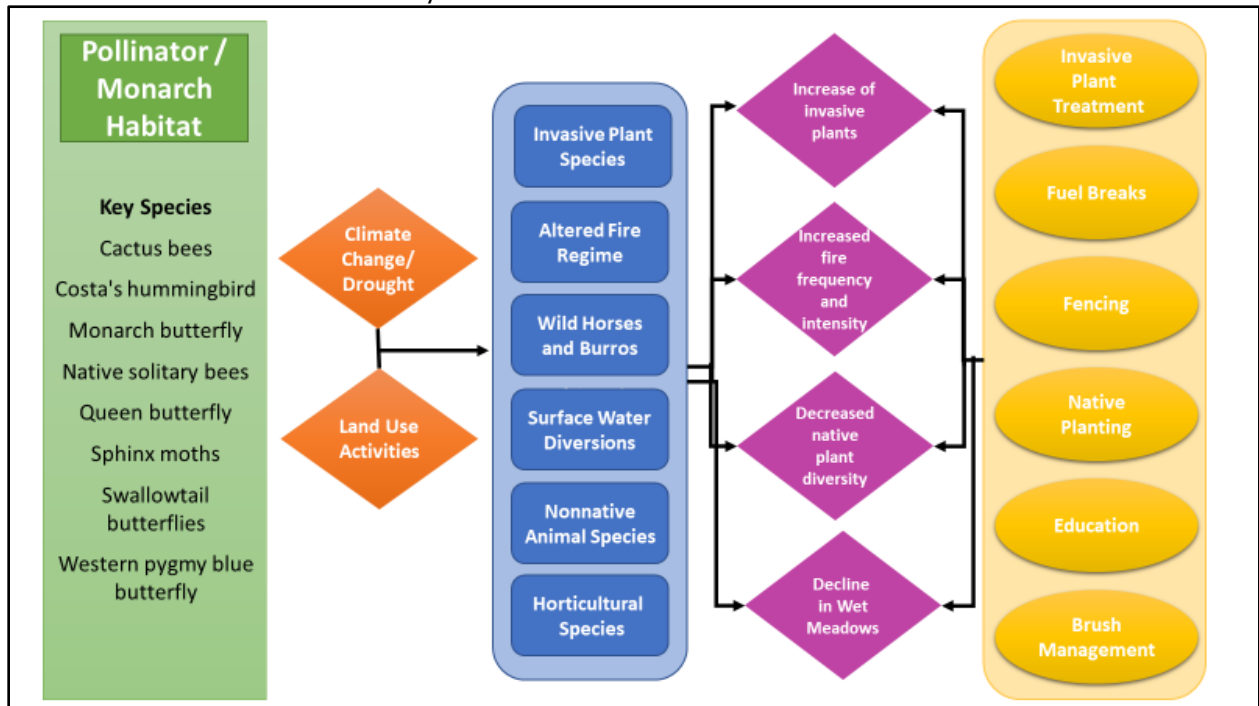
Warm Desert Salton Sea Wetlands



Warm Desert Riparian Forests



Warm Desert Pollinator/Monarch Habitat



Great Basin Ecoregion

Introduction

Ecological Setting

The Great Basin Ecoregion (Great Basin) encompasses more than 72 million acres of semidesert in the western United States. It covers the area from the east slope of the Sierra Nevada, across much of Nevada, and to the Wasatch Mountains of the western Rocky Mountains in central Utah. It is characterized by its basin and range topography with more than 300 mountain ranges interspersed among long, broad valleys.

Salt desert scrub and sagebrush shrublands cover the valleys and lower slopes. Rising above the valley floors, ecological systems include pinyon-juniper woodlands, mountain sagebrush, open conifer forests, and alpine areas in the mountain ranges. Scattered across the landscape are important aquatic, riparian, wetland, badland, and dune habitats. These small, isolated areas highlight the Great Basin's unique biological diversity: more than 280 plants and animals are considered endemic to the ecoregion. The Great Basin is home to many sagebrush ecosystem dependent Federal trust species, including the Bi-State and Greater Sage-grouse.

Although much of the area is managed by federal land management agencies, over 50% of wet meadows, important habitats for fish and wildlife, occur on private lands. Private lands tend to be located along areas with accessible water due to the preferred areas selected during western settlement in the 1800's. Partnerships with private landowners are essential for conservation efforts to benefit Federal trust species.

Partners Program Overview

The Partners Program in the Great Basin is implemented from the Reno Fish and Wildlife Office (FWO) with staff in Reno, Winnemucca, Elko and Modoc National Wildlife Refuge. There are three full time staff and one State Coordinator managing Partners Program projects in the ecoregion.

National and Regional Priorities

Strategies identified for the Partners Program in the Great Basin directly tie to local, regional and national priorities. National Partners Program priorities include species conservation, habitat connectivity, and resilient ecosystems. These are complimentary to the regional priorities of threatened and endangered species, Refuge purpose, and interjurisdictional fish.

Conservation Planning

Ecoregion Scope and Vision

Habitat restoration is the primary approach by the Partners Program to achieve conservation results. Priority is given to projects that benefit Federal trust and state priority species. Several factors were taken into consideration when narrowing the Great Basin Ecoregion scope to one that would allow efforts to be focused on key ecosystems (Conservation Targets) within Partners Program Focus Areas that provide a benefit to

multiple species of interest (Figure GB-1). The Great Basin vision statement developed by Partners Program staff is:

For the next five years, we will restore habitat and increase ecosystem resiliency for wildlife and people through collaboration with private landowners and other partners.

Conservation Targets

In the Great Basin, four ecosystem/habitat types were designated as Conservation Targets: sagebrush shrublands, wet meadows and wetlands, intermountain rivers and streams, and springs and springbrooks.

The delineation of these Conservation Targets was driven by a review of Federal trust, Refuge, Threatened & Endangered, and regional priority species occurring within the jurisdiction of the Reno FWO. These species were then designated as either Tier 1 or Tier 2 species with Tier 1 being priority species for the Partners Program in the Great Basin. Tier 1 species were those for which:

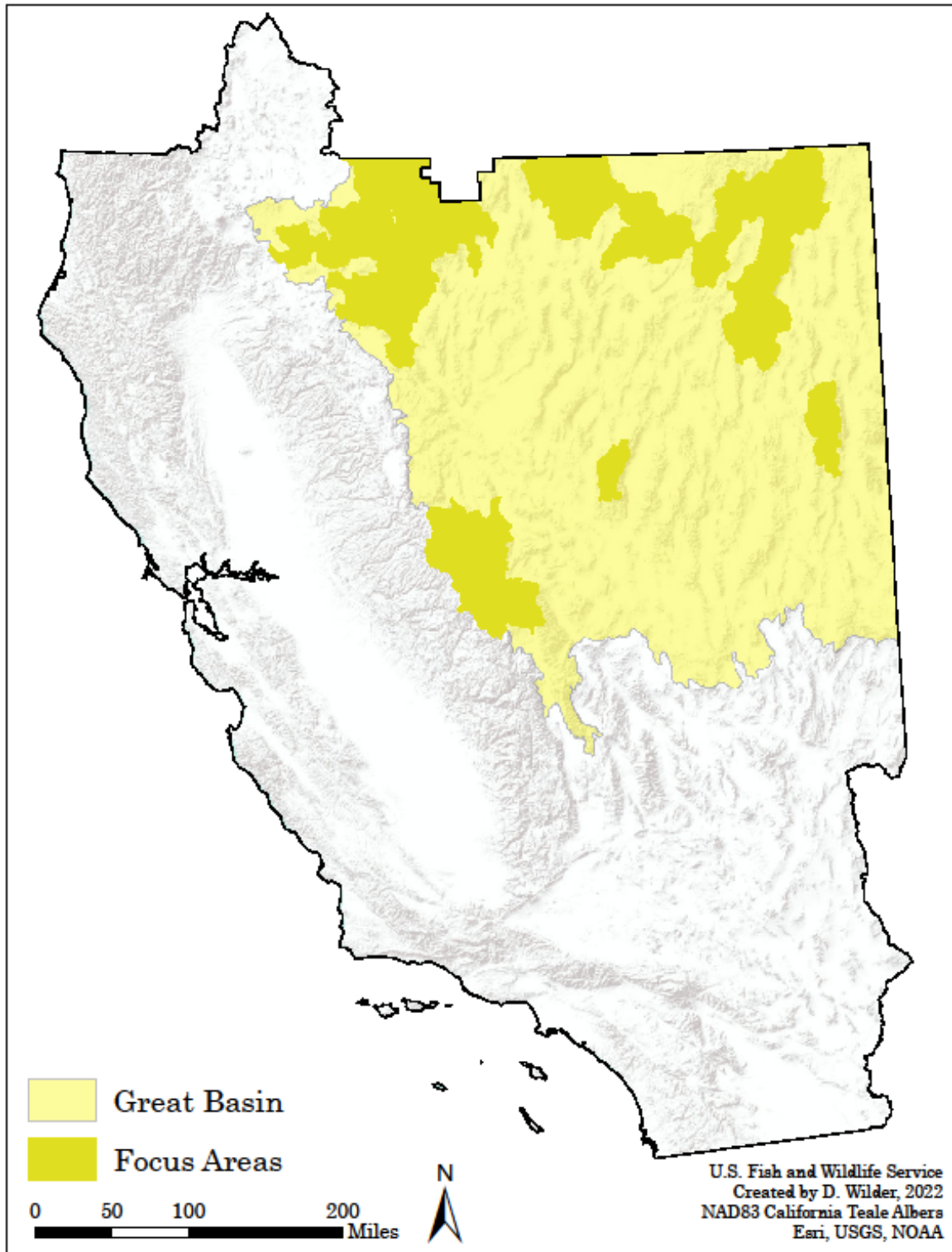
- $\geq 10\%$ of their range occurred within Nevada/Reno FWO jurisdiction AND
- $>10\%$ of the range was on private land OR
- there was focal species/data availability and justification from Service staff and partners for inclusion

Tier 2 species were those that $<10\%$ of their range occurred within Reno FWO jurisdiction and/or $<10\%$ of their range was on private land. Of the 55 species assessed, 21 were designated as Tier 1 species.

Tier 1 species were then nested within the habitats in which they occur with some species occurring in multiple habitats. Of the eight key habitats identified, four were selected as Tier 1 Conservation Targets as they had multiple Tier 1 species co-occurring on the landscape and so face similar threats. Tier 1 species were assigned to habitats, evaluated through a species ranking process, and habitat scores were created by averaging the individual species scores for each habitat. Ranking criterion were:

- The target is a high priority for the Service because it is a listed species or is considered at-risk,
- The target is a high priority for the Service because it directly supports a National Wildlife Refuge purpose as stated in the founding legislation for that Refuge,
- Project Leaders and other Service programs in the local field stations currently have efforts dedicated to conservation of this target,
- Conservation partners in the local area for this target rank this as a high priority conservation need exhibited through conservation plans, conservation efforts, and/or other documented efforts,
- Habitat restoration is an appropriate tool identified in citable sources (or by citable experts),
- Opportunities exist for habitat restoration relevant to the PFW program (e.g., on private lands) and are identified as a high priority tool for this target,

Figure GB-1. Map of the Great Basin Ecoregion with field station Focus Areas.



- Target condition impacts local community economic and social conditions, and
- Probability for improving recovery status or transition to ‘good’ status using habitat restoration.

Table GB-1. Results of the Tier 1 species ranking process used to establish Tier One Conservation Targets.

Tier 1. Conservation Targets	Habitat Scoring
Sagebrush Shrublands	4.8
Wet Meadows and Wetlands	5.1
Intermountain Rivers and Streams	6.5
Springs and Springbrooks	6.0

Great Basin Ecoregion Conservation Targets

Sagebrush Shrublands

The sagebrush ecosystem is comprised of almost 24 million acres in the Great Basin and occurs between 4,500 – 10,000 feet, from valley bottoms to higher elevations in the mountains. Several species evolved specifically to thrive in sagebrush and include sage-grouse, pygmy rabbit, pronghorn, and several migratory songbirds. In the Great Basin, invasive annual grasses and fire are the largest threats to the persistence of the ecosystem. Other pressures, if not managed appropriately, include energy development, incompatible ungulate grazing, and recreation. While management of sagebrush uplands is predominately by federal land management agencies in the Great Basin, particularly within Nevada, there are still many opportunities to work with private landowners to enhance and restore sagebrush uplands. Some of the common projects include removal of encroaching pinyon-juniper, post wildfire herbicide treatments/seeding, and grazing management. Project objectives are focused on improving or maintaining sagebrush uplands that also support an undergrowth of native grasses and forbs.

Key Species:

Brewer’s Sparrow

Sagebrush Sparrow

Sage Thrasher

Pinyon Jay

Dark Kangaroo Mouse

Mule Deer

Pronghorn

Webber’s Ivesia

Steamboat Buckwheat

Greater Sage-grouse

Greater Sage-grouse

Bi-state DPS

Wet meadows and wetlands

Wet meadows can be associated with rivers, streams, and springs in the Great Basin. In addition, flood irrigation in historic floodplains creates habitat for wildlife species. Eight counties across northeast California, northwest Nevada, and southwest Oregon were identified by the Intermountain West Joint Venture as some of the most productive land on the continent for livestock and wetland birds. Because 75 percent of the freshwater emergent wetlands in this region are privately owned, these lands are essential for strategic bird conservation efforts. Wet meadows across the Great Basin have been a focus

for other large scale conservation efforts including the Natural Resources Conservation Service's Sage Grouse Initiative. While sage-grouse evolved to feed on sagebrush, they move to wet meadows, springs, and streamside riparian areas in mid to late summer while hens are raising their growing broods. Leafy plants and insects provide much needed nutrition to sage-grouse and other wildlife species.

Grazing management and juniper removal are examples of strategies for enhancing and restoring wet meadows. Removing the trees, thereby reducing the amount of water they use, can increase water availability to a meadow. Additional techniques for restoration are discussed in the following sections for Intermountain Rivers and Streams and Springs and Springbrooks.

Key Species:

Greater Sage-grouse
Greater Sage-grouse;
Bi-state DPS

Carson Wandering Skipper
Columbia Spotted Frog

Mule Deer

Intermountain Rivers and Streams

Intermountain rivers and streams include riparian areas, floodplains, and wetlands adjacent to streams and rivers. Nevada's Wildlife Action Plan notes that more than 75% of Nevada's species are associated with riparian vegetation. Many of the stream systems are isolated with variable aquatic habitat characteristics which resulted in their support of unique aquatic species assemblages across the landscape. Although extremely small in extent, riparian communities are areas with increased numbers in wildlife diversity. The presence of water either at or near the surface contributes to riparian systems being the most productive habitats. They provide food, nest and den sites, cavity sites, hiding cover, thermal cover, and corridors for migration and wildlife movements.

Threats to rivers and streams in the Great Basin include non-native invasive plants/animals, surface water diversion, river channel modification, and other impacts that result in nonfunctioning hydrologic regime. There are many opportunities to work with partners to protect and improve these areas for fish and wildlife. Some of the ongoing efforts of the Partners Program include enhanced grazing management systems (e.g., off site water, fencing riparian, grazing plan), active stream restoration, integrated weed management, and fish passage projects.

Key Species:

Independence Valley Speckled
Dace
White River Spinedace

Cui-ui
Lahontan Cutthroat Trout

Columbia Spotted Frog

Springs and Springbrooks

Dotted across the arid Great Basin are springs which are vital to not only fish and wildlife but are also important sources of water for livestock and other land uses. A spring occurs where deep or shallow ground water flows from bedrock or natural fill onto the land surface and forms surface flow (springbrook) or a body of water. Nevada has the most

springs in the United States at over 25,000 springs. These spring systems provide habitat for 165 of Nevada’s 173 endemic fish and aquatic invertebrates.

Water diversion, excessive ungulate grazing, groundwater depletion, recreation, mining (de-watering activities), and establishment of non-native species are all threats to spring systems in the Great Basin. The Partners Program is working with landowners to protect and, when appropriate, restore spring systems. Projects include enhanced grazing management (e.g., off site water and fencing), integrated weed management, and restoration of hydrologic regime.

Key Species:

<i>Relict Dace, DPS</i>	<i>Independence Valley Speckled Dace</i>	<i>Columbia Spotted Frog</i>
<i>Clover Valley Speckled Dace</i>	<i>Railroad Valley Springfish</i>	<i>Springsnails</i>

Viability Assessment (Current Condition) of all targets

In assessing the current conditions of the Conservation Targets, Key Ecological Attributes (KEAs) were established for each target. Ideally the indicators would be quantifiable with data for current and future conditions. However, much of this data is not available at the ecoregional scale for the Great Basin. The lack of quantifiable data to establish current and desired conditions during this planning process represents a data gap that can hopefully improve during the span of this plan. In the near term, the selected KEAs will be used at the project level to determine local site condition, set restoration objectives, and measure project success.

Table GB-2. Key Ecological Attributes (KEAs) and Indicators for the Great Basin Ecoregion Conservation Targets.

Conservation Target	KEA	Indicator
Sagebrush Shrublands	Vegetation	Composition of native perennial grasses, forbs, and woody species
Sagebrush Shrublands	Vegetation	% cover of invasive annual grasses*
Wet Meadows and Wetlands	Vegetation	% ground cover
Wet Meadows and Wetlands	Vegetation	Native plant species diversity
Wet Meadows and Wetlands	Vegetation	Productivity*
Wet Meadows and Wetlands	Hydrologic connectivity	Acres surface water*
Intermountain Rivers and Streams	Hydrologic regime	Resilience*
Intermountain Rivers and Streams	Hydrologic regime	Floodplain connectivity
Intermountain Rivers and Streams	Aquatic biota	Nonnative aquatic species
Springs and springbrooks	Physical integrity	Degree of physical alteration
Springs and springbrooks	Groundwater	Surface discharge
Springs and springbrooks	Aquatic biota	Nonnative aquatic species
Springs and springbrooks	Vegetation composition and structure	Diversity of riparian plant species, functional groups and age classes
Springs and springbrooks	Native aquatic vegetation	Presence/absence

*Measurable by evolving remote sensing techniques

Threats to Conservation Targets

Through Service cross program coordination and partner meetings, Partners Program biologists identified 13 primary threats to the Conservation Targets. Threats to the Conservation Targets and the biophysical factors are outlined in Table GB-3.

Table GB-3. High and very high (primary) threats and biophysical factors for Great Basin Conservation Targets.

Habitat	Primary Threats	Biophysical Factors
Sagebrush Shrublands	<ul style="list-style-type: none"> Altered fire regime Invasive plant species Mining and energy Incompatible grazing practices Drought 	<ul style="list-style-type: none"> Increase of fuels/invasive annual grasses Increased fire frequency and intensity Decrease in native plant structural and species diversity Decrease in vegetative ground cover Decrease/elimination of native plant species
Wet Meadows and Wetlands	<ul style="list-style-type: none"> Altered fire regime Invasive plant species Wild horses and burros Surface water diversions Incompatible grazing practices Drought 	<ul style="list-style-type: none"> Decrease in extent of native plant structural and species diversity Decrease of wetland associated plant species Decline in wet meadow/wetland resilience Loss of hydrologic topographic features Increase in conifer encroachment
Intermountain Rivers and Streams	<ul style="list-style-type: none"> Surface water diversions Channel modification Dams and artificial barriers Nonnative animal species Incompatible grazing practices Drought 	<ul style="list-style-type: none"> Decline in bank stability Loss of hydrologic topographic features Loss of instream habitat Loss of off-channel habitat Decrease in species survival
Springs and Springbrooks	<ul style="list-style-type: none"> Wild horses and burrows Surface water diversions Channel modification 	<ul style="list-style-type: none"> Decline in spring source integrity Loss of hydrologic topographic features

	Dams and artificial barriers Excessive groundwater withdrawal Nonnative animal species Incompatible grazing practices Drought	Loss of instream habitat Loss of off-channel habitat Decreased flow Decreased species survival
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A threats assessment was conducted which highlights the level each threat affects the Conservation Targets (Table GB-4). Partners Program restoration strategies will be directed at reducing high and very high threats to Conservation Targets in the Great Basin.

Table GB-4. Threat ranking scores for individual threats to Conservation Targets for the Great Basin. Threats to targets are scored very high (VH), high (H), medium (M), or low (L).

Direct Threat	Conservation Targets			
	Sagebrush Shrublands	Wet Meadows and Wetlands	Intermountain Rivers and Streams	Springs and Springbrooks
Altered Fire Regimes	VH	H	M	M
Invasive Plant Species	VH	H		M
Wild Horses and Burros	M	H	M	H
Mining and Energy	H	M	M	M
Development	M	M	M	M
Surface Water Diversions		H	H	VH
Channel Modification			VH	H
Dams and Artificial Barriers			H	H
Excessive Groundwater Withdrawal		M	M	H
Incompatible Recreation Use	M	L	L	L
Nonnative Animal Species	L		H	H
Incompatible Grazing Practices	H	H	H	H
Drought	H	H	H	H

Strategies, Objectives, and Goals

The final stages of the conservation planning process included development of objectives and restoration strategies for Conservation Targets (Table GB-5). The strategies will guide the development of Partners Program projects aimed at improving current condition and remediating the effects of the threats to the Conservation Targets. Appendix D provides an overview of the connection between the Conservation Targets, objectives, restoration strategies, and 5-year goals. Additionally, Table x identifies key species associated with the

Conservation Target and the 5-year performance goals for the Partners Program in the Great Basin.

Situation models were developed to graphically present the connection between contributing factors, their direct threats to the target and the restoration strategies. (Figure GB-2)

Table GB-5. Summary of Conservation Targets, objectives and restoration strategies that will be employed to achieve five-year goals in the Warm Desert Ecoregion.

Conservation Target	Objective	Restoration Strategy	Five-Year Goals
Sagebrush Shrublands	Native plant structural and species diversity	Weed treatments Fuel breaks Prescribed grazing Native planting Grazing management Brush management	12,300 acres
Wet Meadows and Wetlands	Increase in wet meadows/wetlands Extend hydroperiod	Weed treatment Native planting Active and processed-based restoration Grazing management Improve water control structures Brush management	7,500 acres
Intermountain Rivers and Streams	Resilient riparian areas	Active and processed-based restoration Water crossings Dams and impoundments (removal) Nonnative fish barrier Fish screens Grazing management	15 miles
Springs and Springbrooks	Functioning springs that support native biodiversity	Active and process-based restoration	5 miles

		Dams and impoundments (removal) Nonnative fish barrier Fish screens Grazing management Exclusion fencing	
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Great Basin Focus Area Delineation

The Reno FWO Partners for Fish and Wildlife Program used a three-phase approach when identifying Focus Areas (Figure GB-3). Delineation of the Focus Areas relied on the development of a spatial model based quite heavily on landscapes that support a large percent of focal species as well as a high percentage of private lands. The process also included a vigorous in-reach and out-reach effort. This led to the selection of seven priority areas within the Great Basin Ecoregion Focus Area (Figure GB-1).

Phase I: Focal Species

Identification of Focal Species: A list of focal species from the Conservation Target selection process was compiled using several sources including: species listed under the ESA, Federal trust and at-risk species, Birds of Conservation Concern, Nevada Department of Wildlife, and California Department of Fish and Wildlife priority species. The scope of focus area delineation included the Great Basin Ecoregion within the jurisdiction of the Reno FWO. Only species from these sources occurring in this scope were used as part of the analysis.

Evaluation of Species Range and Private Land Opportunities: Each of the focal species was evaluated based on the percentage of their known range (not critical or priority) that occurs within the scope and their presence on private lands. Spatial population or range data available for the focal species were then evaluated to assess the proportion of the population or habitat occurring on private lands as the Partners Program cannot fund on-the-ground activities on federal or state lands. In some cases, species, or distinct population segments for a species, occur primarily on public lands, and a different program or entity would be necessary to work on conservation delivery.

Designation of Species Tiers: After evaluation of each species, they were designated as a Tier 1 or Tier 2 focal species. Of the 55 species reviewed, 21 were designated as Tier 1 species, those species where $\geq 10\%$ of their range occurred within the scope and $>10\%$ of the range was private land OR there was focal species/data availability. The remaining 34 species were designated as Tier 2 species, those species where $<10\%$ of their range occurred within the scope and/or $<10\%$ of their range was on private land.

Phase II: Spatial Model

Data Collection: Spatial datasets were obtained that represented where Tier 1 species are known or believed to occur, i.e., range-wide datasets.

Calculation of Species Richness: Species range-wide polygons were overlaid with a fishnet grid created at a 2 km x 2 km (~1.24 mi) scale. Species richness was determined by calculating the number of species within each grid cell. Species richness heat maps were then created for each Conservation Target: sagebrush shrublands, wet meadows and wetlands, intermountain rivers and streams, and springs and springbrooks. As well as a map including all Tier 1 species. The Tier 1 species richness heat map (Figure GB-4) provided the best depiction of priority species within the scope of the Reno Fish and Wildlife Office.

Identification of Species Priority Areas: Priority areas were determined by selecting HUC 8 watersheds that aligned with the highest number of species. Conservation efforts focused on these watersheds would benefit multiple species.

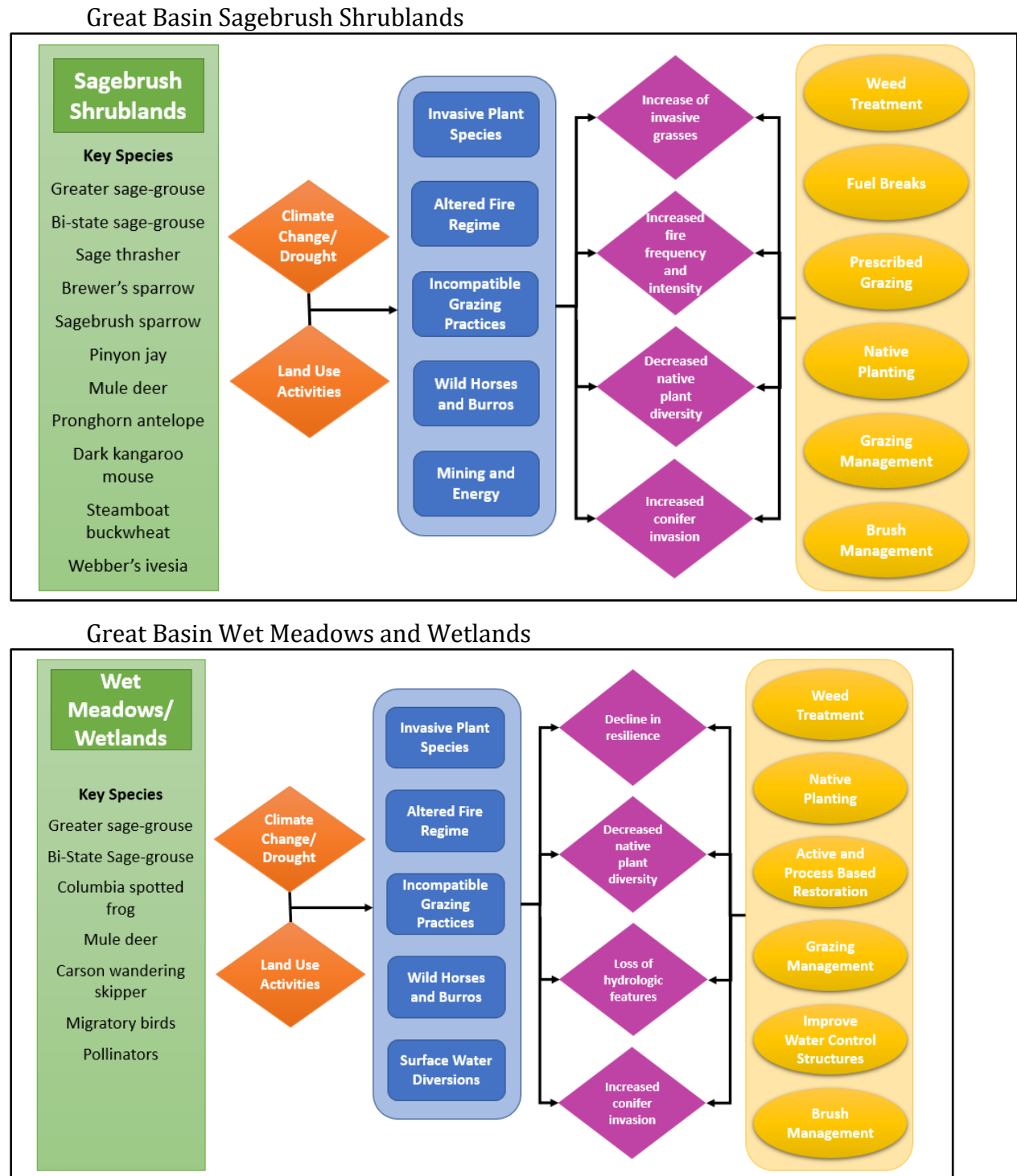
Phase III: Focus Areas

Landscape Scale Assessment: Overlaying species priority areas (e.g., species richness heat map) with priority areas for other conservation efforts in the area helped to fine-tune areas and leverage our efforts. Examples of conservation efforts within our scope included:

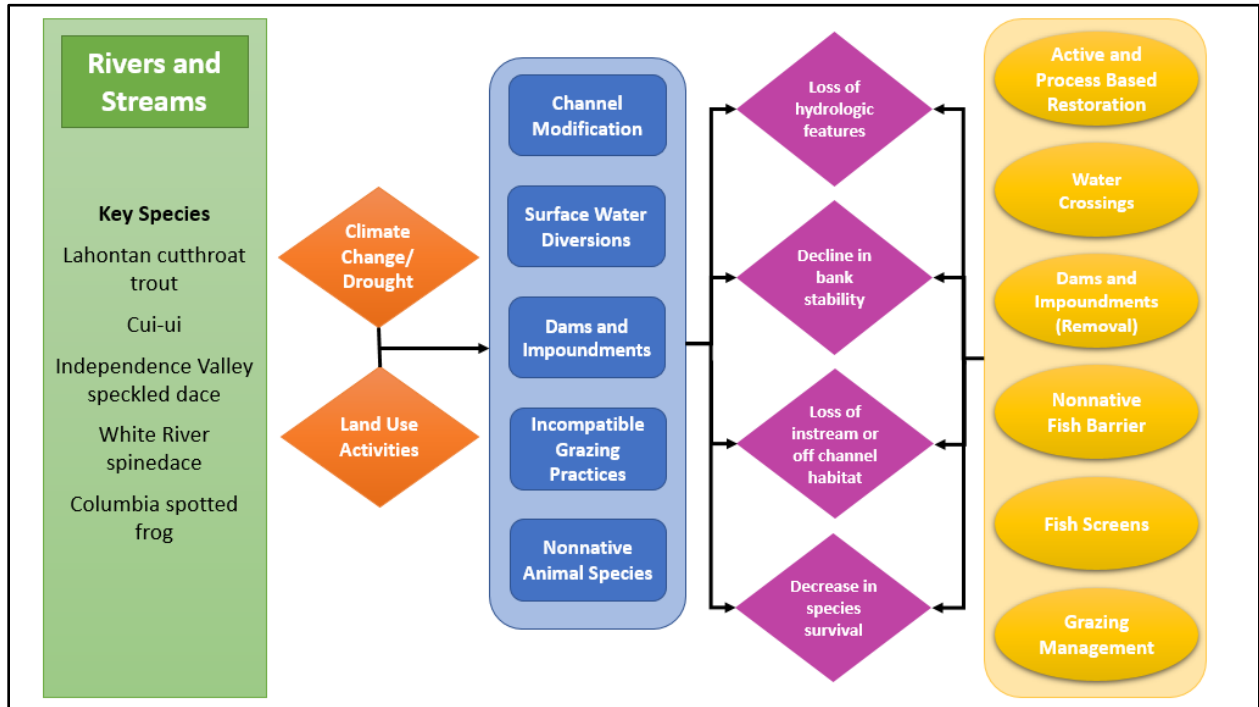
- 4 Bird Spp Prioritization – Tack et al. (in review) dataset: Percent core habitat prioritization values for four sagebrush obligate birds (Sage Sparrow, Sage Thrasher, Brewer's Sparrow, Greater Sage Grouse) of the Sagebrush Biome. Data Source: Jason Tack jason_tack@fws.gov - USFWS, et al. ; Subsequent Data Processing (simple dissolve operations): Matt Heller matthew_heller@fws.gov - USFWS
- Secretarial Order 3362 – Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors
- Nevada Shared Stewardship (<https://forestry.nv.gov/natural-resource-management/shared-stewardship>) – A collaborative effort to expand working relationships, jointly set priorities and implement projects at the appropriate scale, co-manage risk, and share resources for the betterment of habitat and watersheds.
- Greater Sage-grouse core, priority and general habitat - U.S. Geological Survey, Western Ecological Research Center, Dixon Field Station, Dixon. CA. Nevada Sagebrush Ecosystem Program, Carson City, NV; Composite Management Categories for Greater Sage-grouse in Nevada and northeastern California; <https://doi.org/10.5066/F7CC0XRv>
- Greater Sage-Grouse Bi-State DPS - U.S. Geological Survey, Western Ecological Research Center; General Habitat Areas within the Bi-State Distinct Population Segment defined by modeling resource selection functions and utilization distributions for greater sage-grouse populations. Data Source: Peter Coates, pcoates@usgs.gov
- Lahontan Cutthroat Trout priority areas identified in the Updated Goals and Objectives for the Conservation of Lahontan Cutthroat Trout (*Oncorhynchus clarkii henshawi*) (2019)

Final Focus Areas: Focus Areas were delineated based on the above analyses and assessments. Considerations were also given to present and projected budget and realistic staff levels expected during this planning and conservation delivery timeline.

Figure GB-2. Situational models for Tier 1. Targets and key species (green) depicting the interactions among Contributing Factors (orange), their respective influence on the Threats (blue), biophysical factors (purple), and the Restoration Strategies (yellow) to be implemented by the Partners Program to reduce the effects of the Threats on Targets.



Great Basin Intermountain Rivers and Streams



Great Basin Springs and Springbrooks

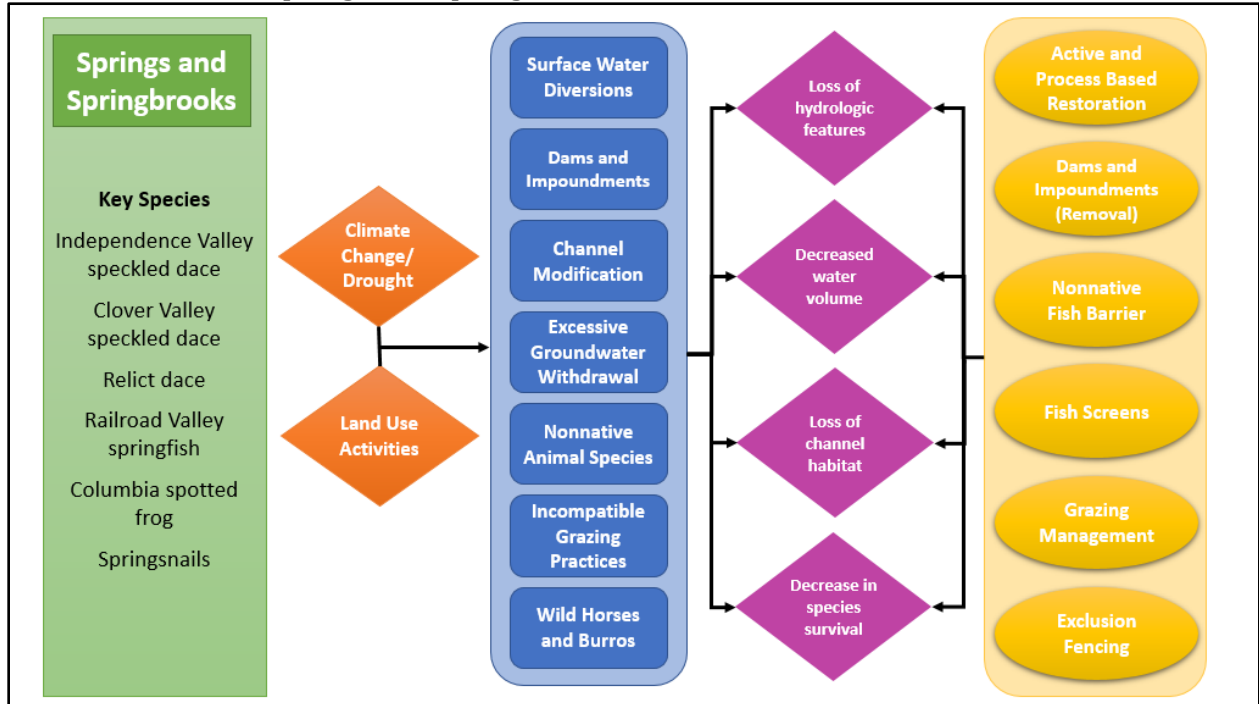


Figure GB-3. Focus Area delineation process for the Great Basin Ecoregion within the Reno FWO jurisdiction.

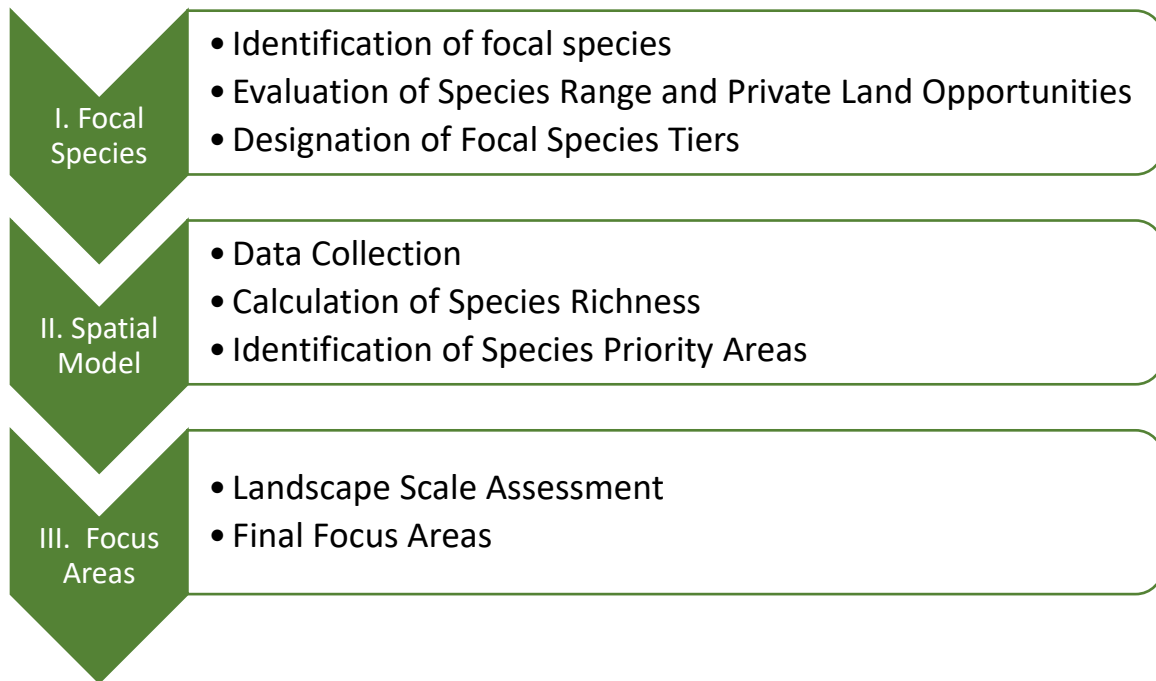
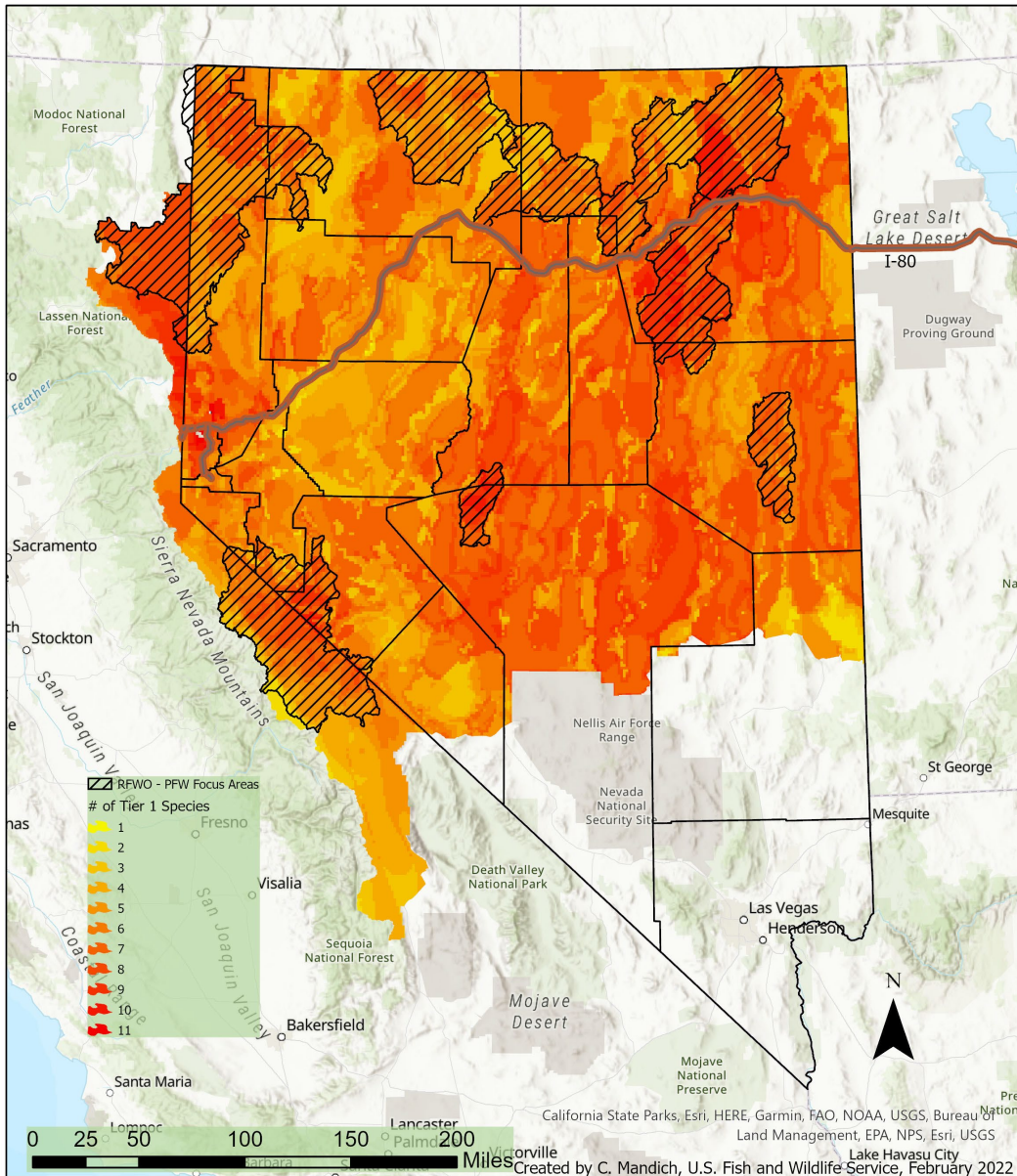


Figure GB-4. Species richness heat map for Tier 1 species in the Reno Fish and Wildlife Office jurisdiction in the Great Basin Ecoregion.



Partners for Fish and Wildlife Tier 1 Species Richness



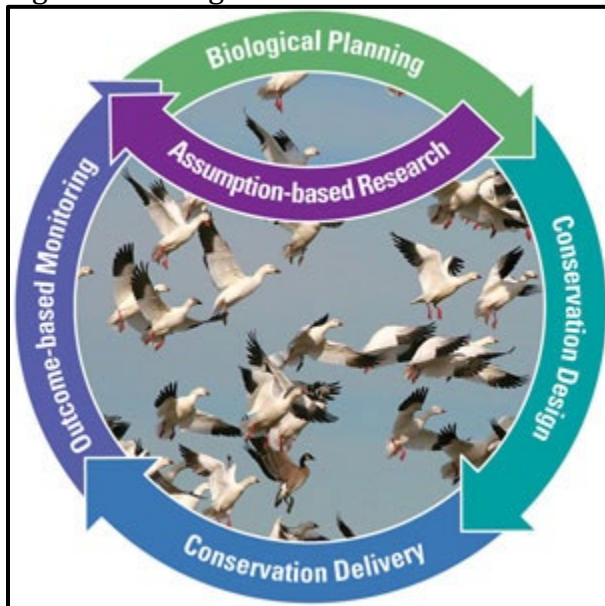
Informational Boxes

Box 1. Strategic Habitat Conservation. Strategic Habitat Conservation.

Strategic Habitat Conservation (SHC) is an adaptive management framework that supports the Service in delivering conservation through a more strategic and adaptive process (<https://www.fws.gov/landscape-conservation/shc.html>). The SHC framework provides an iterative process that guides management decisions on where and how conservation actions should be delivered effectively and efficiently (Figure 1). A key component of the SHC framework is the continued assessment of actions through an adaptive management process to guide future conservation actions.

Functioning under the SHC framework, the Partners Program will be positioned to support larger landscape efforts identified by Landscape Conservation Cooperatives and be integrated into Landscape Conservation Designs as they are developed.

Figure 1 Strategic Habitat Conservation Process.



Box 2. Ecoregional Conservation Business Plans.

The Region 8 Partners Program Strategic Plan calls for the development of a Conservation Business Plan within each Ecoregion. These plans will provide the operational structure for the Program across the region.

Over the past decade the conservation community has embraced the concept of conservation business models (Keen and Oureshi 2006). In order for a business to remain successful and relevant they must develop a business model that explains their purpose, identifies markets, establishes how they'll operate in these markets, and provides feedback on their activities (Pralhad and Hamel 1990, Drucker 1994, Keen and Qureshi 2006). A conservation business plan can be viewed in the same manner as a business plan.

Structurally, the Conservation Business Plans are the mechanisms from which the goals of the regional plan are met through the action items identified within the individual office action plan (see Figure 5 in the text).

These conservation business plans are intended to establish basic processes for moving toward a more rigorous and unified Program within Ecoregions, which will contribute to creating an enhanced landscape-scale based, strategic, and ideally, successful restoration program for the Service and its partners. Ecoregions will have the flexibility in the development of their plan to ensure it works for their geographic area, but it is expected that all plans contain the same key components.

Key components contained within each plan will be:

- The identification of landscape level resource priorities and objectives necessary to address these priorities
- The establishment of an ecoregional data management process and an ecoregional project monitoring process
- A description of funding allocations from the Regional Office to each ecoregion
- An ecoregion-wide Workforce Plan
- Development of accountability measures; reporting needs; coordination and decision rules; and approaches to revise processes that require changes

References

Drucker, P.F. 1994. The theory of the business. *Harvard Business Review* 70:96-104.

Keen, P. and S. Qureshi. 2006. Organizational transformation through business models: a framework for business model design. *Proceedings 39th Hawaii International Conference on System Science*. Published on CD-ROM, ISBN 0-7695-2507.

Pralhad, C. K. and G. Hamel. 1990. The core competences of the organization. *Harvard Business Review* 68:79-93

Appendix

- A. Klamath Business Plan 2014
- B. Pacific Southwest Region Partners and Coastal Program Field Guide to Strategic Planning 2021-2026
- C. Supporting Documents referenced or consulted in the development of Ecoregional sections of the Strategic Plan
- D. Worksheet and interview questions for discussing priorities with Service leadership and external partners.
- E. Pacific Flyway Focus Area Development Analysis (2021 Dylan Wilder Report)

