U.S. Fish & Wildlife Service

Partners for Fish and Wildlife Program

National Strategy

2022–2026

Message from the Chief

With more than 70 percent of land in the United States under private ownership, it is critically important that the U.S. Fish and Wildlife Service continue to invest in voluntary conservation with private landowners and communities. They are important neighbors to national wildlife refuges and national fish hatcheries across the country. Cultivating positive and mutually beneficial relationships with private landowners is a priority not only for the Fish and Wildlife Service, but also for me personally. Growing up in rural New Mexico with a strong connection to working lands forged unforgettable memories and a passion for conserving these special places.

With so much opportunity and only finite resources, it is imperative that we are strategic with our efforts through the Partners for Fish and Wildlife Program. I am proud of the work our employees and stakeholders have invested into planning for the next five years. Valuable collaboration and energy went into defining the five overarching goals and focal areas along with focal species. I appreciate the commitment and passion that went into this work.

Thank you to everyone who helped complete this plan. It provides an important framework as we work with private landowners, communities and others to conserve private and public lands across the Nation, including in under-served rural and urban areas.

Cynthia Martinez
Chief, National Wildlife Refuge System

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Rocky Mountain Front focus area, Montana. Photo by Joe Milmoe, USFWS

The PFW Program has been around for 35 years, and I hope it stays that way for generations. My son will soon be taking over the ranch in the near future and I hope he gets the opportunities to build relationships and the partnerships with folks at the U.S. Fish and Wildlife Service and the PFW Program. It's a great Program. It's rancher friendly and it's landowner friendly.

Jim Stone, Chair, Partnerscapes

Importance of Private Lands Conservation

The United States (U.S.) is filled with opportunities to engage private landowners to voluntarily restore and enhance their properties for the benefit of Federal trust species. Private landowners are the heartbeat of this Nation and our working lands produce substantial amounts of the food and fiber supporting the American population. As they continue to fill those roles, privately-owned working lands are also the backbone of the Nation's wildlife conservation efforts. With over 70 percent of the land in the U.S. in private ownership, these lands play prominently in conservation and it's incredibly important to take a strategic approach to conservation.

With opportunity comes challenges, more than 50 percent of the Nation's wetlands have been destroyed, more than 70 percent of the Nation's riparian habitats have been lost or significantly degraded, and 95 percent of our tallgrass prairie and longleaf pine forests no longer exist. Further, less than two percent of the country's rivers remain free flowing. Born from these challenges, visionaries within the U.S. Fish and Wildlife Service (Service) started the Partners for Fish and Wildlife (PFW) Program. Since its humble beginnings in 1987, the Program has become a centerpiece for voluntary conservation and the Service's leader in private lands conservation. Border to border, coast to coast, the Program covers all 50 states and U.S. territories. Long ago, the Program realized the path to successful private lands conservation was through the building of relationships with people and success hinged on those partnerships. Contained within is an exciting, creative, strategic approach to private lands conservation.

National Conservation Challenges:

50%

of wetlands have been destroyed

70%

of riparian habitats have been destroyed

95%

of tallgrass prairies have been lost

95%

of longleaf pine forests have been lost

2%

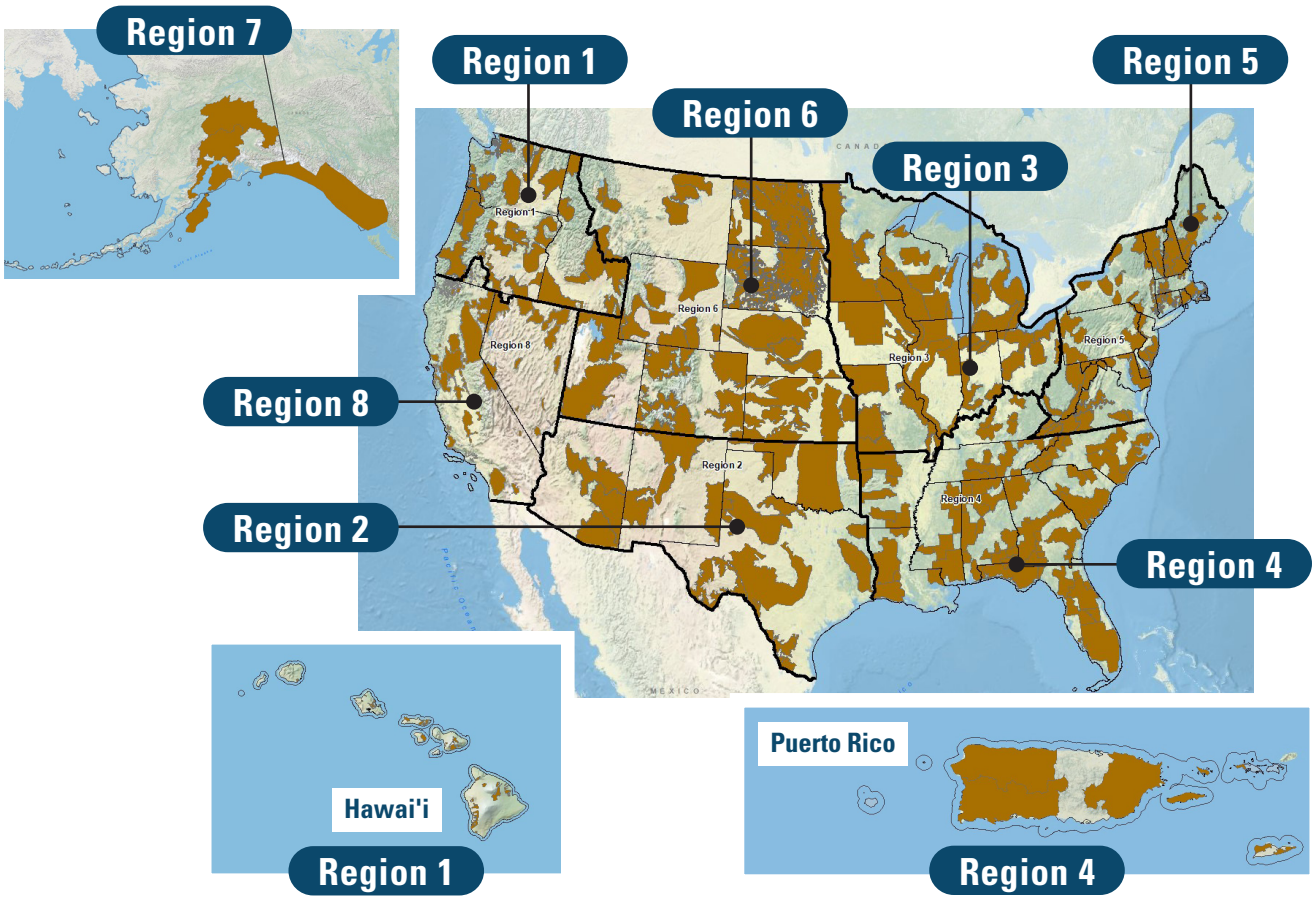
of rivers remain free flowing

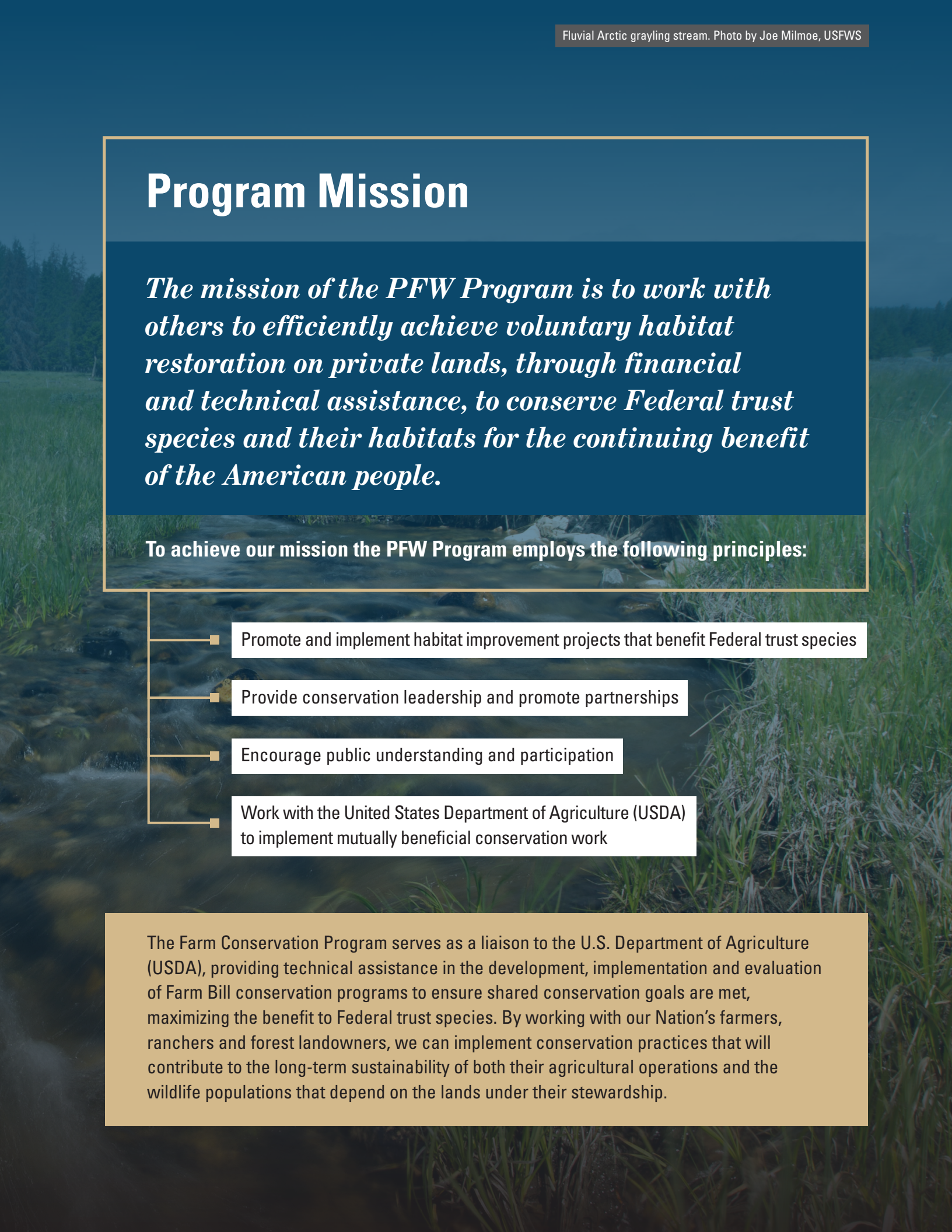
Partners for Fish and Wildlife Program

The PFW Program has been working to address these conservation challenges. The PFW Program is the Service's vanguard for non-regulatory, voluntary, citizen and community-based stewardship efforts for fish and wildlife conservation on private lands. It is based on the premise that fish and wildlife conservation is a responsibility shared by citizens and government.

The PFW Program provides willing partners with financial and technical assistance to accomplish voluntary restoration projects. While the Service works under an array of statutory authorities and resource management programs to meet its mandates, the PFW Program serves as a direct bridge to the owners and managers of private lands, working collaboratively to identify shared goals and develop partnerships that directly benefit fish and wildlife.

National Focus Areas





Fluvial Arctic grayling stream. Photo by Joe Milmoe, USFWS

Program Mission

The mission of the PFW Program is to work with others to efficiently achieve voluntary habitat restoration on private lands, through financial and technical assistance, to conserve Federal trust species and their habitats for the continuing benefit of the American people.

To achieve our mission the PFW Program employs the following principles:

- Promote and implement habitat improvement projects that benefit Federal trust species
- Provide conservation leadership and promote partnerships
- Encourage public understanding and participation
- Work with the United States Department of Agriculture (USDA) to implement mutually beneficial conservation work

The Farm Conservation Program serves as a liaison to the U.S. Department of Agriculture (USDA), providing technical assistance in the development, implementation and evaluation of Farm Bill conservation programs to ensure shared conservation goals are met, maximizing the benefit to Federal trust species. By working with our Nation's farmers, ranchers and forest landowners, we can implement conservation practices that will contribute to the long-term sustainability of both their agricultural operations and the wildlife populations that depend on the lands under their stewardship.

Mission

The mission of the Service is "working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people." Since 1987, the PFW Program has been expanding the Service's mission beyond the traditional boundaries of the National Wildlife Refuge System and other public lands, working directly with private landowners to restore, protect, and enhance priority fish and wildlife habitats on private lands. At the heart of the Service's mission are the conservation and management of the Federal trust species: migratory birds, threatened and endangered species, inter-jurisdictional fish, certain marine mammals, and species of international concern.

Our voluntary, cooperative conservation program is based on this premise: fish and wildlife conservation is a responsibility shared by citizens and their government. Our approach is to engage willing partners, through non-regulatory incentives, to conserve, protect, and restore valuable fish and wildlife habitat on their property and in their communities. We do this by providing financial, technical, and planning tools needed to make on-the-ground habitat conservation affordable, feasible and effective.

The PFW Program's locally based field biologists work one-on-one with private landowners and other partners to plan, implement, and monitor their projects. The PFW Program field staff assists landowners in finding opportunities and additional partners to leverage financial and technical resources. This personal attention and follow-through is a significant strength of the PFW Program that has led to national recognition and wide-ranging support. The success of the PFW Program lies not only in its ability to effectively implement habitat restoration projects, but also in its ability to build trust and credibility with landowners and partners. The PFW Program has grown in size and scope and has gained national recognition as a leader in the new era of cooperative conservation at the landscape level.

Our responsibility to the Nation is to be more careful stewards of the land; we must be a constant catalyst for positive change. **– Gifford Pinchot**

National Initiatives

Although these priorities are not new, we present them here because of their importance to our mission success and continuing a legacy of conservation stewardship in partnership with the American people. To remain a conservation leader, our Program must thoughtfully and ambitiously address these priorities to better serve our partners and the conservation community.

PFW biologist meets with Oneida Nation in Wisconsin. Photo by Joe Milmoe, USFWS

Conservation Equity, Inclusion, and Diversity

Diversity, inclusion, racial justice and equity are complex, societal challenges that require thoughtful and ambitious solutions. The PFW Program is committed to providing benefits to the American people as we carry out our mission. As part of the Justice 40 initiative, the PFW Program is reviewing how our habitat conservation projects can provide additional benefits and better support these initiatives. Fundamental to our conservation approach is building a diverse coalition of stakeholders, including underrepresented and underserved people, such as Tribes and minority communities and delivering projects that in addition to wildlife conservation, benefit people and communities.

Biologist meets with landowner in Beatty, Nevada. Photo by Joe Milmoe, USFWS

Urban Conservation

According to the U.S. Census Bureau, more than 80% of Americans live in urban areas. The Service recognizes the future success of conservation lies ultimately in our ability to inspire Americans to connect with the outdoors and nature, and to become stewards of the environment which support their communities and the fish and wildlife resources which they depend on. To that end, the Service established the Urban Wildlife Conservation Program (UWCP) with the overall goal of prioritizing conservation and recreational access efforts in urban areas where most Americans live and can more directly benefit.

The PFW Program has a history of engaging urban communities to restore and enhance fish and wildlife habitats for the benefit of the American people. We plan to continue that work and support the Service's UWCP and better serve our communities, by adopting the Standards of Excellence and Critical Elements into planning and programs in all urban areas. Refer to www.fws.gov/sites/default/files/documents/Urban-Wildlife-Conservation-Program-Strategic-Plan-FINAL508tested.pdf for additional details on the standards and elements.

To help incorporate these concepts, PFW Program biologists can coordinate efforts with urban refuges, Urban Wildlife Refuge Partnerships, Urban Bird Treaty Cities, or Urban Waters Federal Partnerships to help identify opportunities to implement conservation projects that bolster community assets and resilience.

Streambank stabilization in North Carolina. Photo by USFWS

> ***PFW Program support has made a big difference, not only in allowing us to replant the eastern bank, but mostly in bolstering our credibility with the city and other agencies. Your actions have rippled out and we on the board of FOCL are very grateful.***
>
> **Ray Thorn,** Friends of Colorado Lagoon

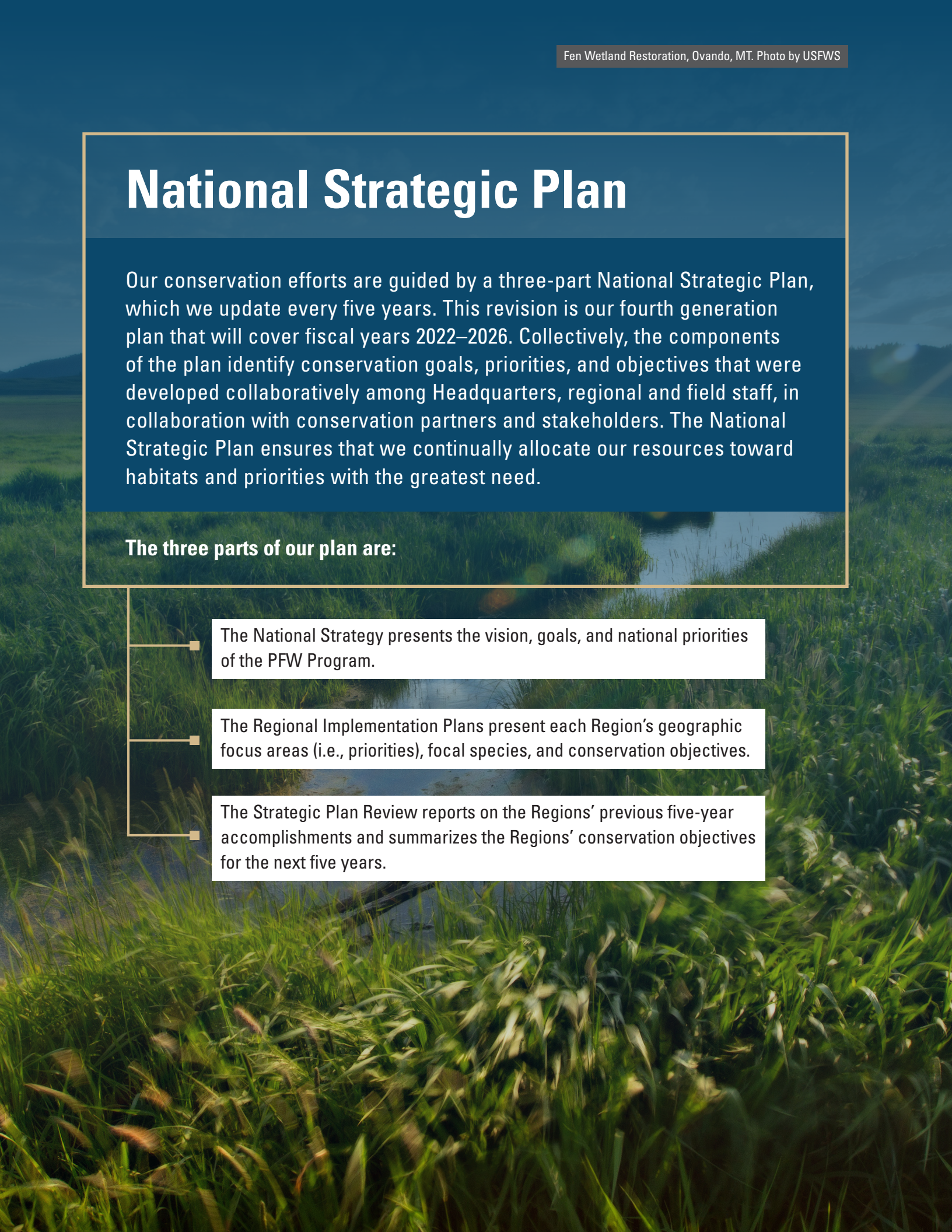
Outdoor classroom at Seaside Heights Elementary School in Seaside, Oregon. Photo by Joe Milmoe, USFWS

Youth and Nature

The PFW Program works to foster a connection with nature in communities, especially among youth – the next generation of environmental stewards. The Service is committed to working with local and national non-profit youth organizations by providing internships and other employment opportunities.

By partnering with these organizations, upon completion of their commitment, these youth are eligible for a variety of jobs under Special Hiring Authorities in the Service. We can do this by working with local schools, youth job corps and others to help create employment opportunities and restore natural spaces that educate and engage young people.

All acts of government…are of slight importance to conservation except as they affect the acts and thoughts of citizens." **– Aldo Leopold**



Fen Wetland Restoration, Ovando, MT. Photo by USFWS

National Strategic Plan

Our conservation efforts are guided by a three-part National Strategic Plan, which we update every five years. This revision is our fourth generation plan that will cover fiscal years 2022–2026. Collectively, the components of the plan identify conservation goals, priorities, and objectives that were developed collaboratively among Headquarters, regional and field staff, in collaboration with conservation partners and stakeholders. The National Strategic Plan ensures that we continually allocate our resources toward habitats and priorities with the greatest need.

The three parts of our plan are:

- The National Strategy presents the vision, goals, and national priorities of the PFW Program.
- The Regional Implementation Plans present each Region's geographic focus areas (i.e., priorities), focal species, and conservation objectives.
- The Strategic Plan Review reports on the Regions' previous five-year accomplishments and summarizes the Regions' conservation objectives for the next five years.

Strategic Priorities

The PFW Program has a tremendous legacy of developing partnerships, leveraging resources and finding win-win scenarios that benefit people, communities and the fish, wildlife and habitats they value and depend on. New in this generation of plans is a common set of national priorities, which have been developed to advance the strategic nature of the program and communicate a unified message about program focus and effectiveness at the national level. These national priorities have been informed by the regional strategic plans, which have been honed by over 15 years of planning, implementation and reassessment.

Our 2022–2026 strategic priorities are:

- **1. Species Conservation:** Implement habitat projects within priority areas that prevents decline or supports 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 ongoing conservation efforts including on National Wildlife Refuges and other protected lands.

- **3. Resilient Ecosystems:** Advance ecosystem health and resilience to climate change related impacts to benefit communities of fish, wildlife, plants and people. This priority acknowledges that climate change affects all parts of the ecosystem, including those on which humans depend, and the PFW Program can work with diverse partners to support conservation actions to help them respond to climate change stressors.

Goals

The PFW Program operates in a constantly changing natural, economic, social, and political environment. In the face of these challenges, it is crucial to strategically allocate resources, while remaining nimble, adaptive, and responsive. Habitat conservation (Goal one) is the principal purpose of the PFW Program. Goals two through five were selected to support and ensure the effective and efficient delivery of that primary goal. This National Strategy document describes the direction of the program for the next five years using the five national-level goals. In Regional Implementation Plans, each region identifies objectives and performance targets under each of these goals.

These five goals are designed to support the mission of the PFW Program:

Installing prairie strips. Photo by USFWS

> ***When you get the friendships, the partnerships, the agencies – Federal, State, Local and private and put them together for the waterfowl resource, the upland resource, the species…it proved to be highly successful. We really enjoy the Program and we did it! We gained funding, we expanded the Program and as I see today- a magnificent success beyond my greatest expectations!***
>
> **Eldon McLaury,** Retired Biologist

Goal 1

Conserve Habitat

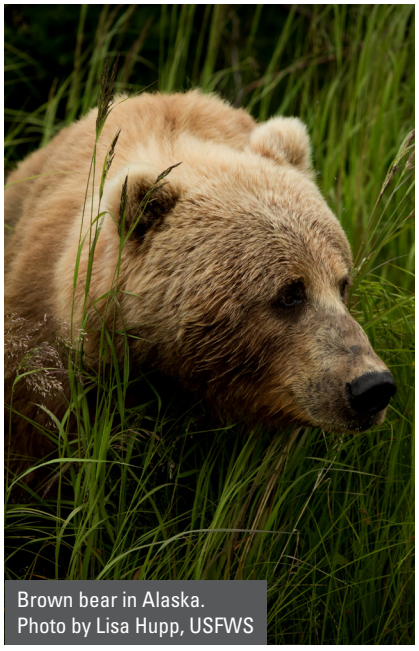
Restore and enhance priority habitats to increase and maintain Federal trust species populations

One of the primary goals of the PFW program is to restore and help protect key remaining natural habitats. This conservation stewardship is achieved by designing and implementing on-the-ground habitat restoration work on private lands and by providing technical assistance to partners on conservation easements and acquisitions. These ongoing conservation measures require strategic planning and investment of labor and funding. Whether implementing projects directly, or providing assistance to partners, the goal is to deliver projects to restore priority habitats and ecosystem functions. Cumulatively, these acres contribute significantly to the sustainability of Federal trust species.

In general, the PFW Program develops regional habitat priorities in coordination with partners through a region-by-region assessment of shared needs and opportunities. This assessment provides the basis for development of focus areas and conservation actions determined to be the most critical to benefit the fish and wildlife species the Service is entrusted to conserve across the landscape. These regional conservation priorities are presented in our Regional Implementation Plans.

The PFW Program policy has established priority ranking factors to help guide where best to develop and fund projects. These priorities are stepped down to the regional, State and local levels as staff collaborate with partners to further refine habitat priorities and geographic focus areas. These priorities and focus areas are described in regional implementation plans of the PFW Program's overarching strategic plan.

Sage-grouse restoration partnership in Nevada. Photo by Joe Milmoe, USFWS



Brown bear in Alaska. Photo by Lisa Hupp, USFWS

Priority ranking factors for the PFW Program are used to assign funding priority status to proposed projects that meet the following conditions:

Improve habitat for Federal trust species, including migratory birds; threatened and endangered species; inter-jurisdictional fish; marine mammals; and, other declining species;

Complement activities on lands within the National Wildlife Refuge System, or contribute to the resolution of problems on refuges that are caused by off-refuge practices;

Address species and habitat priorities that have been identified through Service planning teams (with program partners), or in collaboration with State fish and wildlife agencies;

Reduce habitat fragmentation or serve as buffers for other important Federal or State conservation lands; and

Create self-sustaining systems.

All other considerations being equal, a project will be prioritized if it connects publicly and privately-owned conservation lands, promotes long-term conservation, involves multiple partners, includes cost sharing, and is cost effective by providing the biggest monetary return on investment.

The overall goal of a PFW Program project is to restore a site to the highest-quality habitat for Federal trust species in the context of landscape-scale objectives.

Goal 2

Broaden and Strengthen Partnerships

Accomplish conservation delivery through voluntary partnerships

This goal supports an important component of both the Service and the PFW Program mission "to work with others" by engaging external partners and other Service programs in stewardship activities that restore, enhance, and protect fish and wildlife habitats. A shared interest in habitat conservation is the foundation of the Program's partnerships.

Program partners include Federal, Tribal, Alaska Native, State and local government agencies, non-governmental organizations, private corporations, foundations, land trusts, and individual landowners. The PFW Program develops partnerships taking into consideration the priorities and opportunities in different geographic areas. Partnerships may be established using formal mechanisms such as cooperative and landowner agreements, or less formal approaches. The technical assistance provided by the PFW Program is integral and highly valued to both formal and informal partnerships.

One of PFW's primary contributions is technical staff expertise regarding species recovery and their habitat requirements. In a partnership role, the PFW Program can also use funding and/or technical assistance to influence the design and scope of plans and projects. The Service's biological expertise and field presence help ensure that projects are cost-effective and targeted to benefit priority fish and wildlife resources.

Jones Lake in Ovando, Montana. Photo by Joe Milmoe, USFWS

> ***No government conservation program is more resonant with Leopold's version of a land ethic than the Partners for Fish and Wildlife Program. It allows a landowner to express their own land ethic on their own property.***
>
> **Buddy Huffaker,** Executive Director, Aldo Leopold Foundation

Goal 3

Improve Information Sharing and Communication

Collaborate and share information and concerns with partners, stakeholders, potential future partners, decision-makers, and others to protect, restore, and enhance trust resources

Effective listening and communication skills are pivotal to engaging, recruiting, and enlisting the many stakeholders and decision makers needed for successful conservation. The Program must promote understanding and increase awareness of the PFW Programs' stewardship vision to encourage voluntary participation and expand community support for habitat conservation through the PFW Program. It is important to reach out and establish trusting relationships with partners that will foster the shared sense of stewardship necessary for successful collaboration. Program biologists communicate with partners, constituents, and stakeholders in a variety of ways, including one-on-one interactions with partners, community gatherings, the news media, brochures and other written material, social media, websites, and online forums. Expanding digital media communication is crucial for connecting with technologically savvy audiences and youth.

Biologists at the Thomas Fire restoration site in California. Photo by Robyn Gerstenslager, USFWS

The PFW Program will continue to improve communication by improving messaging and methods of sharing our story. In addition, we foster intra- and interagency exchange of information to enhance the success of projects. The PFW Program also coordinates and interacts with interagency, State, and educational partners to assess and describe the biological response that is occurring as a result of our habitat restoration and enhancement activities.

Goal 4

Develop our Workforce

The staff are our most important resource. Maintaining and supporting staff is the key to success in achieving on the ground results for Federal trust species.


Biologist Angel Montoya meets with partners at Vermejo Ranch in New Mexico. Photo by USFWS

Successful implementation of the PFW Program requires a diverse, highly skilled, and motivated workforce. We are committed to developing highly capable employees who are results-focused, act with integrity, and seek creative solutions in the conservation of Federal trust species.

Employees will also have access to the technical and financial tools necessary to meet the demands of the PFW Program. Our workforce development comes in many forms – access to evidence-based conservation tools, team building and planning, training in the latest restoration techniques, and knowledge of state-of-the-art tools, such as geospatial planning. We share our expertise with our partners, while leveraging our capacities with others for shared conservation objectives.

Before and after prairie restoration in Arkansas. Photo by Mike Budd, USFWS

Goal 5

Ensure Accountability

Measure, assess, and report on the effectiveness, efficiency and fiscal integrity of our habitat conservation programs and activities

Accountability is an important responsibility of all government programs. The PFW Program reports acres and miles of wetlands, uplands, riparian lands and streams restored as annual accomplishments. We also report on numbers of fish barriers removed and acres that address adaptive habitat management. The PFW Program uses an enterprise data system to capture accomplishments from the field, which provides a reliable and important tool for meeting accountability requirements.

However, new and expanded accountability standards are emerging from Office of Management and Budget and Department of the Interior (DOI). While acres and miles of habitat restored or protected remain central to measuring PFW Program accomplishments, PFW staff will continue to translate the value of our conservation work to Federal trust species recovery and the public, including economic benefits and biological outcomes.

> ***Without the assistance and attention provided to me by the PFW biologist, I would not have signed up for any of the existing conservation programs.***
>
> **Harold May,** Mississippi Private Landowner

Next Steps: Vision to Implementation

This National Strategy document serves as an introduction to the PFW Program Strategic Plan for 2022–2026. Two-page state summary spreads were developed as an appendix to this document, which serve as a tool to summarize data from Regional Implementation Plans (pg 19). These spreads provide a brief synopsis of important and impactful work happening in each state and territory, to be communicated to project leaders, Service leadership, DOI and White House Office of Management and Budget staff.

The remaining two parts in the Strategic Plan will describe how and where we will operate to meet expectations outlined in the National Strategy. Part two, "Regional Implementation Plans" identifies geographic focus areas, estimated performance targets, conservation objectives, and a description of anticipated benefits to Federal trust species, as developed by our regional and field offices, through collaboration with stakeholders. Part 3, called the "Strategic Plan Review" document, is a summary of what the PFW Program completed 2017–2021 and highlights accomplishments from that timeframe.

To learn more about our Program and how to find a local contact go to our website at www.fws.gov/partners or connect with us on Facebook at https://www.facebook.com/PFWProgram.

Biologist meets with landowner in Montana. Photo by Joe Milmoe, USFWS

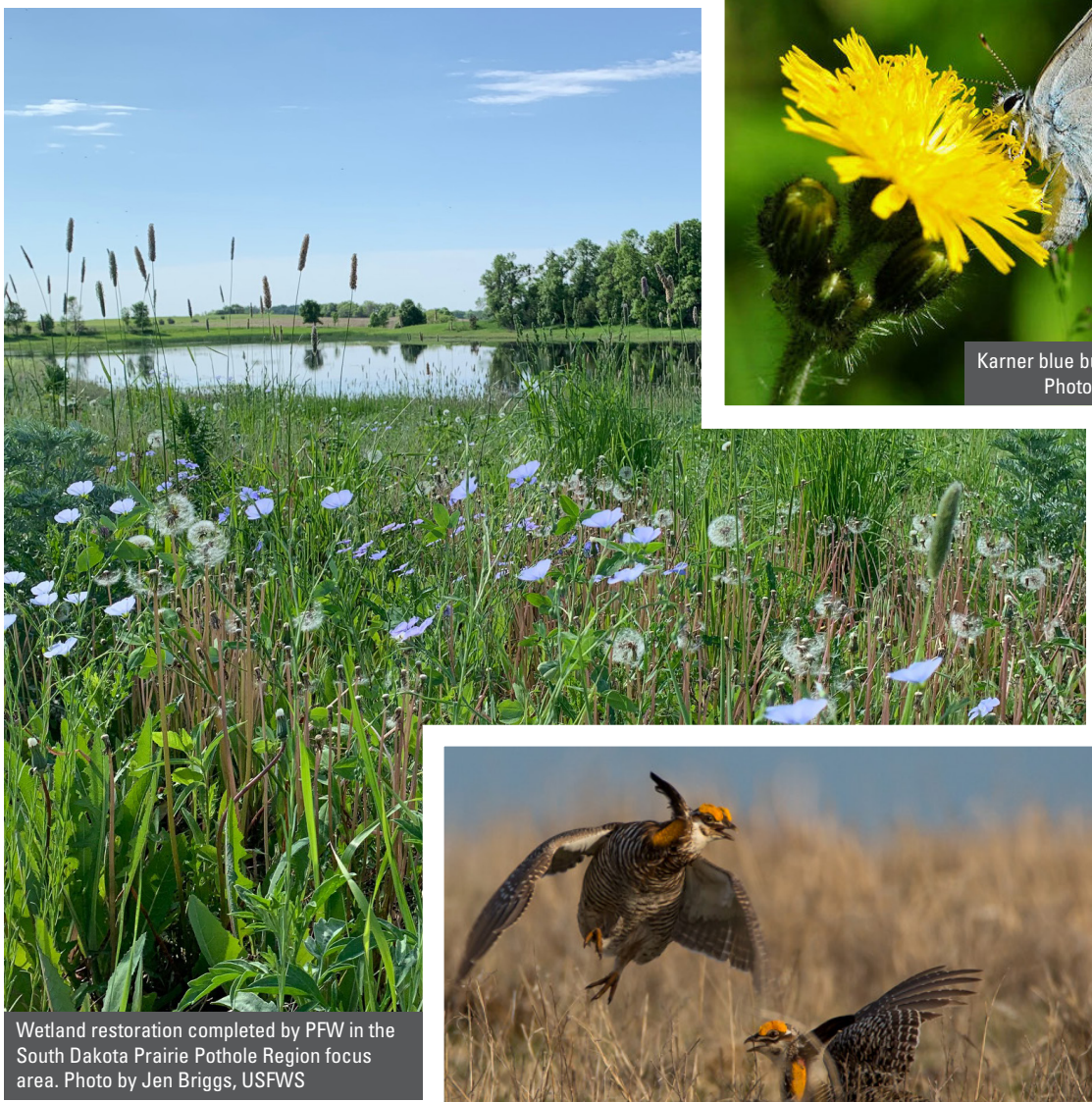
Landowner seeding in South Dakota. Photo by USFWS

Proud longleaf forest restoration partners in North Carolina. Photo by USFWS

Appendix A

2-Page State Spreads Alphabetical

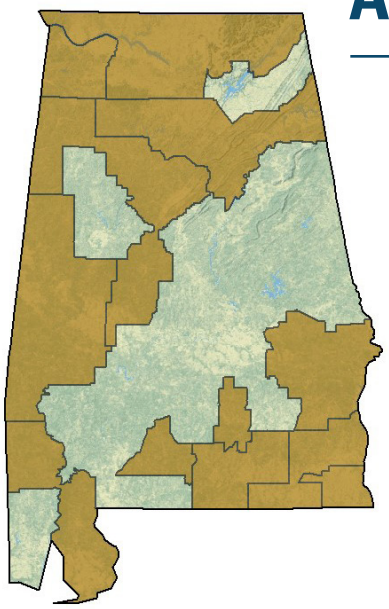
Karner blue butterfly on hawkweed. Photo by Joel Trick, USFWS

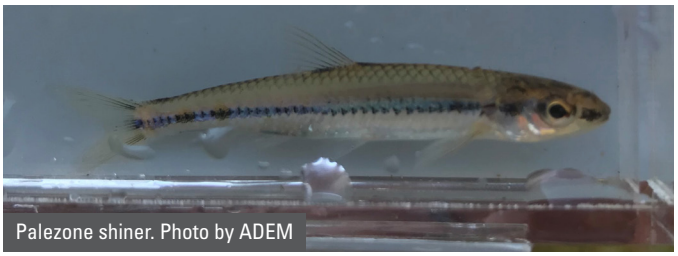


Wetland restoration completed by PFW in the South Dakota Prairie Pothole Region focus area. Photo by Jen Briggs, USFWS

Greater prairie-chickens. Photo by USFWS

Alabama Focus Areas

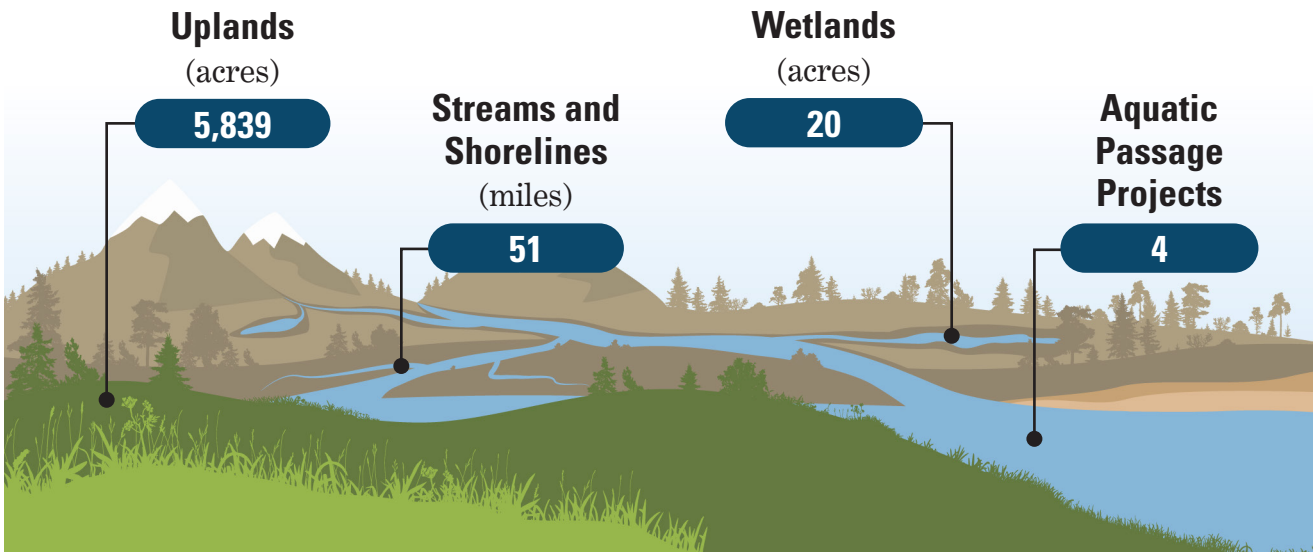




Palezone shiner. Photo by ADEM

Snail darter. Photo by ADEM

2022–2026 Conservation Targets



Habitat Examples

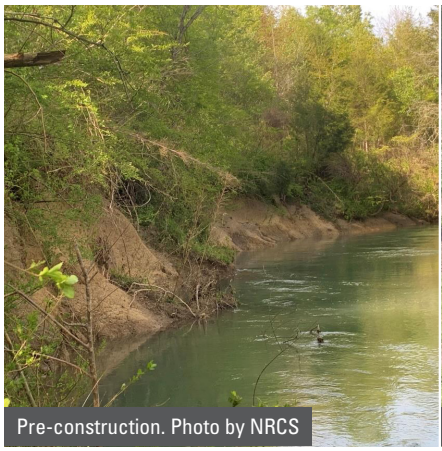
Uplands: longleaf pine, shortleaf pine, barrens/glades/prairie • **Wetlands:** floodplains, rivers, streams • **Stream/Riparian:** instream habitat, streambanks, riparian areas

Species Examples

Federally endangered species: palezone shiner, shiny pigtoe, slabside pearlymussel, Alabama (AL) lampmussel, AL cave shrimp • **Federally threatened species:** snail darter • **At-risk species:** Tennessee cave salamander, monarch butterfly

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Paint Rock River Streambank Stabilization


Pre-construction. Photo by NRCS


During construction. Photo by TNC


1 week post-construction. Photo by TNC

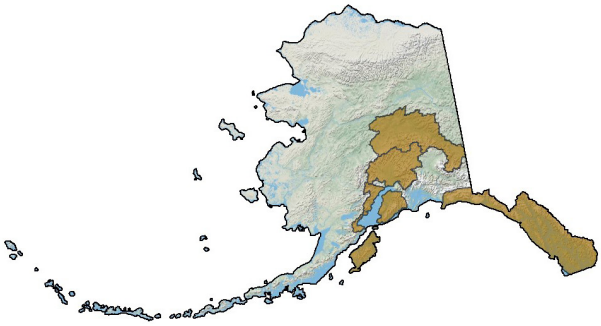
For more than two decades, Partners for Fish and Wildlife (PFW) has worked with State and Federal agencies, non-governmental organizations, and over three dozen private landowners in the Paint Rock River watershed in Jackson County, Alabama. This area is a Strategic Habitat Unit (SHU), a watershed location designated as a priority for management, recovery, and restoration activities, because it contains many rare fishes, mussels, snails, and crayfishes. To date, the partnership's combined efforts have resulted in completion of nearly 40 projects in this SHU.

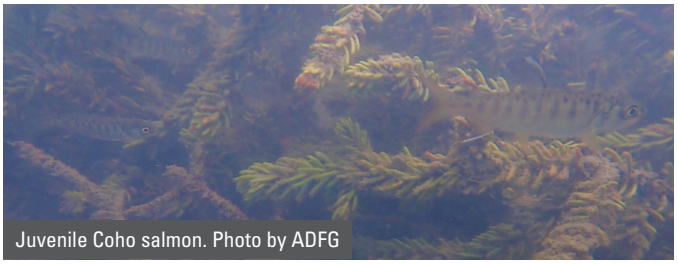
One project was selected to protect water quality and habitat conditions for nine federally listed mussel species and two fish species, two at-risk mussel species, and designated critical habitat for two mussels in the Paint Rock River. The work consisted of stabilizing approximately 350 feet of streambank habitat. Sod was harvested to stabilize streambank slopes instead of using the traditional erosion control blankets, grass seeding, mulching, and use of hay straw and fertilizer.

Restoration work occurred within an area currently enrolled in the United States Department of Agriculture (USDA) Conservation Reserve Program (CRP). Communications between the landowner, The Nature Conservancy Alabama Chapter, PFW, and Natural Resources Conservation Service staff ensured the project was feasible and requirements for CRP were met. All vegetation removed or damaged in the CRP area during the project implementation was replanted adjacent to and parallel to the stream channel within the project footprint during the winter of 2021 and 2022.

Funding for this project was provided in part by the PFW Program, the Tennessee Valley Authority's Environmental Stewardship Program, and private landowner in-kind contributions.

Alaska Focus Areas

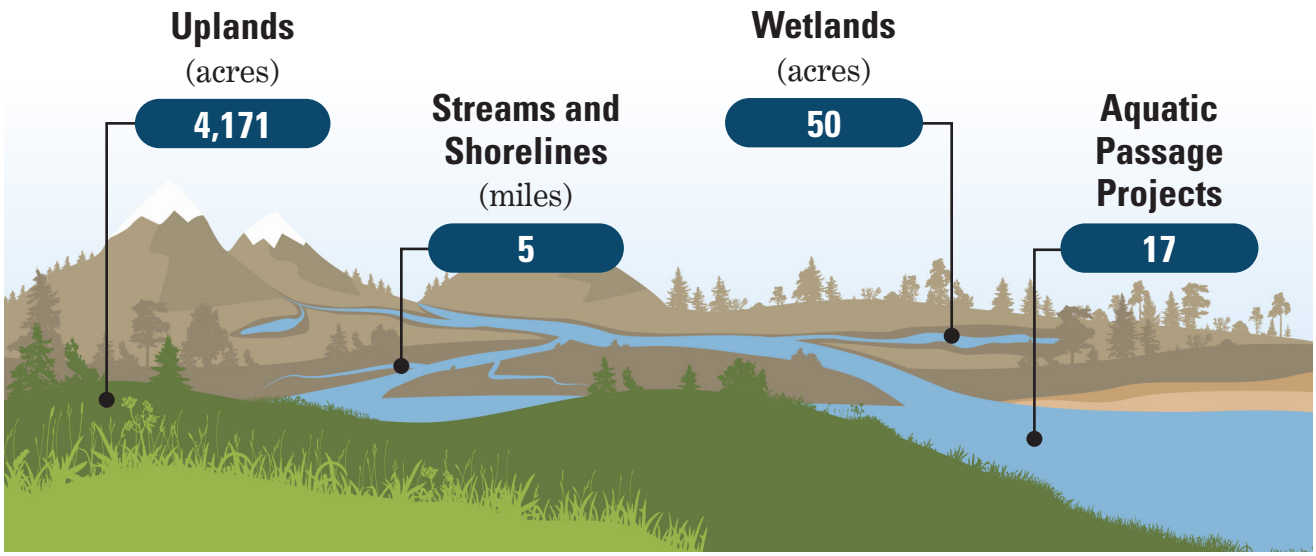




Juvenile Coho salmon. Photo by ADFG

Pre- (left) and post- (right) restoration. Post-restoration shows stabilized banks. Photos by ADFG

2022–2026 Conservation Targets



Habitat Examples

Upland, riparian, wetland, aquatic, temperate rainforest, coastal areas

Species Examples

Pacific salmon, migratory birds, pollinators

More information available in the Alaska Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Kenai River Streambank Restoration Partnership

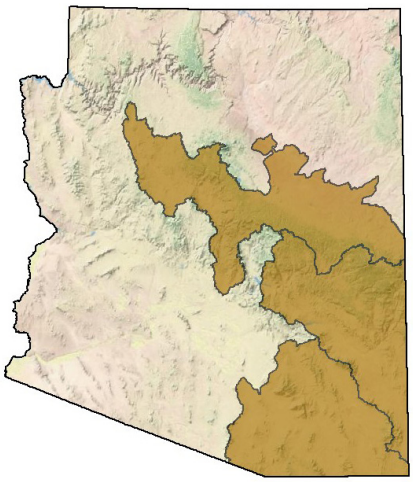
Chinook salmon, one of five Pacific salmon species found in Alaska. Photo by Ryan Hagerty, USFWS

The Kenai River is a glacially fed river in Southcentral Alaska that supports five species of Pacific salmon. Its road-accessibility and proximity to larger population centers has made it one of the most popular and heavily fished rivers in Alaska. Rapid development with inconsistent building standards combined with wave action from heavy motorboat usage has created a patchwork of unstable banks, impacting juvenile salmon habitat quality.

Since 1995, Partners for Fish and Wildlife (PFW) has partnered with the Alaska Department of Fish and Game (ADFG) and hundreds of landowners to restore and enhance juvenile salmon habitat connectivity, and streambank stability and resilience within the Kenai River watershed. To date, the program has completed over 750 preservation and streambank restoration projects, steadily creating a mosaic of connected juvenile rearing habitat along privately owned sections of the river. Collectively, these projects are creating a more stable floodplain, increasing resilience during flooding, and minimizing infrastructure damage. In addition to the projects completed with direct funding, PFW biologists provide technical assistance to 50+ local landowners annually.

In 2021, PFW, ADFG, and a dedicated landowner completed a streambank project that aligned with the conservation goals of the partnership. This section of streambank suffered from decades of trampling by anglers combined with high levels of erosion caused by relentless summertime boat wakes. Through a variety of techniques, the bank was stabilized, the riparian buffer reestablished, salmon habitat was recreated, and landowner access to the river was maintained. With the completion of this project along with 13 others this year, the Kenai River is a step closer to regaining continuous juvenile habitat connectivity and overall watershed health.

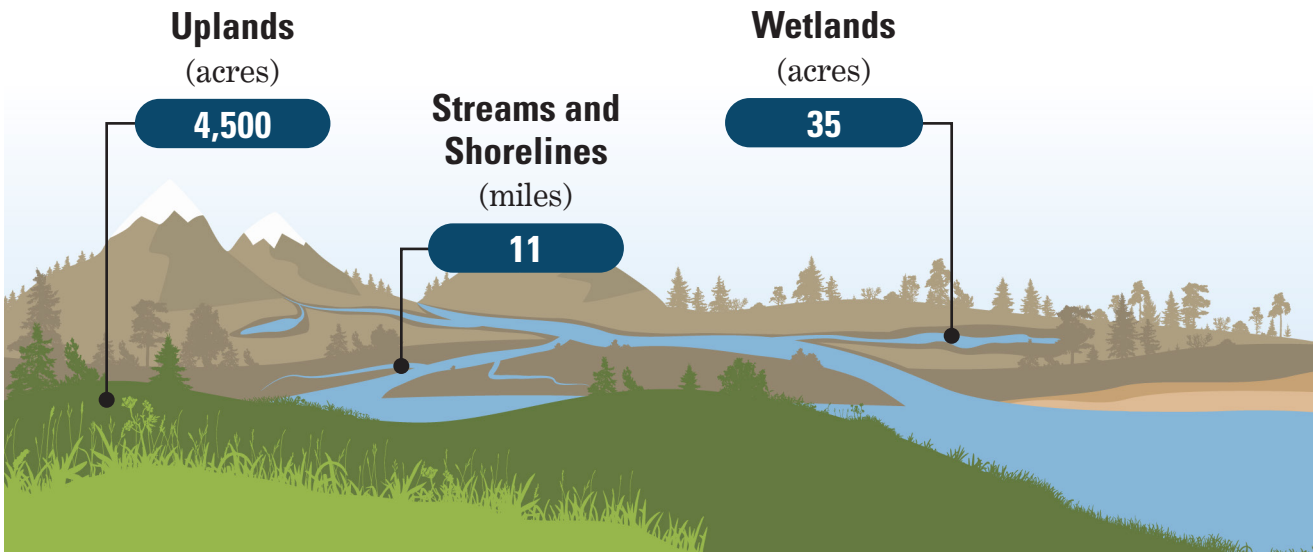
Arizona Focus Areas



Floating islands of vegetation were installed in the pond to help with pond maintenance. Photo by USFWS

The outflow was designed to provide habitat for canyon treefrogs. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Wetlands and riparian areas, streams, grasslands, pinyon-juniper woodlands

Species Examples

Southwestern willow flycatcher and other migratory birds, Chiricahua leopard frog, Apache trout

More information available in the Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Desert Pupfish and Pollinator Habitat Enhancement Project

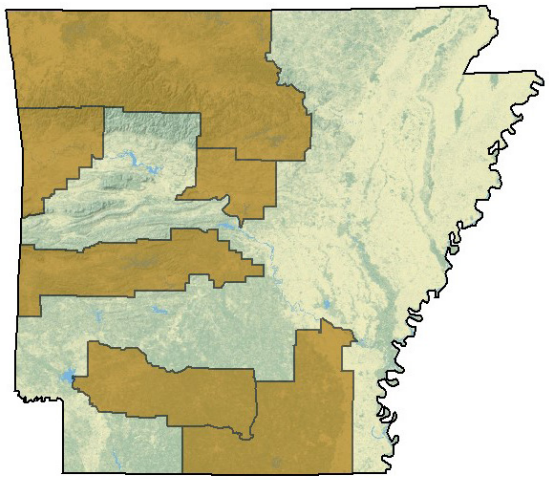

Newly installed stream for desert pupfish. Photo by USFWS

Tucson Audubon, a private landowner, Arizona Game and Fish Department (AGFD), and Partners for Fish and Wildlife worked together to enhance habitat for the threatened desert pupfish, pollinators, and migratory birds in the Southern Arizona Focus Area. The landowner signed onto AGFD's Desert Pupfish Safe Harbor Agreement with the United States Fish and Wildlife Service to facilitate population establishment. The Southern Arizona Focus Area, near the border with Sonora, Mexico, is one of the most biologically diverse temperate areas in the world and includes Arizona's highest number of neotropical migratory birds.

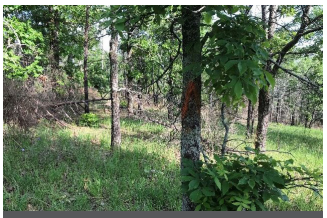
The project created a new pond for desert pupfish and a variety of habitat enhancements for pollinators and birds. Because desert pupfish use both low-flow streams and ponds, we created an integral small cascade-series stream with a recirculating pump. In the pond, wetland plants were installed on floating islands for increased fish habitat diversity, with pollinator plants placed around the site to improve habitat for breeding azure bluebirds. The landowner and Tucson Audubon also installed four azure bluebird nest boxes for this cavity-limited species.

The landowner propagated wild native mulberries to augment bird food sources. The landowner also improved wildlife food sources by planting desert willow, Mexican elderberry, velvet mesquite, Gambel's oak, netleaf hackberry and western soapberry. Arizona walnut trees were planted near the banks of Corral Canyon Wash, which serve as a primary host for bagworms, the favored prey item of western yellow-billed cuckoo. The understory pollinator plants we established along the wash should also increase the overall insect prey base for cuckoos and other migratory and breeding birds.

Arkansas Focus Areas



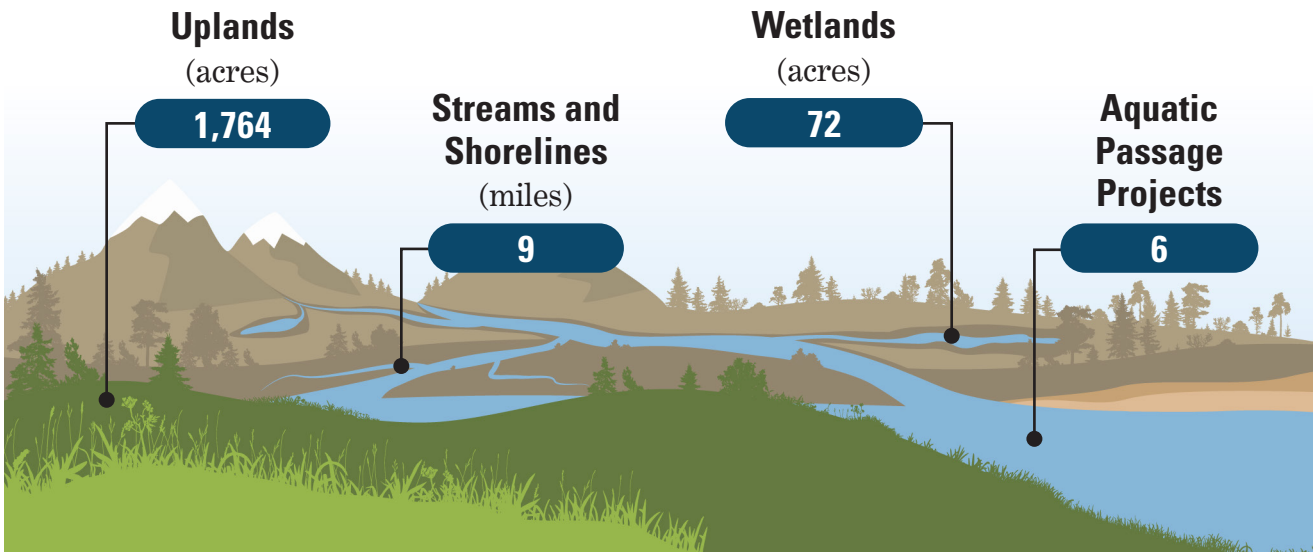
Before restoration. Photo by USFWS



After restoration. Photo by USFWS

Indiana bats. Photo by Ryan Hagerty, USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: prairie and open pine/oak woodland • **Stream/Riparian:** Illinois River, Beaver Lake Watershed, Four Forks Little Red River, caves/karst

Species Examples

Federally endangered species: Ozark big-eared bat, Indiana bat • **Federally threatened species:** Ozark cavefish, northern long-eared bat • **At-risk species:** Texas frosted elfin, monarch butterfly, spotted skunk, regal fritillary

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Restoring Habitat with Timber Stand Improvement and Prescribed Fire

Site preparation burn for native prairie restoration. Photo by Jonathan Baxter, USFWS

Partners for Fish and Wildlife (PFW) worked with the landowner, Arkansas Wildlife Federation, and the Arkansas Game and Fish Commission on a large piece of property historically used for cattle, hay, timber production, and recreation. The landowner wanted to manage habitat for wildlife including quail, deer, turkey, bear, bats, neotropical migratory birds, monarch butterflies and other pollinators. The property was a mixed closed canopy upland hardwood forest, mixed with shortleaf pine and rocky glades scattered throughout. Because of the lack of forest management and fire exclusion, the understory was missing much of the native herbaceous and canopy species, which were replaced by shade tolerant woody species. The dense canopy caused the trees to be stunted and less vigorous. Timber stand improvement (TSI) was completed on approximately 170 acres using single stem chemical injection of undesirable species (hickory, red cedar, elm, and sweetgum) to open the canopy to 50–60 basal area and release desirable species (oaks, shortleaf pine, and herbaceous understory). Shortly following the TSI, prescribed fire was used to maintain and control remaining understory and midstory woody species. This also promoted the release of native grasses and forbs stored in the seedbank by removing accumulated leaf litter, allowing the sun to reach the ground. Forty-five acres of pasture that were mostly invasive species, such as fescue and bermudagrass, were converted to a forb-rich native grass mix containing milkweeds for monarch butterflies and other pollinators. Additional species that benefited from this restoration included the endangered gray bat and Indiana bat, the threatened northern long-eared bat, and the at-risk tricolored bat, spotted skunk, prairie gray fox and northern bobwhite.

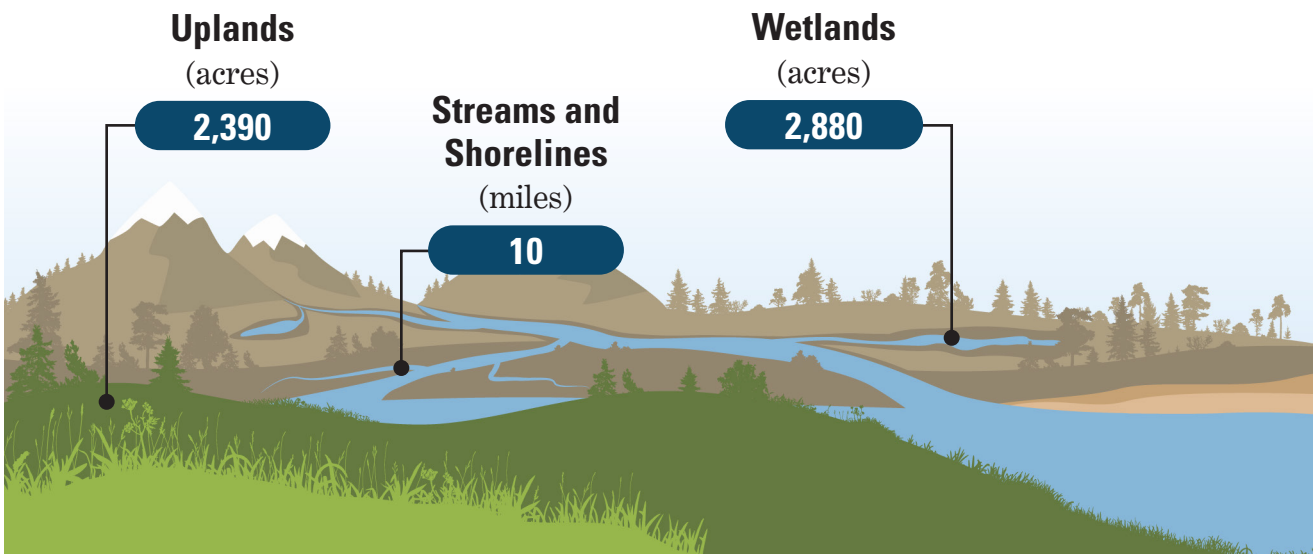
California Focus Areas

Post restoration. Photo by USFWS

Before restoration. Photo by USFWS

Cactus survivors. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: native grasslands • **Wetlands:** managed seasonal, semi-permanent/permanent, wet meadows, freshwater wetlands (ponds, springs and vernal pools) • **Stream/Riparian:** Instream and riparian areas

Species Examples

Threatened and endangered mammals, reptiles, amphibians, anadromous fishes, crustaceans, and plants; migratory and nesting waterfowl; migratory shorebirds

More information available in the Pacific Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

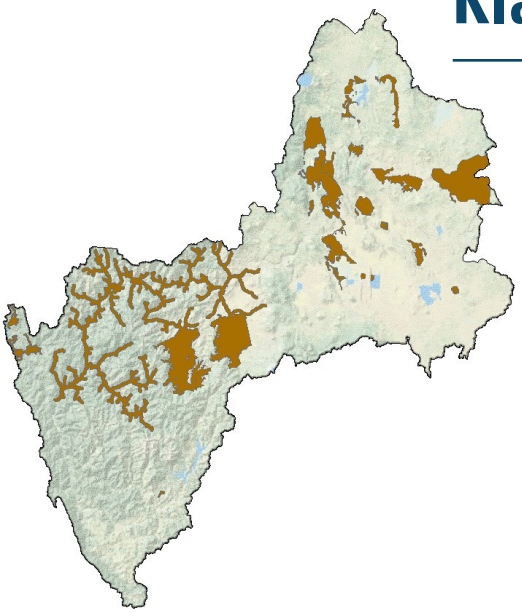
Meadowlark Habitat Restoration Project


Post restoration. Photo by USFWS

The Meadowlark property is a conservation property in San Diego County, adjacent to suburban development, agricultural land, and other conserved properties. This property provides important habitat for the federally threatened coastal California gnatcatcher and several other animals native to the area. This project had two parts, one of which was to restore an area infested by a nonnative plant called onionweed with native coastal sage scrub plants. The other part of the project was to use the conservation knowledge of the Center for Natural Lands Management to assist a neighboring property owner in creating a conservation plan for their property.

This project provides an example of how conservation properties and restoration projects can both improve habitat and help with the planning and land use issues present in southern California. With the leadership and guidance of each partner, this project improved habitat for a threatened species and provided a great opportunity for students and community members to be a part of a conservation effort.

Klamath Focus Areas

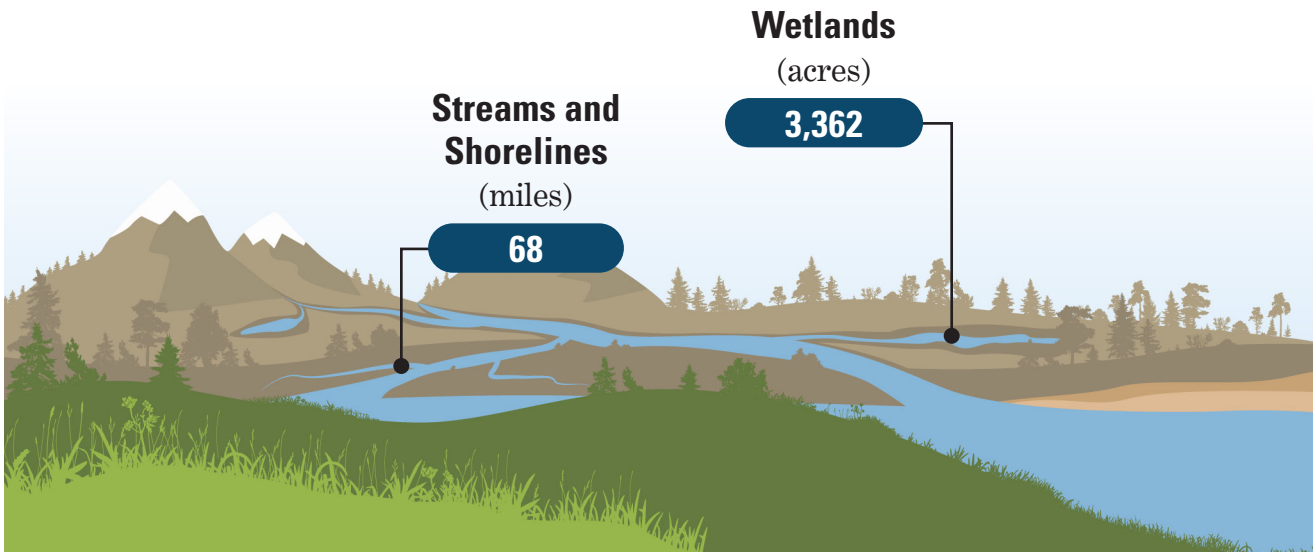


Project site pre-construction. Photo by USFWS

Floodplain excavation. Photo by USFWS

Post construction: large wood and caged riparian shrubs/ trees on constructed side channel. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Semi-permanent wetlands, seasonal wetland habitat; instream-riverine, riparian areas

Species Examples

Suckers, Pacific Flyway waterbirds with dabbling/ diving ducks (shorebirds), native salmonids

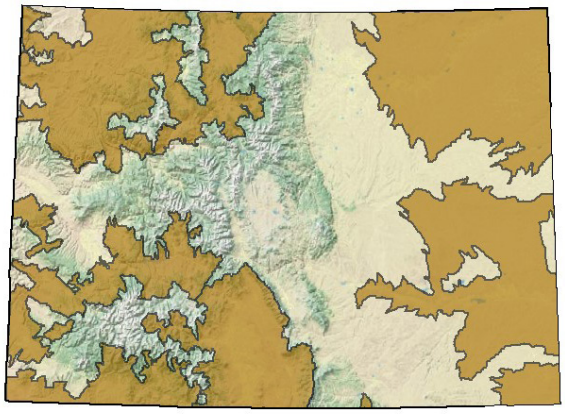
More information available in the Pacific Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

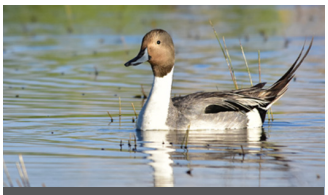
Lower Yreka Creek Side Channel Project

Aerial view of Lower Yreka Creek Side Channel Project. Photo by J Mosier

This project was implemented to create habitat for the federally endangered Southern Oregon/Northern California Coast (SONCC) coho salmon in Yreka Creek in Siskiyou County, California. This project also benefits Chinook salmon, steelhead trout, and various wildlife species including migratory birds. The California Coho Recovery Strategy (2004) identifies Yreka Creek as a "key stream" for coho salmon recovery in the Shasta River Basin and this project provides a unique and significant opportunity to increase SONCC coho habitats for juvenile rearing and adult spawning. The work consisted of excavating two acres of floodplain to remove mine tailings to reconnect it to the water table. A 650-foot new side channel was then created within the restored floodplain. The side channel was connected to Yreka Creek by removing portions of a levee at the inflow and outflow. Spawning gravels, large wood, and rock vane structures were installed in the side channel for stability and habitat features. The riparian and floodplain habitats created were seeded to native grasses and forbs, and planted with native shrubs and trees. Funding for this project was provided by the United States Bureau of Reclamation and the Yreka Partners for Fish and Wildlife Program. Partners involved: Jerry Mosier (Siskiyou Gardens, Parks, and Greenways Association), Tom Hesseldenz (Tom Hesseldenz and Associates), Mike Peters (Peters Construction Company), Don Flickinger (National Marine Fisheries Service), the City of Yreka, Shasta Tribal Elders, and the landowners.

Colorado Focus Areas



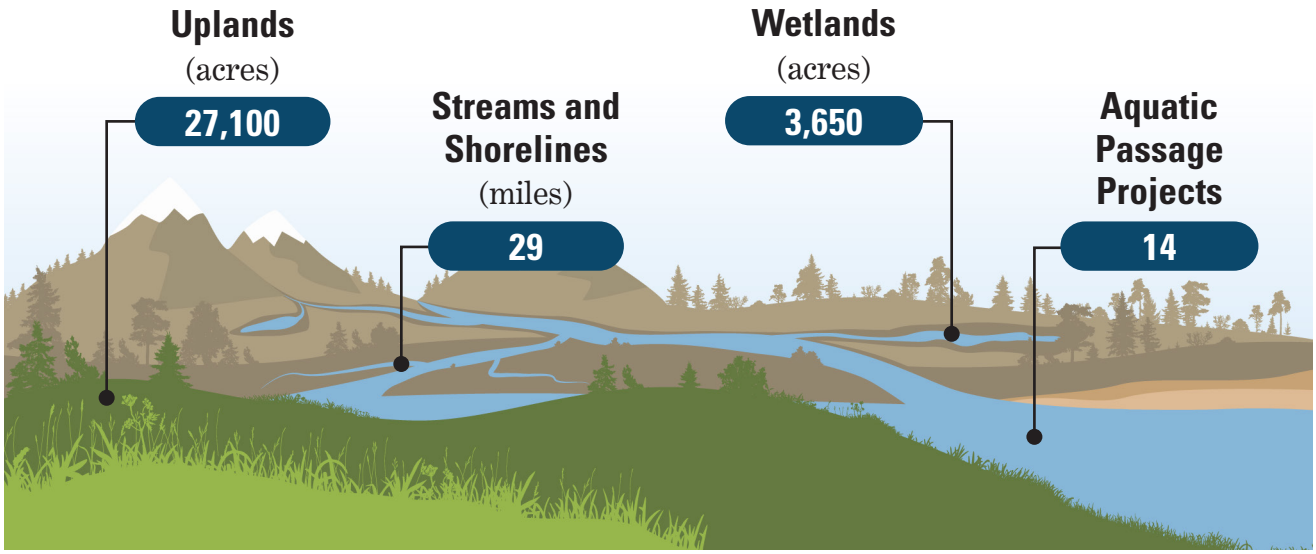


Northern pintail. Photo by Tom Koerner, USFWS

Beaver dam analog. Photo by Brandon Miller, USFWS

Dabbling ducks and other waterbirds benefit from flood-irrigated working wet meadows. Photo by Tom Koerner, USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: grasslands, sagebrush-steppe • **Wetlands:** emergent, temporary and permanent, wet meadow • **Stream/Riparian:** headwaters, tributaries, channel restoration, floodplain connection

Species Examples

Waterfowl, grassland birds, wading birds, riparian dependent birds, greater and Gunnison sage-grouse, sagebrush obligate birds, priority mammals, native fishes, pollinators

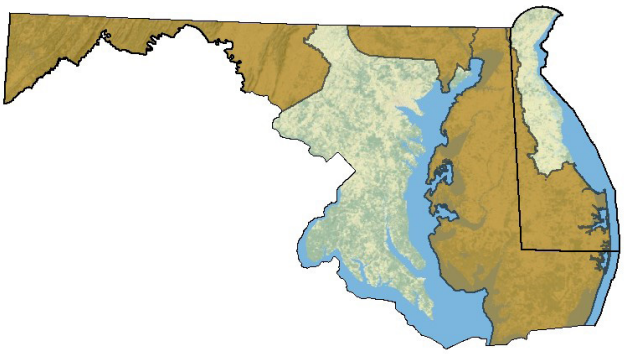
More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Improving Riverscape Health

A conservation crew installs a beaver dam analog structure along the Little Dolores River. Photo by Brandon Miller, USFWS

This project is located along the Little Dolores River, approximately nine miles upstream of the Colorado-Utah border and west-southwest of Grand Junction. The purpose was to improve riverscape health by increasing channel-floodplain connectivity, increasing water storage, extending stream flow, and creating conditions that promote the recruitment of cottonwood. This project used low-tech processes-based restoration techniques (LTPBR) to mimic, promote, and sustain the processes of wood accumulation and beaver activity within identified stream reaches. Installation of LTPBRs included installing approximately 150 post-assisted log structures (PALS) or beaver dam analogues (BDAs) using hand crews. PALS are used to mimic and promote the process of wood accumulation in the stream. PALS utilize woody material pinned together with untreated posts that are driven into the stream substrate. BDAs are used to mimic and promote the process of beaver dam activity. BDAs are permeable, channel-spanning structures constructed with a mixture of woody debris and fill material (e.g., cobble, mud). Both types of structures were installed throughout stream reaches. Expected outcomes include reduced stream velocity, increased sediment deposition, pool formation, streambed aggradation, increased channel-floodplain connectivity, colonization and expansion of emergent wetland and riparian vegetation, and increased habitat diversity. Federal trust species benefiting from this project include western yellow-billed cuckoo, Lewis's woodpecker, other migratory birds, and resident wildlife.

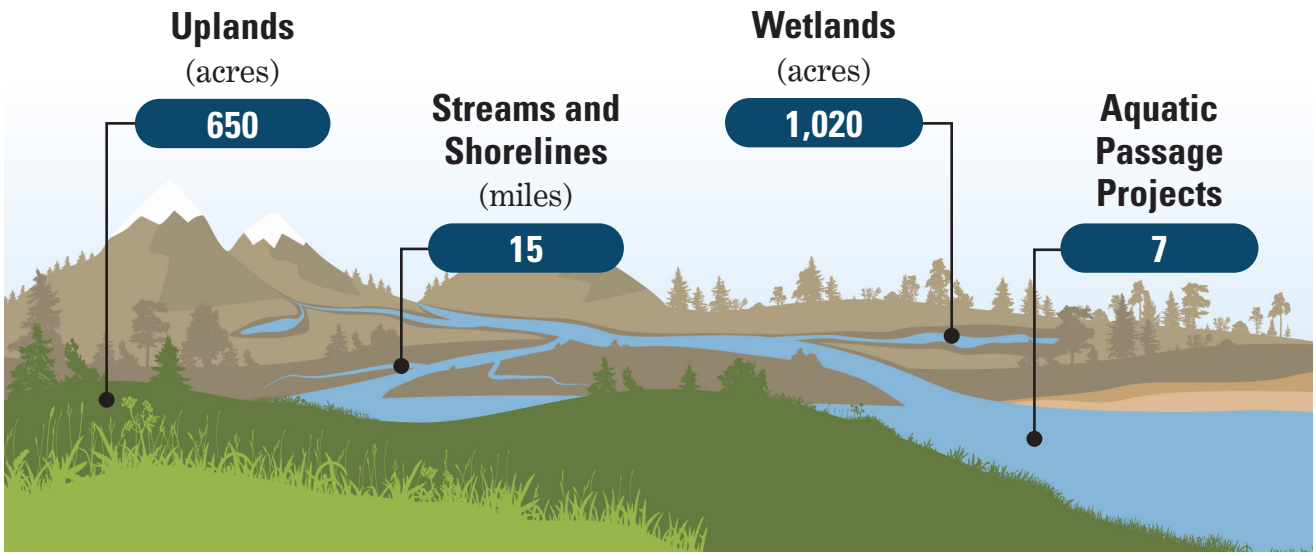
Delaware and Maryland Focus Areas



Before restoration. Photo by USFWS

After restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: forested uplands and grasslands, Pine Barrens • **Wetlands:** tidal marshes, freshwater emergent wetlands, floodplains • **Stream/Riparian:** riparian forest buffers and associated edge habitats, streams, rivers

Species Examples

Spotted turtle, wood thrush, dwarf wedgemussel, American black duck, saltmarsh sparrow, black rail, frosted elfin, monarch butterfly and other pollinators, northern bog turtle, Chesapeake logperch, brook trout, brook floater, green floater

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

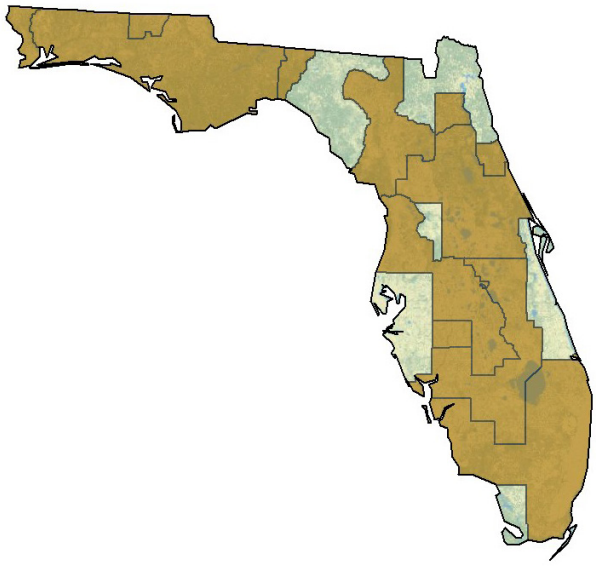
Species Conservation for Listed and At-Risk Species

Prefabricated bridge installed. Photo by USFWS

Partners for Fish and Wildlife (PFW) worked with Trout Unlimited's Western Maryland Initiative, National Fish and Wildlife Foundation, Natural Resources Conservation Service, United States Fish and Wildlife Service (USFWS) National Fish Passage Program, Maryland Department of Natural Resources, Allegany County Government, Frostburg State University (FSU), and others to restore and improve stream and riparian habitat in the western half of Maryland. Targeted species included brook trout, freshwater mussels, yellow lance, brook floater, green floater, wood turtle, and Chesapeake logperch.

To restore riparian and instream habitat and improve fish passage, a failing culvert was replaced with a prefabricated bridge, 1.2 acres of riparian buffer were planted, and pool habitat was created within 200 feet of Sand Spring Run. The goal of the project was to improve habitat conditions for an isolated brook trout population within the watershed. The project was just outside of the city limits of Frostburg, Maryland. Community engagement was prioritized and included multiple tree planting events and benthic macroinvertebrate monitoring. Community groups included the Allegany County Women's Action Coalition, the FSU Wildlife Society, the FSU A Star! AmeriCorps program, and the FSU Geography Club. Trout Unlimited's and USFWS Chesapeake Bay Field Office's (CBFO) efforts here directly complement watershed-scale restoration efforts by Trout Unlimited including additional riparian buffer restoration downstream, 1,500 feet of future instream restoration currently in the design phase, and planned acid mine drainage remediation. By addressing a host of stressors in the watershed, CBFO intends to secure population persistence for one of Maryland's only brook trout populations occupying habitat within a semi-urban area. Following damage from a hurricane, the Sand Spring Run project directly improved infrastructure flood resiliency within a residential area.

Florida Focus Areas

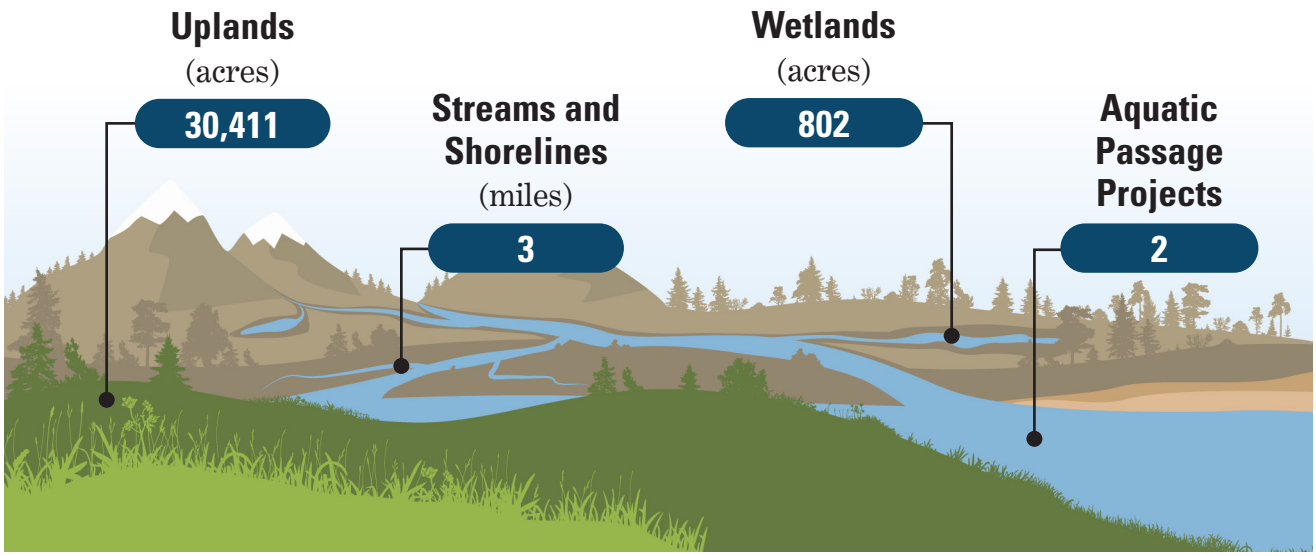


Scrub plum examination post-fire. Photo by USFWS

Groundcover seeding post-fire. Photo by USFWS

Juvenile gopher tortoise. Photo by Kourtney Stonehouse

2022–2026 Conservation Targets



Habitat and Species Examples

Longleaf pine sandhill and flatwoods: red-cockaded woodpecker, eastern indigo snake, gopher tortoise • **Scrub:** Florida scrub-jay, sand skink, etonia rosemary, scrub plum • **Pine flatwoods:** Florida bonneted bat, red-cockaded woodpecker, Florida panther • **Dry and wet prairie:** Florida grasshopper sparrow, northern crested caracara • **Riverine:** Atlantic sturgeon (Gulf subspecies), listed mussels, Florida manatee • **Ephemeral wetlands:** frosted and reticulated flatwoods salamander, gopher frog • **Coastal marsh:** Sanibel Island rice rat, eastern black rail • **Cypress slough/freshwater forest:** wood stork, Florida panther • **Perennial and intermittent streams:** listed mussels

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Listed Plants and the Gopher Tortoise Preserve (Lake County, Florida)

Cheryl Peterson (Bok Tower Gardens), Michael Jenkins (Florida Forest Service), and Todd Mecklenborg (USFWS) at the gopher tortoise preserve post-fire. Photo by Chad Allison, USFWS

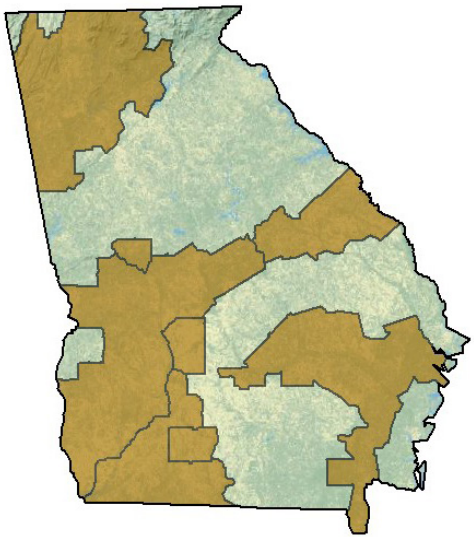
Partners for Fish and Wildlife (PFW) completed work in Lake County, Florida alongside the conservation community in support of unique scrub and associated ecosystems along the northern end of Central Florida's Lake Wales Ridge. The work focused on a 40-acre gopher tortoise preserve, which lies adjacent to a listed species rich tract of the Seminole State Forest.

The Bok Tower Gardens' Rare Plant Conservation Program took lead, using a fiscal year 2018 PFW grant, to engage the preserve, Florida Forest Service, and neighbors to address invasive plants migrating through the preserve and surrounding lands onto the Warea Tract. The tract is named for the federally endangered clasping warea, endemic to scrub and sandhill habitat in Central Florida. Eight additional plant and two animal species found on the tract are also federally protected.

Bok Tower Gardens coordinated 32 acres of habitat management in support of gopher tortoise populations and the need to head off invasive species. This included fuel reduction and invasive plant treatments, listed plant surveys, photo-point establishment, contracted firebreak installation, and prescribed burning. Through the completion of these activities, 26 federally endangered scrub plum shrubs and numerous gopher tortoise burrows were identified and are prospering under the active management.

The Warea Tract is a relatively undisturbed habitat, containing an array of species found nowhere else on the planet. Based on the notable population of scrub plum identified at the gopher tortoise preserve, partners are hopeful that other rare species may be lingering in the seed bank. Moving forward, the group plans to engage additional partners to expand efforts, such as transitioning the planted slash pine to longleaf pine and supporting more robust native ground cover.

Georgia Focus Areas

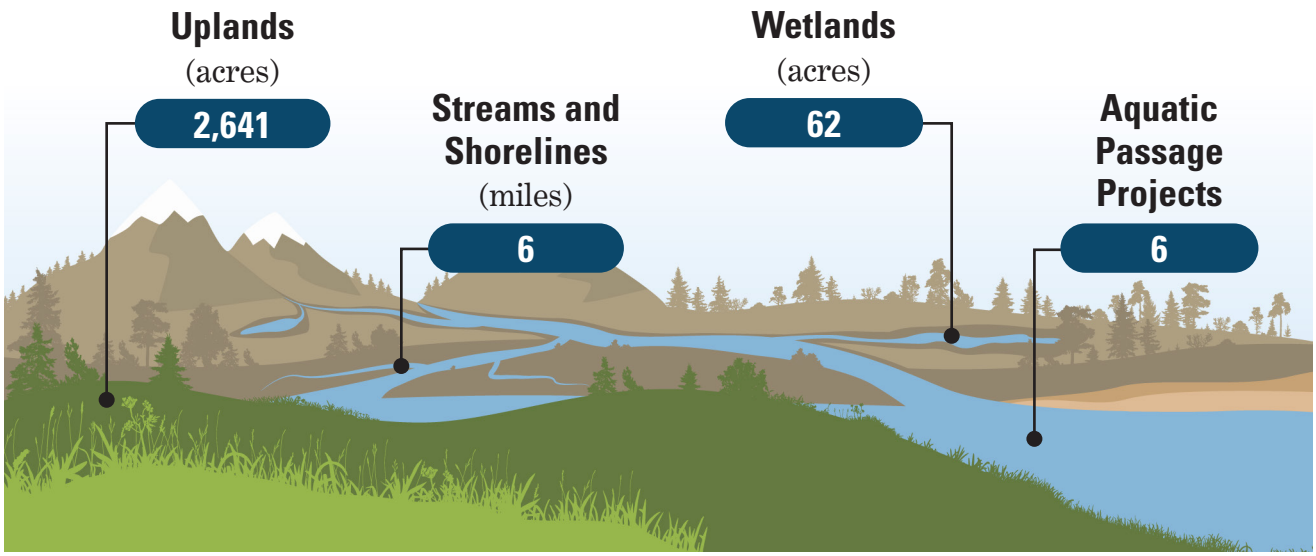


Oval pigtoe. Photo by Peter Maholland, USFWS

Ole Mill post-construction. Photo by USFWS

Ole Mill post-construction. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

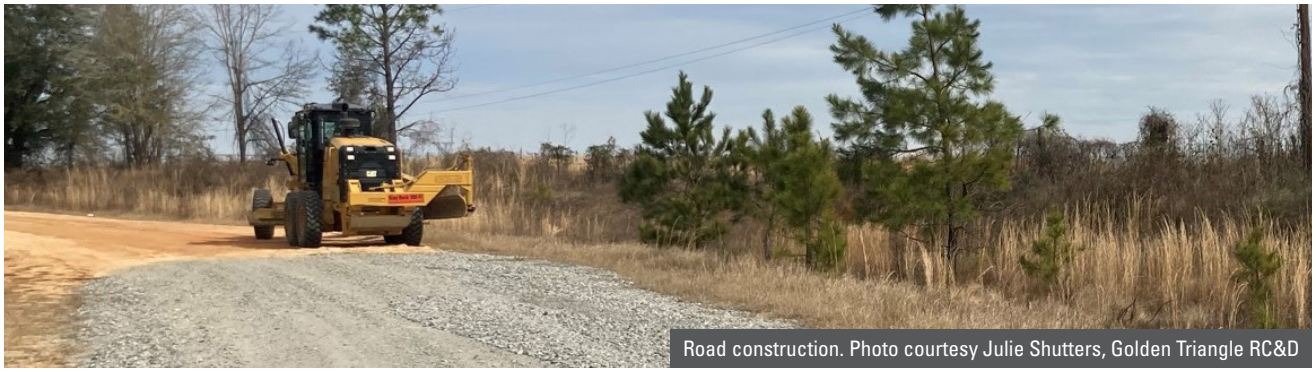
Uplands: longleaf pine, native grasslands and prairies • **Wetlands:** seasonally ponded isolated wetlands, riverine wetlands • **Stream/Riparian:** instream/stream bank/dirt road and stream intersects

Species Examples

Federally endangered species: American chaffseed, red-cockaded woodpecker, Tennessee yellow-eyed grass, Conasauga logperch • **Federally threatened species:** trispot darter, blue shiner, eastern indigo snake • **At-risk species:** gopher frog, gopher tortoise, broadstripe shiner

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Ole Mill Acres Road Stabilization

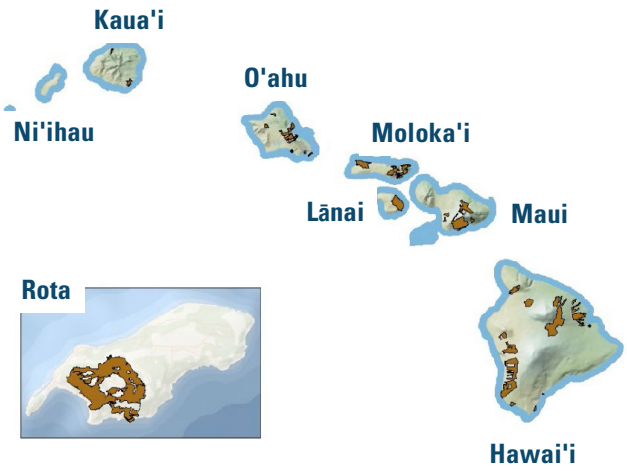


Road construction. Photo courtesy Julie Shutters, Golden Triangle RC&D

Through a continued cooperative effort with the Golden Triangle Resource Conservation and Development Council (GTRCD), Partners for Fish and Wildlife (PFW) biologists assisted several private landowners, counties, and municipalities with development and implementation of habitat improvement projects within priority watersheds in southwestern Georgia. These watersheds support high species diversity, which includes federally listed (i.e., shiny rayed pocketbook, oval pigtoe), and at-risk (i.e., rayed creekshell) freshwater mussels, and many other aquatic and migratory bird species. In recent decades, watersheds have experienced degradation due to a variety of factors such as agricultural irrigation drawdowns, residential and commercial development, construction of impoundments on tributaries, sedimentation from road construction and other development, and a lack of implementation of best management practices at stream crossings and adjacent agricultural and forest lands. The partnership implemented projects to reduce sediment influx at stream/road crossings, exclude livestock from streams, re-establish stream channel stability using natural channel design methods and bioengineering practices, enhance associated wetland vegetation, and control invasive, exotic species.

One recent success was the Ole Mill Acres Road Stabilization project, which considerably reduced sediment influx along 1,600 linear feet of Old Mill Acres Road, adjacent to designated critical habitat. The Miller County Road Department (MCRD) worked closely with GTRCD/PFW on project design and led construction efforts. At each site, the roadbed was elevated where necessary, graded, and layered with Geotextile fabric and granite GAB base. Larger culverts were installed, ditches were reconstructed, lined with rip rap where necessary, and seeded for erosion control. MCRD contributed labor and equipment, and PFW covered the cost of materials. This project fulfilled objectives for proactive conservation of at-risk and other priority aquatic species.

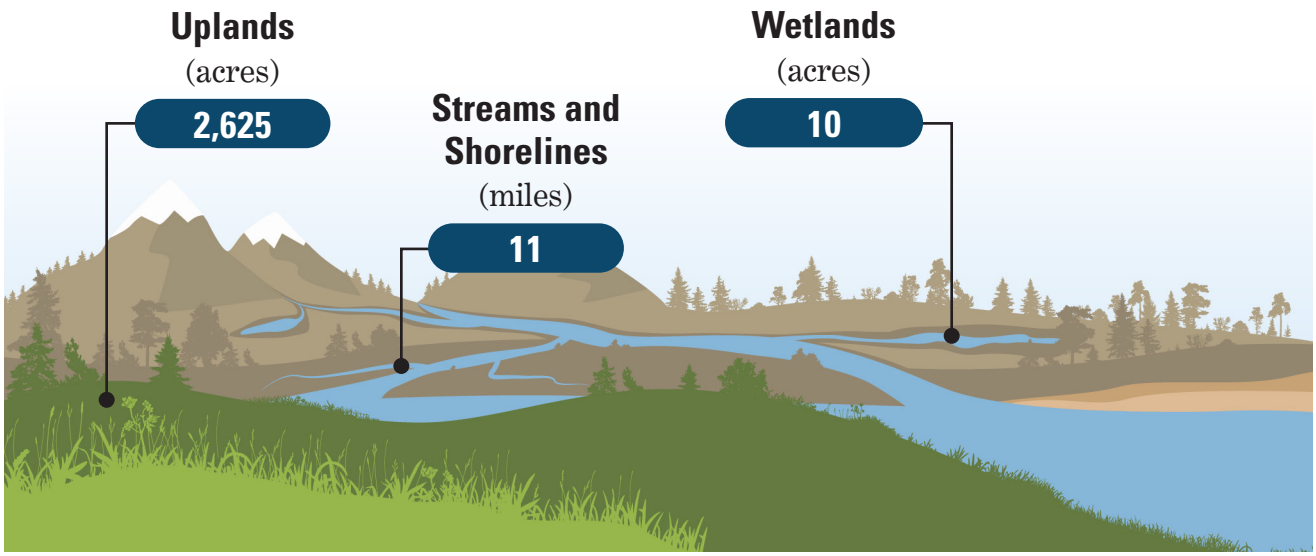
Hawaii- Pacific Islands Focus Areas




Aerial image of fenceline. Photo by USFWS


Nēnē/Hawaiian geese at fenceline. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Wet montane forest, mesic montane forest, subalpine mesic forest, shrubland

Species Examples

ʻAlalā or Hawaiian crow, honuʻea or hawksbill turtle, *Achyranthes mutica*, uaʻu or Hawaiian petrel, kiwikiu or Maui parrotbill, Blackburn's sphinx moth, nēnē or Hawaiian goose

More information available in the Pacific Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

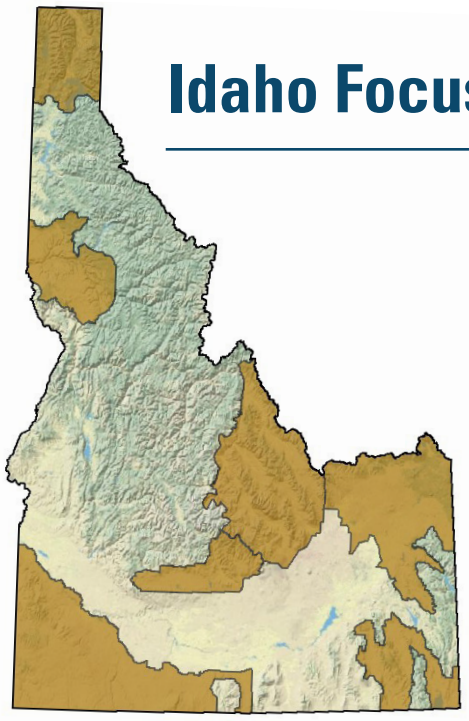
Pu'u Pahu Invasive Plant Management

'Ōhi'a Lehua at Pu'u Pahu. Photo by USFWS

The Pu'u Pahu invasive plant management project was completed on the island of Maui on a working cattle ranch that protected an important ecosystem in the subalpine forests of Haleakalā through weed control, fence maintenance, and animal control. Gorse (*Ulex europaeus*) is a significant invasive species found on Haleakalā, and this project included significant mechanical and chemical control. Fence maintenance and animal control were also essential for protecting existing native forest found at the ranch. The ranch worked with contractors and conservation partners, including the Hawaii Department of Land and Natural Resources, to remove the last remaining feral ungulates from Pu'u Pahu preserve. After feral animals were removed and priority invasive plants effectively controlled, the area began to recover and now has little need for extensive outplanting or other intensive management.

At this elevation, native forest birds can escape mosquitoes, which carry avian malaria. Protecting this area strengthens the resilience of the forest against effects of climate change, as higher temperatures slowly increase to higher elevations over time, which allows the mosquitos to move into previously safe habitat for native forest birds. This project also benefited rare and endangered species within the Maui Island focus area, including nohoanu, nēnē or Hawaiian goose, 'ōpe'ape'a or Hawaiian hoary bat, and ua'u or Hawaiian petrel.

Idaho Focus Areas

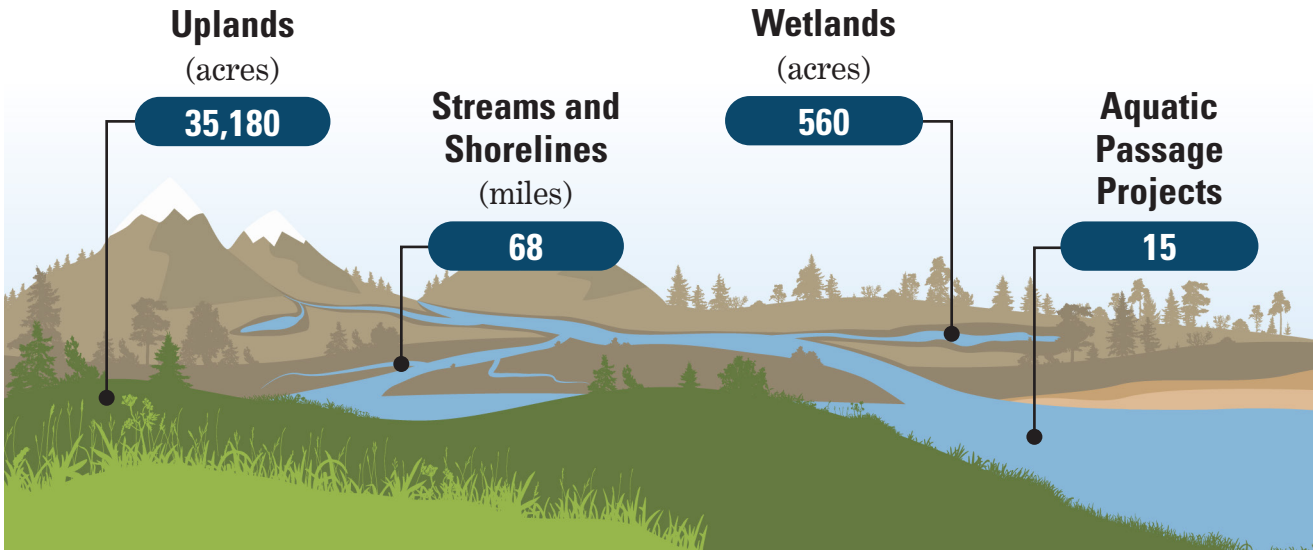


Conifer removal project. Photo by Connor White, Pheasants Forever

Stream enhancement project. Photo by J. White, USFWS

Wetland restoration project in the Owyhee Uplands. Photo by J. White, USFWS

2022–2026 Conservation Targets



Habitat Examples

Wetlands, wet meadows, riparian, sagebrush-steppe, native grassland, and instream/aquatic

Species Examples

Greater sage-grouse, long-billed curlew, monarch butterfly, Bonneville cutthroat trout, western yellow-billed cuckoo, Snake River Basin steelhead, Spalding's catchfly

More information available in the Pacific Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Guy Canyon Stream Enhancement

Partners installing instream wood structure using hydraulic post-pounder to anchor woody debris within the stream channel. Photo by University of Idaho

This project implemented a novel low-cost, low-tech restoration technique utilizing structures known as beaver dam analogues (BDAs) or Post-Assisted Logjams (PALS) and included an evaluation of the impacts that BDA or PALS installation may have on stream characteristics, vegetation, habitat for fish and wildlife, and forage availability and quality for livestock grazing. Instream structures were installed across one mile of stream enhancing nine acres of associated wet meadow habitat. The objective of the project was to reconnect the floodplain with the adjacent riparian and wet meadow habitat to benefit greater sage-grouse and yellow-billed cuckoo. Partners for Fish and Wildlife staff identified monitoring techniques that represent the associated changes across varying spatial and temporal scales. The results of our project will inform the development of a monitoring and implementation framework to help us understand the expected benefits of these practices, and aims to move the conversation of process-based restoration success in a direction that includes monitoring for management goals, implementation strategies, and the broader ecosystem impacts across multiple spatial and temporal scales.

The project involved assessing changes in vegetation composition and structure, stream channel geomorphology, wetted area extent and other pertinent metrics by monitoring across three spatial scales: (1) the site scale using field monitoring, (2) the reach scale using drone imagery, and (3) a sub-watershed scale using satellite imagery. Monitoring will continue to occur at multiple scales, allowing assessment of both fine-scale and reach-wide effects of this technique. Using satellite imagery will allow us to untangle year-to-year and seasonal effects of varying temperature and precipitation patterns. The three scales of analysis will have overlapping metrics such as the wetted area extent, change in structure or type of vegetation, and stream channel geomorphology.

Illinois Focus Areas

New water control structure. Photo by USFWS

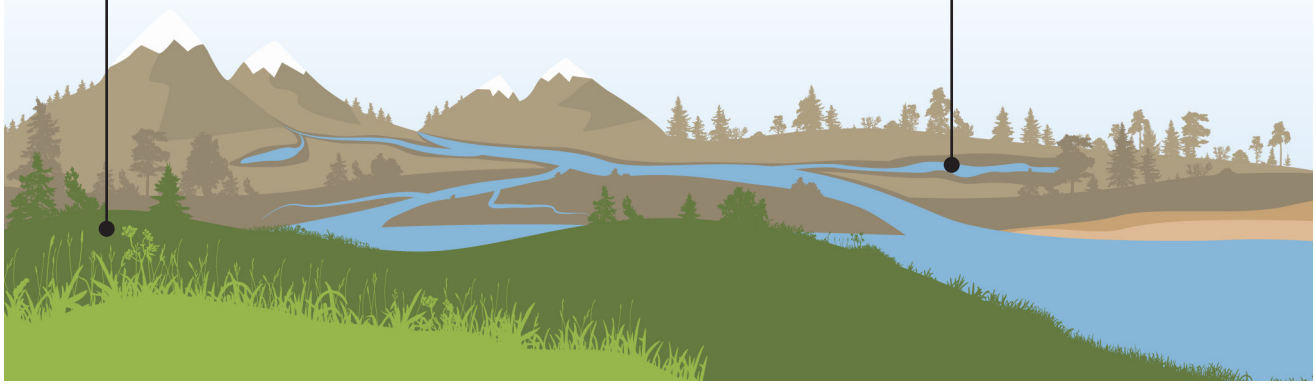
Removing old drainage tile during construction. Photo by USFWS

Freshly seeded low-level berm. Photo by USFWS

2022–2026 Conservation Targets

Uplands
(acres)
1,200

Wetlands
(acres)
1,000



Habitat Examples

Wetlands, grasslands, stream banks, riparian areas

Species Examples

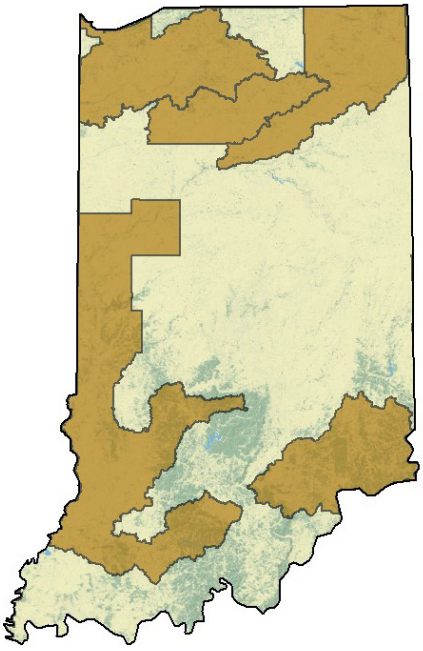
Pollinators, blue-winged teal, canvasback, gadwall, green-winged teal, lesser scaup, mallard, northern pintail, ring-necked duck, wood duck

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

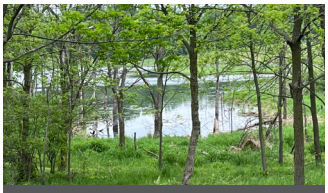
Iroquois County Wetland Restoration

Wetland restoration in action. Photo by USFWS

Wetland ecosystems have been severely degraded or effectively removed from the Illinois landscape since European settlement. Today, less than 10 percent of Illinois wetlands remain, and those that do are often degraded from agricultural practices and altered hydrology. The reduction of wetland habitat has led to declines in wetland dependent species such as northern pintail, king rail, and black rail. For this project, Partners for Fish and Wildlife worked with Pheasants Forever and Illinois Department of Natural Resources to restore about four acres of wetland habitat in Iroquois County, Illinois. The property historically had wetland habitat, prior to being drained several decades ago. Land managers mimicked historic seasonal wetland hydrology by removing invasive species and installing two small earthen berms, tile breaks, and a water control structure. The project site now provides seasonal wetland habitat for migratory shorebirds and waterfowl.



Indiana Focus Areas

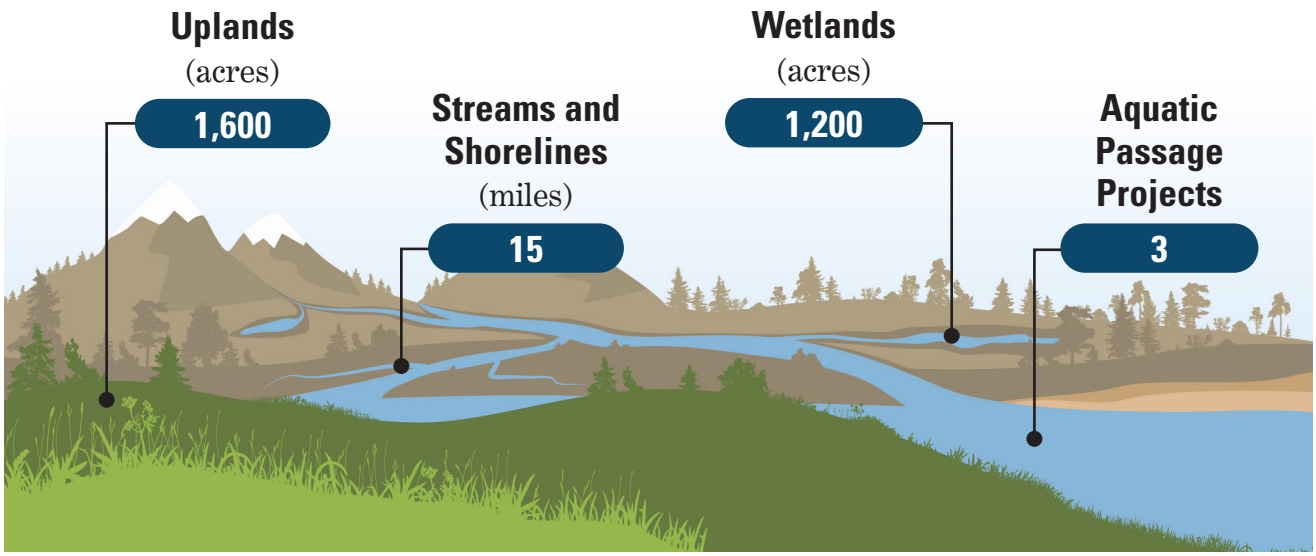


Restored wetland with adjacent upland forest. Photo by USFWS

Copperbelly water snake. Photo by Andrew Hoffman

Restored wetland - May 2022. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: native prairie/grasslands, oak savanna and woodland, upland reforestation, pollinator habitat • **Wetlands:** emergent marsh, wet meadow/fen, scrub-shrub, bottomland reforestation, managed wetlands • **Stream/Riparian:** riparian reforestation, aquatic passage barrier removal

Species Examples

Mallard, blue-winged teal, Henslow's sparrow, eastern meadowlark, pectoral sandpiper, greater yellowlegs, American woodcock, red-headed woodpecker, monarch butterfly, rusty patched bumble bee, eastern massasauga, copperbelly water snake, clubshell mussel, rabbitsfoot mussel, Indiana bat, northern long-eared bat

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Steuben County Wetland Restoration

Aerial shot of completed wetland project within complex of other upland and wetland restoration sites. Photo by Zach Merkling

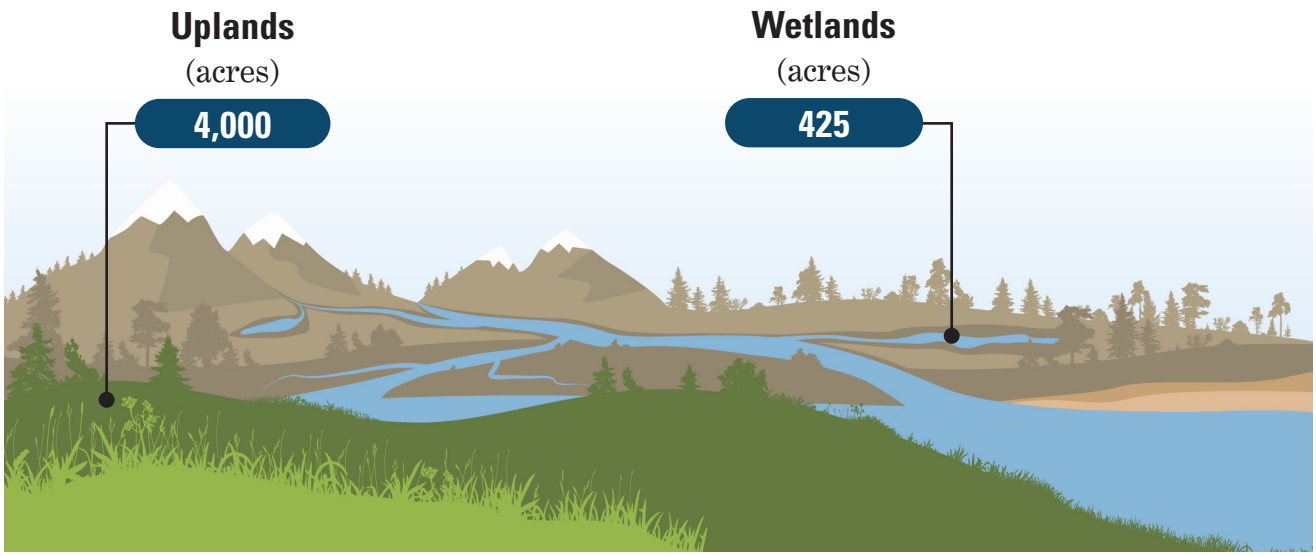
Partners for Fish and Wildlife (PFW) staff worked with Ducks Unlimited, the Indiana Department of Natural Resources, the Natural Resources Conservation Service, and a private landowner to restore 18 acres of tile-drained wetland habitat on private land in Indiana's Glacial Wetlands and Grasslands Focus Area. The project was part of a broader effort to restore wetland and grassland habitats on private lands in northeast Indiana, and complemented a previous PFW wetland project and reforestation projects done through United States Department of Agriculture conservation programs. Restoration work included construction of an earthen berm, installation of a water control structure, and seed planting. Each partner, including the landowner, provided cost share and in-kind services to complete the project.

The restoration site now supports mallards, blue-winged teal, wood ducks, and sandhill cranes, and contributed to the Upper Mississippi/Great Lakes Joint Venture habitat restoration goals. The restoration site is also in a priority area for the federally threatened copperbelly water snake and massasauga rattlesnake, and is now expected to provide habitat for these species. Water quality improvements provided by this wetland are especially important because the wetland drains into Fish Creek, which is part of the Western Lake Erie Basin and harbors the last known population of the federally endangered white cat's paw mussel.

Iowa Focus Areas

USFWS biologist showing off a rusty patched bumble bee to the public. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: native prairie/grasslands, oak savanna, oak-hickory woodland, pollinator habitat • **Wetlands:** off-channel oxbow restoration areas, emergent marsh, wet meadow/fen, scrub-shrub, managed wetlands

Species Examples

Topeka shiner, rusty patched bumble bee, American bumble bee, monarch butterfly, mallard, wood duck

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Digging Deeper: An oxbow restoration partnership that benefits people, fish, wildlife, and water quality


Oxbow before restoration. Photo by USFWS


Oxbow after restoration. Photo by USFWS

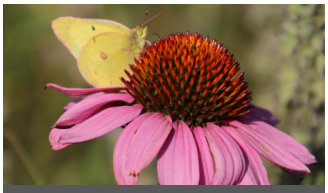
In the late 1990s, Partners for Fish and Wildlife (PFW) began restoring off-channel oxbow wetlands (oxbows) in Iowa for the federally threatened Topeka shiner. Oxbow restorations also provide high-quality habitat for waterfowl and songbirds, as well as important sport fish such as northern pike, smallmouth bass, and bluegill. In addition to providing wildlife habitat, off-channel oxbow wetlands can improve water quality-reducing nutrient loads 42–90 percent.

From 2001–2021, PFW and partners restored 80 oxbows within Iowa's Topeka shiner range, leveraging State, private, and multiple Federal funding programs. PFW and other partners have also restored 116 oxbows across Minnesota and removed nine dams and fish passage barriers, which reopened nearly 50 miles of valuable shiner habitat in Minnesota.

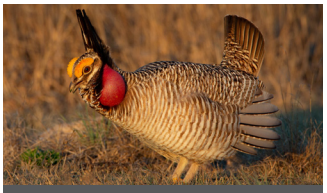
Surveys in Minnesota showed Topeka shiner occupancy at restored sites exceeded 90 percent, compared to less than 30 percent pre-restoration. In Iowa, surveys indicate occupancy in 52 percent of restored off-channel habitat compared to just nine percent in the adjacent stream. If these results can be replicated, the United States Fish and Wildlife Service will be able to document redundancy, resiliency, and representation metrics, which are needed to delist the Topeka shiner.

PFW is collaborating with several partners to leverage funding to restore up to 80 additional oxbows in priority reaches in the next five years through the United States Department of Agriculture's Regional Conservation Partnership Program. Additionally, the Fisheries and Ecological Services Programs, PFW, and partners have begun assessing and identifying fish passage barriers in Iowa for future restoration potential.

Kansas Focus Areas



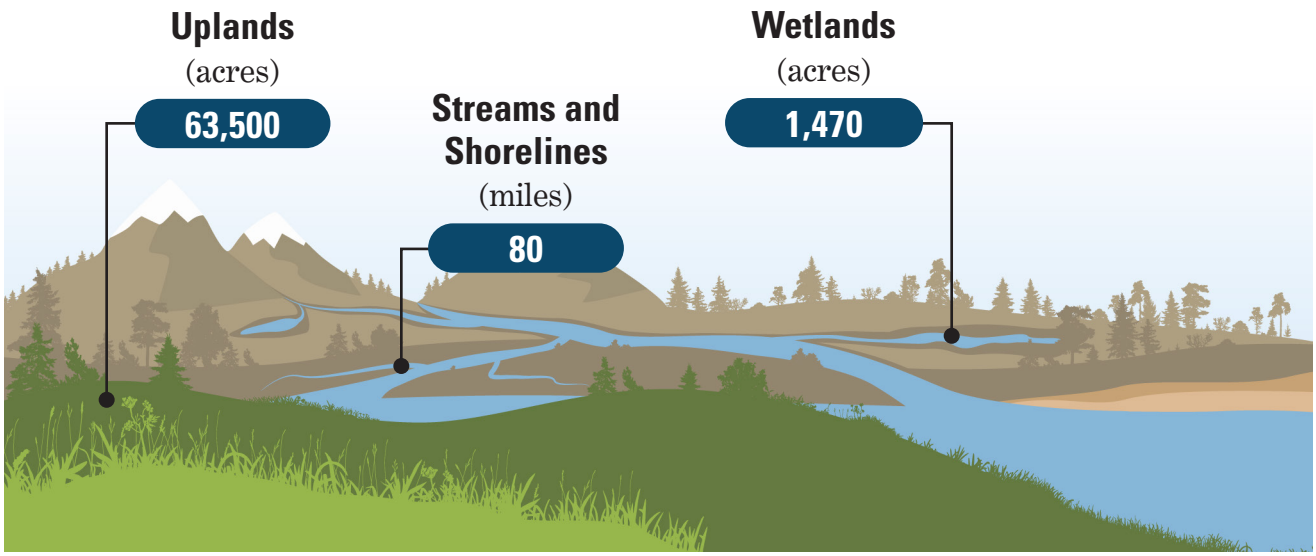
Pollinator at restoration site.
Photo by USFWS



Lesser prairie-chicken.
Photo by USFWS

Greater prairie-chickens. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Native prairies (tallgrass, mixed-grass, mixed/sand sagebrush, and shortgrass prairies), wetlands, riparian corridors

Species Examples

Migratory waterfowl, migratory grassland birds, migratory shorebirds, pollinators, threatened and endangered species

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Making Dreams Come True

The soybean field, three years post-restoration, is now providing excellent habitat. Photo by USFWS

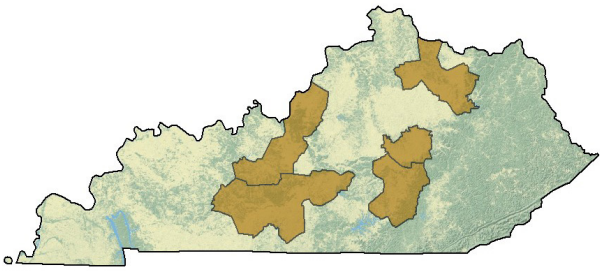
Partners for Fish and Wildlife (PFW) worked with two landowners from Riley County to help restore two soybean fields to native prairie and help make one of their dreams come true. In 2018, working in partnership with the Kansas Department of Wildlife and Park's Habitat First Program and the Riley County Conservation District, a restoration plan was developed to improve habitat for wildlife on 25 acres of their property. This plan incorporated the management of an existing four-acre native tallgrass prairie hay meadow and eight acres of mature deciduous riparian woodland. Surrounding these areas were two soybean fields totaling 13 acres. It was in these two fields that most of the restoration efforts were focused.

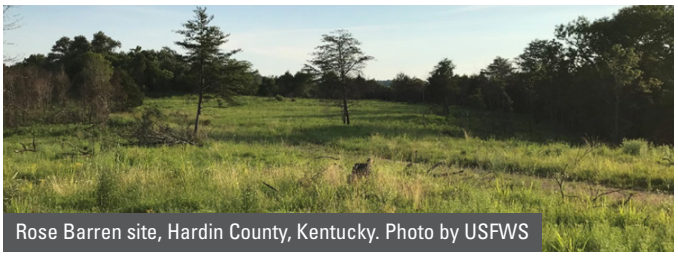
The fields were seeded with a mixture of native warm-season grasses and a heavy mixture of native forbs, and later prescribed burned and seeded with additional native forbs using a no-till drill. A small patch of brome was treated and interseeded with a mixture of native grasses and forbs. The following spring, native forb plug plots were added to the treated brome area and the rest of the site.

A long-term management plan was developed for the entire 25-acre project site. Species benefitted include pollinators, grassland nesting birds, and the federally endangered Topeka shiner.

The restoration of the crop fields was a success, with pollinators and grassland birds currently using the site. This project would not have been this successful without the foresight and commitment the landowners made to see the project to completion. Through their hard work and dedication, the landowners are celebrating a dream come true. The Kansas PFW program is proud to be a partner in their restoration efforts.

Kentucky Focus Areas

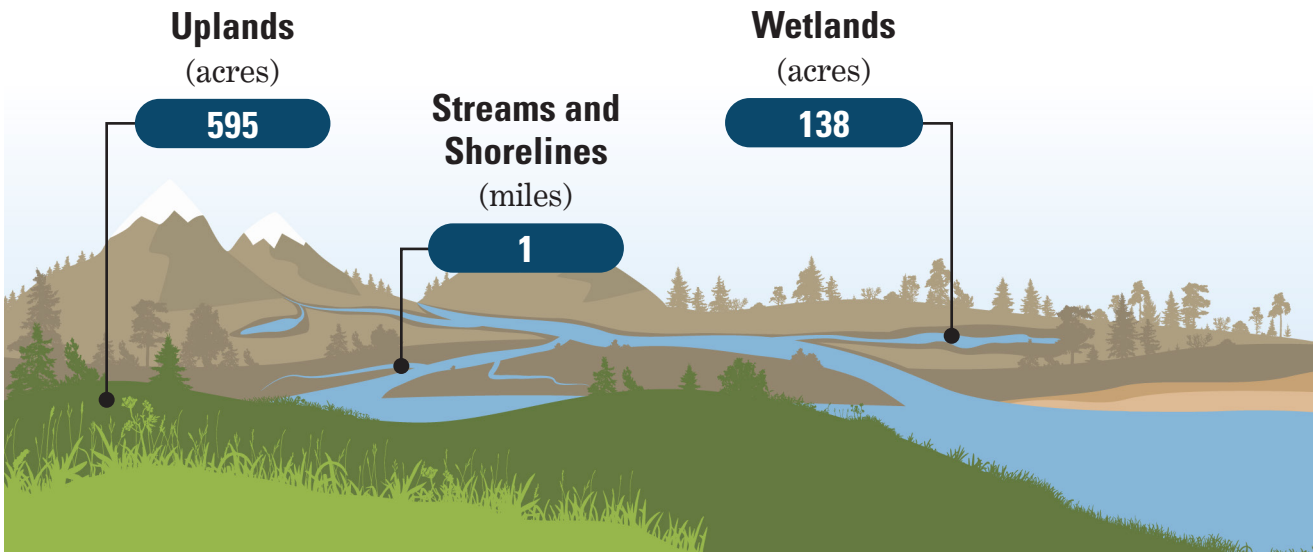




Rose Barren site, Hardin County, Kentucky. Photo by USFWS

Monarch butterfly on black-eyed Susan. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Upland areas such as native barrens, prairies, and forests, as well as wetlands and streams

Species Examples

Federally endangered species: Cumberland bean, Indiana bat • **Federally threatened species:** Kentucky glade cress, northern long-eared bat • **At-risk species:** monarch butterfly, karst snowfly, rattlesnake master-borer moth

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Kentucky Tallgrass Prairie Planting

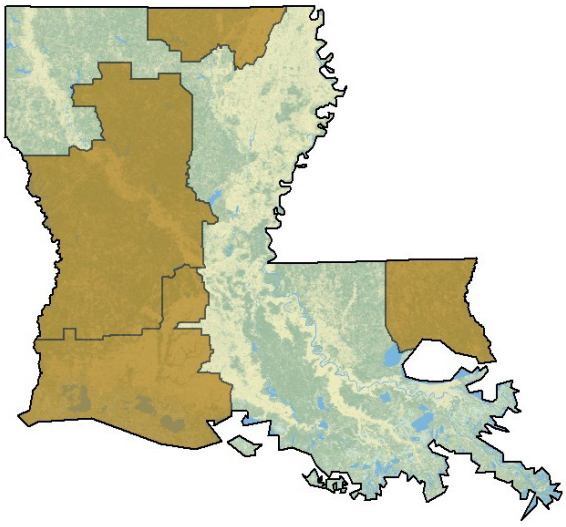
Pollinator habitat installed on Terrapin Barrens site in cooperation with the landowner, Garrard County, Kentucky. Photo by USFWS

Partners for Fish and Wildlife (PFW) facilitated the initial restoration of a barren and glade complex known as Rose Barrens. Located in the central part of Kentucky, Rose Barrens is part of the Big Barrens Region of Kentucky, an area known for prairie and barren remnants and other rare plant communities. The Big Barrens Region is a strategic habitat conservation focus area for the PFW Program and other conservation partners.

PFW worked with Southern Conservation Corp (SCC) and Roundstone Native Seed Company to restore 30 acres of pasture and cedar thickets to native prairie habitat from 2019–2021. This grassland habitat will be managed in perpetuity as a native prairie. Focal species for the project were the monarch butterfly and the federally endangered Indiana bat. Kentucky is very important for the monarch's conservation as it is in the southern portion of the monarch's breeding habitat and is also in the monarch's migration corridor. This site also provides habitat for several neotropical bird species that are in decline, such as the prairie warbler, whip-poor-will, and American woodcock. Less than one percent of native barren and prairie habitats remain on earth, making them one of the world's most endangered ecosystems.

The project area was treated with herbicide for over a year to eliminate invasive plant species, and then planted in 2021 with a native genotype forb and grass mix with over 30 species represented. The site will be managed long term by SCC using prescribed fire. This project is an excellent example of a private conservation organization, local business, and government working together to restore a rare habitat and help declining species such as the monarch butterfly and Indiana bat.

Louisiana Focus Areas

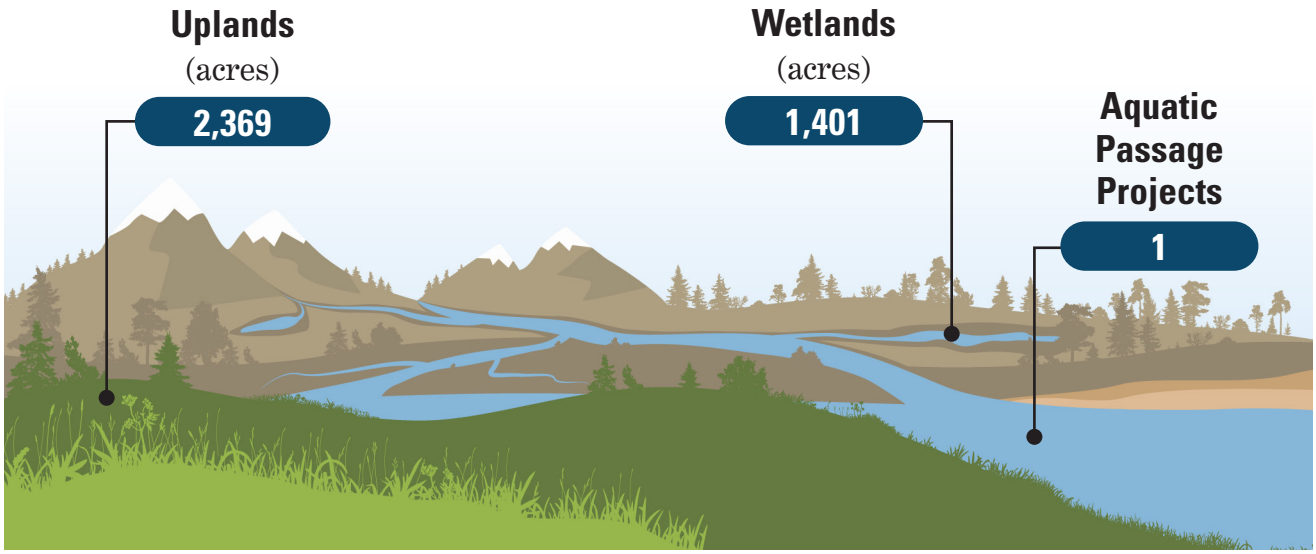


Black rail. Photo by Erik Johnson, Audubon

Waterfowl from restored area. Photo by landowner John Allaire

Water control structure. Photo by landowner John Allaire

2022–2026 Conservation Targets



Habitat Examples

Uplands: shortleaf pine/hardwood forests, open longleaf pine forests, prairie • **Wetlands:** coastal marsh, pine savannah

Species Examples

Federally endangered species: American chaffseed, red-cockaded woodpecker, whooping crane • **Federally threatened species:** Louisiana pinesnake, Louisiana pearlshell mussel, black rail • **At-risk species:** golden-winged warbler, bog spicebush

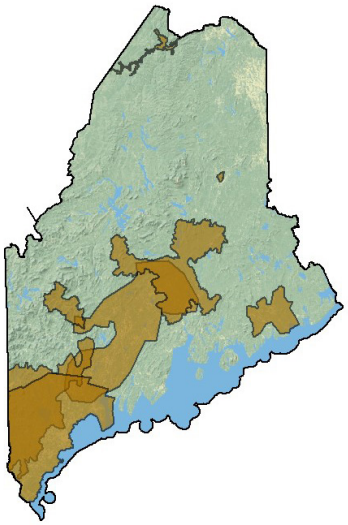
More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Proactive Conservation of At-Risk Species

Landscape with water control structure in background. Photo by landowner John Allaire

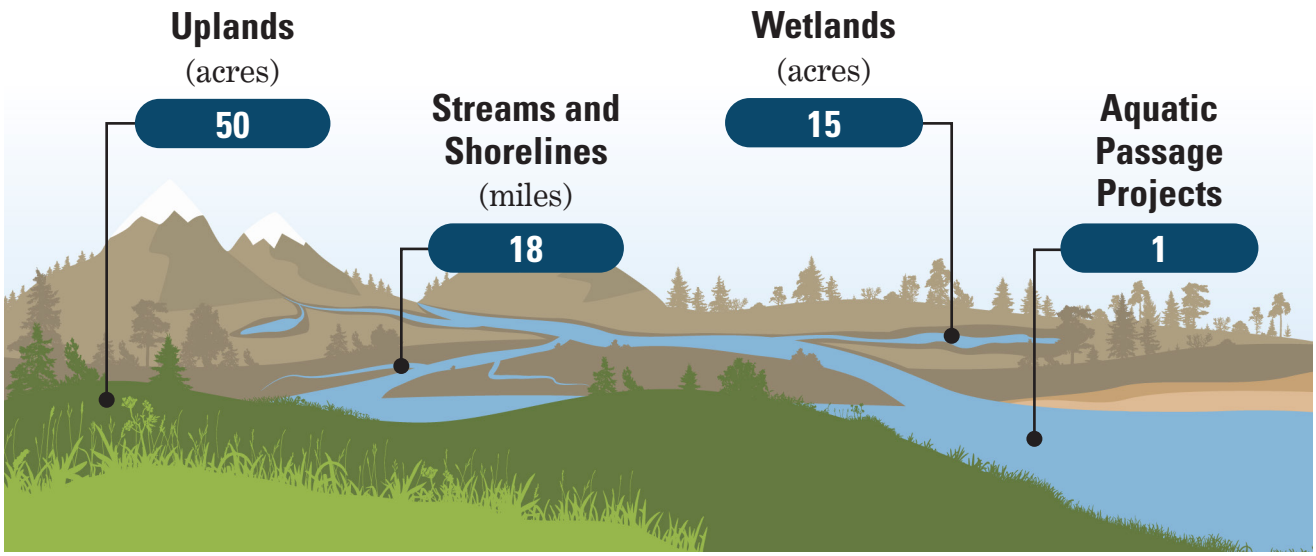
This project consists of restoration and enhancement of approximately 40 acres of coastal chenier habitat (maritime forest ridges), and approximately 60 to 220 acres of fresh/brackish marsh in Cameron Parish, Louisiana. The chenier forest portions of the site are being enhanced by the control of invasive Chinese tallow trees via hack-and-squirt and backpack spray herbicide application, and with supplemental plantings of a diverse mixture of native bare root tree and shrub seedlings (e.g., live oak, sugarberry, toothache tree, acacia). The marsh areas are being enhanced to benefit black rail (*Laterallus jamaicensis*) by controlling invasive Chinese tallow trees and other woody species via spot treatment with herbicides, and by the application of prescribed fire. A percentage of the funds were also leveraged with the Louisiana Waterfowl Project (a Ducks Unlimited partnership) to install a water control structure to enhance management capability of existing fresh/intermediate marsh that adjoins adjacent marshes occupied by black rails. This habitat restoration effort will benefit Federal trust species including black rail (documented onsite), forest and marsh-adapted migratory songbirds, wading birds, shorebirds, migratory waterfowl, and raptors.

Maine Focus Areas



Skip Lisle installing flowage device. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: grassland, early successional forest • **Wetlands:** fen, forested wetland • **Stream/Riparian:** forested riparian

Species Examples

State listed turtle species, native pollinators, migratory grassland birds, federally listed plants, federally listed fishes

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Eastern Prairie Fringed Orchid Habitat Restoration

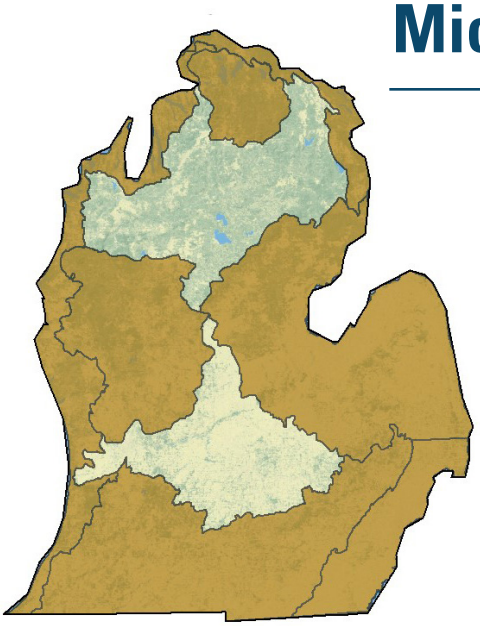
Hannah Mullally installing flowage device. Photo by USFWS

Partners for Fish and Wildlife (PFW) worked with The Nature Conservancy (TNC) to restore habitat for the federally threatened eastern prairie fringed orchid (EPFO). This partnership occurred on TNC's Crystal Bog. Crystal Bog includes unique circumneutral fen communities, which support the only known population of the EPFO in the northeast.

Factors which appear to be limiting to the orchid include shading by shrubs or forest canopy and pressure from invasive species. Fires during the dormant season and early growing season are beneficial for the species. The EPFO's habitat was maintained by fire in the past when the bog was unintentionally burned by sparks from steam locomotives traveling along the adjacent railroad tracks. This disturbance was eliminated with the advent of diesel locomotives and allowed encroachment of trees and shrubs into prime EPFO habitat.

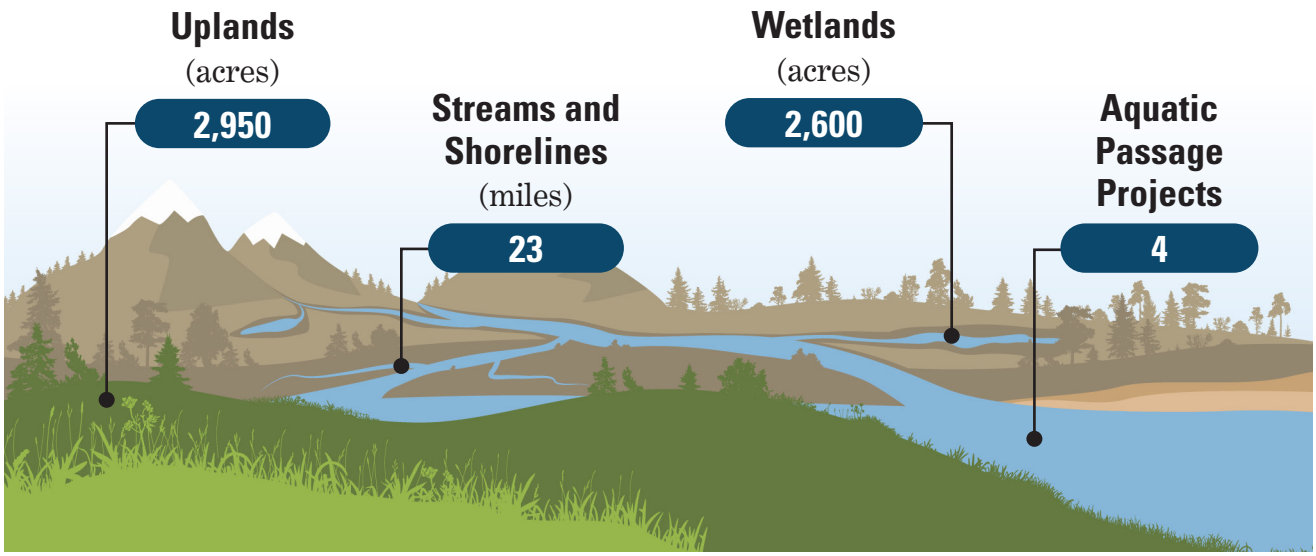
The overarching goal of this partnership is recovery of EPFO by restoring hydrology and periodic fire disturbance regimes to the area. This year, beavers dammed the fen outlet stream, leading to flooding of EPFO's habitat. The United States Fish and Wildlife Service (Service) contracted Skip Lisle, president and founder of Beaver Deceivers International in Vermont to design and build flowage devices to resolve the flooding. Service staff worked on site with Skip to build these devices, which will discourage beaver damming in the future. Future work on Crystal Bog will utilize PFW technical assistance and species recovery funding to complete monitoring, prescribed burn plans, invasive species control, and cedar removal. There will also be opportunities for planting EPFO seeds in the future.

Michigan Focus Areas



Wetland restoration in progress. Photos by USFWS

2022–2026 Conservation Targets



Habitat Examples

Wetlands, grasslands, streams (in-channel and riparian corridor), barrens, fens

Species Examples

Migratory birds, federally endangered and threatened species, interjurisdictional fish, declining grassland birds (e.g., bobolink, Henslow's sparrow), monarch butterfly, native bees and other pollinators

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

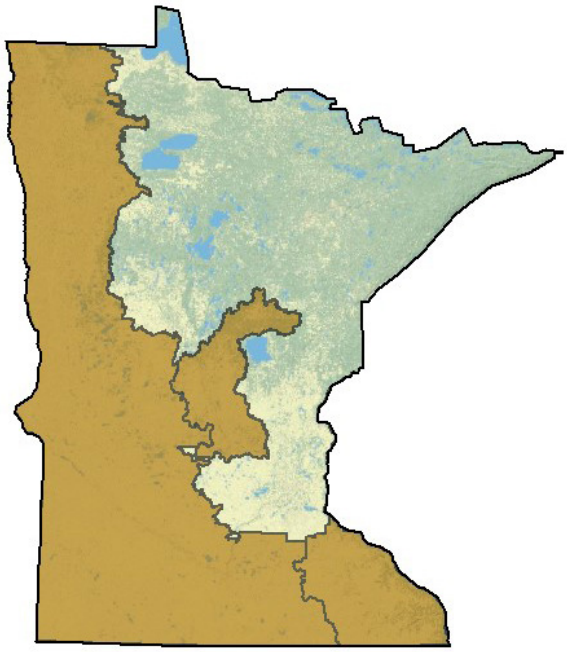
Pine River Restoration


Post-restoration. Photo by USFWS

This project enhanced an 80-acre wetland complex by performing a two-year draw down by installing a 24-inch diameter bottom draw, adjustable water control structure. This project reconsolidated the wetland bottom, controlled invasive lily pads, improved oxygen levels in the water and increased floristic diversity and emergent aquatic plant composition. This will provide long-term benefits for waterfowl, other wetland dependent migratory birds, reptiles, and cold-water aquatic resources.

The impoundment has been at full pool since the 1970s and the fixed water control structures (five overflow pipes), which serve as the outlet to the Pine River, were exceeding their working lifespan. Because the pipes were perched above the streambed, they also created a fish barrier. The project removed and replaced these failing structures with a fish accessible surface overflow structure for the wetland, and created a stream bypass channel allowing fish passage into the existing stream.

The project restored fish passage to three miles of stream in the Pine River, which is one of Michigan's 16 Natural and Scenic Rivers. United States Fish and Wildlife Service trust resource objectives were met because quality breeding and stopover habitat for waterfowl and many other wetland dependent migratory birds was created, and foraging areas for bats was improved. The landowner's objectives were to secure the integrity of the dam to meet State standards, improve fish and wildlife habitat, and enhance the aesthetic value of the wetlands. Funding for this project was provided by PFW, Great Lakes Restoration Initiative funds through a cooperative agreement with Ducks Unlimited, and the landowner.



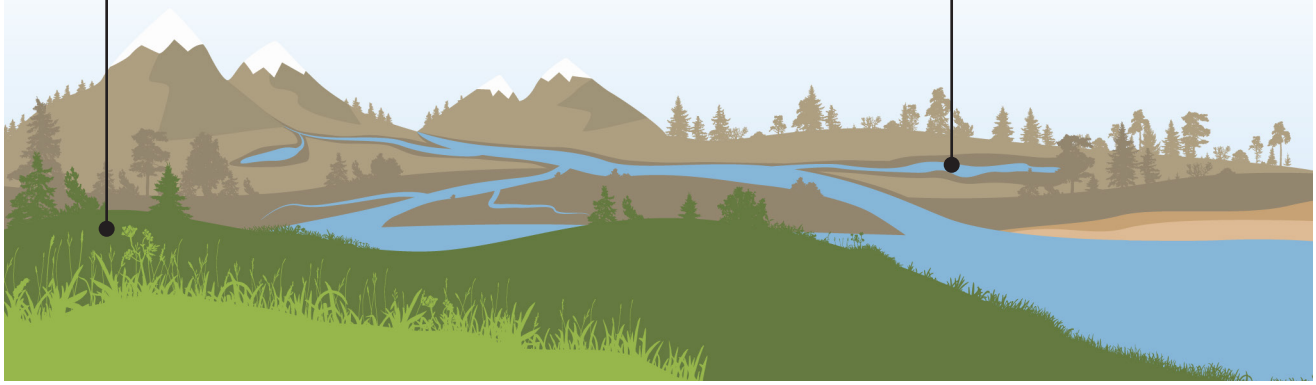
Minnesota Focus Areas

Pothole wetlands in Minnesota. Photo by USFWS

2022–2026 Conservation Targets

Uplands
(acres)
16,700

Wetlands
(acres)
4,205



Habitat Examples

Uplands: tallgrass prairie
- **Wetlands:** prairie potholes

Species Examples

Wood duck, Henslow's sparrow, monarch butterfly, eastern meadowlark, American woodcock, blue-winged teal, Topeka shiner, mallard

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

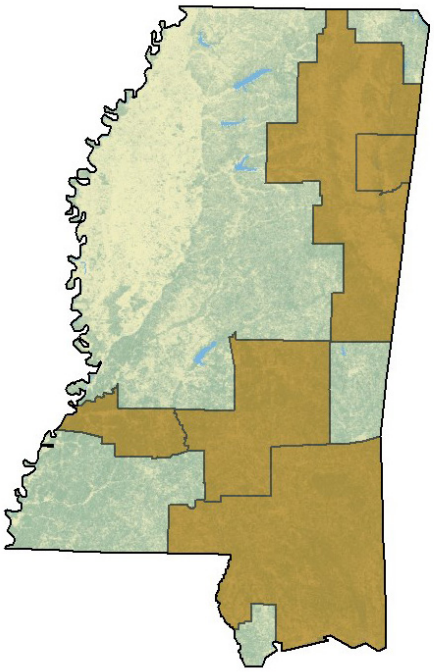
Prairie Pothole Region: Where it all Began

Minnesota winter waterfowl on the Pelican River. Photo by Shawn May, USFWS

The Partners for Fish and Wildlife (PFW) Program began right here in Minnesota, in the Prairie Pothole Region. The Prairie Potholes are important internationally due to the high concentration of wetlands and native prairie grasslands, which provide critical breeding habitat for numerous waterfowl, waterbirds, and a variety of other birds and wildlife species. However, more than 90 percent of these habitat types have been lost in Minnesota.

In response, restoration work began in earnest here several decades ago, gaining energy and momentum with the publication of the North American Waterfowl Management Plan in 1986, which galvanized the waterfowl community with common goals and priorities. Along with the momentum in habitat restoration has come an incredible array of scientific tools (Joint Venture, Habitat and Population Evaluation Teams, ongoing research) that guide where we do our work and the restoration techniques we use. Our program is now fully integrated with the goals of several Wetland Management Districts, as well as several partnering agencies and organizations, and the majority of PFW projects in Minnesota are now permanently protected.

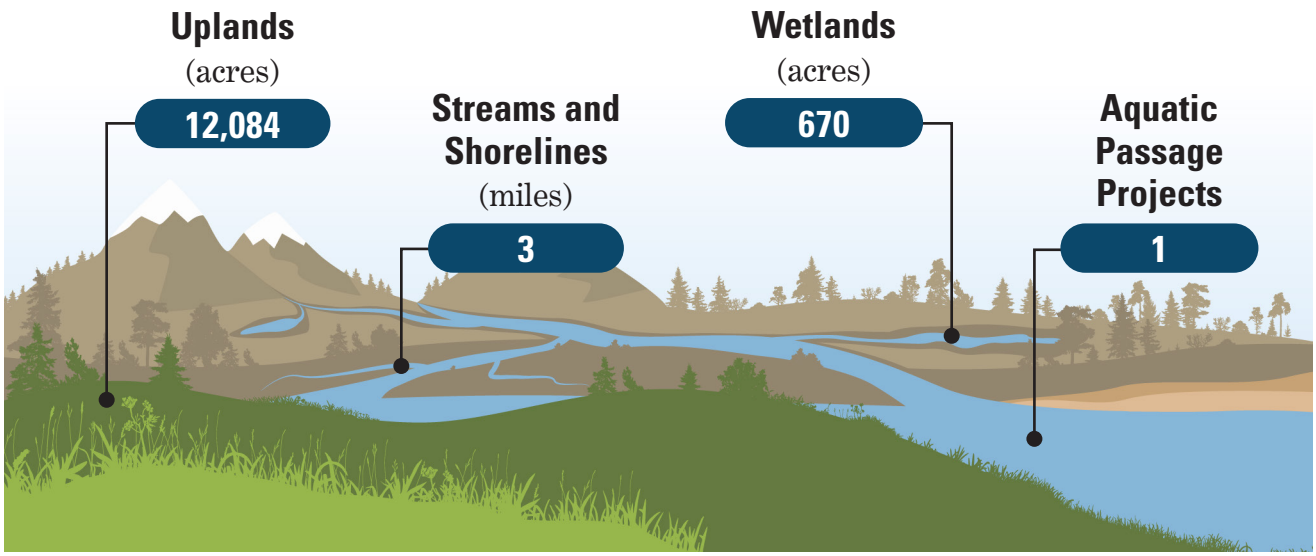
In short, we are well-positioned to continue great work in this part of the state. In the next five years, PFW will restore or enhance 20,000 acres of prairie wetlands, 70 percent of which will be permanently protected, and we plan to share our successes widely internally and externally.



Mississippi Focus Areas

Juvenile gopher tortoise. Photo by Kourtney Stonehouse

2022–2026 Conservation Targets



Habitat Examples

Uplands: prairie, longleaf pine • **Wetlands:** moist soil, bottomland hardwood forests • **Stream/Riparian:** Bayou Pierre, Tennessee-Tombigbee River

Species Examples

Federally endangered species: southern clubshell, southern combshell • **Federally threatened species:** orange-nacre mucket, black pine snake, gopher tortoise, Bayou darter • **At-risk species:** eastern diamondback rattlesnake, monarch butterfly • **Migratory bird:** Henslow's sparrow

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

South Mississippi Longleaf Pine Grassland Enhancement

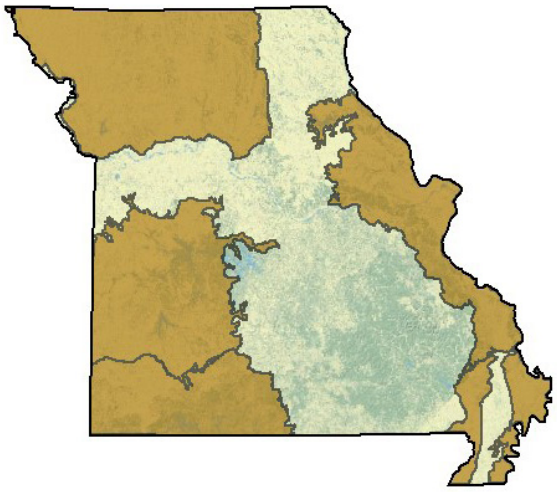
South Mississippi understory enhancement post prescribed burn. Photo by Randy Browning, USFWS

Across the Southeast, longleaf pine ecosystems have been reduced to remnants of a once expansive range. Mississippi's Gulf Coastal Plain longleaf systems have open, diverse understories dominated by bunchgrasses, forbs, and legumes when subjected to frequent fires. However, years of fire exclusion and the conversion of longleaf stands to dense, fast-rotation pine plantations have markedly reduced these systems and subsequently reduced habitat for many threatened and endangered, at-risk, and other species of concern.

The South Mississippi focus area consists of 13 lower coastal counties that center around the Desoto National Forest. Three endangered species, two threatened species and five at-risk species occur within the focus area. Efforts within this focus area prioritize projects that fall within counties that have known distributions of the federally threatened gopher tortoise (*Gopherous polyphemus*) and the federally threatened black pine snake (*Pituophis melanoleucus lodgi*).

This proactive conservation project involved maintaining and enhancing understory vegetation through the use of prescribed fire and active timber harvest on 95 acres of mixed-pine grassland habitat in Lamar County, Mississippi. Focal species that benefited from this project included the gopher tortoise, black pine snake and at-risk eastern diamondback rattlesnake (*Crotalus adamanteus*).

Missouri Focus Areas

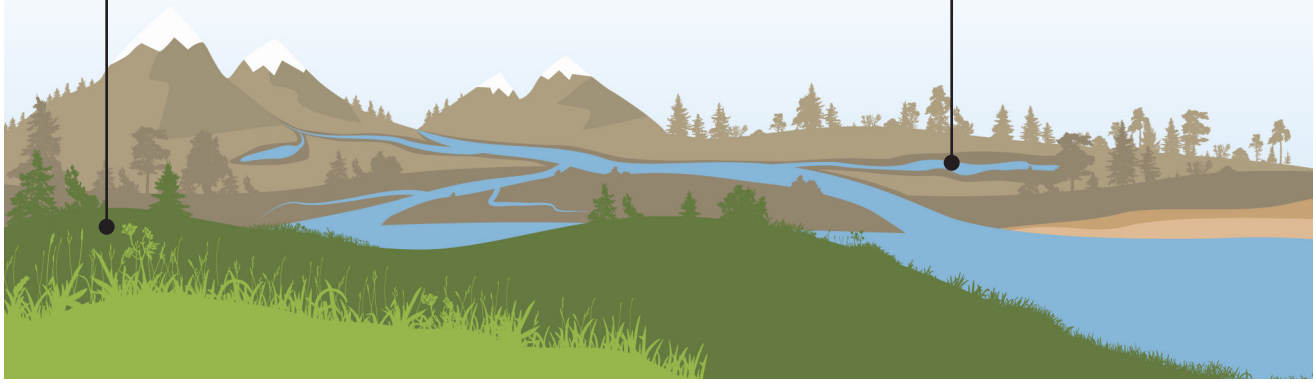


Private lands biologist conducting a prescribed burn in a Missouri woodland. Photo by USFWS

2022–2026 Conservation Targets

Uplands
(acres)
4,800

Wetlands
(acres)
700



Habitat Examples

Wetlands: marshes, sloughs, swamps, bottomland hardwoods, wet prairie habitats • **Uplands:** native prairie, grasslands

Species Examples

Ozark hellbender, Topeka shiner, Tumbling Creek cave snail, pink mucket (pearlymussel), Indiana bat, monarch butterfly

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Restoring Uplands and Wetlands

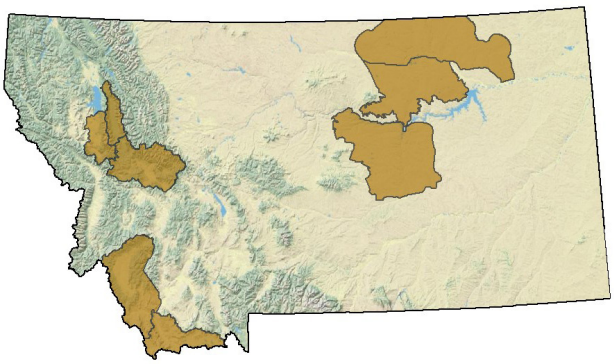
USFWS biologist with happy landowners at a prairie restoration site in Missouri. Photo by USFWS

The Missouri and the Mississippi are the two largest rivers in the United States, and both flow through the region making the health of the surrounding landscape even more important. Therefore, our work in Missouri focuses on the uplands and adjacent wetlands to help protect these important river systems. Not only does this improve water quality, for declining or federally listed fish and wildlife and people locally, but there is a cumulative effect as the rivers traverse the country and flow to the Gulf of Mexico. The streams and tributaries in Missouri are important habitat to freshwater mussels, amphibians, darters, and shiners. Ensuring that we can restore the function and connectivity of these habitats on private lands, which comprises 94% of the state, is the focus of Partners for Fish and Wildlife (PFW) Program.

Each of our five focus areas are conservation partner and science-based for our highest priority flora and fauna. We will maintain our previous focus areas delivering regional habitat priorities, but we are introducing an extension of the Mississippi Plains and Forested Bluff-lands focus area to include priority areas along the Mississippi River flyway and for karst habitat to expand opportunity for at-risk migratory birds and subterranean karst dependent and listed species.

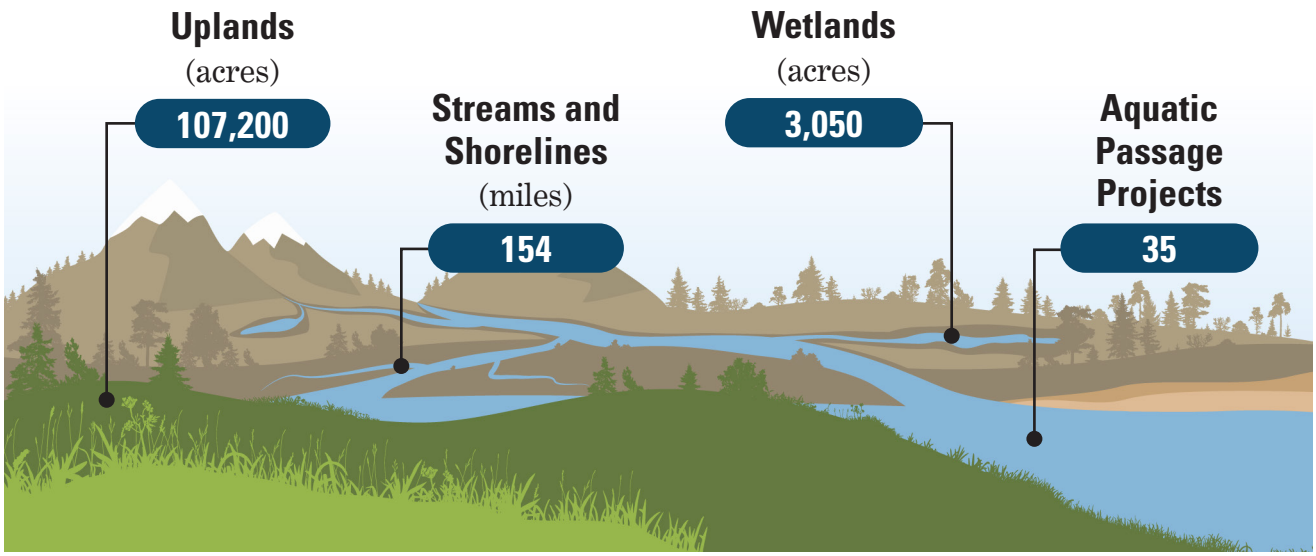
Missouri works with several statewide partnerships to address the needs on the landscape including Missourians for Monarchs and Pollinators, Missouri Agricultural Wetlands Initiative, Missouri Bird Conservation Initiative, and Shoal Creek Restoration Initiative. With our partners, we can target work and restore resilient habitats that not only provide an immediate benefit, but also that will accommodate the challenges presented by climate change, lands-use changes, and other adverse impacts.

Montana Focus Areas



Federally threatened bull trout (Montana). Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: sagebrush-steppe, grasslands • **Wetlands:** pothole wet-grass complexes, glaciated depressional wetlands, mesic habitat, montane forest wetlands • **Streams/Riparian:** headwaters, riparian areas

Species Examples

Grizzly bear, greater sage-grouse, Brewer's sparrow, northern pintail, trumpeter swan, arctic grayling, bull trout, westslope cutthroat trout

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Nevada Creek Aquatic Restoration in the Blackfoot River Valley

Instream and riparian restoration on Nevada Creek a key native fish tributary to the Blackfoot River. Photo by USFWS

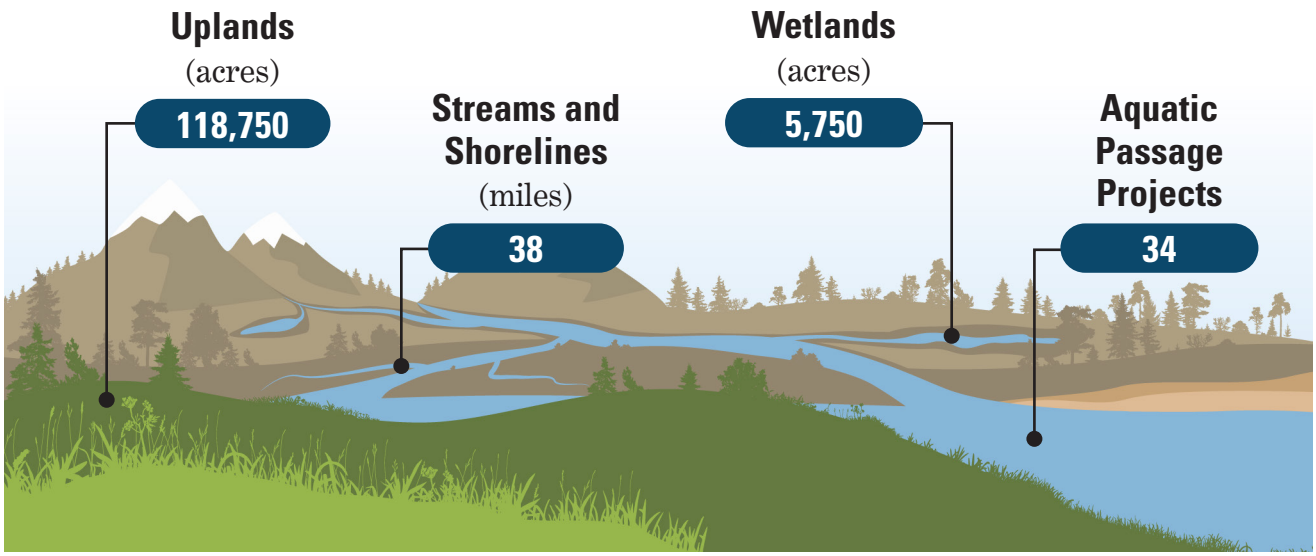
Nevada Creek is a large, third-order tributary to the middle Blackfoot River and supports important populations of westslope cutthroat trout and western pearlshell mussel. The Montana Department of Environmental Quality listed Nevada Creek as an impaired stream for nutrients, siltation, suspended solids, and thermal modifications. This section of Nevada Creek, totaling approximately 14,000 feet, had lost its woody riparian vegetation and floodplain connection, and had extensive bank erosion. Pre-project Bank Erosion Hazard Index studies determined that 545 tons of sediment were being deposited into this section of the stream each year. This excessive sediment was having significant negative impacts on spawning westslope cutthroat trout and was negatively impacting western pearlshell mussel habitat. The Montana PFW Program worked with the landowner and other partners (e.g., Montana Fish, Wildlife, and Parks; the Big Blackfoot Chapter of Trout Unlimited) to restore the appropriate pattern, profile, and dimensions to this 14,000-foot stream reach in the fall of 2020.

Nebraska Focus Areas

Carp barrier installation. Photo by USFWS

Carp eradication. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: tallgrass, mixed-grass, sandhills, and shortgrass prairies • Wetlands • Riverine and riparian habitat

Species Examples

Migratory waterfowl, grassland birds, shorebirds, pollinators, threatened and endangered species, high priority fish species

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

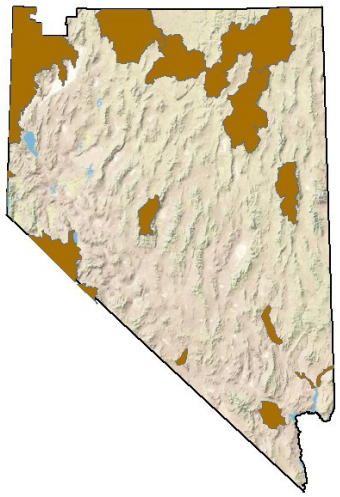
Sandhill Wetland and Aquatic Habitat Restoration Projects

Nebraska PFW Sandhills Clear Lake Habitat Restoration project in Brown County. Photo shows Clear Lake (background) and associated wetland habitats restored through the partnership. Photo by PFW partner/landowner

Partners for Fish and Wildlife (PFW) works to restore and enhance important aquatic habitats throughout the Sandhills of Nebraska. The Sandhills are home to more than 2,000 lakes and wetlands and are some of the most productive aquatic systems in the country, as well as countless migratory and resident fish and wildlife species. The Sandhills provide some of the most important nesting grounds to many migratory waterfowl species outside the Prairie Pothole Region. However, the infestation of carp into these aquatic systems threatens the productivity and usage of these lakes and wetlands dramatically. Carp drastically alter aquatic systems that they invade, creating murky water by the feeding patterns, which leads to poor water quality, lack of aquatic vegetation growth, suppressed desirable fish populations, and poor usage by migratory waterfowl and shorebirds. PFW and our partners are working to address these invasives through partnership projects, which focus on eradicating carp from lakes and wetlands throughout watersheds.

In 2021, four carp barriers/structures and six fish screens were strategically built and installed to prevent carp from re-infesting five waterbodies. Two lakes were chemically treated to remove the invasive carp. 1,900 acres of Sandhills permanent and seasonal wetland and aquatic habitats were restored this past year. More than 7,000 surface acres of wetland habitat have been restored with an additional 4,130 acres in progress. Once carp are removed, high quality habitats for migratory waterfowl, along with other native fish and wildlife are restored to these Sandhill lakes and wetlands. These projects contribute significantly towards meeting both habitat restoration and technical assistance targets as identified in the United States Fish and Wildlife Service's PFW Strategic Plan 2017–2021.

Nevada Focus Areas

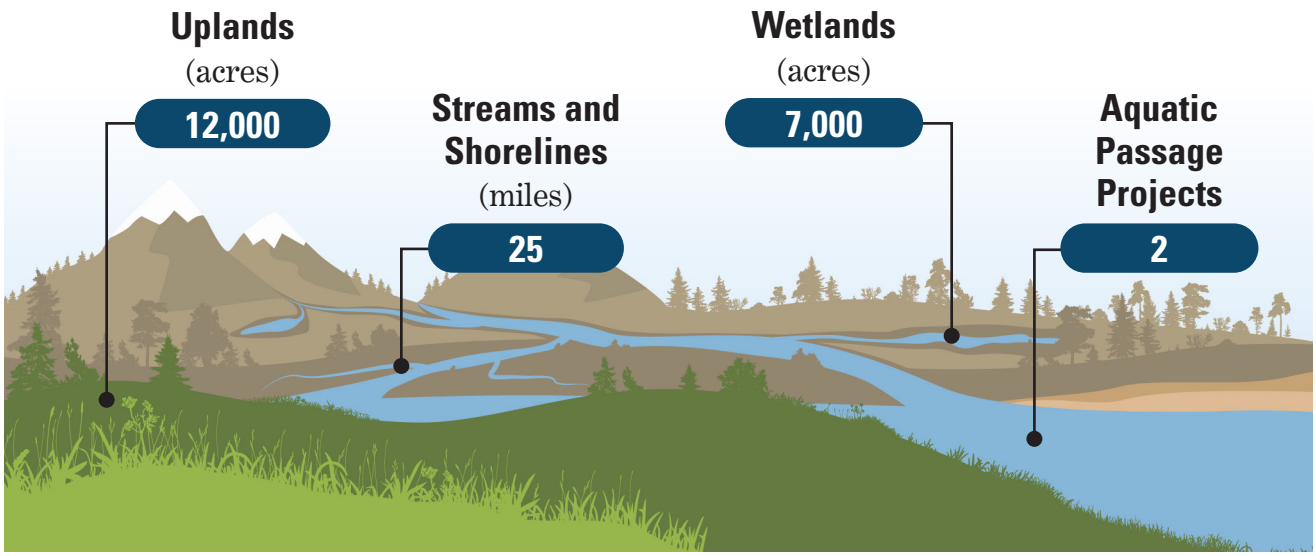


Channel obstructions before restoration. Photo by USFWS

Debris and silt removed from drain. Photo by USFWS

Landscape before restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Sagebrush uplands, wetlands and wet meadows, rivers and streams, springs and springbrooks

Species Examples

Sagebrush obligate species, migratory birds, endemic fish, native trout, native amphibians, endemic springsnails, pollinators

More information available in the Pacific Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

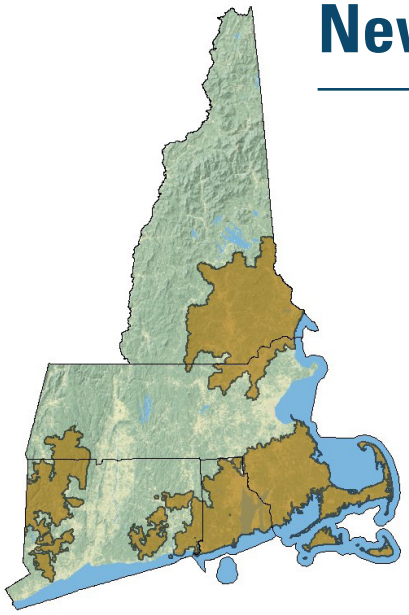
Beyond the Boundaries: Pahranagat National Wildlife Refuge


Volunteer Steve Meldrum with excavator. Photo by USFWS

The main water source for Pahranagat National Wildlife Refuge (Refuge), an oasis for fish and wildlife in southern Nevada, is the Pahranagat Drain. Since the Refuge is at the southern end of the valley, it receives water after it has passed through the private lands above. Decreasing the sediment entering the drain and increasing the capacity of the drain will benefit the Refuge, specifically habitat that supports the endangered southwestern willow flycatcher (*Empidonax traillii extimus*) and the refugium for the endangered Pahranagat roundtail chub (*Gila robusta jordani*). Both the flycatcher and chub are listed in Nevada's Wildlife Action Plan as Species of Conservation Priority. The project is listed in the Recovery Plan for Aquatic and Riparian Species of Pahranagat Valley.

This project improved water management in Pahranagat Valley which benefited ranchers, other landowners, and native fish. Conservation practices included the removal of live and dead woody material from the channel that obstructs flows, removal of trash, and removal of dead woody materials from the banks. All non-native Russian olives in the project area were removed, which totaled over 100 trees along over four miles of the drain. The Lincoln County Conservation District worked with private landowners along the drain to complete this project. This segment of the drain passes through private land with over 30 different private landowners. Special thanks to volunteer Steve Meldrum who managed the project and did the lion's share of the work!

New England Focus Areas

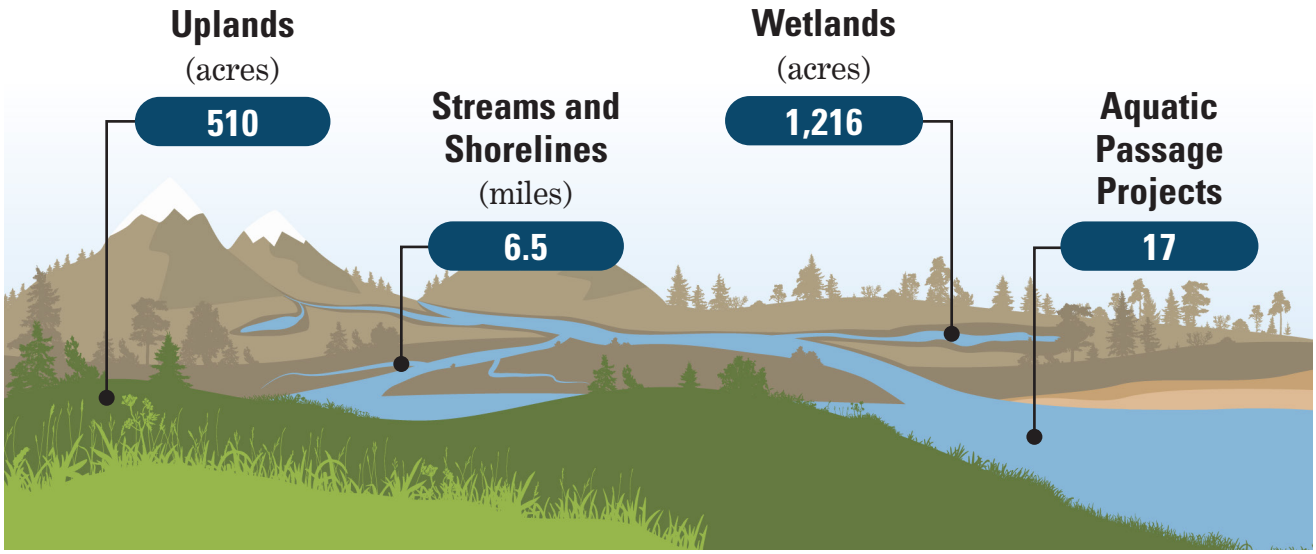


Prescribed fire May 2021. Photo by USFWS

Prescribed fire May 2021. Photo by USFWS

Regeneration September 2021. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Young forests, grassland/shrublands, connected aquatic habitats, freshwater and tidal wetlands, rivers and streams

Species Examples

New England cottontail, prairie warbler, American woodcock, eastern towhee, blue-winged warbler, eastern towhee, brown thrasher, saltmarsh sparrow, American eel, American black duck, chestnut-sided warbler, river herring, wood turtle, dwarf wedge mussel, brook trout, pollinators

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

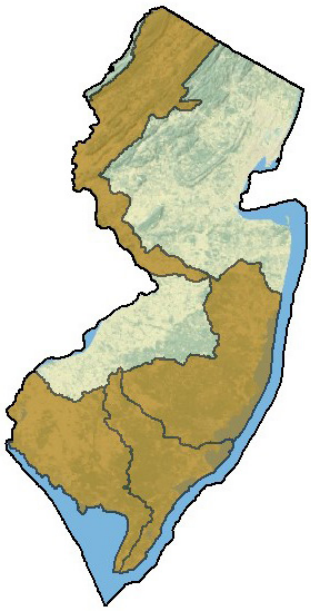
Species Conservation Targeting At-Risk Pollinator Species

Field prior to tree removal and prescribed fire treatment. Photo by USFWS

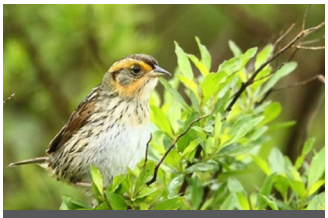
Partners for Fish and Wildlife (PFW) worked with a landowner, sub-consultants, and contractors, to plan and implement pollinator projects and promote the United States Fish and Wildlife Service's (Service) Northeast Region Priority of At-Risk Species conservation. This project converted former agricultural fields to native grassland and meadow to promote a diverse assemblage of native wildlife species. This was accomplished by reducing woody plant encroachment, controlling invasive plants, and establishing native grasses and forbs in the treatment areas.

Eight acres of habitat were enhanced to create pollinator habitat using various methods including tree and shrub removal and prescribed fire. Using Service funds allowed the landowner to use other funds to manage the field in perpetuity. PFW staff worked closely with project partners to promote and implement the pollinator habitat enhancement. The Service's responsibilities included technical assistance with restoration site designs and implementation, review of construction operations during restoration, assistance with permitting, monitoring habitat restoration construction actions, and providing general guidance and technical assistance to the landowner and other project partners as they implemented their responsibilities under the Cooperative Agreement.

The property is considered of high ecological value by MassWildlife's Natural Heritage and Endangered Species Program (NHESP) and the Massachusetts Department of Environmental Protection (MassDEP). All of the property drains into the Green River, one of the state's premier cold-water streams and a tributary of the Deerfield River.

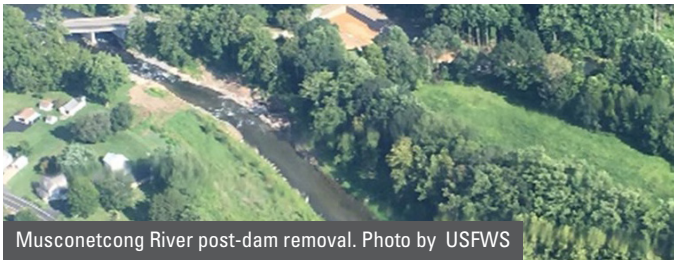


New Jersey Focus Areas



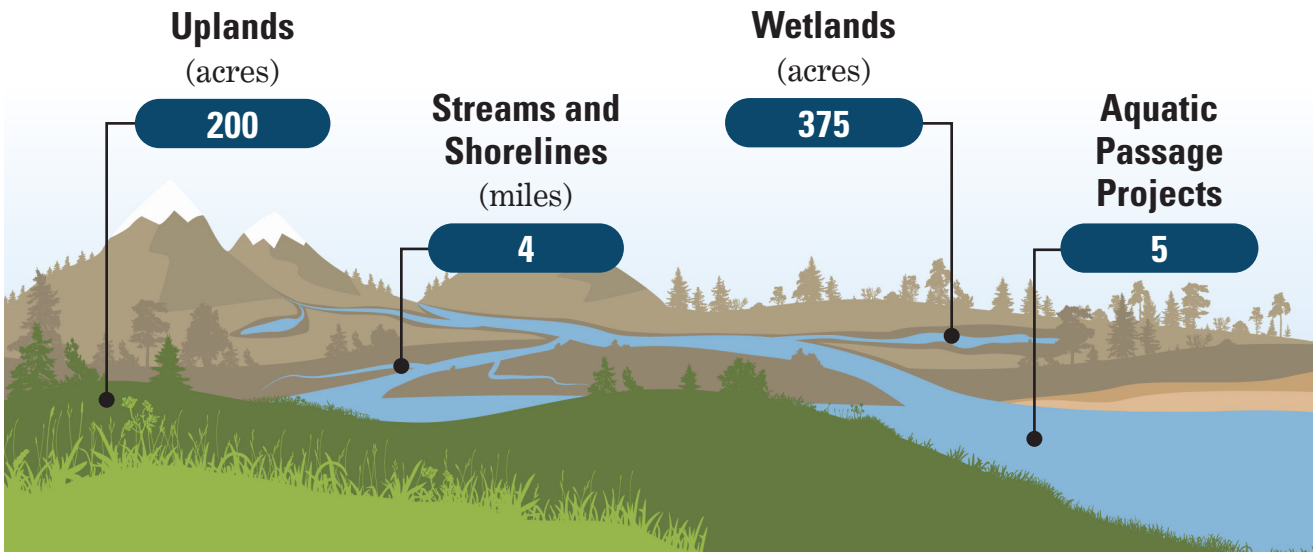
Saltmarsh sparrow. Photo by USFWS

Bog turtle. Photo by USFWS



Musconetcong River post-dam removal. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: forested uplands and grasslands, barrier islands • **Wetlands:** tidal marshes, floodplains, freshwater wetlands • **Stream/Riparian:** streams, rivers and associated habitats

Species Examples

Rufa red knot, horseshoe crab, saltmarsh sparrow, black rail, American black duck, prairie warbler, swamp pink, monarch butterfly, frosted elfin butterfly, river herring, bog turtle, wood turtle, cerulean warbler, wood thrush, piping plover, seabeach amaranth. American oystercatcher, American shad

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Salt and Freshwater Marsh Habitat

Work with the Delaware Bay Estuary Project and other partners to identify opportunities to implement on-the-ground projects to restore habitat for saltmarsh sparrow, American black duck, and black rail. Potential projects include culvert replacement to restore or manage tidal flow, facilitate marsh migration though strategic mowing and/or tree removal, and small-scale pilot projects for marshland restoration.

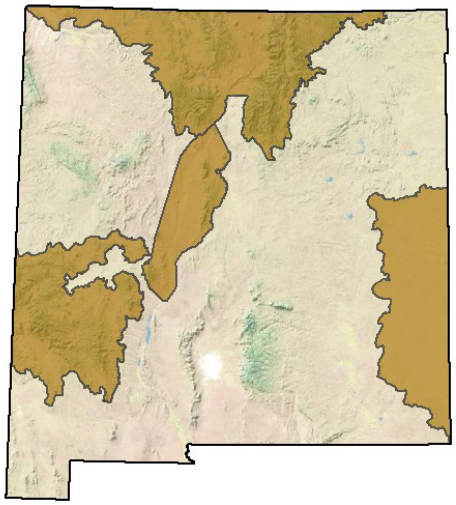
Bog Turtle

Working with key partners, such as NRCS, we will permanently protect bog turtle habitat and assist landowners with habitat management of high priority sites. The Service has partnered with key conservation groups in southwestern New Jersey to implement a USDA-NRCS funded Regional Conservation Partnership Program (RCPP) project to protect and restore bog turtle habitat in the Salem River watershed. With the Service as a contributing partner, our goals are to permanently protect 110 acres of habitat with associated buffer lands and to restore at least 200 acres of bog turtle habitat over the next five years; habitat protection and restoration are key components of the bog turtle recovery plan. Several projects will target working lands to utilize prescribed grazing to restore and maintain high quality habitat.

Aquatic connectivity

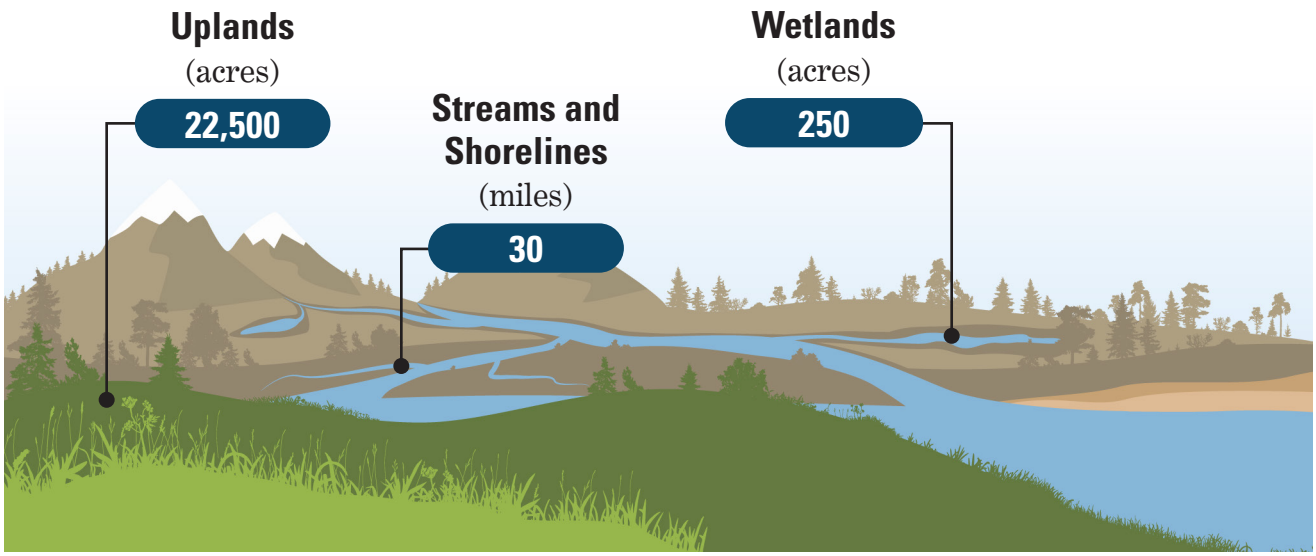
Work with landowners who volunteer to remove dams, install fish ladders, replace undersized culverts, and improve in-stream habitats for the benefit of diadromous fish and imperiled mussels. Over the next five years we anticipate removing five barriers in the Delaware and Raritan River watersheds. The Musconetcong River Restoration Partnership, of which the Service is a founding member, has removed five dams which have restored almost eight miles of passage, allowing for the historic return of American shad after over 100 years of blockage from historic spawning and rearing grounds for shad and other diadromous fish.

New Mexico Focus Areas



Upstream view before restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Forest uplands, grasslands, corridors, wet meadows within river floodplain, riparian, shrubland, big river-low gradient, medium river-moderate gradient, pools

Species Examples

Dunes sagebrush lizard, lesser prairie-chicken, black-tailed prairie dog, long-billed curlew, Rio Grande cutthroat trout, southwest willow flycatcher, New Mexico meadow jumping mouse

More information available in the Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Stream Restoration Project

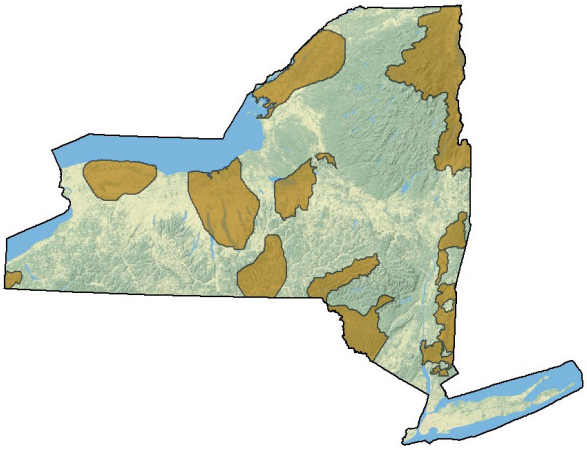

After restoration. Photo by USFWS

This project restored a stable channel of stream that was degraded in 2015 due to a catastrophic flood event. A tributary of just 1–2 cubic feet per second (cfs) of perennial flow increased to an estimated 2,400 cfs. The crest of the flash flood was 18 feet deep and guests had to be evacuated. The flash flood resulted in major damage to the channel and floodplain in an already degraded channel, as well as over 1 million dollars in damages to property.

Stream restoration based on Natural Channel Design and Induced Meandering Techniques was proposed. The purpose was to restore a stable channel form with a floodplain to increase visitor safety and ensure and protect a healthy riparian bosque. Future flood events would be mitigated by the restoration work and be less damaging to infrastructure and the stream ecology.

The project addressed three objectives: (1) stream restoration erosion control structures, (2) removal of invasive Russian olive along the stream and (3) expanding riparian understory revegetation efforts.

New York Focus Areas

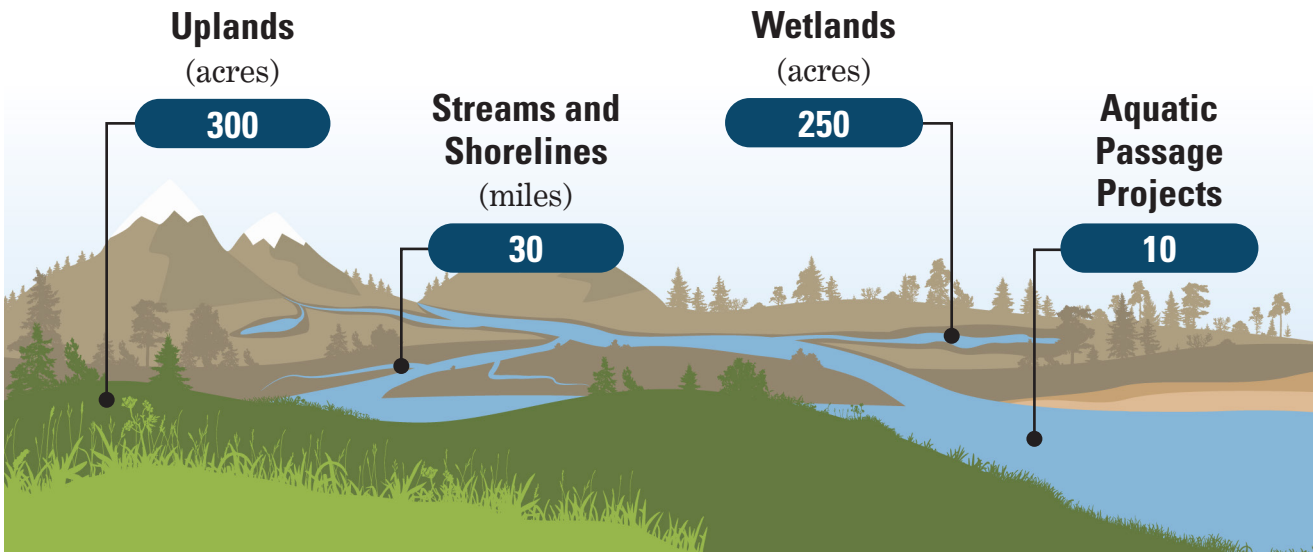


Toe wood structure protects bank and provides important fish habitat. Photo by USFWS

Operator installing structure. Photo by USFWS

Toe wood bench immediately after construction. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: forested uplands and grasslands • **Wetlands:** freshwater emergent wetlands, floodplains • **Streams and riparian areas**

Species Examples

Wood turtle, golden-winged warbler, bog turtle, eastern brook trout, American woodcock, monarch butterfly

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Ausable River Restoration

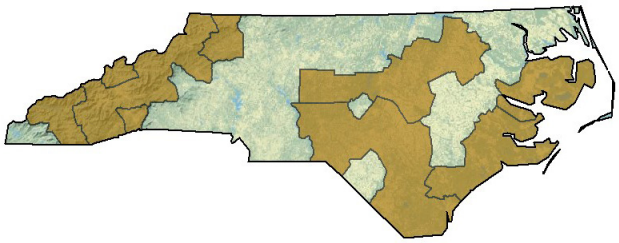
Restoration work on the East Branch Ausable River. Photo by USFWS

Partners for Fish and Wildlife (PFW) in New York worked with the Ausable River Association, Trout Unlimited, local municipalities, and numerous private landowners to identify, assess, and restore priority reaches on the East and West Branches of the Ausable River, in Essex County, New York. For this project, the primary objective was to implement the second phase of a natural channel design restoration project developed in response to a downstream emergency project (exposed water main) undertaken in 2020, also under the direction of the PFW Program. The emergency site is located on a reach of the East Branch Ausable River that was designated a priority in the 2016 Ausable River Watershed Management Plan. The project restored long-term, self-sustaining flows to a functional, but at-risk, sub-reach of the East Branch Ausable River in the hamlet of Keene. Additional outcomes were improved habitat, water quality, bank stability, sediment competence, and flood resilience.

The phase two plan addressed the cause of the instability that exposed the water main and restored self-sustaining function to the entire reach. It included installation of two J-hooks: one on the upstream-most bend to increase stream energy and reinforce flows at the deepest part of the channel, and one anchoring a 400-foot toe wood bench along the apex of the deeply eroded second bend. Two 200 to 300-foot sections of root-rap prevent erosion in bend transitions above and below the toewood.

PFW staff had substantial involvement in this project and completed the following tasks: site assessment and survey, State Historic Preservation Office review, State and Federal permit review, project design, construction oversight, creation of riparian planting plan and implementation, and liaising with multiple partners.

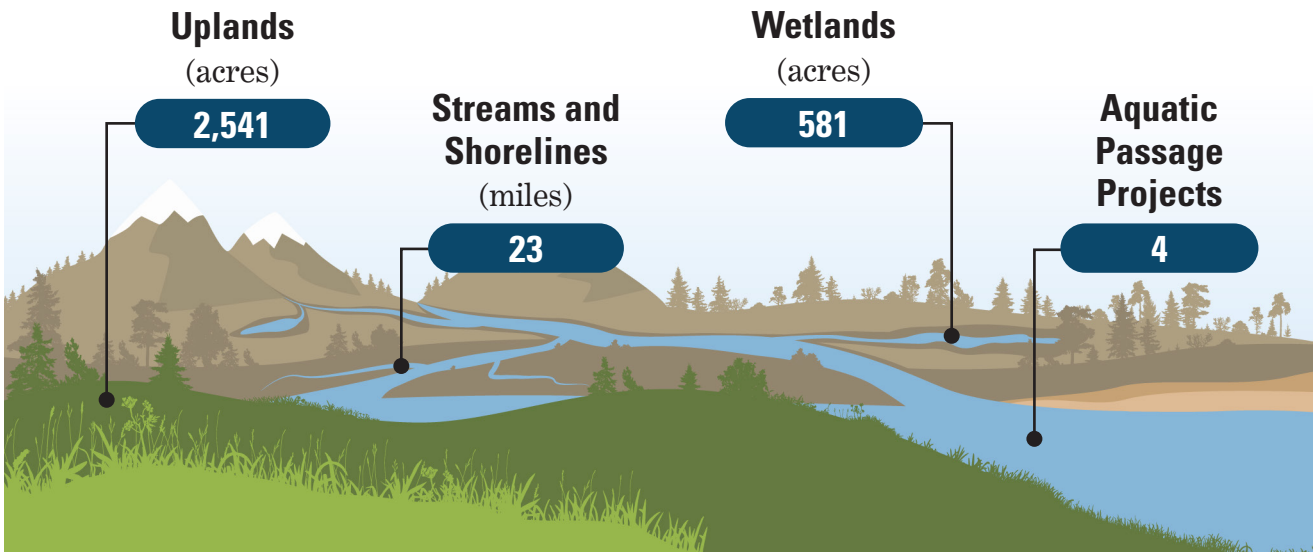
North Carolina Focus Areas



Newly planted longleaf seedling with native plant understory. Photo by John Ann Shearer, USFWS

Landowner and his forester proudly display PFW signs. Photo by John Ann Shearer, USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: high elevation spruce-fir and rock outcrops, longleaf pine, red wolf habitat • **Wetlands:** mountain bogs and fens • **Stream/Riparian:** aquatic ecosystems

Species Examples

Federally endangered species: red-cockaded woodpecker, red wolf, bunched arrowhead, smooth coneflower • **Federally threatened species:** bog turtle, spotfin chub, yellow lance • **At-risk species:** monarch butterfly, golden-winged warbler

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Longleaf Restoration on Huckleberry Farms

Thinned and burned longleaf pine allows sunlight to reach the forest floor, stimulating growth of native grasses and wildflowers. Photo by John Ann Shearer, USFWS

The Longleaf Pine Ecosystem once spanned 92 million acres from Virginia southward to Texas and provided habitat for many wildlife species. Now reduced to about 8 million acres, many of the endemic wildlife species are rare and some are federally listed as endangered or threatened. Landowners care about these species, but they are also connected to longleaf pine because of its rich cultural history and its valuable timber. Partners for Fish and Wildlife (PFW) works cooperatively with landowners to restore this iconic ecosystem that is so important environmentally, culturally, and economically.

This restoration project occurred on Huckleberry Farm in southeastern North Carolina within the Cape Fear Arch focus area, identified as a priority for longleaf restoration. A state managed game land is adjacent to this property and two state parks and a state forest are within 12 miles, affording the opportunity for this project to connect habitats.

This project restored 200 acres of the 900 acre property. Techniques included harvesting underperforming loblolly pine and replacing it with longleaf pine seedlings, thinning older longleaf pine, and planting and encouraging native understory vegetation by opening the forest to increase sunlight and conducting controlled burns. These actions have transformed the property, with native grasses, wildflowers and longleaf pine all thriving. Most importantly, the landowner is thrilled with the results and is committed to the continued management of the property.

Fox squirrels, Bachman's sparrow, brown-headed nuthatches, northern bobwhite, and wild turkey are benefitting from this restoration project. Endangered red-cockaded woodpeckers are active only one mile south of this project; it is anticipated they will forage in the restored longleaf pine in the near future and perhaps one day nest there.

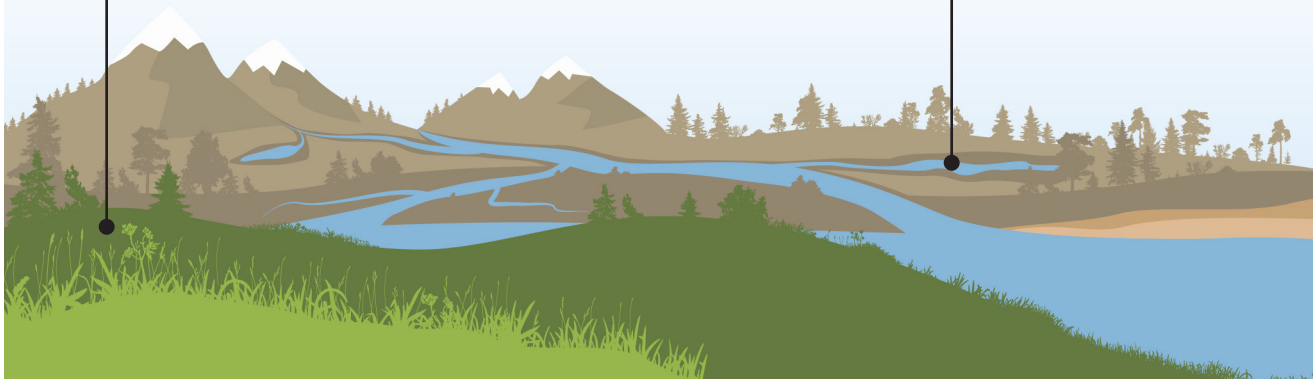
North Dakota Focus Areas

Cattle taking a break from grazing in a rotational grazing system implemented through the North Dakota PFW Program. Photo by USFWS

2022–2026 Conservation Targets

Uplands
(acres)
107,950

Wetlands
(acres)
695



Habitat Examples

Uplands: sagebrush-steppe, mixed-grass prairie
• **Wetlands:** prairie potholes

Species Examples

Migratory waterfowl, migratory grassland birds, migratory shorebirds, greater sage-grouse, pollinators, threatened and endangered species

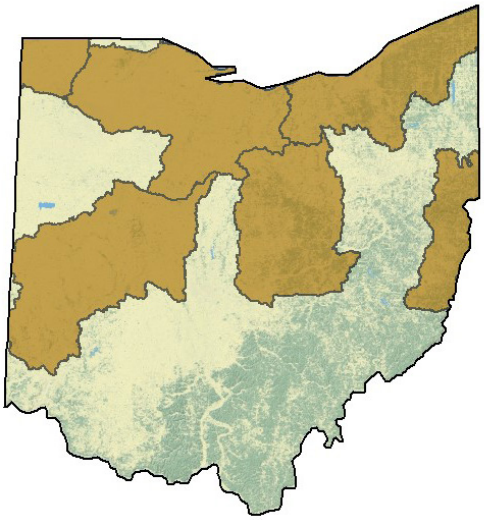
More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Wetland Restoration and Protection Lead to Upland Enhancement

Landowner speaking during a tour of the conservation practices implemented on his ranch. Photo by USFWS

A Partners for Fish and Wildlife (PFW) biologist worked with one landowner family to implement a rotational grazing system on nearly 9,000 acres of high priority habitat in the Prairie Pothole Region of North Dakota. This family takes great pride in their conservation-minded approach to agriculture, and they take every opportunity to host tours and workshops to help others work towards a more sustainable and regenerative farming and ranching operation. They also use this platform to explain their involvement with and appreciation for the United States Fish and Wildlife Service. This positive message about collaborative conservation is extremely important in North Dakota, where conservation is not always viewed favorably. In addition to the numerous practices that have been implemented in order to improve their grazing regime, this family is also currently implementing a fish passage project through the North Dakota PFW Program as well.

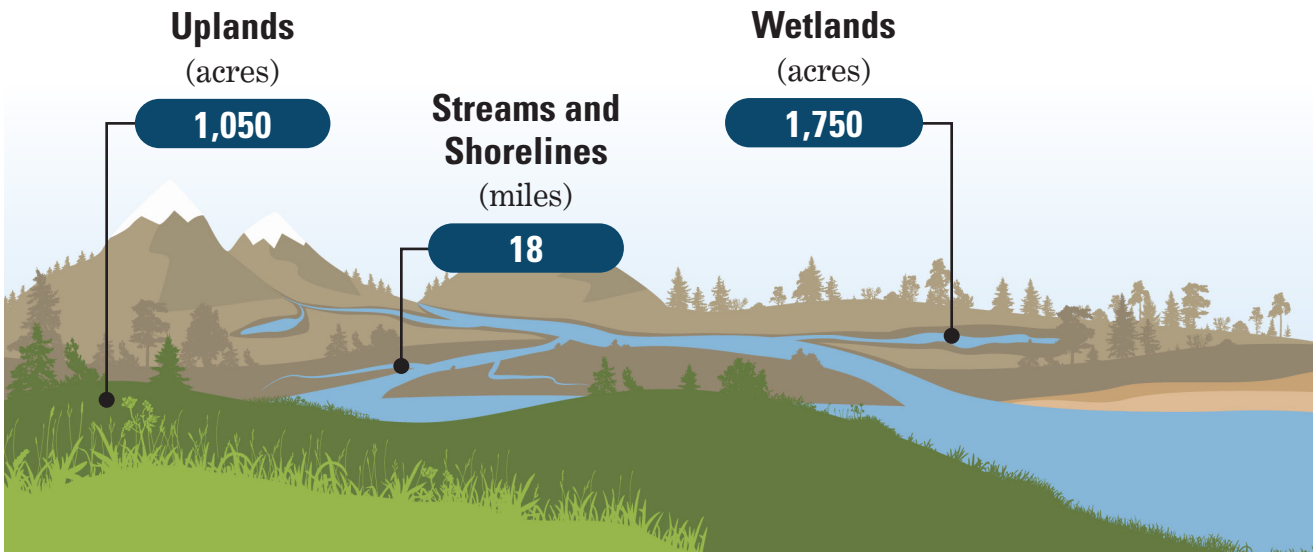
Ohio Focus Areas



American eelgrass propagation for planting in Ohio. Photo by USFWS

New 40-acre off-channel wetland complex. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Hardwood forests, vast wetlands, fens, bogs, prairie grasslands, oak savannas, clear springs, creeks, streams

Species Examples

Migratory birds (e.g., cerulean warbler, Henslow's sparrow, blue-wing teal), copperbelly water snake, blacknose shiner, lake chubsucker

More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Ohio's Great Miami River Watershed Partnership: Go Big or Go Home

Several companies and private lanowners benefitted from this off-channel wetland restoration by receiving high quality topsoil at no cost. Photo by USFWS

For the past eight years, Partners for Fish and Wildlife (PFW) has been involved in a landscape-scale partnership in the Great Miami River Watershed in southwestern Ohio. This large, diverse partnership is dedicated to restoring, enhancing, and connecting floodplain and riparian habitat in the Great Miami River.

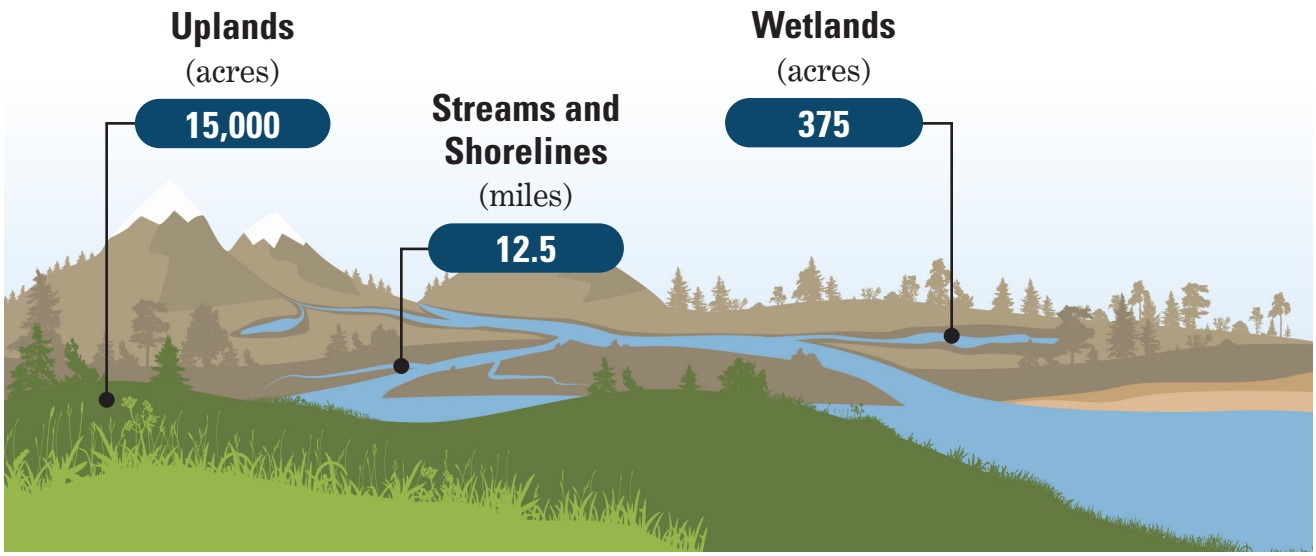
For decades, the Great Miami River suffered from impaired water quality due to poor wastewater infrastructure and agricultural runoff. Additional threats to the river include damaging floods, channel incision, increased water velocity, perched floodplains, and diminished aquatic populations. Several low head dams also prevent fish passage. Because of recent improvements in wastewater infrastructure, portions of the river have been classified as exceptional warmwater habitat, and the United States Fish and Wildlife Service, as well as many partners, believe the stage is set to address the remaining threats with a series of large-scale restoration projects in and along the river. PFW is working to restore habitat for federally endangered rayed bean and snuffbox mussels, both of which require stable riffle, run, pool habitat, and sufficient host fish populations for spawning success. Habitat improvements benefit several State endangered species, such as Iowa darters, eastern hellbenders, and blue suckers, as well as game fish like large and smallmouth bass, northern pike, and walleye.

Restoration at this scale is complex and takes years to plan and implement. Several successful projects have been completed, but the full restoration planned will take many more years, and will include off-channel wetland restoration, dam removals, instream habitat enhancement, reforestations, native grass plantings, mussel reintroductions, and eelgrass restoration.

Oklahoma Focus Areas

Before restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Sand sagebrush, oak shinnery, bottomland hardwoods, pine-oak woodlands, caves, small rivers and streams, wetlands, and riparian areas, cross timbers, prairies (shortgrass, tallgrass and mixed-grass)

Species Examples

Lesser prairie-chicken, Texas horned lizard, Cassin's sparrow, long-billed curlew, Quachita rock pocketbook, Arkansas River shiner, piping plover, whooping crane, monarch butterfly, American burying beetle

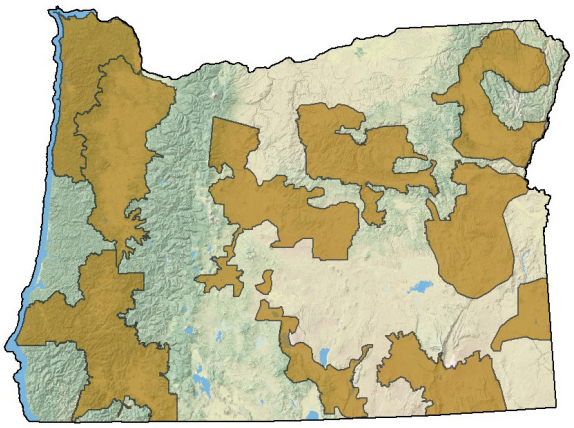
More information available in the Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Baker Casey Ranch


After restoration. Photo by USFWS

The restoration work included the mechanical removal of 617 acres of eastern red cedar in upland wildlife habitat. In addition, fire will be reintroduced into 617 acres of the project site three to four years post-brush treatment. Livestock grazing will be permitted following treatment, not to exceed taking 25 percent of the annual grass growth that is available for livestock consumption. If needed, to determine if actual forage consumption and estimated consumption are accurate, and to adjust accordingly, a four-foot by four-foot enclosure cage will be constructed of cattle panels and placed in two representative portions of the pasture. Periodic monitoring will be required to determine the estimated grazing percentage. These enclosures should be moved each year prior to the growing season. Three to four years following the mechanical cedar tree control, a prescribed burn will be conducted on the restoration area and any adjacent area of the ranch where cedars are encroaching. Prescribed fire should kill young remaining cedar trees, remove cedar tree skeletons, and improve grazing distribution. To ensure the area has adequate fuel loads for the prescribed fire, grazing may be deferred in areas to be treated with fire prior to the prescribed fire treatment.

Oregon Focus Areas

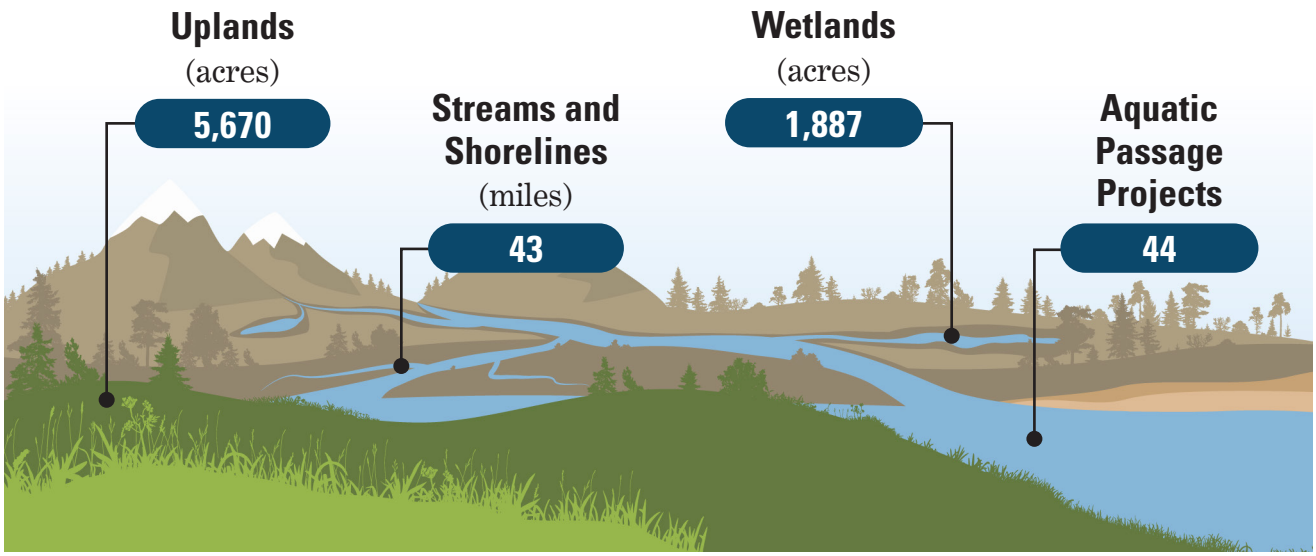


Blue camas native plug planting. Photo by USFWS

Native plant delivery. Photo by USFWS

Blue camas mowing. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Tidal wetland, upland prairie, oak savanna, wet prairie, hardwood riparian forest estuary, riverine, riparian, floodplain, forests, oak woodland

Species Examples

Greater sage-grouse, bull trout, Oregon spotted frog, steelhead, Lahontan cutthroat trout, Warner sucker, salmonids, migratory birds

More information available in the Pacific Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

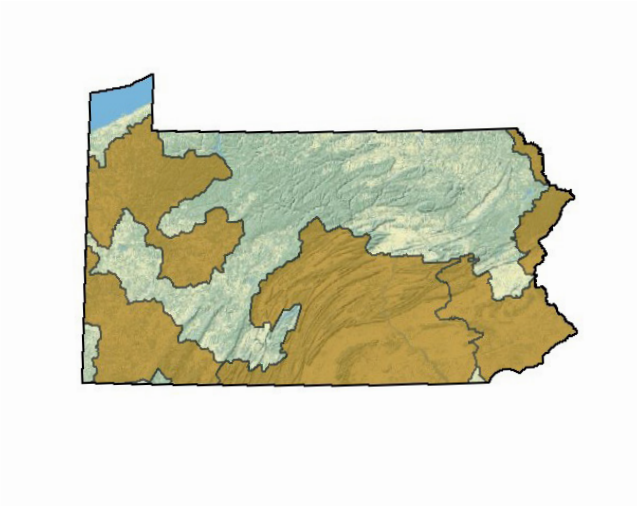
Blue Camas Pollinator Restoration
Willamette Valley National Wildlife Refuge Complex

Blue camas cottonwood trees. Photo by USFWS

The enhancement of wetland and prairie habitats on private lands protected by a perpetual easement with the Natural Resources Conservation Service's Wetland Reserve Program (WRP) was the focus of this project. Many treatments have been incorporated at the Blue Camas WRP over the past four years to enhance both wetland and prairie habitats. Mowing and weed control were used annually to manage vegetation and trend the plant composition towards native and desirable cover. In the emergent marsh, reed canarygrass was treated and stands of cottonwood trees were removed from one of the wetlands to diversify the emergent wetland habitat characteristics at the site. Disturbance due to the cottonwood removal was used as an opportunity to augment the wetland with native seed, including wapato, bur reed, water plantain, and American sloughgrass. Primary trust species benefited include common yellowthroat, mallard, northern harrier, savannah sparrow, western meadowlark, willow flycatcher, yellow-breasted chat, and northern red-legged frog.

The 70-acre project area is comprised of approximately 85% wet prairie and 15% emergent marsh. The wet prairie units were restored in the previous decade, and since that original restoration there have been focused efforts to increase nectar resources in the prairie by increasing the density and diversity of wildflowers. Efforts have included augmentation with native seed mixes, planting of native wildflower plugs, mowing, and grass-specific herbicide treatments. Additionally, prescribed fire was previously used and was planned during this most recent enhancement project, but changes in Federal fire policy precluded our ability to utilize this important tool and historic driver of prairie habitats.

Pennsylvania Focus Areas

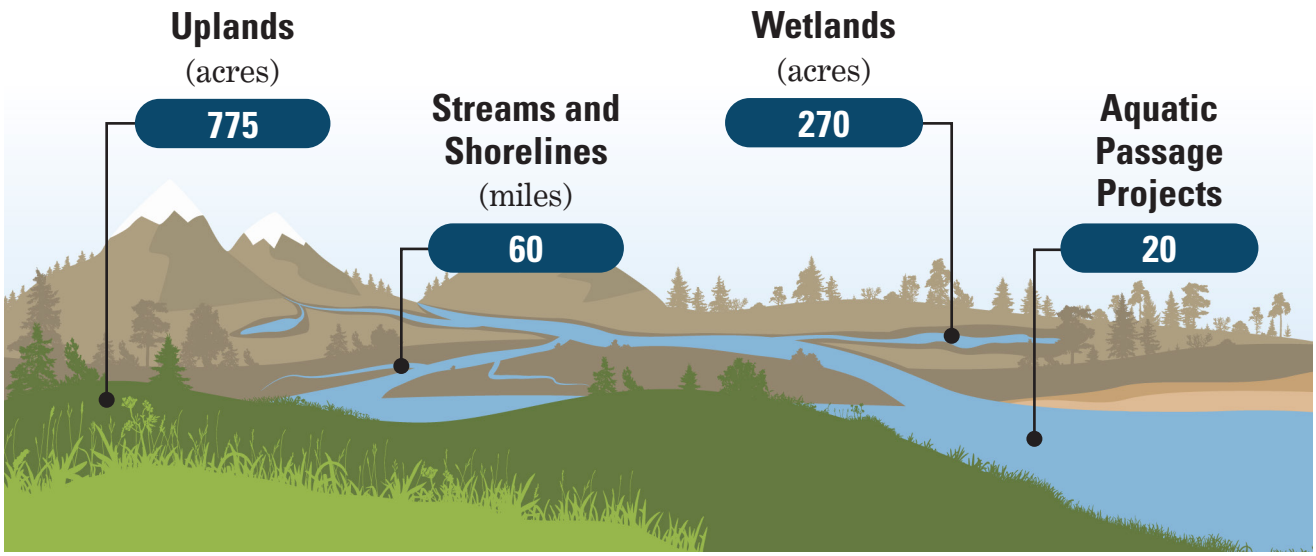


During restoration. Photo by USFWS

After restoration. Photo by USFWS

Before restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: early successional habitat, pollinator habitat, forests • **Wetlands:** emergent and scrub shrub wetlands, wet meadows • **Streams and riparian areas**

Species Examples

Migratory waterfowl; grassland birds; migratory shorebirds; migratory forest birds; pollinators; threatened and endangered species; at-risk herpetofauna, fish, mussels, and bats

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

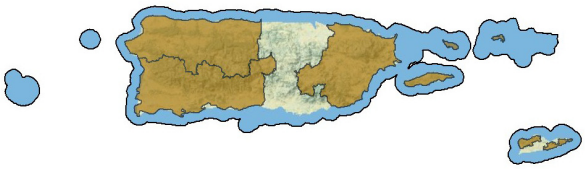
Fishing Creek

Before restoration: cattle and dog wallow hole. Photo by USFWS

Fishing Creek is an agriculturally impaired stream in Lancaster County. At this site, an unnamed tributary to Fishing Creek flows through an existing cow pasture, which resulted in steep, vertical banks lacking vegetation that provided little to no habitat for fish. The collapsing stream banks were constantly adding sediment to the stream, resulting in a wide, sediment laden bottom with few riffles, increased stream temperatures, and an overall lack of trout habitat. We restored a 1,300-foot section of this stream by installing fish habitat enhancement structures including 670 feet of mudsills, 495 feet of bankfull bench, seven log vanes, and six cross vanes. These structures provide fish habitat, stabilize the stream banks, reduce erosion and provide thermal protection for fish. In addition, cattle were fenced off of the stream bank and a riparian buffer was installed.

Species Conservation: We pledge to work to restore and manage habitats for threatened, endangered and at-risk species. Pollinator habitat enhancement projects will increase host plant numbers and expand frosted elfin, regal fritillary, and monarch butterflies. We will integrate wood turtle conservation efforts into our stream and wetland restoration programs. Habitat assessment and restoration work will focus on the recovery of brook trout, bog turtle, mussel species, Chesapeake logperch, massasauga, hellbenders, pollinators and at-risk migratory birds. We will continue to assist the Pennsylvania Game Commission and others with research and habitat expansion for the recovery of American woodcock, golden-winged warbler and Allegheny woodrats.

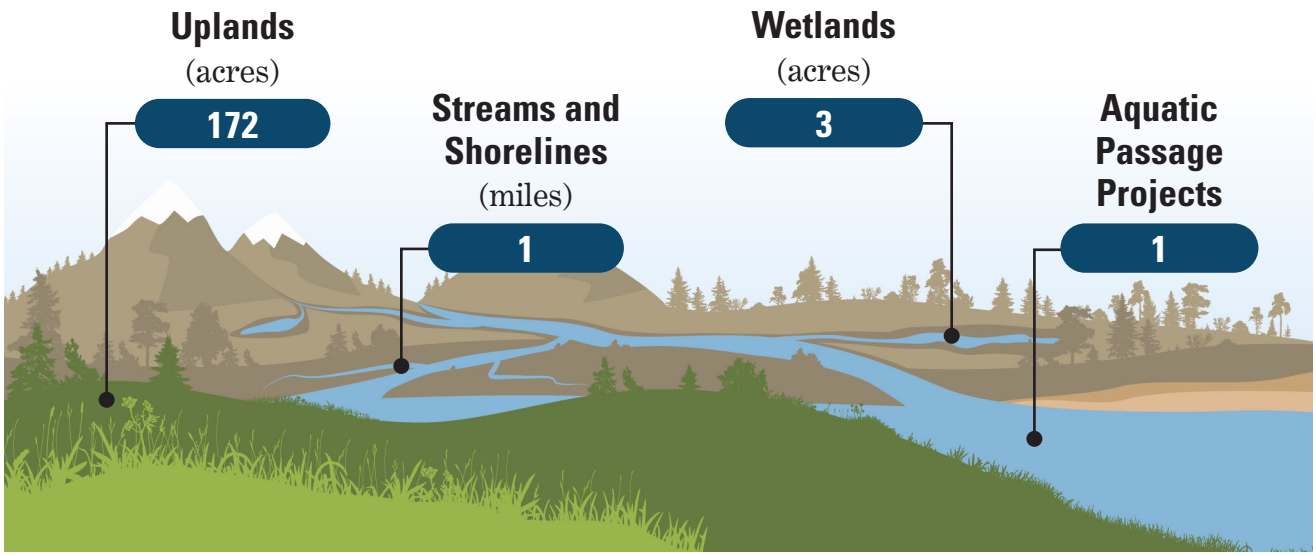
Puerto Rico- Caribbean Focus Areas



Protectores de Cuencas, Inc. planting native trees on a private property. Photo by Protectores de Cuencas, Inc.

USFWS and Protectores de Cuencas, Inc. with landowners during the certification visit. Photo by Protectores de Cuencas, Inc.

2022–2026 Conservation Targets



Habitat Examples

Subtropical forests: wet, moist, dry karst • **Wetlands:** lake, riverine, freshwater forested/shrub, freshwater emergent, estuarine/marine deepwater, estuarine/marine • **Aquatic and coastal ecosystems:** coastal/mangrove forests, sandy beaches, streams

Species Examples

Federally endangered species: Puerto Rican (PR) parrot, St. Croix ground lizard, *Agave eggersiana*, *Catesbaea melanocarpa*, Wheeler's peperomia, *Eugenia woodburyana*, Matabuey • **Federally threatened species:** PR crested toad, Cobana negra, Palma de Manaca • **At-risk species:** harlequin butterfly

More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Federal Trust Species Habitat Restoration Initiative in Private Lands of the Guajataca River Watershed in Puerto Rico

Private property selected for habitat improvement. Photo by Protectores de Cuencas, Inc.

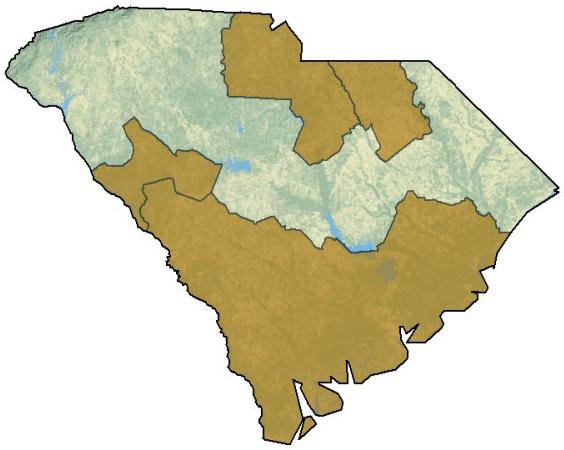
Partners for Fish and Wildlife (PFW) collaborated with local non-governmental organizations, Iniciativa Herpetológica Inc. and Protectores de Cuencas, Inc., to restore wildlife habitat for threatened and endangered species on private lands adjacent to the Guajataca River Watershed, complementing other ongoing landscape-level initiatives within the same geographic region. Conservation efforts integrated with science-based ecological management is critical to maintain the ecological functionality of this region.

Three landowner agreements were developed as part of this project to restore, enhance, and establish new essential habitat for the federally proposed threatened harlequin butterfly by planting native trees and shrubs to create biological corridors and increase food availability for the species. Other focal species included Matabuey, Palma manaca, Puerto Rican crested toad, and the Puerto Rican boa.

A total of 2,000 native tree and shrub species typically found in this area were planted within selected private properties located in the municipality of Isabela, Puerto Rico. The properties have high ecological value because they lie within the Subtropical Wet Forest Life Zone/Northern Karst region adjacent to the Guajataca State Forest. Some of the native species planted included almácigo, roble blanco, palo de vaca, péndula, and uva de playa.

PFW was substantially involved in the restoration actions performed on each property and collaborated with partners during the planning, implementation, and monitoring phases. The expert technical assistance PFW provided to the landowners ensured successful implementation of the habitat improvement practices.

South Carolina Focus Areas

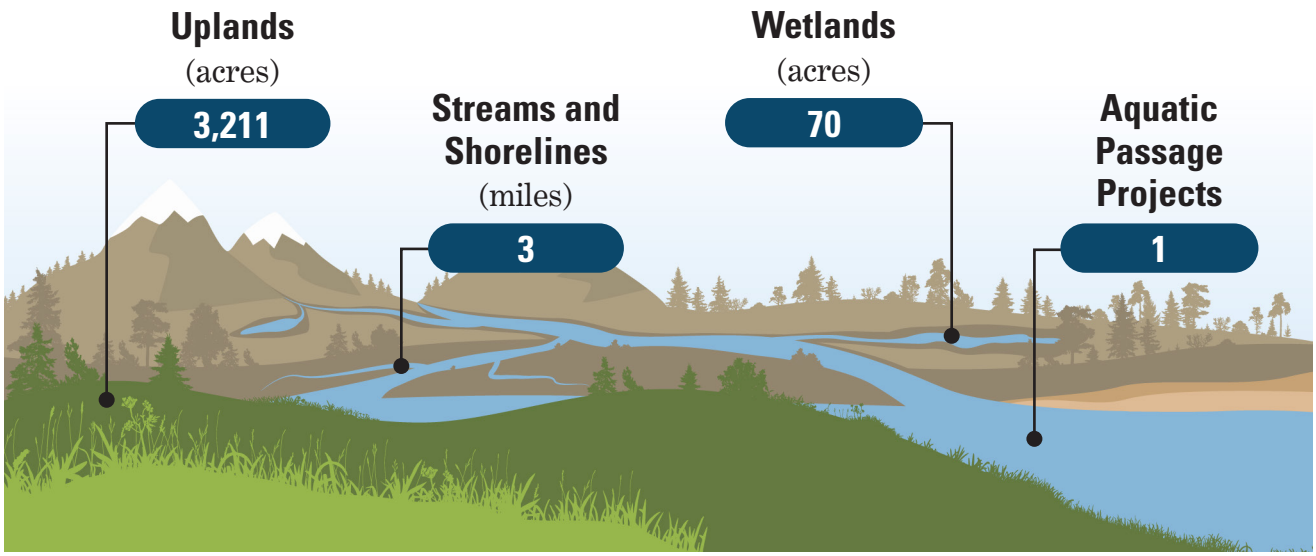


Inserting nest box for red-cockaded woodpecker.
Photo by USFWS

Red-cockaded woodpecker sitting on eggs in artificial nest cavity.
Photo by Charles Babb

Red-cockaded woodpecker eggs in artificial nest cavity.
Photo by Charles Babb

2022–2026 Conservation Targets



Habitat Examples

Uplands: longleaf pine • **Wetlands:** Coastal Plain, emergent marshes, managed wetlands • **Streams and riparian areas**

Species Examples

Federally endangered species: Carolina heelsplitter, Schweinitz's sunflower, red-cockaded woodpecker, American chaffseed, eastern black rail • **Federally threatened species:** frosted flatwoods salamander • **At-risk species:** gopher frog, eastern diamondback rattlesnake

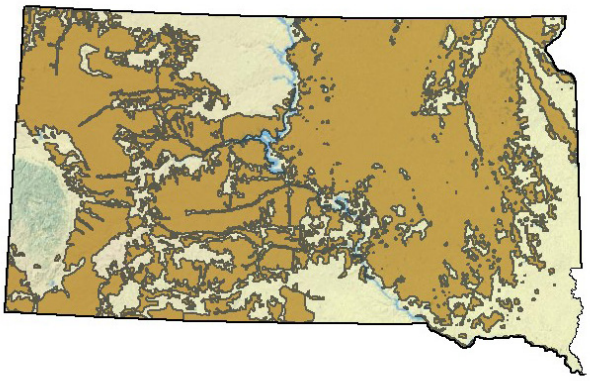
More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Longleaf Pine Ecosystem Restoration

Wiregrass response after thinning and hardwood control. Photo by Bret Beasley, USFWS

This 73-acre project focused on forest stand improvement practices on a stand of 35–90-year-old longleaf pine to restore red-cockaded woodpecker (RCW) habitat. The site was located within one mile of public land which is home to the second largest population of RCWs in South Carolina. Before the project began, the longleaf dominate stand had a mix of loblolly pine, a high density of turkey oak, and had not been burned in over 10 years. The landowner thinned the site to remove all non-longleaf pine species which dropped the basal area from 120 sq ft/acre to 65 sq ft/acre. The Turkey oak mid and understory was then mulched, and herbicide was applied to resprouting hardwoods. This site was then burned under prescription. After the habitat restoration activities were completed four artificial cavity inserts were installed. Within a few months, RCWs began occupying the cavities, and eventually laid eggs and raised young. The site is responding well after these treatments, native understory grass and forbs are recolonizing the area due to the increase in sunlight to the forest floor. The landowner is very pleased with the results of the project and has committed to burning on a 3–4-year fire return interval.

South Dakota Focus Areas

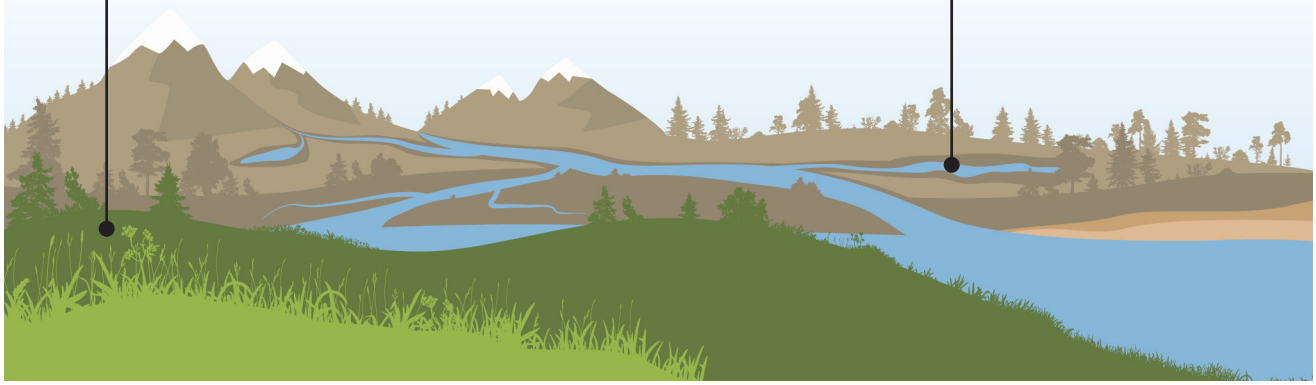


Wetland restoration completed by PFW in the South Dakota Prairie Pothole Region focus area. Photo by Jen Briggs, USFWS

2022–2026 Conservation Targets

Uplands
(acres)
100,000

Wetlands
(acres)
600



Habitat Examples

Uplands: tallgrass, shortgrass, and mixed-grass prairies • **Wetlands:** prairie potholes • Riparian corridors

Species Examples

Migratory waterfowl, grassland songbirds, shorebirds, pollinators, threatened and endangered species

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Bison-based Grazing Management Project in the South Dakota PFW Western Prairies Focus Area

Bison grazing on a PFW project in the Western Prairies Focus Area. Photo by Joe Nichols, USFWS

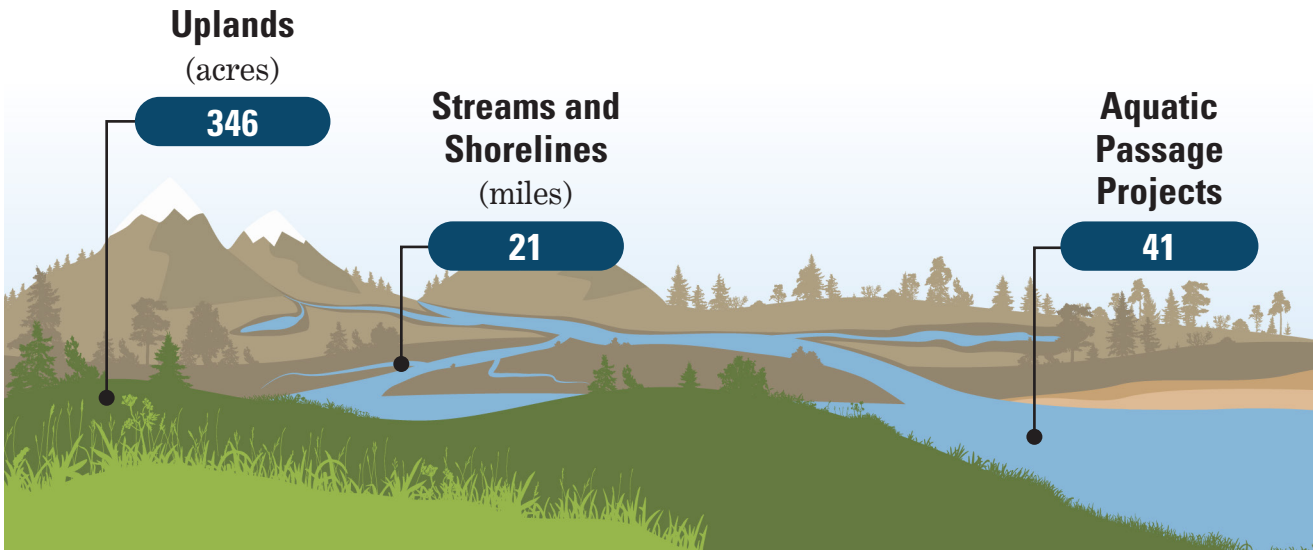
Partners for Fish and Wildlife (PFW) staff collaborated with Pheasants Forever, the Natural Resources Conservation Service (NRCS) and a local rancher to implement a 1,927-acre bison-based grazing management plan in the South Dakota PFW Western Prairies focus area. PFW staff worked closely with the landowner to install two strategically located water tanks in separate grazing cells in support of enhanced rangeland management and stewardship. Pheasants Forever and NRCS provided critically important technical assistance and outreach to help assure a successful project.

The PFW project was completed in October 2021 and now complements a larger 44-paddock grazing management system that spans over 41,000 acres of mixed and shortgrass native prairie. The entire system provides high quality nesting habitat for a wide variety of grassland songbirds including grasshopper sparrows and western meadowlarks. The South Dakota PFW Program used a new generation of spatially-explicit decision support tools (DST) developed by the United States Fish and Wildlife Service Habitat and Population Evaluation Team (HAPET) to help inform project selection and document benefits to high priority grassland songbirds. The project exemplifies the South Dakota PFW Program's continued emphasis on delivering grassland bird conservation by enhancing working rangelands throughout western South Dakota. The new generation of DSTs for grassland bird conservation provided by HAPET have helped confirm the importance of previous PFW projects and provide additional resources to refine future project selection and delivery.

Tennessee Focus Areas

Before restoration: eroding streambank with no riparian buffer. Photo by NRCS

2022–2026 Conservation Targets



Habitat Examples

Uplands: glade/barren/woodland complexes, caves/karst, headwater wetlands • **Stream/Riparian:** riparian areas, instream, streambanks

Species Examples

Federally endangered species: leafy prairie-clover, Indiana bat, slabside pearlymussel • **Federally threatened species:** spotfin chub, rabbitsfoot, white fringeless orchid • **At-risk species:** Cumberland moccasinshell, Tennessee cave salamander, striated darter

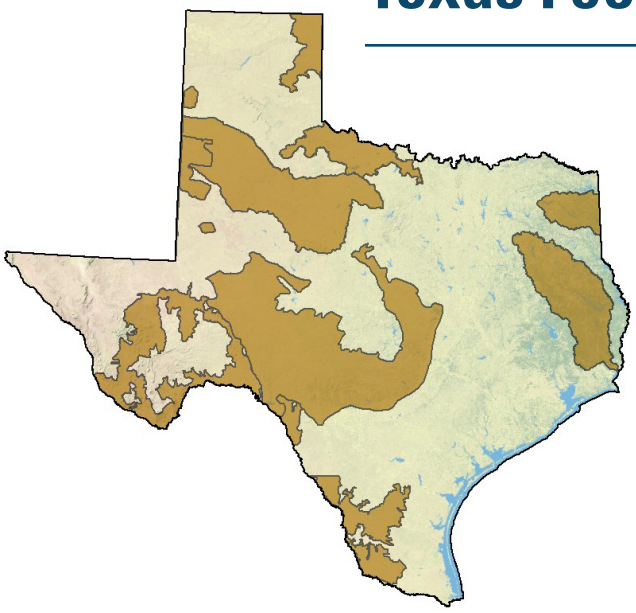
More information available in the Southeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Duck River Restoration

After restoration: stabilized streambank with riparian buffer and livestock excluded. Photo by Robby Cogburn, USFWS

The Duck River is widely recognized as one of the most biodiverse aquatic ecosystems in North America, harboring a variety of freshwater species, including the federally endangered pygmy madtom (*Noturus stanauli*). Conserving aquatic resources found in this system involves addressing sources of non-point source pollution by securing or replanting forested riparian buffers, installing livestock exclusion fencing and alternative water sources, and stabilizing failing streambanks. The Tennessee Partners for Fish and Wildlife (PFW) Program, along with State and Federal partners, worked with a landowner to stabilize several hundred feet of streambank, install two acres of riparian buffer, and exclude livestock from the Duck River. These conservation delivery efforts target priority recovery actions for the madtom, along with several other listed and at-risk mussel species by reducing sedimentation and turbidity. This project demonstrates how landowners can meet their goals of maintaining working lands and ensuring sensitive ecosystems are conserved.

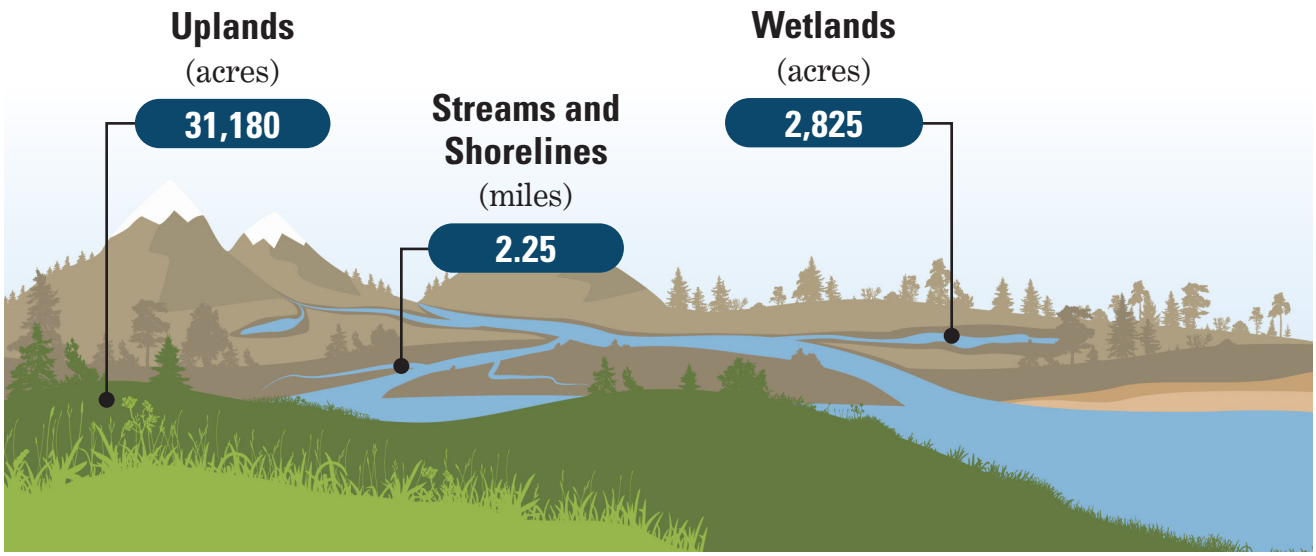
Texas Focus Areas



Prescribed burn. Photo by USFWS

Ribelin family. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Bottomland hardwoods, pine forests, Great Plains, shortgrass prairie, prairie streams, playas, oak savannah, riparian, Neches River

Species Examples

Freshwater mussels, paddlefish, red-cockaded woodpecker, lesser prairie-chicken, sharpnose shiner, whooping crane, kangaroo rat

More information available in the Southwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Restoring Fire Frequency back into Native Habitats of West Texas

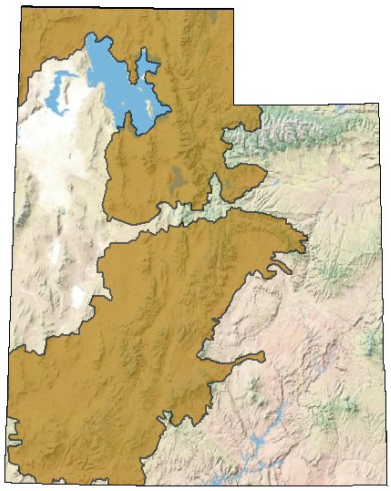
Monarch butterfly. Photo by Dan Duchscherer, USFWS

Partners for Fish and Wildlife (PFW) worked with the Ribelin family to restore native vegetation on the Ribelin Ranch in Stonewall County, Texas. The Ribelin family wanted to promote conservation of monarch butterflies and grassland birds while maintaining their livestock grazing operations. The landowners decided prescribed fire was the best tool to achieve their goals. PFW assisted the landowners by paying for State approved fire contractors to complete the burn. The flexible fire policy allowed for the use of State resources to implement fire management actions, which is necessary when Federal fire resources are unavailable.

In October 2021, the partnership set up and burned two burn units to start getting the property back into a fire frequency program more conducive to native grasslands. Areas were identified by the landowner and PFW to utilize patch burn grazing, a grassland management practice designed to benefit wildlife habitat and livestock production through the application of prescribed fire followed by focused livestock grazing. This technique increases vegetation diversity and structure. Cool season grasses dominated the targeted units, but with the removal of the dense growth and some livestock pressure, the Ribelin's now have a diverse mix of both cool and warm season grasses. Milkweed was planted within the burn units to promote recovery of the monarch butterfly. Currently, the Ribelin's have over 230 milkweed plants on their property.

PFW continues to work with the Ribelin Ranch to find additional areas to implement fire on the landscape. The Ribelin Ranch serves as a model for voluntary prescribed fire practices with neighbors and the local community.

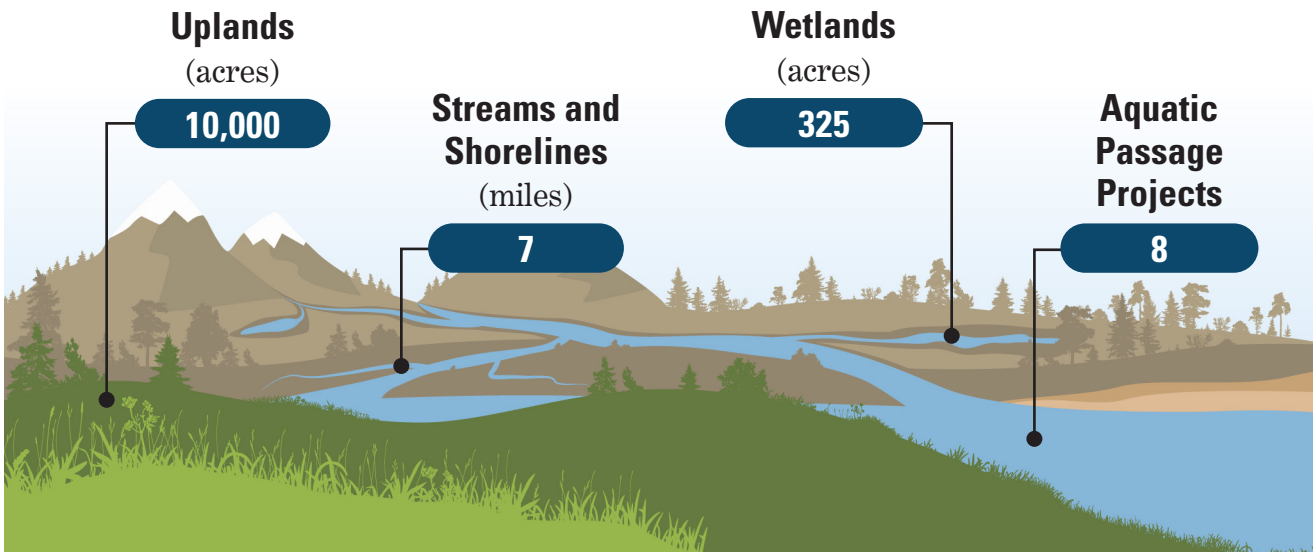
Utah Focus Areas



A sagebrush sparrow feeding in the sagebrush. Photo by Tom Koerner, USFWS

Before restoration. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Sagebrush-steppe, wetlands, in-stream and riparian habitat

Species Examples

Sagebrush obligate birds (e.g., sage thrasher, Brewer's sparrow), migratory birds (e.g., cinnamon teal), wading birds (e.g., white-faced ibis), native fishes (e.g., cutthroat trout), pollinators (e.g., monarch butterfly), threatened and endangered species, sensitive species, western toad (boreal toad)

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Wet Meadow Restoration

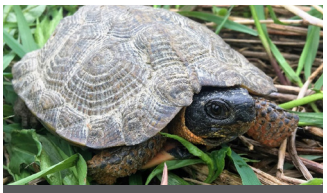

After restoration. Photo by USFWS

The Fremont Plateau in southern Utah is a hot spot for sagebrush-steppe wildlife. Partners for Fish and Wildlife (PFW) works with State and Federal agencies, non-governmental organizations, landowners, grazing associations, and other conservation partners to address needs for priority habitats, species, and threats, identified by partners as being important for conservation and restoration. This area is important for greater sage-grouse, sagebrush obligate songbirds, small mammals, pollinators, and big game. This project falls within an identified Bird Habitat Conservation Area with sagebrush-steppe and wetland habitat listed as priority habitats types for conservation. Sagebrush dependent species such as sage-grouse, sagebrush sparrow, and Brewer's sparrow are listed as priority birds needing conservation practices implemented here. PFW worked with landowners and other partners to plan and implement wet meadow restoration. In response to being asked what the vision for this project was, PFW said, "take this thin green sponge and make it a much bigger green sponge". Mission accomplished! What a difference a year, some management changes, and some conservation work makes. The photos seen here were taken one year apart, on October 6, 2020, and October 6, 2021. The water was in a trench and staff worked to slow the flow and spread the water out across the meadow. This was completed using hand-built rock structures with native rock and local contractors. This kind of wetland restoration restores natural soil hydrology that benefits soils, wetland and grassland plants, pollinators, insects, birds, livestock, big game, mollusks, small mammals, and people.

This 2021 project is part of an ongoing targeted approach to habitat restoration in the area to maximize watershed scale ecosystem benefits, regardless of landownership.

Vermont Focus Areas

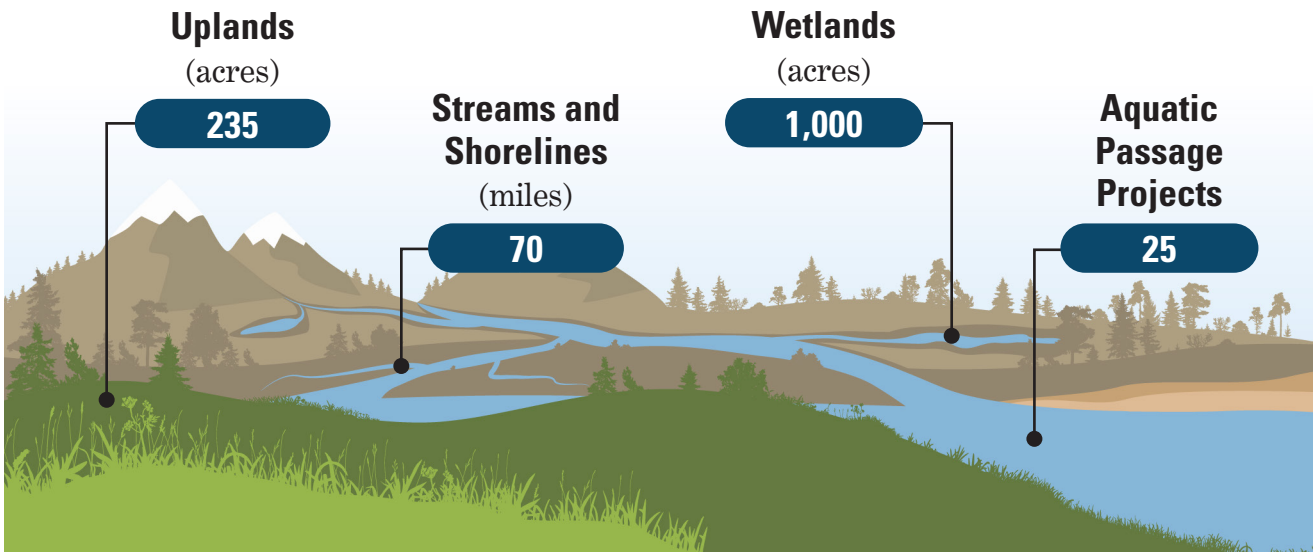
Riparian buffer establishment. Photo by USFWS



Young male wood turtle in a restoration area. Photo by USFWS

Redstart Forestry crew members planted nearly 8,000 bareroot stems in the restoration area. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: young forest • **Wetlands:** emergent, forested, scrub-shrub • **Stream/Riparian:** riparian floodplain forest

Species Examples

Wood turtle, golden-winged warbler, olive-sided flycatcher, American black duck, pie-billed grebe, brook trout, American woodcock, Indiana bat, land-locked Atlantic salmon, lemon cuckoo bumblebee

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Restoring Habitat for Wood Turtles

Fencing installed to conserve 26 acres. Photo by USFWS

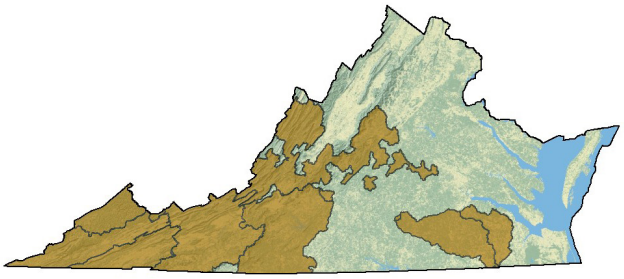
Partners for Fish and Wildlife (PFW) worked with State, Federal, and local partners to restore 26 acres of degraded floodplain to benefit high-priority fish and wildlife species. The project area has a long history of agricultural use; prior to restoration, the floodplain was hayed and intensively grazed. In partnership with the Vermont Land Trust and the State of Vermont's River Corridor Easement Program, 26 acres of land along the Missisquoi River and Coburn Brook were removed from agricultural production and protected in perpetuity.

The area was planted with native trees and shrubs. PFW prepared the site by applying herbicide to reduce grass pressure and facilitate the natural regeneration of native species from the seed bank. Approximately 8,600 feet of hi-tensile fence was installed to exclude livestock from the restoration area. Three stream crossings were installed to allow access to grazing areas on both sides of the river.

At-risk wood turtles were the priority restoration species for this project. There is suitable nesting habitat in the immediate project area, making this site a high priority for floodplain restoration activities. This project is also an important component of the U.S. Fish and Wildlife Service's goal of restoring wildlife habitat to benefit Federal trust species (migratory birds and interjurisdictional fish) and pollinator species in Vermont.

PFW provided financial and technical assistance for this project. In conjunction with the Missisquoi River Basin Association, the Vermont Agency of Agriculture, and the Natural Resources Conservation Service's Environmental Quality Incentives Program, PFW designed the restoration plan and oversaw implementation. PFW also used equipment and staff to prepare the site and oversaw follow-up maintenance. The Vermont Land Trust provided funding for the restoration work and holds the easement for the property.

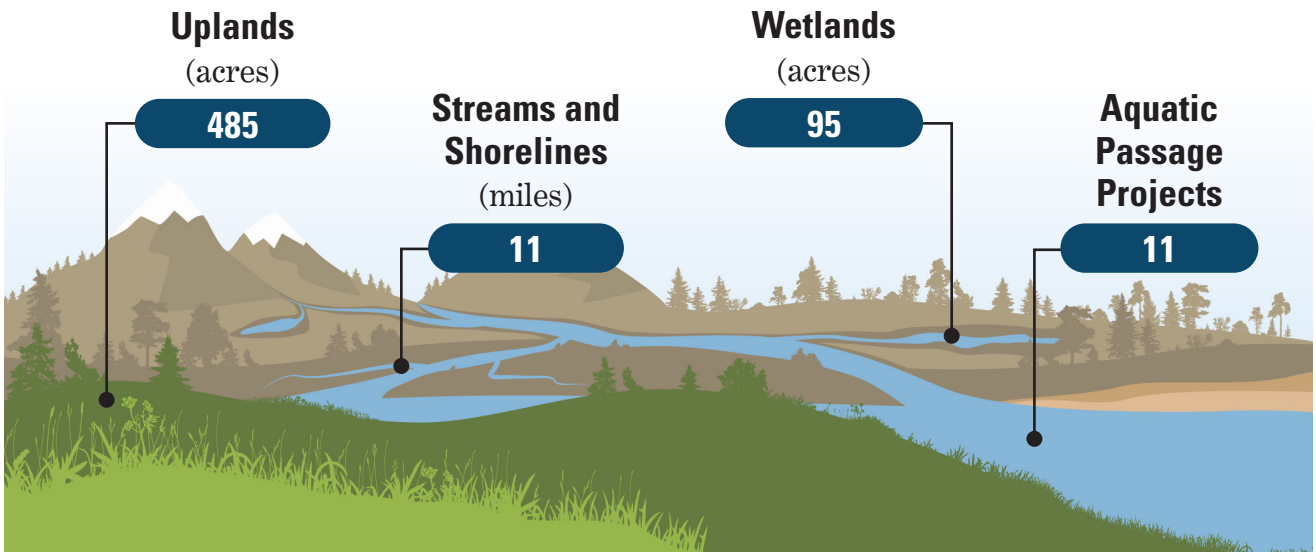
Virginia Focus Areas



Pre-restoration. Photo by USFWS

As-built showing narrowed bankfull channel. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: Forested and herbaceous areas • **Wetlands:** riparian (forested/shrub), emergent wetlands • **Stream/Riparian:** Appalachian/Piedmont streams and corridors

Species Examples

Neoptropical migratory birds; federally threatened and endangered birds, crayfish, freshwater mussels, and freshwater fishes; at-risk birds, amphibians, and pollinators

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

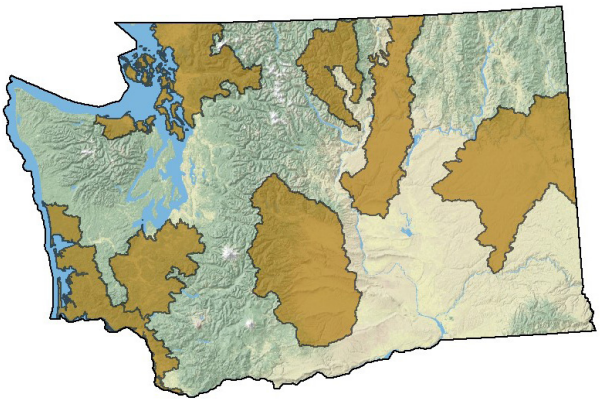
South Fork Clinch River Restoration

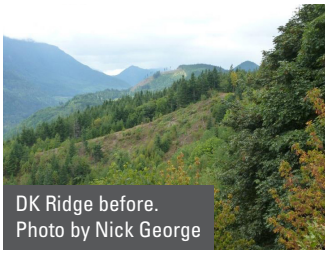
Restored reach along the North Fork Roanoke River with developing riparian buffer of native grasses, forbs, shrubs, and trees. Photo by USFWS

This project restored a 2,500-foot reach of the North Fork Roanoke River (NFRR) along adjacent working farms in Montgomery County, VA. Under this agreement, streambank stabilization, instream habitat improvement, and riparian habitat restoration was applied to the NFRR corridor. This included the establishment of native pollinator meadows and over 8 acres of riparian habitat. In addition, agricultural improvements such as livestock exclusion fencing along waterways, alternative watering sources, and rotational grazing system infrastructure was applied to these working lands. This reach of the NFRR was experiencing bank failure and extensive erosion along both banks due to historic unrestricted livestock access and a lack of a functioning riparian buffer. These conditions created an over-widened channel, leading to an increase in bank toe scour, bank failure, excess fine sediment deposition, and mid-channel bar formation. The restoration project narrowed the bankfull channel as needed, reconstructed and stabilized banks, and restored floodplain connectivity. A number of rootwad revetments, soil lifts, and soil lifts with toe wood were installed in order to stabilize the toe of the bank, reconstruct degraded banks to bankfull elevation, establish stable channel dimensions, and provide in-stream habitat. Species benefitting from this project include the federally endangered Roanoke logperch (Percina rex), other freshwater fish and mussels, and numerous riparian obligate species (e.g., Louisiana waterthrush, mallard, wood duck, yellow warbler).

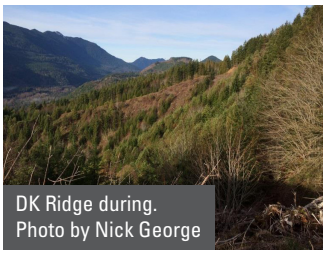
Partners for Fish and Wildlife (PFW) staff served as the project manager and lead partner on river corridor restoration involved in all aspects of project planning and coordination, survey and design, permitting and compliance, project implementation, construction management and oversight, and management guidance. YouTube video: https://www.youtube.com/watch?v=EFoTMTf2DUQ.

Washington Focus Areas





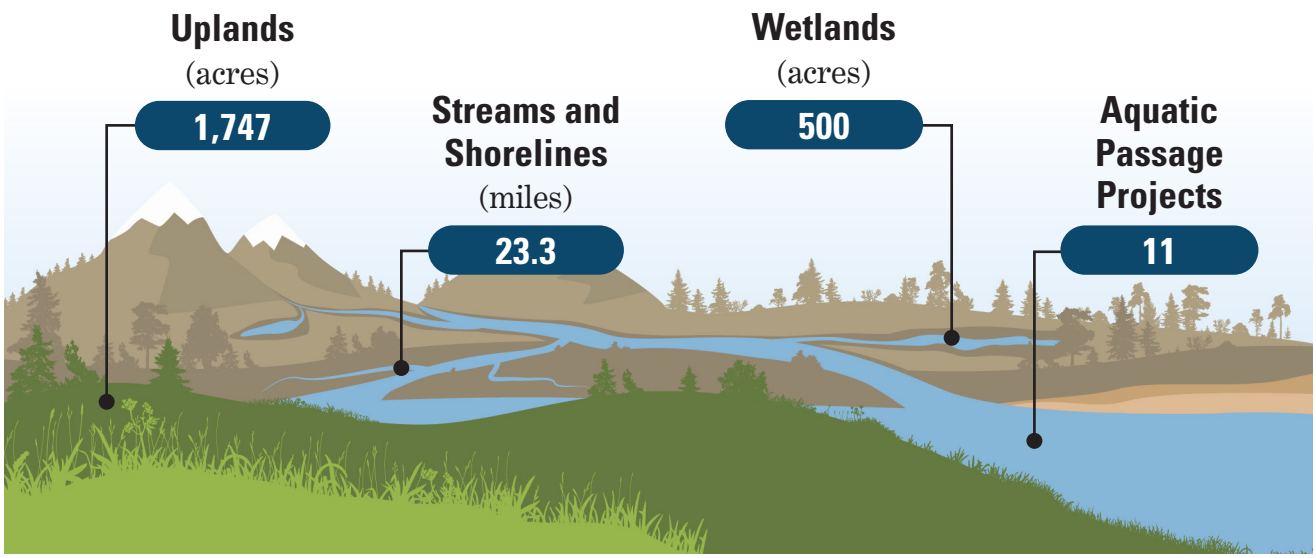
DK Ridge before.
Photo by Nick George



DK Ridge during.
Photo by Nick George

DK Ridge after. Photo by Nick George

2022–2026 Conservation Targets



Habitat Examples

Uplands: shrub-steppe, prairie, mixed-old growth forest • **Wetlands:** Shallow emergent • **Stream/Riparian:** perennial and intermittent streams, wet meadow

Species Examples

Greater sage-grouse, Columbian sharp-tailed grouse, Oregon spotted frog, bull trout, island marble butterfly, Columbia Basin pygmy rabbit

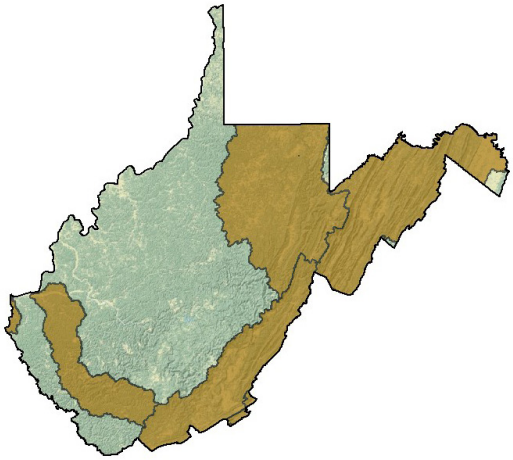
More information available in the Pacific Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Dan Kelly Ridge Restoration for Pollinators


DK Ridge view. Photo by Nick George

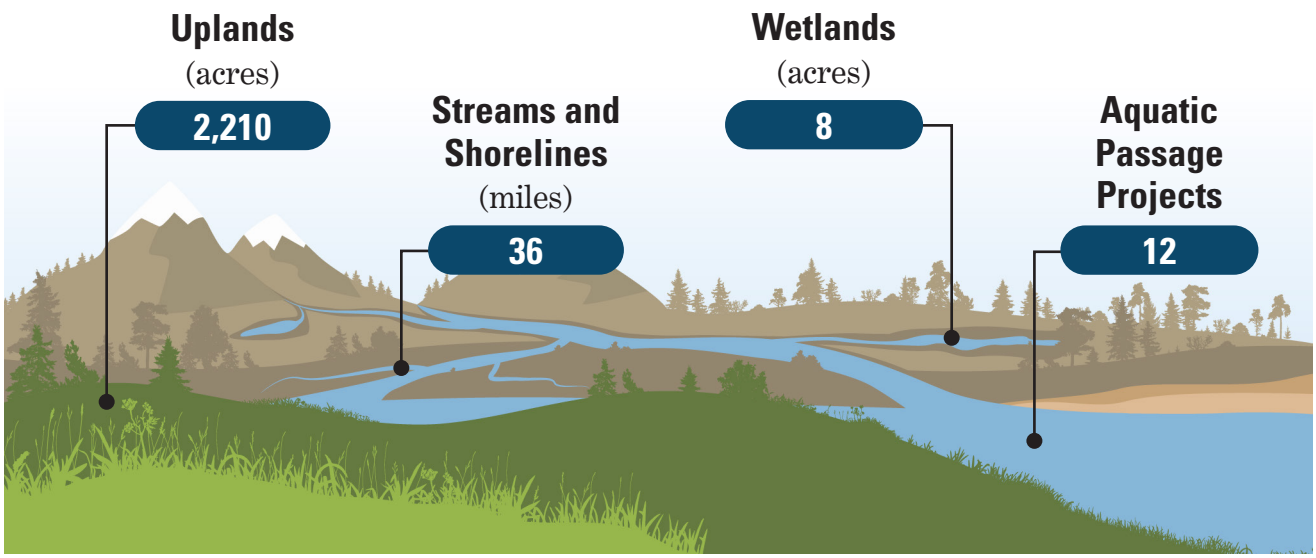
Taylor's checkerspot butterfly is a Washington State and federally listed endangered butterfly. Checkerspots inhabit open, grassy or herbaceously vegetated sites, including prairies, coastal cliff banks and beach deposits, and shallow-soiled balds and timber harvest openings that occur within a forested matrix, adjacent to already occupied habitat. The balds where the checkerspots persist in the Dan Kelly Ridge area are relatively high quality because there are fewer invasive plants than at most sites. The greatest threat to these areas is encroachment of Douglas Firs, which used to be prevented by more frequent fires. Restoration of the balds on the Dan Kelly Ridge included removal of encroaching conifer, removal of noxious weeds, and seeding of native bald species and checkerspot host plants. Work done under this agreement restored over seven acres of habitat and benefitted objectives outlined in the Taylor's checkerspot butterfly recovery plan, as well as habitat criteria for many sensitive and declining pollinators of the Olympic peninsula. Partners included the Center for Natural Lands Management and the Washington Department of Fish and Wildlife.

West Virginia Focus Areas



Installing conservation fencing conserves at-risk species in WV. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: forested uplands and grasslands
- **Wetlands:** freshwater emergent wetlands, marshes
- **Streams and riparian areas**

Species Examples

Threatened, endangered, and at-risk species, freshwater mussels, at-risk pollinators, clubshell mussel, snuffbox mussel, longsolid mussel, round hickorynut mussel, Cheat Mountain salamander, eastern hellbender, rusty patched bumble bee, monarch butterfly, cerulean warbler, golden-winged warbler, brook trout

More information available in the Northeast Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Pendleton County Fencing Project


Construction phase of restoration. Photo by USFWS

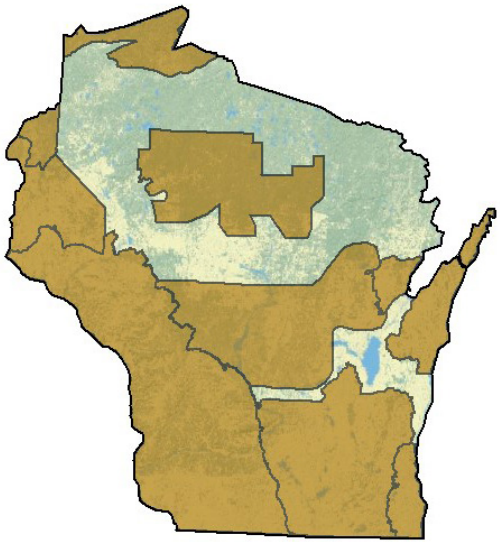
Partners for Fish and Wildlife (PFW) worked with the landowner, Trout Unlimited (TU) and Farm Service Agency (FSA) to enhance and protect the streambank and riparian upland, and improve pasture management on a privately owned farm in Pendleton County. PFW and FSA met with the landowner on site to develop the conservation plan. The project was completed using Conservation Reserve Enhancement Program cost share funding, in-kind contributions from project partners, and landowner out-of-pocket expenses. The PFW and TU conservation crew installed fencing using TU staff and United States Fish and Wildlife Service equipment and vehicles.

In West Virginia, livestock exclusion/conservation fencing enhances nesting, spawning, and foraging habitat features for native fish and wildlife. These practices reduce sediment runoff that can adversely affect water quality and spawning habitat for fish. Restored vegetation also provides a protective corridor for freshwater mussels, turtles, bats, pollinators, and migratory birds.

On this working landscape, enhancing pasture management improved farm profitability by concentrating nutrient deposits in the pasture. Clean drinking water and stable footing for livestock reduced veterinary expenses and increased herd productivity. Removing livestock from unstable soils helped protect the landscape from erosion and increased hunting, fishing, and trapping opportunities because native habitat was restored.

The restored landscape now features deep root systems established in highly vegetated soils along the stream, which absorb surface water more effectively increasing flood resiliency on the land and in communities downstream. Threatened, endangered, and at-risk species that benefited from this project include the Indiana bat, northern long-eared bat, rusty patched bumble bee, Virginia big-eared bat, and wood turtle.

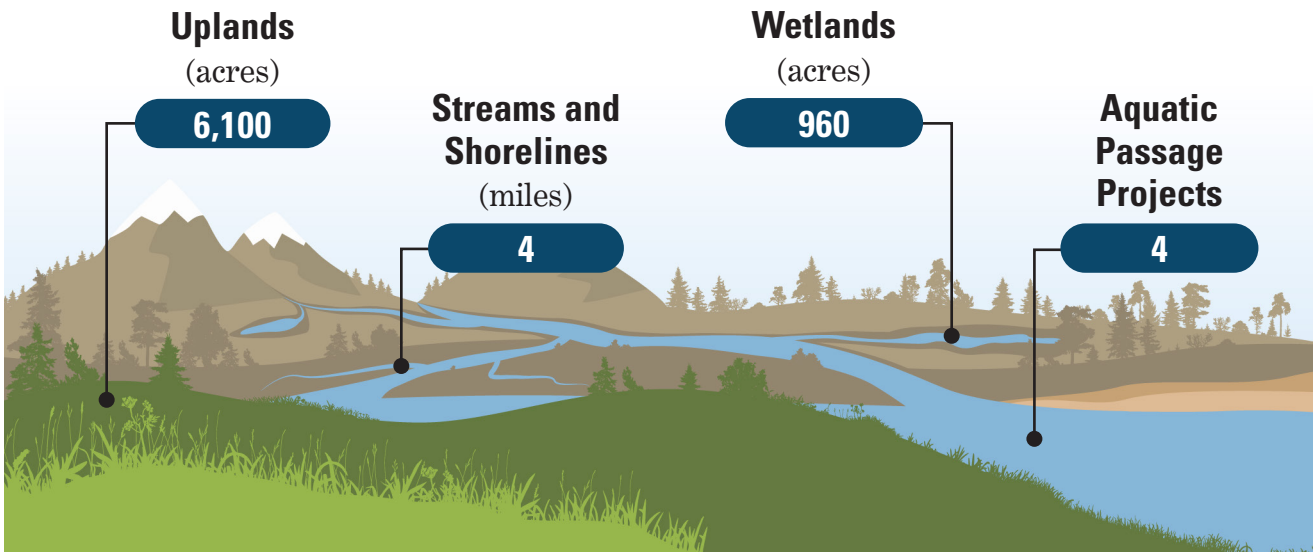
Wisconsin Focus Areas



Happy Wisconsin landowner with his new Karner blue butterfly habitat. Photo by USFWS

Restoring Karner blue butterfly habitat in Wisconsin. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Prairie, forest, wetlands, riparian areas

Species Examples

Karner blue butterfly, rusty patched bumble bee, mallard, blue-winged teal, wood duck, Henslow's sparrow, golden-winged warbler, bobolink, eastern meadowlark

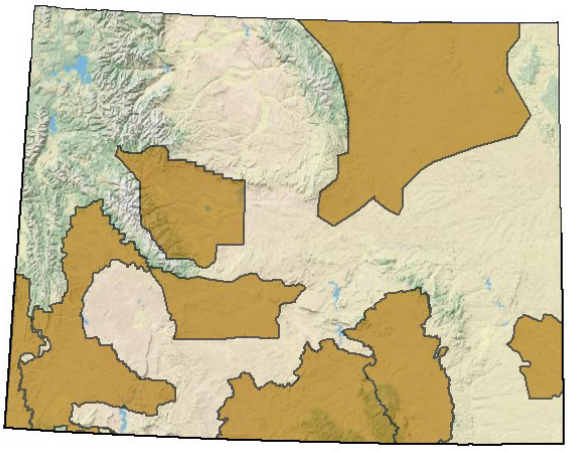
More information available in the Midwest Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Recovering Endangered Karner Blue Butterflies in Wisconsin

Karner blue butterfly on hawkweed. Photo by Joel Trick, USFWS

In 1995, Partners for Fish and Wildlife (PFW) began restoring habitat for the endangered Karner blue butterfly (KBB) in central Wisconsin. The KBB is an umbrella species for oak savanna, dry prairie, and pine barren habitats, and the species that rely on those habitats throughout much of the Midwest Region. However, the KBB is highly vulnerable to habitat degradation and loss of connectivity, both of which are significant threats to the species. Because well-managed areas with high connectivity are more valuable for the KBB than isolated patches of habitat, PFW works with private landowners to improve habitat connectivity and dispersal corridors for KBB by restoring habitat in and around viable populations that occur on protected lands.

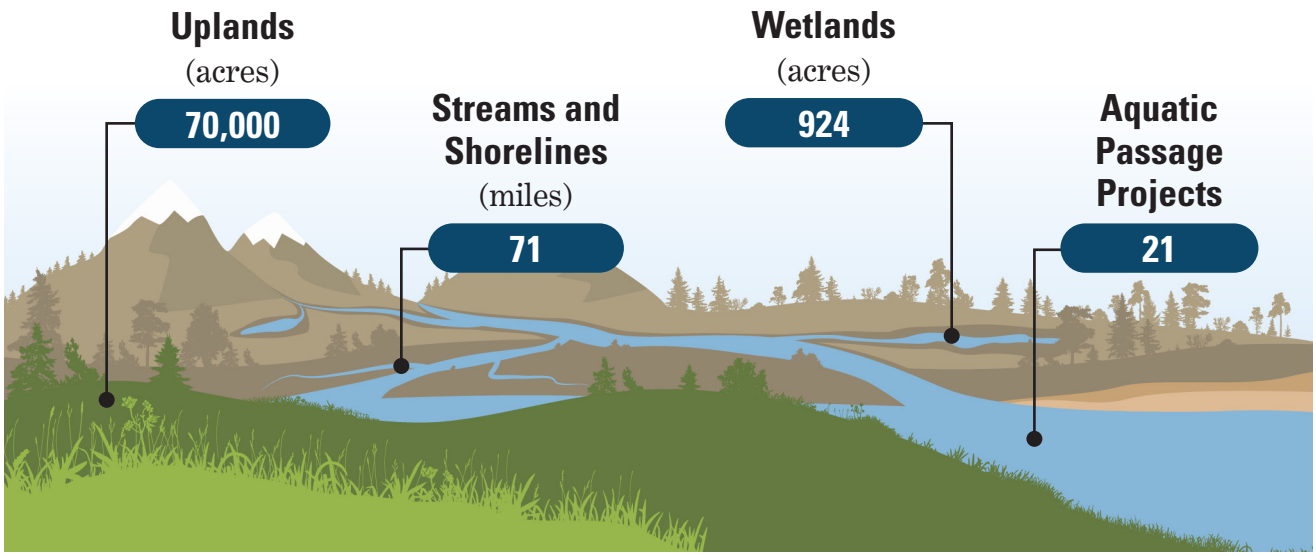
Wyoming Focus Areas



Sagebrush-steppe habitat of the Red Desert with Green Mountain backdrop. Photo by Mark Hogan, USFWS

Plains meet the Rockies. Photo by USFWS

2022–2026 Conservation Targets



Habitat Examples

Uplands: sagebrush-steppe, mixed-grass and shortgrass prairie • **Wetlands:** glacially formed potholes and lakes, flood-irrigated wetlands, alluvial floodplains, oxbow wetlands • **Stream/Riparian:** headwaters, perennial streams, Powder River, riparian corridors, springs

Species Examples

Migratory waterfowl, shorebirds, grassland birds, greater sage-grouse and other sagebrush obligate birds, high priority fishes, native plants, threatened and endangered species

More information available in the Mountain-Prairie Region Partners for Fish and Wildlife Strategic Plan: 2022–2026.

Lending Beavers a Helping Hand


Constructed beaver dam analog. Photo by USFWS

A high-intensity wildfire raced through the juniper-sagebrush habitat of our project area in the Green River watershed in the early 2000s and burned all the way down to the stream, habitat for Colorado River cutthroat trout. A flood event followed soon after and the stream incised dramatically. The riparian area has been slowly recovering since then, with beavers helping to restore the stream habitat. However, the steep slope of the stream puts significant stress on beaver dams that are being built from smaller sticks and branches—all that is available in the years following wildfire. Wyoming Partners for Fish and Wildlife and conservation partners including Trout Unlimited, Seedskadee and Cokeville Meadows National Wildlife Refuge, and the Montana Conservation Corps planned, surveyed, permitted, and built artificial beaver dam structures on 2,400 feet of stream in fall 2020 to help raise the streambed, increase pool habitat for fish, and encourage riparian plant growth. Beavers built on top of some of the structures later the same fall and in spring 2021. After one runoff, the streambed increased in elevation by 3 to 12 inches, and water depths at low flow within the stream increased by 2 to 10 inches.

Learn more about the conservation science and heart of the Partners for Fish and Wildlife Program
www.fws.gov/partners

Cover: Migrating sandhill cranes along the Central Platte River in Nebraska
Photo by Joe Milmoe, USFWS