

# Partners for Fish and Wildlife

## 2022 Annual Report



# PARTNERS FOR FISH AND WILDLIFE 2022 ANNUAL REPORT

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## MISSION

The Partners for Fish and Wildlife Program works toward achieving the mission of the Service, working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people.



Left Page: Crew building Post-Assisted Log Structures (PALS) in Idaho. ©Brittany Morlin/USFWS.  
Left photo: Volunteers removing old, impassable fencing from a project site in MT. ©USFWS.



Restoration team at Navajo Nation Betatakin Trail project in Arizona. ©USFWS.

## MESSAGE FROM THE CHIEF

### Celebrating Private Lands Conservation

Beginning in 1987, the U.S. Fish and Wildlife Service recognized that success of our mission hinged upon partnerships with private landowners. Rising to the challenge, visionaries started the Partners for Fish and Wildlife Program to work beyond the boundaries of the National Wildlife Refuge System.

The approach is simple and effective: engage willing partners, through voluntary habitat restoration and enhancement, to conserve valuable fish and wildlife habitat on their property and in their communities.

Over the past 35 years, we have partnered with more than 60,000 landowners, working together to care for more than 7 million acres of habitat for wildlife and people across America. In 2022, 250 U.S. Fish and Wildlife Service biologists completed 1,877 wildlife habitat projects across all states

and U.S. territories, restoring and enhancing 233,890 acres of uplands, 17,452 acres of wetlands and 280 miles of rivers and streams for fish, wildlife and plant species.

Over the past year, we have celebrated and evaluated our voluntary conservation efforts, reinvigorated connections with our stakeholders, increased our relevancy with new partners, expanded relationships with Native American tribes, created new urban youth partnerships and begun to build a culture of communicating science. Each day seems to bring a new set of challenges. Yet we continue to innovate and adapt at a rate far greater than we could have imagined.

This year, as we celebrate the 50th anniversary of the Endangered Species Act, we want to recognize the role of partners in protecting threatened and endangered species. Landowners who see the significance of their lands in the greater landscape are vital to endangered species recovery. These landowners not only conserve valuable habitat, but they also embody a conservation ethic that is passed to new generations.

The U.S. Fish and Wildlife Service is also welcoming and

mentoring the next class of biologists. New energy coupled with generations of knowledge helps foster the best conservation practices.

I look forward to working together with all of you in 2023 and beyond to continue to build landscapes where people and wildlife thrive.



Cynthia Martinez, Chief  
National Wildlife Refuge System, U.S.  
Fish and Wildlife Service



USFWS National Wildlife Refuge System Chief Cynthia Martinez.

**1,877**  
PROJECTS

**\$14.69M**  
PFW PROJECT INVESTMENT

**\$54.3M**  
PARTNER CONTRIBUTION

**\$69M**  
TOTAL PROJECT INVESTMENT

**\$1:3.7**  
LEVERAGE

**279.8**  
STREAM AND RIVER MILES

**233,889**  
UPLAND ACRES

**17,452**  
WETLAND ACRES

**60**

**FISH PASSAGE STRUCTURES**

# NATIONWIDE ACCOMPLISHMENTS



## WORKING TOGETHER

Working with 1,528 landowners and 800 partnering organizations, we completed 1,877 collaborative restoration and enhancement projects in 2022.

Prescribed fire crew at a PFW project in Louisiana. Photo by Robert Ogle.



Shady Acres Duck Club restoration partnership, Imperial County, California. ©Jonathan Snapp Cook/USFWS.

The Partners for Fish and Wildlife program provides technical and financial assistance to landowners interested in restoring and enhancing wildlife habitat on their land. Projects are custom-designed to meet landowners' needs.

Since the program's start in 1987, more than 50,000 landowners have worked with Partners for Fish and Wildlife biologists to complete 60,000 habitat restoration projects across 7 million acres.

Partners for Fish and Wildlife projects are voluntary. Participating landowners continue to own and manage their land to serve their needs while they improve conditions for fish, wildlife and plants.

The health of the country's fish and wildlife populations depends on private landowners, who manage more than two-thirds of the country's land. Many Partners for Fish and Wildlife projects take place on working landscapes such as forests,

farms and ranches. Our goal is to keep lands working: increasing sustainability and yield while improving habitat for wildlife. We focus our efforts on areas of conservation concern, such as upland prairies, wetlands, rivers and streams. Projects range in size and scope to benefit federal trust species including migratory birds, endangered, threatened and at-risk species.

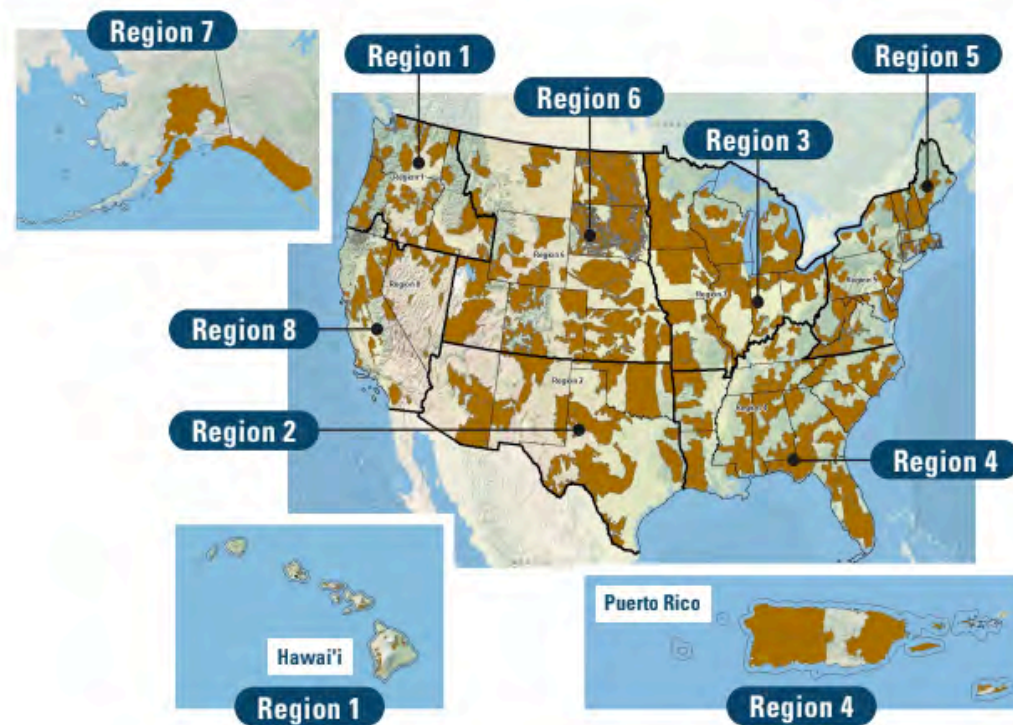
**↑ 1,528**  
New Landowners Enrolled in 2022

**↑ 251,342**  
Private Landowner Acres Restored in 2022

**↑ \$1:3.7**  
Federal Dollars Leveraged with Partners

# STRATEGIC CONSERVATION

## GEOGRAPHIC FOCUS AREAS



## 2022-2026 STRATEGIC PLANS

### A Comprehensive Approach to Conservation Planning and Delivery

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 National Strategy presents the vision, goals, and national priorities. 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.

## NATIONAL INITIATIVES

### 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.

### 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.

### 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 create, we help create employment opportunities and restore natural spaces that educate and engage young people.

## STRATEGIC PRIORITIES

### 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.

### 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.

### 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 in which humans depend, and the PFW Program can work with diverse partners to support conservation actions to help them respond to climate change stressors.

# HEADQUARTERS ACCOMPLISHMENTS



## 1987-2022: 35 YEARS OF PRIVATE LANDS CONSERVATION

Working together we have delivered more than 7 million acres of habitat for wildlife, people and places across America. This has been made possible by the tireless contributions of each and every member of the PFW family and broader cooperative conservation community. Our cooperative efforts have contributed to the de-listing, the down-listing or have prevented Endangered Species Act listing, of 19 species such as the greater sage-grouse, Delmarva fox squirrel, fluvial Arctic grayling, Oregon chub, Louisiana black bear and New England cottontail.

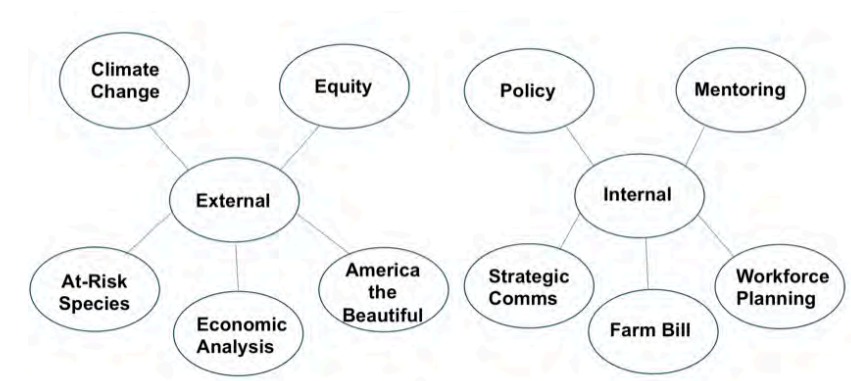
## CELEBRATING 35 YEARS

Private Lands Partners Day 2022 was held October 4-6 in Fayetteville, Arkansas, a rapidly growing part of the country that is important for agriculture and is rich in natural resources. Almost 150 people attended from 29 states and Puerto Rico. On the first day, attendees participated in a field tour where they saw private lands partnership work including stream bank stabilization and restoration, prairie and forest management, as well as agricultural operations integrated with natural resource management including a poultry growing operation and a dairy. On the second day, attendees were in a conference setting where they were welcomed to Arkansas and to the event by a broad variety of state and federal conservation and agricultural leaders, where they heard about broad-based, landowner-led private lands conservation partnerships from around Arkansas and across the country. PFW staff presented at 35th Anniversary video and hosted partner recognition awards for PFW partners from around the country.

Throughout the year, Partners for Fish and Wildlife staff across the country worked to reinvigorate connections with our stakeholders, increase our relevancy with new partners, connect with Service leadership, expand relationships with Native American Tribes, create new urban youth partnerships, and build a culture of communicating science. We have come a long way in the past thirty five years, and we look forward to continuing to partner with the outstanding community leaders and the private land stewards of our Nation's land, water, and wildlife.

## PROGRAM EVALUATION TEAMS

As part of our 35th Anniversary milestone, PFW utilized the opportunity to evaluate our business practices by developing ten teams that worked collaboratively to reflect upon, evaluate and develop recommendations which will help to guide the next 35 years of PFW Program vision implementation. More than 90 staff from across the country met bi-weekly for six months to develop more than 160+ recommendations that will guide the future trajectory of the PFW Program. Evaluation team recommendations will be presented to the PFW National Leadership Team in early 2023 with emphasis on transitioning recommendations to implementation, where teams will guide the program in implementing an updated vision and national priorities for the PFW Program.



Many thanks to our world class staff, landowners and conservation partners who work hard and make sacrifices every day to move private lands conservation forward. We can't thank you enough and wish you a great start to 2023!

# FARM CONSERVATION

Keeping Working Lands Working



Rural landowners are some of our most important partners in conservation. By working in the right areas and applying best available science, wildlife conservation and sustainable agriculture can fit together like hand in glove.

USFWS photo.

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.



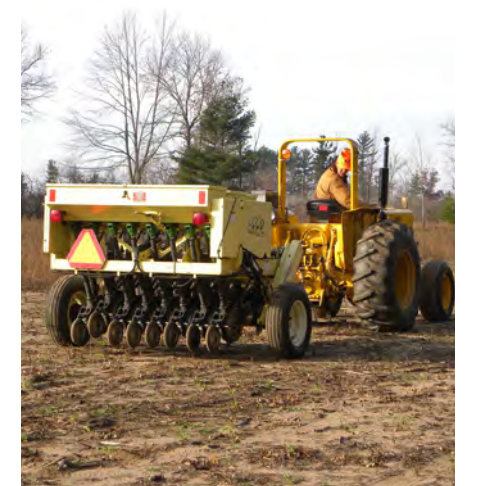
Ranchers working on a project in California. ©Conservation Media.

## IN 2022, THE FARM CONSERVATION PROGRAM:

- Provided technical assistance at the national, state and local levels in support of efforts by USDA's Natural Resources Conservation Service (NRCS) and Farm Service Agency to target Farm Bill resources to conserve high priority wildlife and their habitats, such as grassland birds, aquatic species, and pollinators, while also increasing habitat connectivity and ecosystem resilience to climate change.
- Tracked implementation of the 2018 Farm Bill and provided information updates on conservation program funding, rules, and policies, including additional conservation program funding provided to NRCS through the Inflation Reduction Act of 2022.
- Coordinated with State Fish and Wildlife agencies and other partners to leverage resources and maximize conservation opportunities offered by the Farm Bill.
- Identified opportunities to enhance the wildlife benefits of the Farm Bill in preparation for the 2023 reauthorization process.
- Worked with NRCS, as directed by Congress in the 2018 Farm Bill, to support implementation of the Working Lands for Wildlife, which offers regulatory predictability to agricultural producers who take actions to conserve declining species on their lands.
- Facilitated engagement by the agricultural community in pollinator conservation efforts.
- Coordinated implementation of the National Seed Strategy for Rehabilitation and Restoration with funding provided through the Bipartisan Infrastructure Act projects.



Heavy equipment used for instream restoration. ©USFWS.



Native prairie seeding. © USFWS.

**1,835**  
JOBS CREATED

**\$6.15**  
PER \$1 INVESTED IN  
ECONOMIC RETURNS

**\$149M**  
TOTAL ECONOMIC  
STIMULUS



# RESTORATION RETURNS

Creating Jobs and Stimulating Local Economies

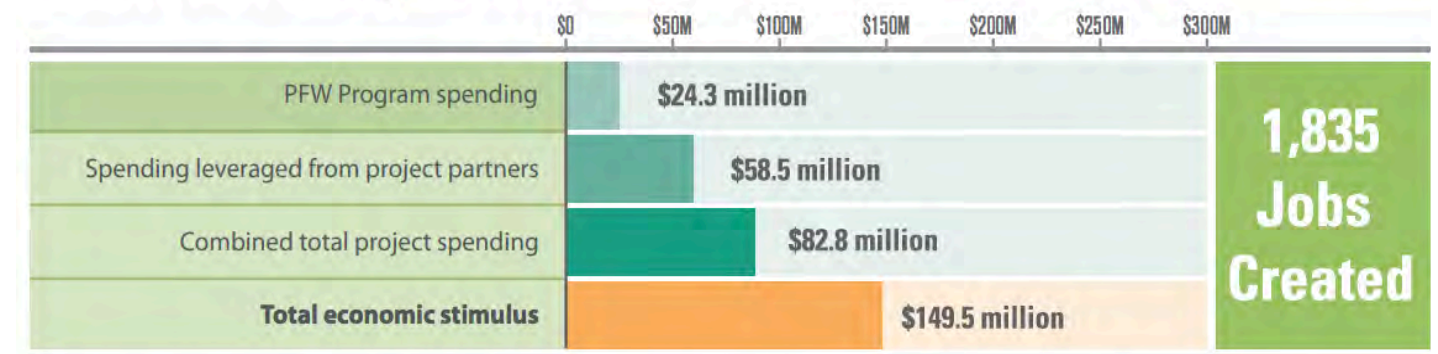
Blue crabs at Mattamuskeet National Wildlife Refuge stimulate the economy through fishing and recreational investments. Photo by Joe Milmoie / USFWS.

## WHAT WE DELIVER

High Return on Investment of Taxpayer Dollars

A 2018 supplement to U.S. Fish and Wildlife Service national economic analysis titled "Restoration Returns: The Contribution of Partners for Fish and Wildlife Program and Coastal Program Projects to Local U.S. Economies", found that the Partners for Fish and Wildlife program is an extraordinary economic engine, creating local jobs and generating dollars for the U.S. economy.

## Numbers at a glance FY2017



This reflects spending for on-the-ground restoration projects completed in FY2017. Program spending for protection activities and staff time to support technical assistance is not included.

### Leveraging

For every appropriated dollar invested in Partners for Fish and Wildlife habitat projects on privately owned land, Partners for Fish and Wildlife leveraged an additional \$3.40 in non-federal funds with other partners. Local businesses then hire and pay employees, workers and businesses spend money in the local economy and ultimately the investment is multiplied throughout local communities.

In total, Partners for Fish and Wildlife projects deliver an impactful \$1:6.15 return on investment. Most importantly, our work created 1,835 local jobs, ranging from heavy equipment operators, project supervisors, surveyors, and staff at nurseries, quarries, farm suppliers and more. Additionally, habitats that we have restored have been found to increase property values which greatly benefit the American people.

### ECONOMIC RETURNS



Every **\$1** the Partners for Fish and Wildlife Program invested in a project leveraged **\$3.40** in total project funding, which created **\$6.15** in economic returns.



Restoration Returns report, available at: <https://www.fws.gov/home/pdfs/restoration-returns.pdf>



**\$216,504**

PFW PROJECT INVESTMENT

**\$524,769**

PARTNER CONTRIBUTION

**\$741,273**

TOTAL PROJECT INVESTMENT

**\$1:2.4**

LEVERAGE

**0.08**

STREAM MILES

**15**

WETLAND ACRES

**710**

UPLAND ACRES

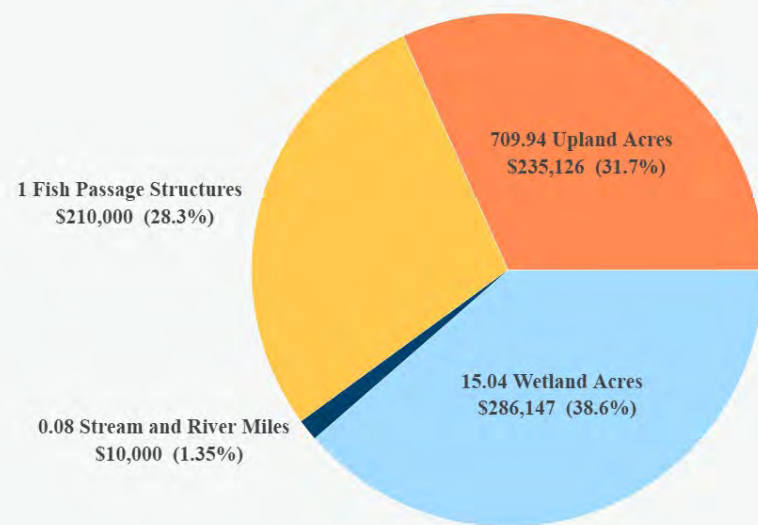
**1**

FISH PASSAGE STRUCTURE

# ALABAMA



Investments by Habitat Type



L: Repaired streambank, post construction. ©USFWS. R: Eroded streambank, pre-construction. ©USFWS

## PROJECT HIGHLIGHT:

### Calvert Prong Streambank Stabilization

In November 2021, a streambank stabilization project was initiated on Calvert Prong of Little Warrior River in Blount County, Alabama. Over two years of coordination went into the project planning efforts to enhance habitat in this stream to benefit the federally threatened flattened musk turtle (*Sternotherus depressus*).

The project site consisted of a series of three meander bends, each with severely eroded streambanks. The streambanks were a source of excessive sedimentation that had degraded habitat for the flattened musk turtle within this reach of Calvert Prong. For logistical and planning purposes, the project was divided into two separate phases. Phase I of the project addressed two of the three eroded streambanks.

Specifically, Phase I consisted of stabilizing 600+ linear feet of streambank, including both the left and right descending banks. The design incorporated a series of slab rocks and the repurposing of materials (e.g., trees, root wads, etc.) harvested on-site to provide and/or enhance habitat for the flattened musk turtle, while also stabilizing the streambanks.

This project leveraged funds from federal and state agencies, NGOs, and a private landowner. Most of the funding was provided by NRCS and TNC. Partners Program funds were leveraged with contributions from these partners, and others, to achieve approximately a 9:1 cost share on this project. Expectations are the same partners will also be involved with Phase II of this project, which is tentatively scheduled for Fall 2023.

**\$1.28M**  
PFW PROJECT INVESTMENT

**\$1.06M**  
PARTNER CONTRIBUTION

**\$2.33M**  
TOTAL PROJECT INVESTMENT

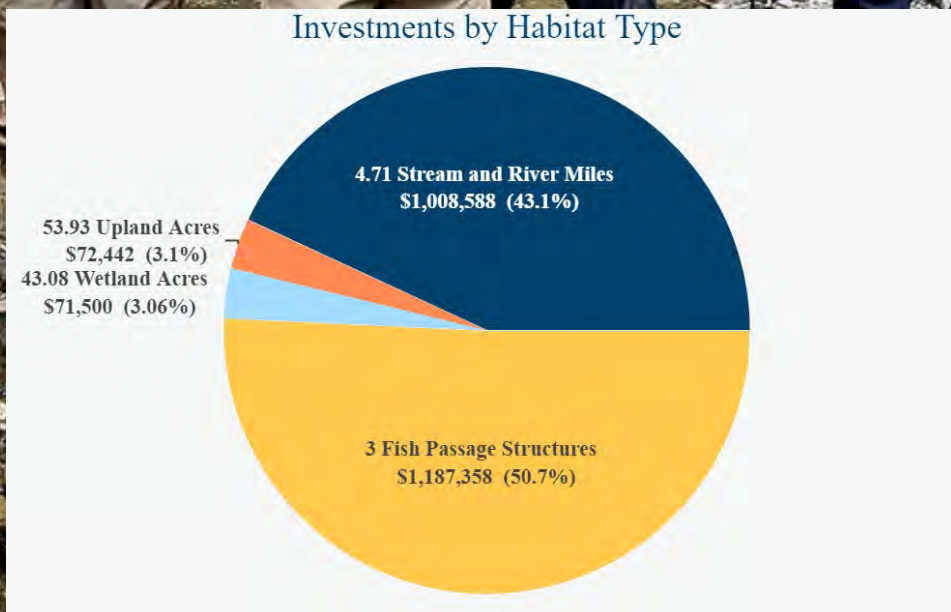
**\$1:0.83**  
LEVERAGE

**4.71**  
STREAM AND RIVER MILES

**54**  
UPLAND ACRES

**43**  
WETLAND ACRES

**3**  
FISH PASSAGE STRUCTURES



Project volunteers at restoration site. ©USFWS.

## PROJECT HIGHLIGHT:

### Teamwork Makes the Streamwork

The Alaska PFW Program has been partnering with the Southeast Alaska Watershed Coalition (SAWC), the US Forest Service, and a variety of Tribal partners to expand Tribal and community partner capacity to steward important salmon watersheds across Southeast Alaska. This project highlights the grassroots efforts to restore riparian and instream habitat for Sockeye Salmon in the Klawock Lake Watershed on Prince of Wales Island; the watershed is primarily Alaska Native Corporation lands. Sockeye salmon from Klawock Lake have been important to the livelihood and culture of the native people of Klawock, Craig, and Prince of Wales Island for millennia. Over the last two decades, there have been significant declines in the number of

fish returning to the Klawock Watershed because of logging and stream habitat loss.

SAWC has leveraged resources from the Partners Program, supporting a local work crew to conduct stream surveys, assess fish passage, enhance riparian forest condition, and carry out instream restoration projects using hand tools. This work inspired the recent formation of the Klawock Indigenous Stewards Forest Partnership, which aims to collaboratively address Sockeye Salmon declines and build indigenous capacity for land stewardship across Prince of Wales Island.

Links to this article featuring this work being performed here by KISFP: <https://www.juneauempire.com/news/resilient-peoples-place-alaska-youth-stewards-program-equips-next-generation-of-prince-of-wales-land-managers/>

<https://www.juneauempire.com/news/the-salmonstatebringing-the-sockeye-home/>

Link to KISFP FB page: <https://www.facebook.com/KlawockISFP>

Link: <https://www.youtube.com/watch?v=w-ErTG6K-ZY&t=1s>

America the Beautiful link: <https://storymaps.arcgis.com/stories/2c3f998374ba4c11883fa821e845287b>

Link: <https://www.tu.org/magazine/conservation/restoration/alaskas-indigenous-communities-at-work-in-the-tongass/>

Volunteers at restoration site. ©USFWS

**\$160,135**  
PFW PROJECT INVESTMENT

**\$76,345**  
PARTNER CONTRIBUTION

**\$236,480**  
TOTAL PROJECT INVESTMENT

**\$1:0.48**  
LEVERAGE

**962**

UPLAND ACRES

**8.67**

WETLAND ACRES

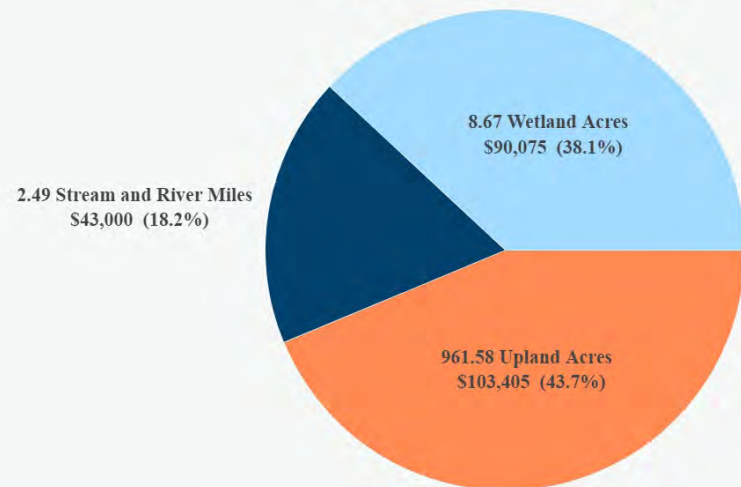
**2.49**

STREAM AND RIVER MILES

# ARIZONA



Investments by Habitat Type



Team Betatakin. ©USFWS.

## PROJECT HIGHLIGHT:

### Collaborating with Navajo Nation, Catena Foundation and Fred Phillips Consulting to Enhance Riparian Habitat for Migratory Birds

In 2014 Fred Phillips Consulting (FPC) led a collaborative effort between the Bureau of Indian Affairs (BIA), Navajo Nation, National Park Service (NPS), Catena Foundation, and permit holders to develop a grazing management plan for Tsegi and Nitsin Canyons. The primary purpose of this plan was to define the land's carrying capacity, propose sustainable grazing techniques, and initiate riparian and range restoration.

For several years, FPC has worked with the project stakeholders in Tsegi Canyon to assess, plan, design, and restore the highly degraded and overgrazed canyon. Tsegi Canyon houses two Navajo National

Monument sites, including the Betatakin and Keet Seel ruins and countless other archeological sites. The canyon also hosts numerous springs and remnant high-quality native riparian habitat.

The project included the construction of the deferment fence. The team installed approximately 2,100 linear feet of wildlife-friendly fencing. The team also fitted the fence with owl reflection tags along the length of the fence. The team constructed a gate at the mouth of the canyon and a breakaway section of fence was built at the stream crossing. In October 2021, the team installed approximately 45 structures in the main wash, spring areas, and side canyons within Betatakin using on-site local materials. Structures completed included beaver dam analogs, one rock dams, Zuni bowls, brush revetments, and live stake willow plantings. The team planted approximately 75 cluster and post plantings of sandbar willow and cottonwood. The team planted approximately 300 propagule plantings of native riparian grasses, forbs, bushes and wildflowers in springs (all grown with seed collected on Navajo Nation). Species planted included sandbar willow, peach leaf willow, red twigged dogwood, evening primrose, blue gramma, and columbine. The team seeded around all erosion structures and planting sites. Seeding species included blue gramma, lewis flax, evening primrose, side oats, and mutton grass. Additional feral livestock were removed in April 2022.

One rock structure in Betatakin Canyon. ©USFWS

**\$60,500**  
PFW PROJECT INVESTMENT

**\$263,350**  
PARTNER CONTRIBUTION

**\$323,850**  
TOTAL PROJECT INVESTMENT

**\$1:4.35**  
LEVERAGE

**0.60**  
STREAM AND RIVER MILES

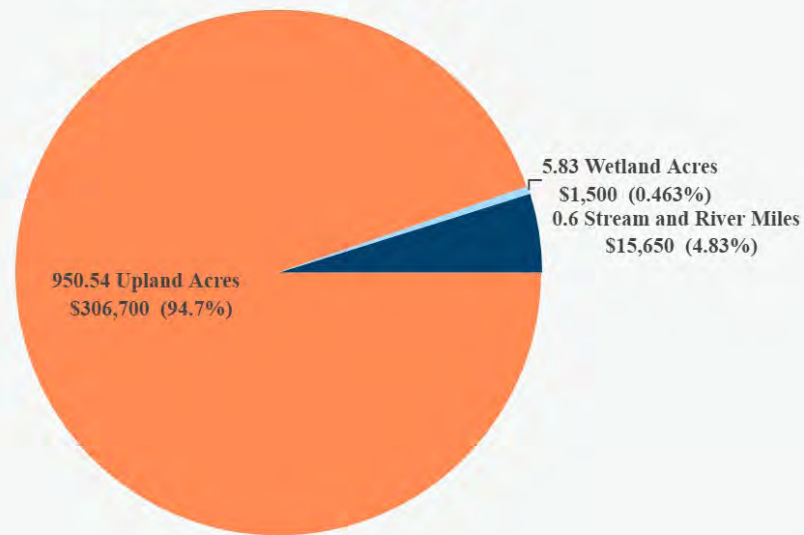
**951**  
UPLAND ACRES

**5.83**  
UPLAND ACRES

# ARKANSAS



Investments by Habitat Type



Restoration at the site encouraged herbaceous growth on the forest floor. ©USFWS



Prescribed fire on upland habitats in the Ozark and Boston Mountain Focal Area of Arkansas. ©USFWS

## PROJECT HIGHLIGHT:

### WHF - Pea Ridge National Military Park

This project assisted a landowner with habitat restoration actions and environmental remediation to protect the habitat in perpetuity through a donation to the Pea Ridge National Military Park-National Park Service. The rugged topography of the Ozark and Boston Mountain Focal Area is mountainous with expansive mixed stands of oak and pine forests, glades, savanna, open woodland, and high plains. The upland habitat has shifted from historical conditions of open woodland with fire-tolerant species and rich herbaceous understory vegetation characterized by open glades, to a current condition of an overstocked shade-tolerant forest lacking understory cover and openings dominated by invasive eastern red cedar. To restore beneficial habitat conditions, forest

stand improvement was conducted using single stem chemical injection of undesirable tree species (e.g., hickory, cedar, elm, and sweetgum). This will result in an open canopy and promote desired species (e.g., oaks, shortleaf pine, and herbaceous understory). These forest conditions will provide foraging habitat for federally listed and at-risk bats and pollinators. The landowner worked with the Arkansas Forestry Commission to install firebreaks and reintroduced fire to the landscape to maintain opened mid-story to stimulate herbaceous growth on the forest floor. Additionally, in partnering with the Arkansas Game and Fish Commission, a 20-acre pasture composed of non-native invasive species (i.e., Johnson grass, fescue, Bermuda) was converted to native forbes and grasses to improve habitat for grassland birds and pollinators.



The restoration encouraged herbaceous growth on the forest floor. ©USFWS

**\$1.76M**  
PFW PROJECT INVESTMENT

**\$2.75M**  
PARTNER CONTRIBUTION

**\$4.51M**  
TOTAL PROJECT INVESTMENT

**\$1:1.6**  
LEVERAGE

**7.36**  
STREAM AND RIVER MILES

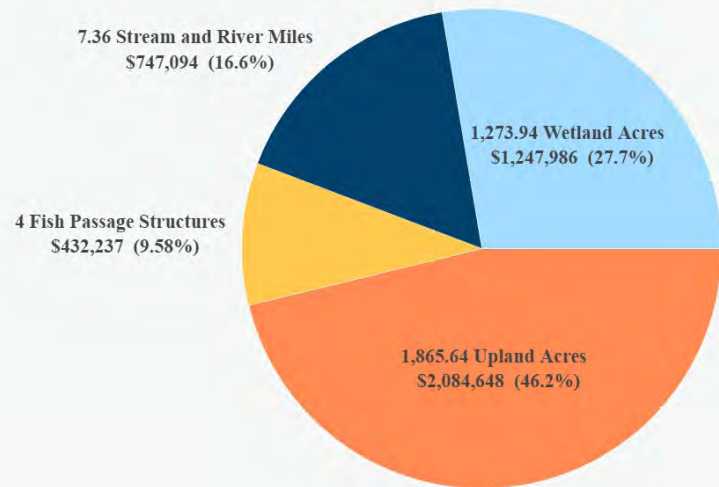
**1,866**  
UPLAND ACRES

**1,274**  
WETLAND ACRES

# CALIFORNIA



Investments by Habitat Type



Volunteers at project site. ©USFWS



Building relationships with landowners. Migratory birds utilizing habitat at the restoration site. ©USFWS

## PROJECT HIGHLIGHT:

### Shady Acres Duck Club Restoration Imperial County, California

Partners for Fish and Wildlife worked with a group of private landowners to enhance a seasonally flooded habitat for the benefit of waterfowl. In this project, we assisted the landowners with a project that improved the water flow on their property, removed salts from the soil, and established beneficial vegetation in the seasonal wetland. We assisted the landowner with preparing the sites for wetland plants, removing invasive plants, such as tamarisk, and then putting down seeds for the desired wetland plants that provide food for waterfowl. The result was an improved wetland for migrating waterfowl, a better hunting area for the landowners, and a project that supports the overall network

of wetland habitat at the south end of the Salton Sea. We had outstanding assistance from the neighbors at Sonny Bono Salton Sea National Wildlife Refuge and our professional partners at the California Waterfowl Association.

This property shares a boundary with land managed by the USFWS Sonny Bono Salton Sea National Wildlife Refuge and several other privately owned properties owned by duck hunters and conservationists. This project provided a starting point for the Partners Program to build a relationship with the private landowners in the area and to learn about Refuge Programs. Having the extra assistance of technical and financial support from the Partners Program helped the Refuge Staff to extend more help to the neighboring private landowners. The result is a synergy that will benefit wildlife and the landowners for years to come.



Migratory birds utilizing habitat at the restoration site. ©USFWS

**\$22,672**  
PFW PROJECT INVESTMENT

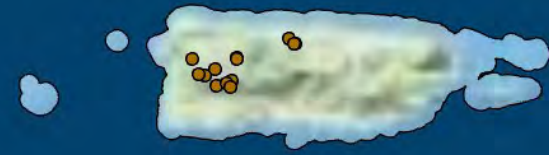
**\$92,095**  
PARTNER CONTRIBUTION

**\$114,767**  
TOTAL PROJECT INVESTMENT

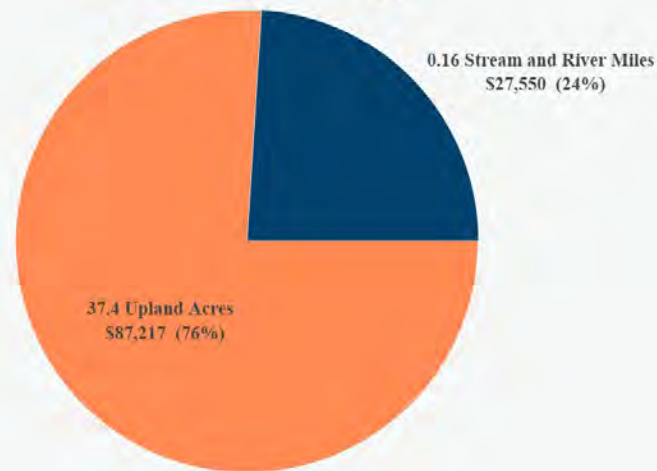
**\$1:4**  
LEVERAGE

**37.4**  
UPLAND ACRES  
**0.16**  
STREAM AND RIVER MILES

# CARIBBEAN



Investments by Habitat Type



Nidia Trejo (Envirosurvey, Inc) with an individual of Palma manaca planted at La Jungla Farm. ©Alexandra Galindo/USFWS.



Left: Landowner and Service staff standing next to a healthy individual of Matabuey at La Victoria Farm. Photo by Envirosurvey, Inc. Right: Habitat restoration practices certification day at the properties of Mr. Juan G. López. Photo by Envirosurvey, Inc.

## PROJECT HIGHLIGHT:

### Federal Trust Species Habitat Restoration Initiative in Private Lands of the Karst Region in Puerto Rico

Priorities: species conservation (establishment of new populations of T&E plant species and habitat enhancement); habitat connectivity (wildlife migration corridors, landscape scale conservation, cross-program restoration efforts); partnering with State wildlife resource agencies

The Partners for Fish and Wildlife Program (PFW) in the Caribbean has been collaborating with Envirosurvey, Inc. (NGO), the Department of Natural and Environmental Resources (DNER) and private landowners to restore habitat for federally listed species; *Goetzea elegans* (Matabuey), *Calyptronoma rivalis* (Palma manaca) and *Peperomia wheeleri*

within private lands at the municipality of Lares, Puerto Rico. The restoration practices included planting approximately 300 individuals of Matabuey, and 50 individuals of *P. wheeleri* in La Victoria Farm, and 100 individuals of Palma manaca within La Jungla Farm.

The northcentral karst is a diverse habitat harboring a unique flora and fauna, including endangered species. These properties are part of the Special Planning Area of the Karstic zone and including the Forest Legacy Area of the Guajataca Lake and Camuy River. They have more than 30 cave systems, underground waters, and contribute to the largest aquifer on the island. This initiative also benefits other trust species such as *Varronia bellonis*, the Puerto Rican boa (*Chilabothrus inornatus*), Sirajo goby (*Sicydium* spp.), American eel (*Anguilla rostrata*) and the Puerto Rico Arlequin butterfly (*Atlantea tulita*). In fact, the property harbors a recently discovered population of *V. bellonis* which represents a range extension for the species.

The PFW in the Caribbean has been engaged with this initiative since 2017 and the third phase was funded last year. CESFO will continue identifying private properties to expand the ongoing conservation and recovery efforts for the focal listed species on a landscape perspective within the northern Karst region.

**\$107,126**  
PFW PROJECT INVESTMENT

**\$699,476**  
PARTNER CONTRIBUTION

**\$806,602**  
TOTAL PROJECT INVESTMENT

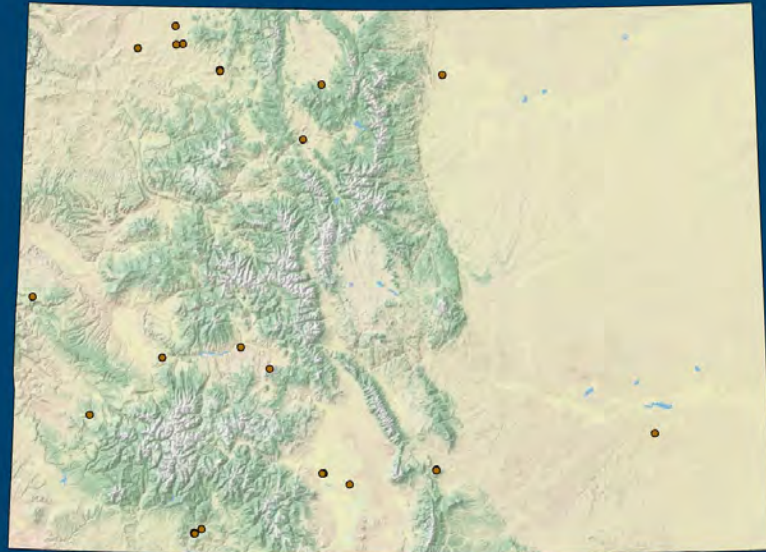
**\$1:6.5**  
LEVERAGE

**11.65**  
STREAM AND RIVER MILES

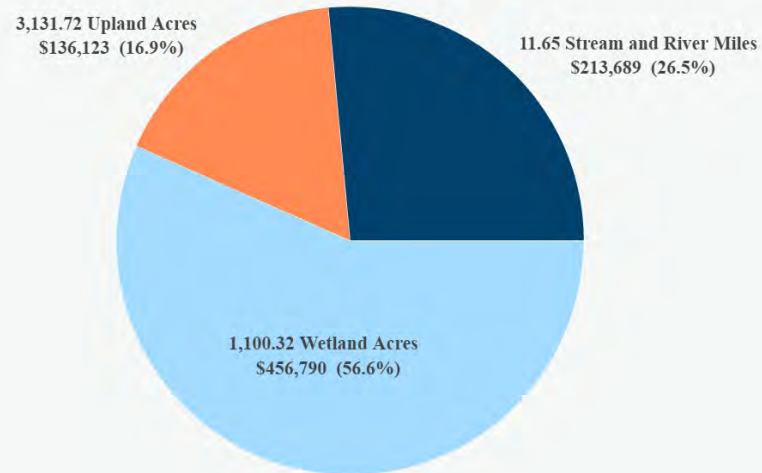
**3,132**  
UPLAND ACRES

**1,100**  
WETLAND ACRES

# COLORADO



Investments by Habitat Type



This project enhanced 3,762 acres of sagebrush habitat through aerial application of Rejuvra herbicide.  
Photo by Bob Timberman/USFWS



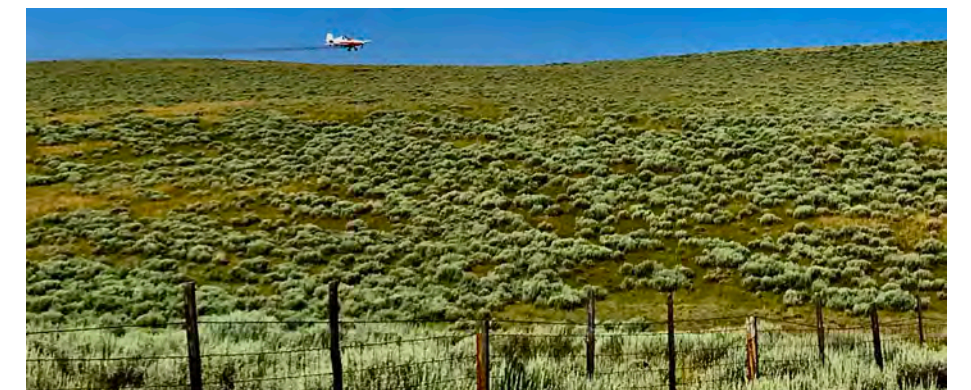
Aerial application of Rejuvra on sagebrush habitat. ©Bob Timberman/USFWS

## PROJECT HIGHLIGHT:

### Upland Enhancement: Aerial Application

The purpose of this project was to enhance 3,762 acres of sagebrush habitats through aerial application of Rejuvra (Indaziflam) herbicide to control cheatgrass. The landowner's property in Moffat County, Colorado, is a working sheep and cattle ranch known to have outstanding management and value for sagebrush-obligate birds. The ranch contains one of the largest sage-grouse leks in the state. The treatment area overlaps with priority modeled (sagebrush) core habitats identified by the FWS Sagebrush Ecosystem Team and within Colorado Parks and Wildlife's Bears Ears and White River Priority Landscape. This priority landscape supports migration and winter range for approximately 70,000 elk and 80,000 mule deer. Threatening much

of the sagebrush biome, cheatgrass depletes soil moisture and nutrients, increases fire frequency, and out-competes native vegetation. With the herbicide removing the viability of annual cheatgrass seed, perennials in the seedbank will be allowed to express themselves. In addition, ungulates have shown to have a strong preference for treatment locations where annual grasses are diminishing over time and perennials flourish. Benefits of this effort to remove cheatgrass and other invasive annuals will increase steadily over a four to five-year time frame. Direct benefits to greater sage-grouse, big game, and sagebrush obligates such as the sage sparrow will benefit directly from the removal of invasive annuals. The Bayer monitoring tool, RangeView will be used to track and monitor cheatgrass control. This information will be shared with the landowner and with prior permission, the site will be used as a demonstration project for others in the community.



Aerial application of Rejuvra on sagebrush habitat. ©Bob Timberman/USFWS

2017-2022  
PROJECTS

**\$48,000**  
PFW PROJECT  
INVESTMENT

**\$5,000**  
PARTNER  
CONTRIBUTION

**\$53,000**  
TOTAL  
PROJECT  
INVESTMENT

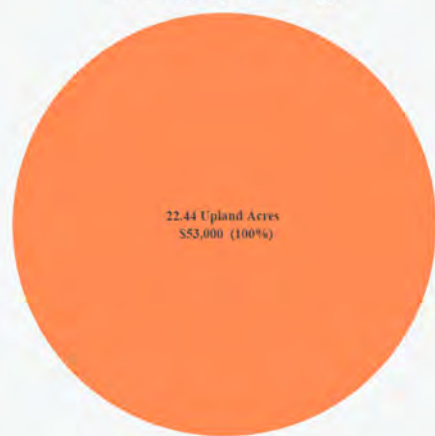
**\$1:0.1**  
LEVERAGE

**22.44**  
UPLAND  
ACRES

# CONNECTICUT



Investments by Habitat Type



Team gathering at Hartford Urban Wildlife Conservation Partnership. ©USFWS

## PROJECT HIGHLIGHT:

### Hartford Community Conservation

The Partners for Fish and Wildlife program and Silvio O Conte National Fish and Wildlife Refuge staff offered technical assistance in Hartford CT with community leaders in the vicinity of Keney Park.

A team gathered as part of an effort to explore the projects for a Hartford Urban Wildlife Conservation Partnership. Staff visited four sites and met with leadership at the Keney Park Urban Agriculture Education Site, Gully Brook at Love Lane, Friends of Keney Park at the Keney Park Pond House, and Ebony Horsewomen, Inc. to lay the groundwork for habitat improvement projects within the community. PFW staff assisted the group with stream restoration work, community cleanups and other possible

improvements for wildlife and people.



Hartford Waterfront area. ©USFWS



**\$5,400**

PFW PROJECT INVESTMENT

**\$52,000**

PARTNER CONTRIBUTION

**\$57,400**

TOTAL PROJECT INVESTMENT

**\$1:9.6**

LEVERAGE

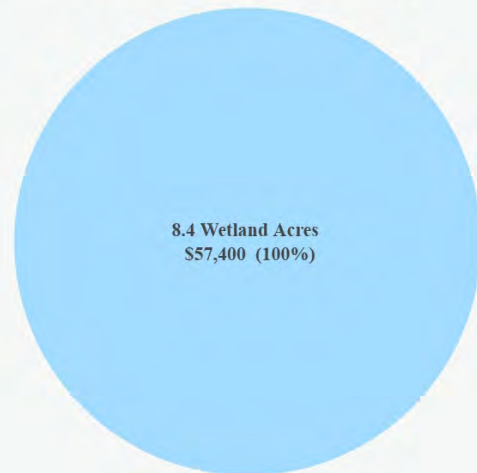
**8.4**

WETLAND ACRES

# DELAWARE



Investments by Habitat Type



2.2 acre emergent wetland restoration in Delaware. ©USFWS

## PROJECT HIGHLIGHT:

### Peterman Project

This accomplishment restores the hydrology to 2.2 acres of emergent wetlands through the shallow (1 foot or less) excavation of the existing wet areas in the agriculture row crop field to provide a longer hydro period. The excavated material will be used to construct a low berm that will increase the ponding area. The water control structure will allow moist soil management to promote emergent vegetation growth in the spring and summer, which will provide habitat structure and food for waterfowl and wading birds.

This is one of hundreds of emergent and forested wetland projects covering thousands of acres that our Partners program has carried out over the last 20 years. These projects occur in the heart of the Atlantic flyway and benefit many species

of migratory birds including key species like the black duck. These projects will also benefit species at risk including the spotted turtle and pollinators. A secondary benefit of these small wetland projects is that they result in cleaner water reaching Chesapeake and Delaware Bays where many federal trust species reside.



Wetland habitat at Prime Hook National Wildlife Refuge in Delaware. ©Timothy Pohlhaus

**\$168,790**

**PFW PROJECT INVESTMENT**

**\$295,098**

**PARTNER CONTRIBUTION**

**\$463,888**

**TOTAL PROJECT INVESTMENT**

**\$1:1.8**

**LEVERAGE**

**1.7**

**STREAM AND RIVER MILES**

**1,093**

**UPLAND ACRES**

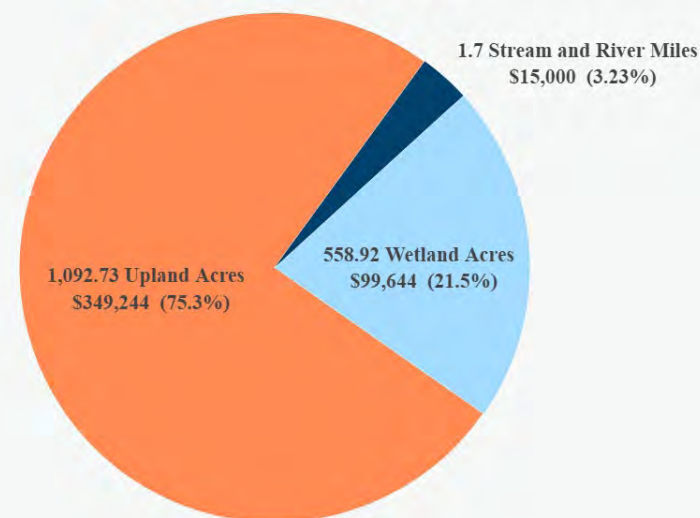
**559**

**WETLAND ACRES**

# FLORIDA



Investments by Habitat Type



Warea plant. ©Putnam Land Conservancy



Volunteers planting at project site. ©Bok Tower Gardens

## PROJECT HIGHLIGHT:

### OPRA Planting, Surveys and Seed Collection and Duke Energy Signage

Florida's Partners for Fish and Wildlife Program partnered with Bok Tower Gardens, Duke Energy, the Florida Native Plant Society, the St. Johns River Water Management District (SJRWMD), and Putnam Land Conservancy in support of the endangered wide-leaf warea (*Warea amplexifolia*). Efforts focused on an unincorporated area in Marion County experiencing notable population growth, associated development, and resulting habitat loss.

With very little conservation land in the area, a plan was devised to collect seeds, engage private landowners, conduct outplantings, and work with Duke Energy on a compatible management regime for their transmission line right-of-

way. Given the plant's limited distribution throughout a handful of locations in Central Florida, the effort intends to preserve the genetic diversity of the local population while also complimenting management of the gopher tortoise and threatened sand skink.

Bok Tower Gardens conducted an experimental germination trial in the spring of 2022 resulting in approximately 100 plants that were planted in July at SJRWMD's Ocklawaha Prairie Preserve with the help of volunteers from local conservation organizations. The Partners Program also supported the purchase of a portable irrigation tank to assist with establishment of the young plants during the hot Florida summer.

In addition, the team was able to successfully engage Duke Energy in the development and installation of 16 sensitive habitat signs along their nearby right-of-way in mid-August. Given the plant's positive response to mowing, it was simply a matter of communicating the most appropriate time of the year for the mowing to take place which Duke was happy to support.

The team also worked on the development of informational fliers to be distributed to residents and collaborated on a joint news release between Duke Energy and USFWS (<https://news.duke-energy.com/releases/duke-energy-ramps-up-environmental-efforts-joins-forces-to-protect-vulnerable-wildlife-in-florida>). Moving forward, the team plans to expand its efforts in support of additional outplantings and habitat management with the hope of supporting eventual downlisting of the endangered plant.

**\$264,693**  
PFW PROJECT INVESTMENT

**\$311,412**  
PARTNER CONTRIBUTION

**\$576,105**  
TOTAL PROJECT INVESTMENT

**\$1:1.8**  
LEVERAGE

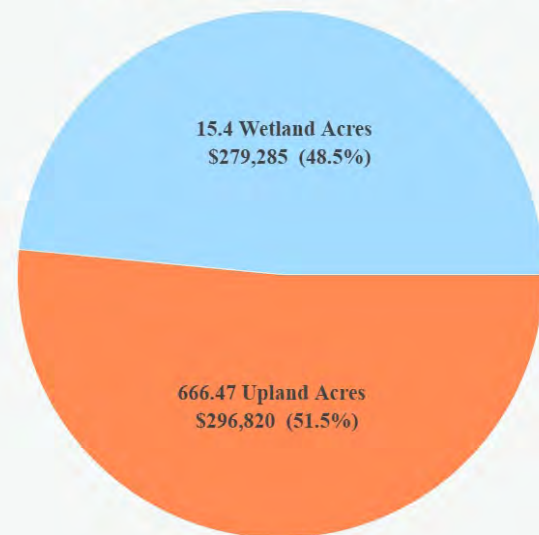
**666**  
UPLAND ACRES

**15.4**  
WETLAND ACRES

# GEORGIA



Investments by Habitat Type



Gopher tortoise restoration site. ©USFWS



Park Creek volunteer planting, aerial view. ©USFWS

## PROJECT HIGHLIGHT:

### Mill Creek Restoration

Partners for Fish and Wildlife in Georgia facilitated the development of a new partnership between Dalton Public Schools, Limestone Valley Resource Conservation and Development Council, University of Georgia, Dalton State College, Georgia Department of Natural Resources, Coosa River Basin Initiative, Tennessee Aquarium and over five other partnering organizations to restore areas previously maintained as sod and bolster environmental education at the Park Creek Elementary School in Dalton, Georgia. During 2022, 5 acres of riparian and 0.3 acres of wetland habitats surrounding the school were restored to protect and enhance 0.7 miles of stream habitat in Mill Creek, which is designated critical habitat for the threatened trispot darter (*Etheostoma trisella*).

In addition, 2 acres of grassland were restored to improve habitat for native pollinators including the monarch butterfly (*Danaus plexippus*), maximize the effectiveness of the riparian buffer, and support an ongoing agricultural project initiated to help feed and educate students, their families and the surrounding community. A state endangered plant also was experimentally introduced in the project area, which now serves as a safeguarding site for the species. To ensure the restoration work had an educational nexus, the partnership worked closely with an array of educators to develop educational curriculum and outdoor signage that will be placed along a 0.4-mile network of walking trails that will later serve as fire breaks to support future prescribed fire activities. Based on the project's success, the partnership is expanding membership and planning to enhance an additional 15 acres of riparian habitat along Mill Creek.



Male trispot darter. ©USFWS

**\$24,290**  
PFW PROJECT INVESTMENT

**\$25,000**  
PARTNER CONTRIBUTION

**\$49,290**  
TOTAL PROJECT INVESTMENT

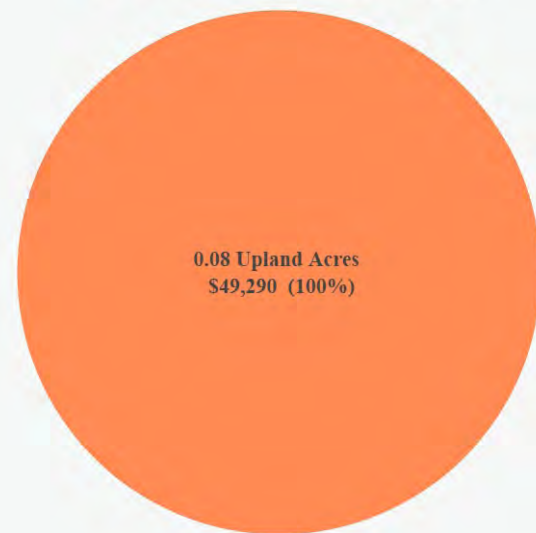
**\$1:1**  
LEVERAGE

**0.08**  
UPLAND ACRES

# HAWAII



Investments by Habitat Type



Sandalwood. ©Michelle Clark/USFWS



Schiedea fence improvement. ©Michelle Clark/USFWS

## PROJECT HIGHLIGHT:

### Upper Manoa Valley Rare Plant Protection Project: Small Scale Stewardship Producing Big Impacts for Endangered Species Populations

The Upper Manoa Valley is a remote 200-acre valley on the island of Kauai only accessible by helicopter. This area is home to a variety of species including nesting habitat for endangered seabirds like Newell's Shearwater (*Puffinus auricularis newelli*) as well as populations of plant species listed as endangered or listed under the Hawaii Plant Extinction Prevention Program (PEPP) including *Schiedea kauaiensis* (E, PEPP, ca. > 12 individuals), *Lysimachia ovoidea* (PEPP, ca. > 35 individuals) and *Bonamia menziesii* (E, ca. > 200 individuals). Working in partnership with the team at Hawaiian Division of Forestry and Wildlife, ungulate exclusion fences

were installed around three plant populations. While the cumulative protected area is small, the targeted fencing is a strategic recovery technique that is critical for protection of these remaining plants. Propagation materials were also collected for seed storage and eventual reintroduction into suitable habitat within protected areas to support population growth. Hawaiian Division of Forestry and Wildlife will continue to maintain the exclosures, monitor plant health and remove weeds further accelerating recovery of several endangered species through voluntary collaborative efforts on private lands. This project is one of many efforts by local partners and community members to protect the exceptional biodiversity of the Hawaiian Islands from extinction.

More info about the PEPP program and species <http://www.pepphi.org/about-pepp.html>



Kanoe pounding posts. ©Michelle Clark/USFWS

**\$202,635**  
PFW PROJECT INVESTMENT

**\$887,887**  
PARTNER CONTRIBUTION

**\$1.09M**  
TOTAL PROJECT INVESTMENT

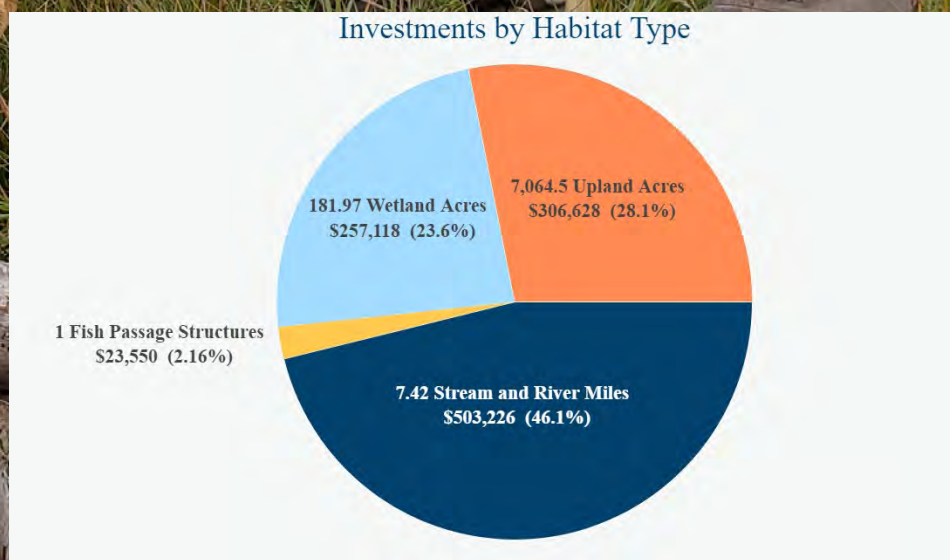
**\$1:4.4**  
LEVERAGE

**7.42**  
STREAM AND RIVER MILES

**7,064**  
UPLAND ACRES

**182**  
WETLAND ACRES

**1**  
FISH PASSAGE STRUCTURES



Volunteers helped building PALS, which were designed to work in concert with BDAs and aimed at reversing incision process through channel aggradation and widening. PALS are more versatile and more porous than BDAs, but typically require interacting with high flow events to do geomorphic work. PALS were included to widen the narrow channel and recruit sediment which will be captured by BDAs downstream, ultimately expediting streambed aggradation. ©Britany Morlin / USFWS.



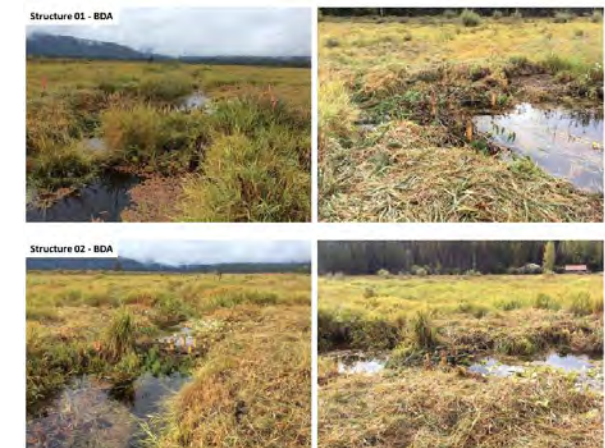
Volunteers collected ~2,500 woody cuttings for weaving material to build the BDAs. In this photo, the crew tasked with collecting alders posed with the neighboring landowner who allowed us to harvest materials from his property. ©Britany Morlin/USFWS

## PROJECT HIGHLIGHT:

### Bismark Meadows: Volunteers Help to Restore Natural Stream and Wetland Processes by Simulating Beaver Activity

The lack of beaver activity in Bismark meadows has resulted in a significant change to the hydrology in the area. Beavers play a key role in aquatic systems as ecosystem engineers, and while they are native to the area, they have been locally extirpated over the years. To support recolonization of peatland plants and enhance wildlife for migratory birds and pollinators, Low-Tech Process-Based Restoration structures were installed to support functionality of an NRCS Wetlands Reserve Program easement. Replication of natural processes will promote riparian vegetation growth and survival, restore natural wetland processes, and improve habitat suitability for beavers. Overall, 19

structures were installed including beaver dam analogs (BDAs) and post-assisted log structures (PALS). Benefits of installing these structures include slowing streamflow and erosion with dams, raising the water table, increasing water storage, and capturing sediments. These actions will support riparian and wetland plants, which will help put the pieces in place for beavers to return to the site. Restoring functional floodplain processes will also be key for improving aquatic conditions in Reeder Creek, a 303(d) listed stream for sediment and temperature. Once beavers return, their role of ecosystem engineer can be restored as an important piece of sustaining ecosystem processes in these complex systems. Until then, the committed volunteers and landowners around Bismark Meadows will support the process.



Looking upstream and toward the river right bank along structures 1-2, which were both BDAs placed at the furthest downstream portion of Phase I. ©Britany Morlin/USFWS

**\$40,833**  
PFW PROJECT INVESTMENT

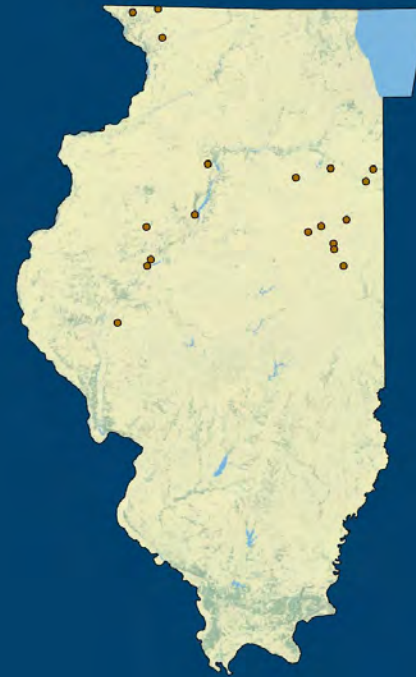
**\$473,272**  
PARTNER CONTRIBUTION

**\$514,105**  
TOTAL PROJECT INVESTMENT

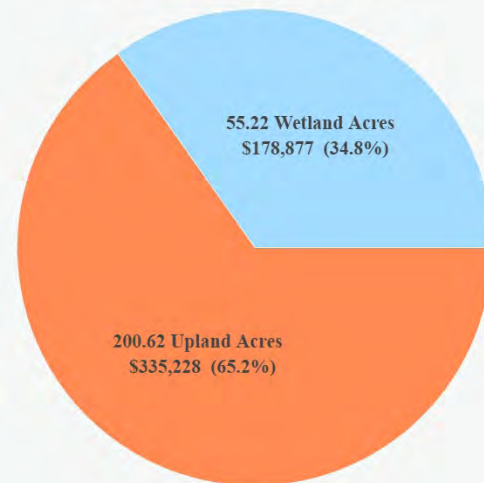
**\$1:11.5**  
LEVERAGE

**200.62**  
UPLAND ACRES  
**55.22**  
WETLAND ACRES

# ILLINOIS



Investments by Habitat Type



Aerial view of wetland restoration site. ©USFWS

## PROJECT HIGHLIGHT:

### Creating Seasonal Wetland Habitat During Shorebird and Waterfowl Migration

This project represents a partnership between the Service, Pheasants Forever, Ducks Unlimited, The Wetland Initiative, and Illinois Department of Natural Resources. Together, we restored 2.4 acres of wetland habitat in Livingston County, Illinois. The property historically had wetland habitat; however, the wetlands were drained decades ago and not restored. This project involves the installation of a small earthen berm, installing a water control structure, and excavating a shallow wetland scrape to create seasonal wetland habitat during shorebird and waterfowl migration. Wetland ecosystems have been severely degraded or effectively removed from the Illinois landscape since European settlement. Today,

less than 10% 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. This project will benefit those species along with many others including most species of migratory waterfowl and shorebirds in the area. This project is on the migration corridor for rare and endangered species such as whooping cranes and golden plovers. The Partners Program participated in topography surveys, design and planning, coordinating the contractor, and construction management. The landowner and NGO partners provided financial match for the construction and supplies. This partnership with The Wetlands Initiative also uses "Smart Wetland" technology and design techniques to enhance the ability of restored wetlands to improve water quality and nutrient reduction while also benefiting priority species.



Aerial view of wetland restoration site. ©USFWS

Aerial view of wetland restoration site. © USFWS

**\$102,909**

PFW PROJECT INVESTMENT

**\$307,093**

PARTNER CONTRIBUTION

**\$410,002**

TOTAL PROJECT INVESTMENT

**\$1:2.9**

LEVERAGE

**367**

UPLAND ACRES

**91**

WETLAND ACRES

**3**

STREAM AND RIVER MILES

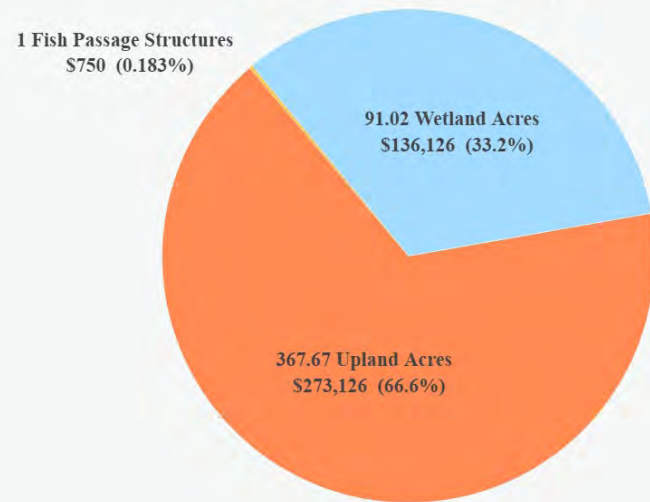
**1**

FISH PASSAGE STRUCTURE

# INDIANA



Investments by Habitat Type



Before restoration. © USFWS



Low head dam removal at project site. ©USFWS

## PROJECT HIGHLIGHT:

### Cedar Creek (Allen County, IN)

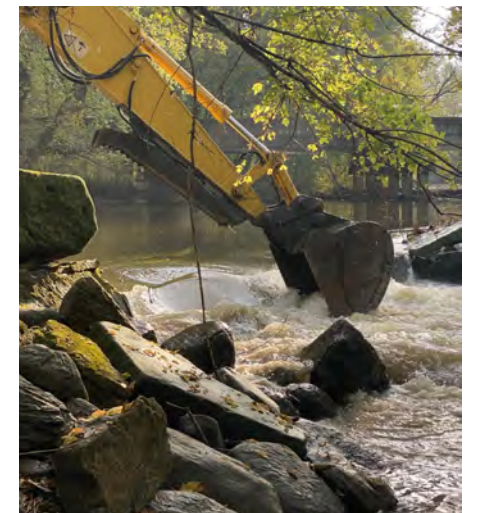
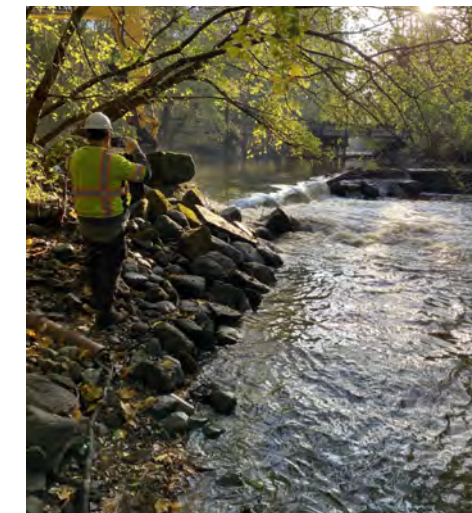
This project removed a privately-owned concrete low-head dam from the main channel of Cedar Creek in Allen County, IN. The project will benefit aquatic species and will reconnect approximately 3 miles of fish passage in the main stem of Cedar Creek, which ultimately flows to the Western Basin of Lake Erie via the Maumee River. In total, the benefits provided through habitat connectivity will have an impact on more than 273 miles of aquatic habitat in both Little Cedar Creek and Cedar Creek Watersheds in Allen, Dekalb, and Noble Counties.

The project improves aquatic passage for smallmouth bass, northern pike, rainbow darter, orangethroat darter and Eastern sand darter, and will provide opportunities for reintroduction of the federally

endangered clubshell mussel.

The project will also provide access to the stream for recreational use and will lessen the human safety hazards associated with the low-head dam. The dam was on property owned by ACRES land trust, which has been a longtime partner of the PFW Program.

The Partners Biologist coordinated with the landowner and their ecological contractor on project design and agency coordination on required permits, provided funding towards project materials, and coordinated with the USFWS National Fish Passage Program, who also provided funding. The Indiana DNR Lake and River Enhancement Program also provided cost-share towards the project.



The project will improve passage for smallmouth bass, northern pike, rainbow darter, orangethroat darter and Eastern sand darter, and will provide opportunities for reintroduction of the federally endangered clubshell mussel

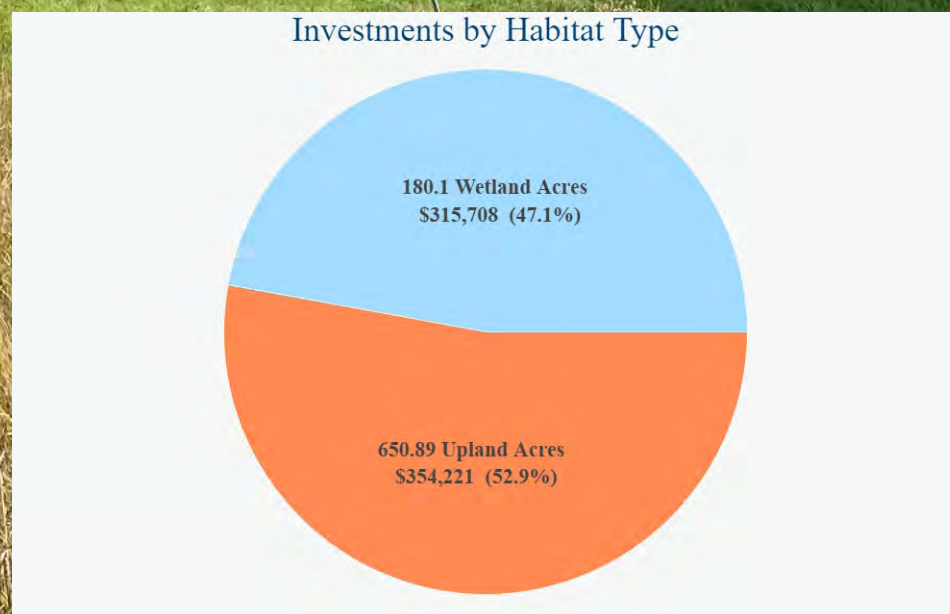
**\$155,497**  
PFW PROJECT  
INVESTMENT

**\$514,432**  
PARTNER  
CONTRIBUTION

**\$669,929**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:3.3**  
LEVERAGE

**651**  
UPLAND  
ACRES  
**180**  
WETLAND  
ACRES



Before restoration. © USFWS



Restoration in progress. ©USFWS

## PROJECT HIGHLIGHT:

The Kossuth County Conservation Board (CCB), in partnership with the U.S. Fish and Wildlife Service – Partners for Fish and Wildlife Program, installed a dike and water control structures (WCS) at the CCB-owned Patterson Recreation and Wildlife Area in 1999 to enhance approximately 56.3 acres of off-channel wetland habitat adjacent to the East Fork Des Moines River. Over the past 20 years, rodents and erosion have degraded the dike and WCS. The purpose of this project is to reshape the dike (wider top and flatter side slopes), armor the dike with riprap in critical areas, install rat wire to reduce rodent damage to the dike, and clean out the WCS to ensure they are functional. A second component of this project involves creating a shallow water excavation (0.7 acres) to increase off-channel wetland habitat. Post-construction,

the dike will be reseeded with a native grass/sedge mix. These enhancements will improve degraded habitat to benefit waterfowl and other migratory birds.



This project reshaped the dike (wider top and flatter side slopes), armored the dike with riprap in critical areas, installed rat wire to reduce rodent damage to the dike, and cleaned out the WCS to ensure they are functional. ©USFWS



**\$184,858**

PFW PROJECT INVESTMENT

**\$1.31M**

PARTNER CONTRIBUTION

**\$1.5M**

TOTAL PROJECT INVESTMENT

**\$1:7.1**

LEVERAGE

**108**

STREAM AND RIVER MILES

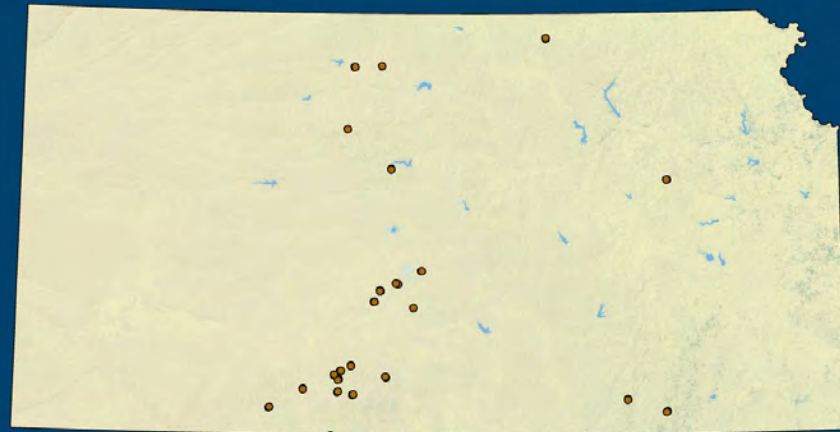
**23,033**

UPLAND ACRES

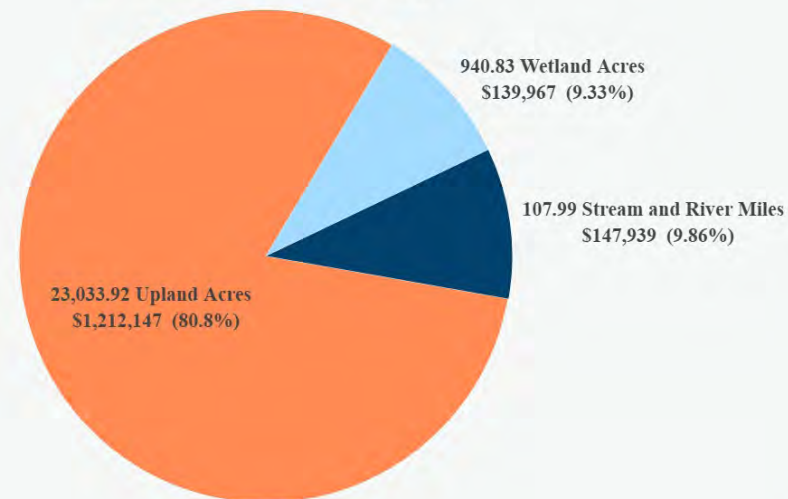
**941**

WETLAND ACRES

# KANSAS



Investments by Habitat Type



Lesser prairie chicken benefitted by habitat restoration. © USFWS



Before (top) and after restoration (below). ©USFWS.

## PROJECT HIGHLIGHT:

The goal of this project was to improve habitat conditions for grassland-dependent and aquatic wildlife species while benefiting working agricultural lands and surrounding communities through increased livestock forage, water quantity, soil health, economic growth, wildlife and plant diversity and reduced risk of catastrophic wildfire. This site is dominated by native mixed-grass and sand sagebrush prairie managed as grazing lands. The primary resource concern was invasive tree encroachment, such as eastern redcedar (ERC) and deciduous trees, not historically a part of the Great Plains' prairie community. Practices implemented on this project included invasive tree removal, firebreak establishment and prescribed burning.

Within Kansas, habitat fragmentation from invasive trees, primarily ERC, is a major threat to livestock producers and the lesser prairie-chicken (LEPC) (Elmore et al. 2009, Fuhlendorf et al. 2002, Woodward et al. 2001, USFWS 2014). This project restored over 1,000 acres of habitat for the LEPC within the KS PFW Southwest Prairies and Playas Focus Area. Partners contributing to this project include the Landowner, neighboring Landowners, Kansas Grazing Lands Coalition and KS PFW.

This project strategically builds upon recent grassland restoration projects addressing woody encroachment within a core grassland area totaling over 70,000 acres. The restored prairie is in excellent range condition, providing grassland bird habitat. Several LEPC leks are documented within 10 miles of the project, which is within a LEPC Range-wide Conservation Plan focal area (Van Pelt et al. 2013). Additionally, this is a high production area for Monarch butterfly and other pollinators, providing breeding and migrating habitat.

This project falls within a Kansas PFW Focus Area. The selection, development and funding of this project followed the model for Strategic Habitat Conservation.



Before (left) and after restoration (right). ©USFWS

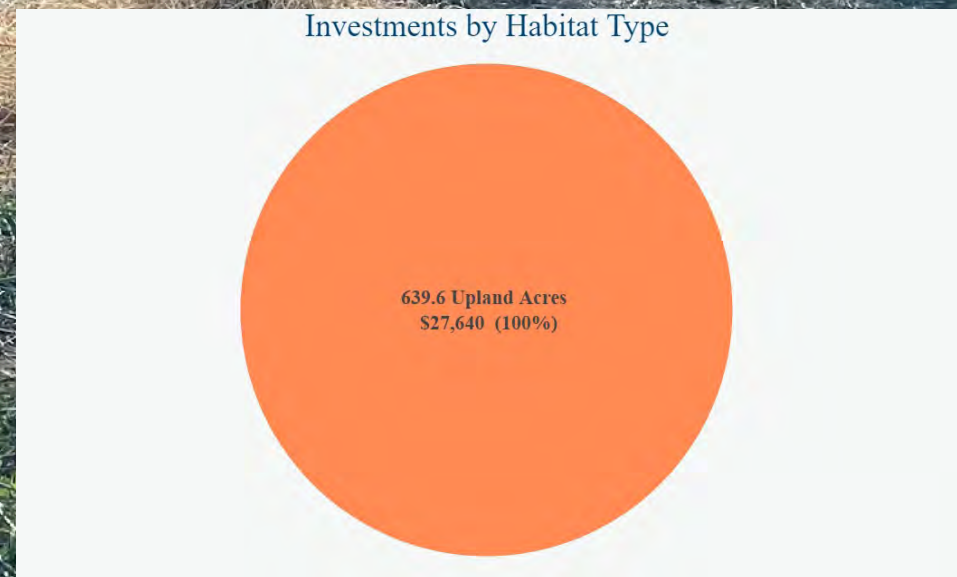
**\$25,565**  
PFW PROJECT INVESTMENT

**\$2,075**  
PARTNER CONTRIBUTION

**\$27,640**  
TOTAL PROJECT INVESTMENT

**\$1:0.08**  
LEVERAGE

**639**  
UPLAND ACRES



Before and after restoration. ©Brent Harrel/USFWS

## PROJECT HIGHLIGHT:

### Baumberger Barrens Project

The Partners for Fish and Wildlife Program in Kentucky worked in partnership with The Nature Conservancy (TNC) to restore and enhance a globally rare grassland ecosystem named Baumberger Barrens. The barrens are also permanently protected by TNC. This project was to restore and enhance native barren habitat for the federal and state rare species such as the Monarch butterfly (*Danaus plexippus*) (C), Eggert's sunflower (*Helianthus eggertii*), Great Plains lady's tresses (*Spiranthes magnicamporum*), hairy hawkweed (*Hieracium longipilum*) and Prairie Warbler (*Dendroica discolor*) (SOC). Existing native forbs and grasses were enhanced through this project, which allowed for a more thorough restoration of the barren. These forb species will benefit a broad host of pollinator

species, which may include many declining species of bumblebees.

Specific work practices included manual thinning and removal of the thick understory and mid-story for barren expansion. Woody encroachment into existing native prairies/barrens was removed to allow better sunlight penetration and growth of native forbs and grasses. In addition, non-native invasive shrubs such as autumn olive, honeysuckle, and multiflora rose were also removed and or herbicide treatment applied. Additional firebreaks were established and will be maintained in preparation of future prescribed fires. Prescribed fire will be the primary tool used to maintain the barren. This sight will continue to be monitored for the protection of the species mentioned and for the continuing benefit of this rare ecosystem.

**\$1.19M**  
PFW PROJECT  
INVESTMENT

**\$456,436**  
PARTNER  
CONTRIBUTION

**\$1.64M**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:0.38**  
LEVERAGE

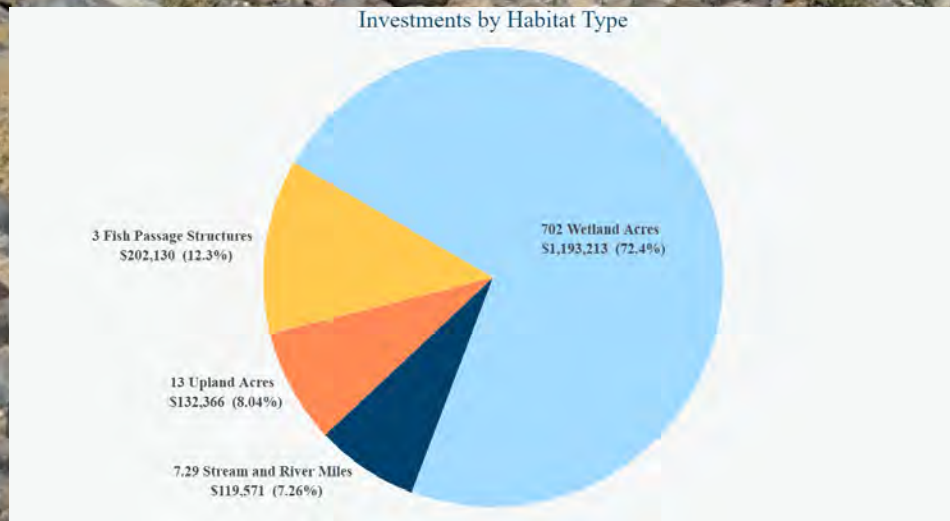
**7.29**  
STREAM  
AND RIVER  
MILES

**13**  
UPLAND  
ACRES

**702**  
WETLAND  
ACRES

**3**  
FISH  
PASSAGE  
STRUCTURES

# KLAMATH BASIN



Looking downstream from the upstream end of the Scott River Tailings Oasis Phase III Project immediately following project implementation, 10/12/2022. The large wood structures are located in the approximate center of the channel and the small wood structures are located on both the river right and left margins.



Looking downstream from the upstream end of the Scott River Tailings Oasis Phase III Project before project implementation, 6/17/2022. Notice the lack of instream habitat complexity and riparian habitat on the river right margin. ©USFWS.

## PROJECT HIGHLIGHT:

### Scott River Tailings Oasis Project Phase III

The Scott River supports runs of Chinook and coho salmon and steelhead trout. However, sections of the river have been degraded by historic mining activities. The tailings reach of the Scott River was dredge mined in the early 1900s. This activity greatly reduced channel complexity and all but eliminated existing riparian habitat. Additionally, the tailings reach is one of the first sections of the river to disconnect in summer and last to reconnect in fall. To address these resource concerns, the Yreka Fish and Wildlife Field Office Partners for Fish and Wildlife Program partnered with the Scott River Watershed Council to implement the Scott River Tailings Oasis Project Phase III.

This project constructed three large wood structures of 12 to 16 logs in the

river channel and eight smaller wood structures of five to six logs on the river margins. The wood structures increased channel complexity and will restore instream habitat by providing overhead cover, sorting spawning gravels, and creating slow water rearing habitat. The large wood structures also will create scour pools and detain water, improving connectivity during low flows. Willows and cottonwoods were planted within the large wood structures and on the downstream side of all the wood structures to promote the development of a riparian corridor. The Phase III project occurred immediately downstream of the Phase I and II projects, which constructed similar wood structures and implemented a comparable planting strategy. Collectively, the project phases restored spawning habitat for Chinook and migratory habitat for coho and steelhead throughout a 0.15 reach of the Scott River.



Large wood structure during construction. Vertical posts are buried into the river bed and the horizontal posts are bolted to the vertical posts. Large boulders are placed around horizontal posts for ballast and in front of the structure for scour protection. River bed material excavated for the placement of the vertical posts is used to fill in the interstitial spaces within the wood structure.

**\$210,105**  
PFW PROJECT INVESTMENT

**\$381,621**  
PARTNER CONTRIBUTION

**\$591,726**  
TOTAL PROJECT INVESTMENT

**\$1:1.8**  
LEVERAGE

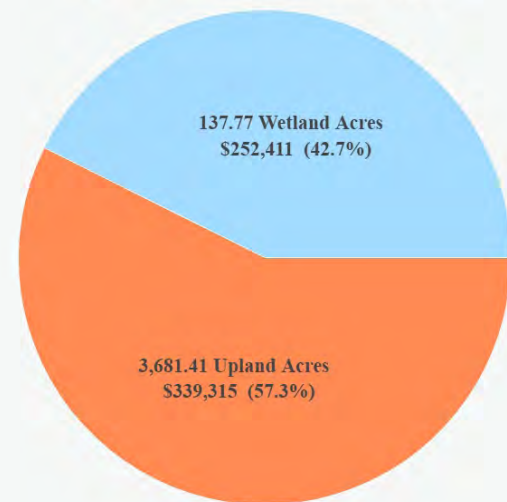
**3,681**  
UPLAND ACRES

**138**  
WETLAND ACRES

# LOUISIANA



Investments by Habitat Type



Aerial image taken by a drone operator, of the prescribed fire being applied to Sandylands Louisiana Pinesnake Project. ©S&S Dozer/USFWS

## PROJECT HIGHLIGHT:

### Sandylands Louisiana Pinesnake Project

This project involves the restoration and enhancement of native herbaceous understory to approximately 928 acres of upland pine forest in an effort to improve habitat for the Louisiana pinesnake and its main prey, the Baird's pocket gopher. The project is located in the Sandylands Louisiana pinesnake management unit, in Bienville Parish, LA. The landowner had enrolled these lands in the Candidate Conservation Agreement with Assurances (CCAA) for the Louisiana pinesnake prior to its listing. To help implement the conservation measures associated with the CCAA, restoration and enhancement practices include firebreak installation/maintenance, 128 acres of prescribed burning, and 800 acres of herbicide to remove invasive

hardwood trees and shrubs from the understory. The project increases and enhances the amount of open longleaf pine forest with herbaceous understory in the area, with the goal of increasing the numbers of, and facilitating colonization and expansion of, Louisiana pinesnake in the Sandylands Louisiana pinesnake management unit. Roads and trails are also being improved to control soil erosion and to provide easier access to Louisiana pinesnake traps and cameras that are used to monitor population size and distribution. This project will also benefit other at-risk species including the frosted elfin butterfly, monarch butterfly, Henslow's sparrow, and Bachman's sparrow.



Left: Fire crew by Robert Ogle. Right: Installing bucket cameras ©USFWS

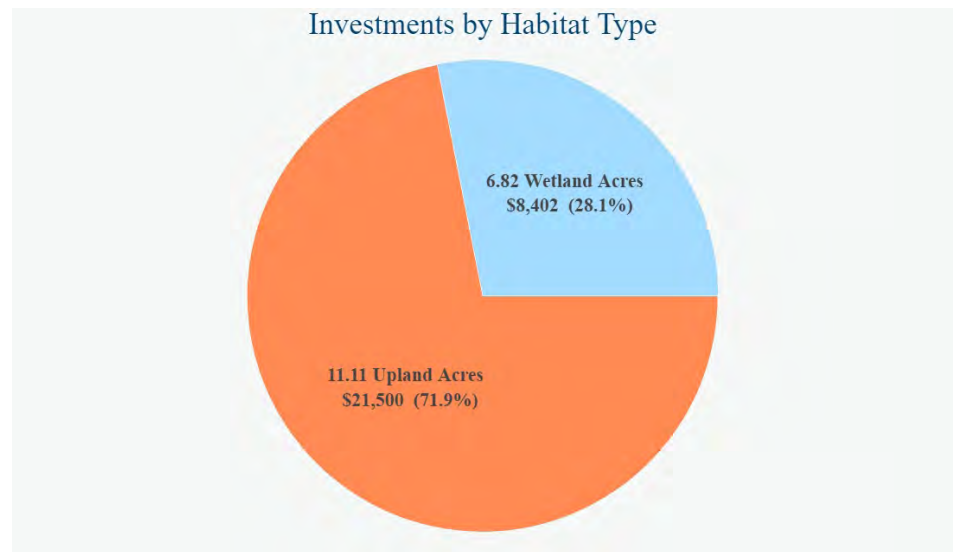
**\$16,500**  
PFW PROJECT  
INVESTMENT

**\$13,402**  
PARTNER  
CONTRIBUTION

**\$29,902**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:0.8**  
LEVERAGE

**11**  
UPLAND  
ACRES  
**6.82**  
WETLAND  
ACRES  
**7**  
FISH  
PASSAGE  
STRUCTURES



TNC employees surveying for eastern prairie fringed orchid and marking trees to be removed. ©USFWS

**PROJECT HIGHLIGHT:**

The Federally endangered eastern prairie fringed orchid (*Platanthera leucophaea*) occurs at a single location in the Region 5 of the U.S. Fish & Wildlife Service (Service) at Little Crystal Fen in the Crystal Bog preserve owned by The Nature Conservancy (TNC) in Crystal, Maine. The eastern prairie fringed orchid is one of the most highly endangered species in our region. Just 10 to 20 plants are documented each year in surveys. The orchid's habitat was maintained by fire in the past when the bog was periodically (and accidentally) burned by sparks from steam locomotives along the adjacent railroad tracks. With the advent of diesel locomotives this source of disturbance was eliminated, and succession has encroached on the fen. Fire during the dormant season has been found to benefit the eastern prairie

fringed orchid, as evidenced by reports of increased numbers of orchids in years following burns. This year, the Partners for Fish and Wildlife Program began work with TNC to restore the site for eastern prairie fringed orchid. Encroaching trees were removed from the 6.82 ac Little Crystal Fen to decrease competition for sunlight and prepare the site for a future prescribed burn. Larger trees were girdled and left standing in place as snags while small trees and shrubs were cut and moved into the surrounding forest. The prescribed burn plan was completed by TNC this year and we expect to complete the prescribed burn in the Spring of 2023.



Little Crystal Fen before encroaching tree removal. ©USFWS

**\$0**  
**PFW PROJECT INVESTMENT**

**\$329,008**  
**PARTNER CONTRIBUTION**

**\$329,008**  
**TOTAL PROJECT INVESTMENT**

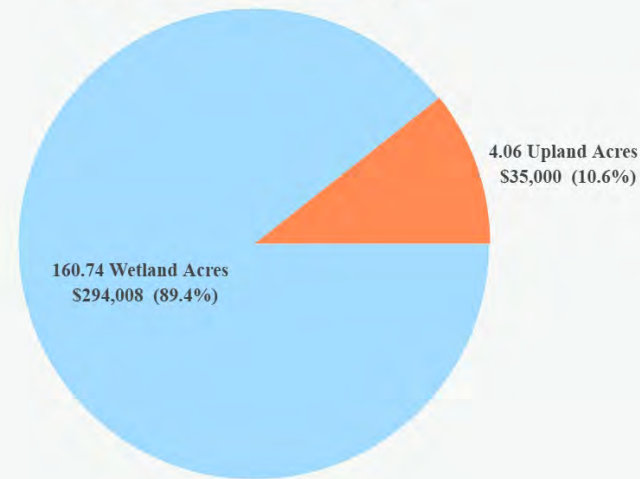
**4.06**  
**UPLAND ACRES**

**161**  
**WETLAND ACRES**

# MARYLAND



Investments by Habitat Type



Restoration efforts have connected 2,920 acres of habitat to the floodplain of the Pocomoke River. ©USFWS

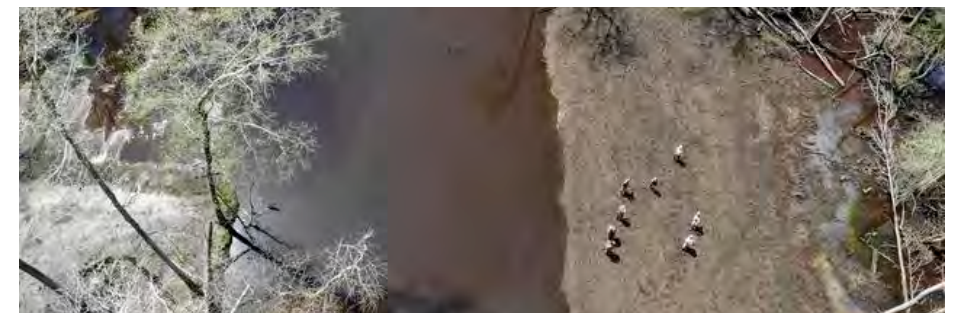
## PROJECT HIGHLIGHT:

As of fall 2022, a long-running partnership between the USFWS and federal agencies, state agencies, local municipalities, NGOs, and private landowners has restored floodplain connection in almost 3,000 acres of participating lands along a nine-mile stretch of the Pocomoke River.

In the 1940s, the river was channelized, and the dredge material placed in linear berms along the river bank reducing floodplain connection and altering floodplain hydrology. Channelization also reduced floodplain storage and storm resiliency. Since 2008, the partnership has restored hydrologic connection by constructing 100-200' wide breaches in the artificial levees, allowing access of the river to the floodplain.

When the final two project areas, which encompass 155 acres and 11 parcels, are completed, a total of 2,929 acres of floodplain forests will be better connected to the river. Most of the land is private, but includes some state- and county-owned parcels. Many of the parcels are enrolled in permanent easements through the NRCS Wetland Reserve Easement Program.

These efforts bring back a natural ebb and flow of floodwaters, enhancing habitat for key species including the American black duck and spotted turtle. The protection of the forests through permanent easements protects an important area for migratory birds. Doppler radar shows large flocks of migratory songbirds using the Pocomoke forests in migration. Increased biogeochemical processing of floodwaters reduces nutrients and sediment reaching the tidal section of the Pocomoke River and Chesapeake Bay. Reducing nutrients and sediments is a major goal of the Chesapeake Bay restoration effort and should lead to better conditions for the growth of submerged aquatic vegetation, oyster reefs, and increased oxygen in estuarine waters.



Aerial view of partners at project site. ©The Nature Conservancy

**\$3.4M**  
PFW PROJECT  
INVESTMENT

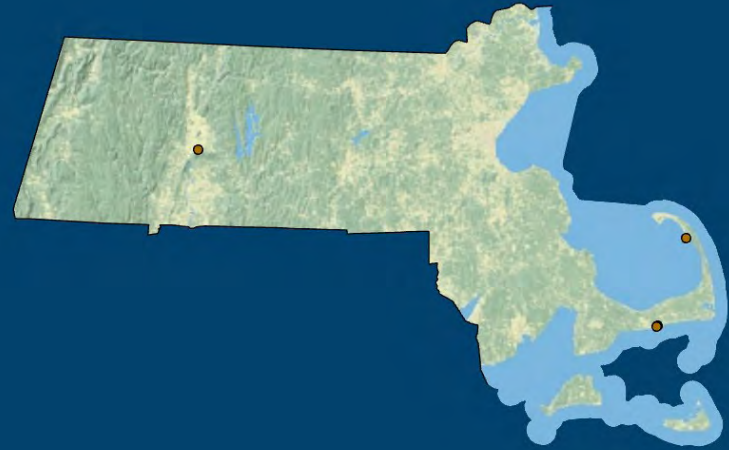
**\$5.5M**  
PARTNER  
CONTRIBUTION

**\$8.9M**  
TOTAL  
PROJECT  
INVESTMENT

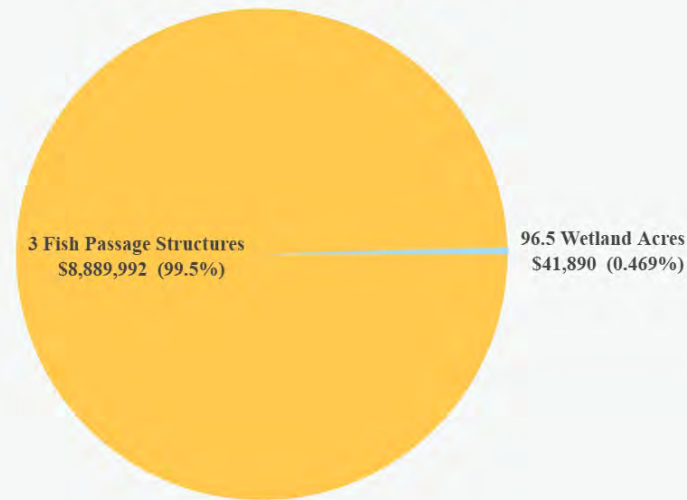
**\$1:1.6**  
LEVERAGE

**96.5**  
WETLAND  
ACRES  
**3**  
FISH  
PASSAGE  
STRUCTURES

# MASSACHUSETTS



Investments by Habitat Type



The Parkers River Project Team, comprised of the Division of Ecological Restoration (DER), the Town of Yarmouth (Town), the U.S. Fish and Wildlife Service (USFWS) Partners for Wildlife program, the National Oceanic and Atmospheric Administration (NOAA), the Cape Cod Conservation District, Natural Resources Conservation Service (NRCS), the Massachusetts Department of Transportation (MassDOT), and the Association to Preserve Cape Cod (APCC) guided this project through engineering and design, construction and monitoring. ©Gerald Beetham.

## PROJECT HIGHLIGHT:

### Parkers River

The Parkers River, located in the Town of Yarmouth, MA on the south shore of Cape Cod is a perennial stream originating in Long Pond, a 63-acre headwater pond. It flows south through Seine Pond, a 93-acre salt pond, 60 acres of salt marsh, and then to Nantucket Sound. Tidal circulation in the Parkers River estuary had been detrimentally affected by an undersized bridge crossing on Route 28. The 18-ft wide bridge opening not only restricted the amount of tidal exchange, it also impounded storm surges for extended periods, thus increasing the likelihood for economic damage during coastal storms. Ecologically, the restricted opening was also responsible for high flow rates under the bridge, which limited passage by

marine and diadromous fish during high flow stages of the tidal cycle. Further, the restricted tides reduced average salinity and the amount of sediment that could be transported into the estuary. Both of which will be needed for the salt marsh to keep pace with sea-level rise.

This restoration effort focused on eliminating the tidal restriction by constructing a new bridge that increased the opening width from 18 ft to 30 ft. Completed hydraulic models identified this opening as the optimal size for maximizing tidal exchange and maximizing outflow after storm events, while minimizing scour and tidal encroachment on abutting properties. The Parkers River Project Team, comprised of the Division of Ecological Restoration (DER), the Town of Yarmouth (Town), the U.S. Fish and Wildlife Service (USFWS) Partners for Wildlife program, the National Oceanic and Atmospheric Administration (NOAA), the Cape Cod Conservation District, Natural Resources Conservation Service (NRCS), the Massachusetts Department of Transportation (MassDOT), and the Association to Preserve Cape Cod (APCC) guided this project through engineering and design, construction and monitoring.



Tidal marsh at project site. ©USFWS

Bridge upstream post restoration. Photo by Gerald Beetham

© gerald beetham

**\$73,268**  
PFW PROJECT INVESTMENT

**\$1.07M**  
PARTNER CONTRIBUTION

**\$1.15M**  
TOTAL PROJECT INVESTMENT

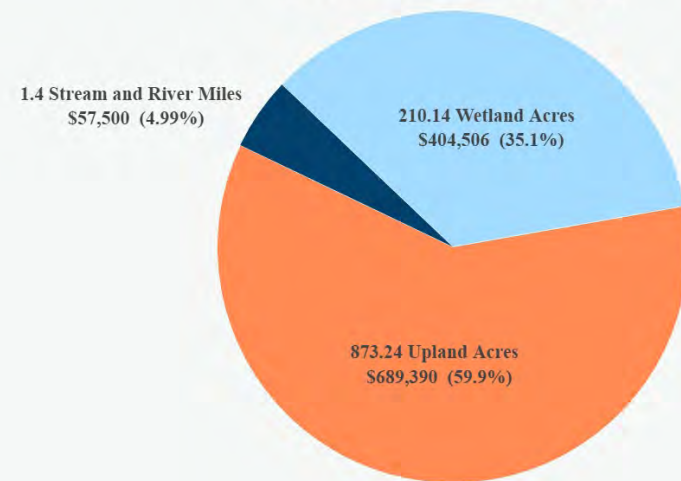
**\$1:14.7**  
LEVERAGE

**873.24**  
UPLAND ACRES  
**210**  
WETLAND ACRES  
**1.4**  
STREAM AND RIVER MILES

# MICHIGAN



Investments by Habitat Type



Riverbend West project site. ©USFWS



Volunteers at Riverbend West restoration site. ©USFWS

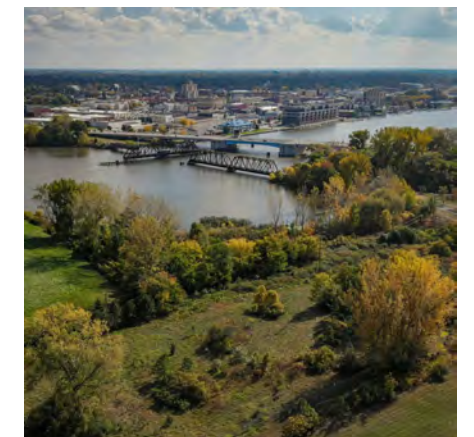
## PROJECT HIGHLIGHT:

PFW partnered with Saginaw Basin Land Conservancy and the City of Bay City to restore a parcel of land owned by the city but left vacant and overgrown for many years. This park is within the city limits with a population near 35,000 with a median household income. As of 2010, US Census Data shows 9.79% of residents do not have a vehicle, so parks like Riverbend are important amenities for this community. Riverbend West required an extensive process to allow for its opening as a rustic nature access site. The first step was a triage approach to mitigate contaminated soils, gain approvals from the Michigan Department of Environment, Great Lakes & Energy (EGLE), eradicate invasive species, remove barriers to use, and clean up and maintain acreage. The second step involved extensive native

plantings and natural features restoration and will provide a broad assortment of built and cultivated amenities like benches, interpretive signage, rustic gathering spaces, and a meandering pathway. The pathway was constructed out of porous, recycled material to ensure no surface runoff issues were created by the new recreational opportunity.

Riverbend West is a rare undeveloped riparian site on the Saginaw River. It contains upland and wetland habitats frequented by waterfowl, deer, small mammals, herpetofauna, and migratory songbirds. We envision this as a rustic nature access site where users can experience the river and a scenic vista of Bay City's downtown in a way that does not currently exist.

<https://www.sblc-mi.org/riverbend-west-nature-area>



Left: Ribbon cutting at Riverbend West project. The restoration of a site along the Saginaw River to create a rustic nature experience with limited recreational development in keeping with the natural character of the site, the Saginaw Basin Land Conservancy and the City of Bay City. Second photo: aerial view of Riverbend West project area. ©USFWS



**\$477,414**  
PFW PROJECT  
INVESTMENT

**\$2.63M**  
PARTNER  
CONTRIBUTION

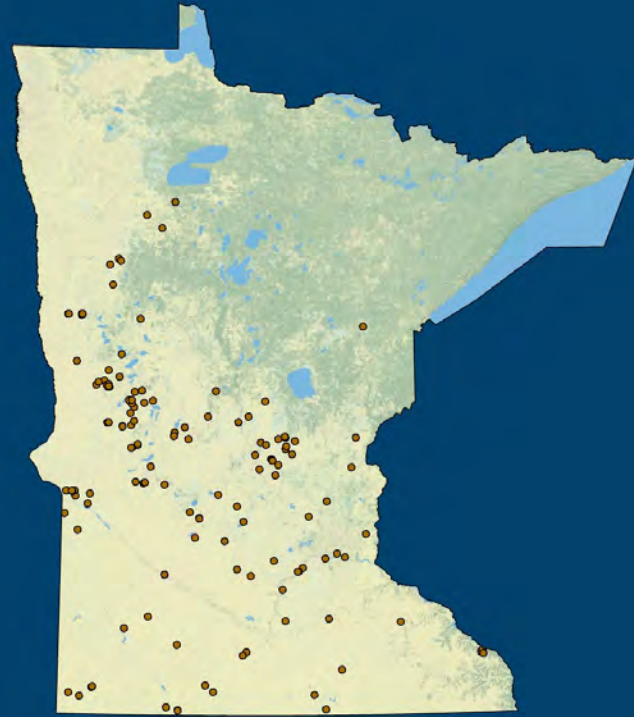
**\$3.11M**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:5.5**  
LEVERAGE

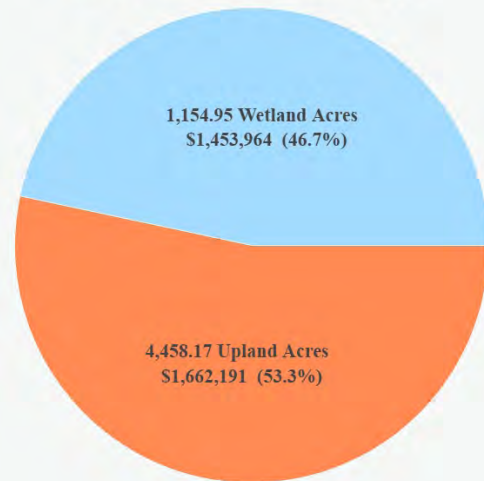
**4,458**  
UPLAND  
ACRES

**1,155**  
WETLAND  
ACRES

# MINNESOTA



Investments by Habitat Type



During restoration. ©USFWS



Photos show before, during and after restoration of previously drained wetland areas. ©USFWS

## PROJECT HIGHLIGHT:

This project consisted of restoring several drained wetlands. The representative Partners for Fish and Wildlife (PFW) Biologist met with the landowner and other stakeholders to complete the survey, design, budget, and necessary permitting which determined the habitat could be enhanced. As a result, 5 wetlands was restored. This restoration will now provide habitat to Federal trust species and other resident wildlife; while also providing biological services to the community like improved water quality and carbon sequestration.

The Partners biologist assessed the site, developed the restoration plan, and oversaw completion of the project providing funds necessary in order to complete the project. This project supports the Upper Mississippi/Great Lakes

Joint Venture Area and the Comprehensive Wildlife Conservation Strategy Action Plan. Furthermore, this project adds habitat connectivity to the region being close to several large state Wildlife Management Areas and similar restoration projects conducted by the PFW Program.



During restoration at project site. ©USFWS

\$0

PFW PROJECT INVESTMENT

\$71,069

PARTNER CONTRIBUTION

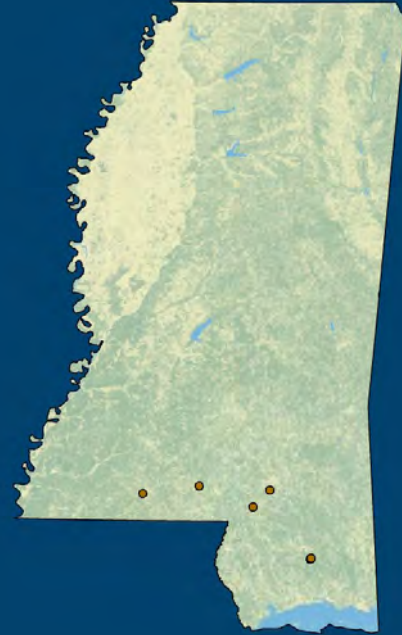
\$71,069

TOTAL PROJECT INVESTMENT

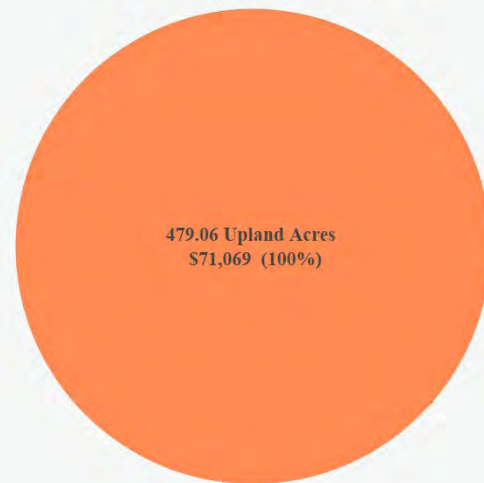
479

UPLAND ACRES

# MISSISSIPPI



Investments by Habitat Type



During cedar removal at project site. ©USFWS

## PROJECT HIGHLIGHT:

This project restored native prairie habitat in the Blackbelt Prairie in Mississippi. Mississippi is also responsible for prairie restoration for a portion of western Alabama. This is a very rare habitat with approximately one percent of it remaining.

This property is 2000 acres located in Greene County, AL. The property has been actively managed for native warm season prairie grasses along the higher ridges. Native grasses including Big Blue stem, Little Blue stem, and Indian grass are present on the site. In recent years, the landowner has removed sections of invasive red cedar to release existing native warm season greases and forbs with excellent results. Prescribed burns are administered in management compartments to control the invading woody species.

For this project, 153 acres of prairie were overrun by woody species such as eastern red cedar. The landowner has already restored approximately 300 acres of prairie habitat in the recent past. Remnant prairie grasses are still present on the site. Removal of the competing species with mechanical means and subsequent fire should release the desired prairie species and return the plant community back to early successional prairie grasses and forbs.

Partners funded mechanical removal of 71.4 acres of eastern red cedar. The landowner was responsible for firebreaks and prescribed burning on approximately 300 acres which includes the 71.4 acres that the Partners Program treated. The Monarch butterfly (*Danaus plexippus*), Henslow's Sparrow (*Ammodramus henslowii*), Prairie Warbler (*Setophaga discolor*), and Southern Combshell (*Epioblasma penita*) were at-risk species benefitted by this project.



Left: Before and After (right) cedar removal at project site. ©USFWS

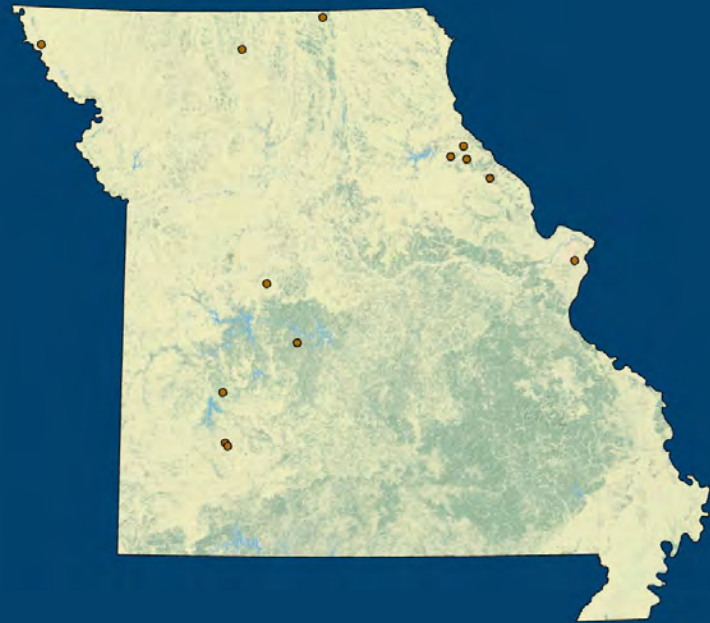
**\$47,834**  
PFW PROJECT  
INVESTMENT

**\$100,409**  
PARTNER  
CONTRIBUTION

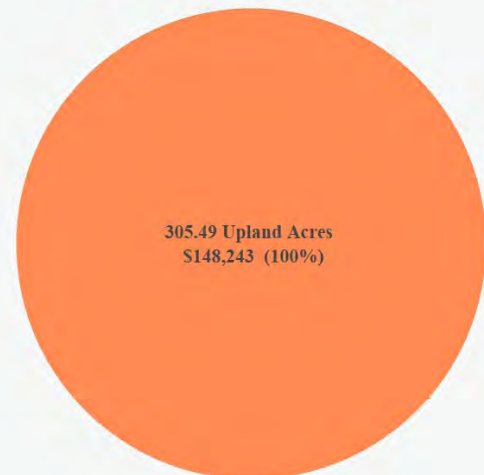
**\$148,243**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:2.1**  
LEVERAGE

# MISSOURI



Investments by Habitat Type



**305.49**  
UPLAND  
ACRES

View of Toby Cave, © USFWS



Volunteers welding at Toby Cave Gate project. ©USFWS

## PROJECT HIGHLIGHT:

This project involves construction of a cave gate to protect this karst feature on private lands. Caves often support rare, cave-dwelling organisms, which is the case for this particular cave. Missouri is home to 6,800 documented caves with many more caves discovered each year. There are always interests in cave exploration in this state and it is important to protect some of them from unwanted occupants. Humans can carry in trash and other things that can upset the delicate balance on the species that dwell there and the ecology of the cave if they are not careful.

This project was done to protect Low Water Bridge Cave from unauthorized and illegal trespassers that could harm the gray bat colony that uses this cave, by installing a fly-over style cave gate. Doing so

will allow wildlife to move freely in and out of the cave, including the gray bats in the colony, but will keep unwanted (human) trespassers from entering the cave. The gate should also reduce the potential introduction of pathogens like White Nose Syndrome. The site is heavily used by migrating bats during the spring and fall seasons and serves as an important stopover location for bats that are moving between their summer and winter grounds. We hope that once the cave is protected and disturbance is reduced, the cave will also become an attractive option for breeding female bats and eventually become occupied by maternity colony.



Toby Gate crew during construction at project site. ©USFWS

**\$345,003**

PFW PROJECT INVESTMENT

**\$2.13M**

PARTNER CONTRIBUTION

**\$2.47M**

TOTAL PROJECT INVESTMENT

**\$1:6.1**

LEVERAGE

**65.52**

STREAM AND RIVER MILES

**46,426**

UPLAND ACRES

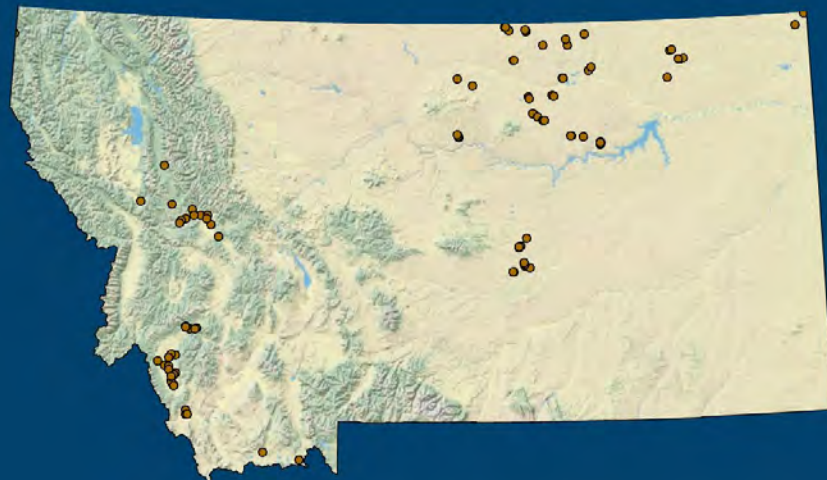
**1,521**

WETLAND ACRES

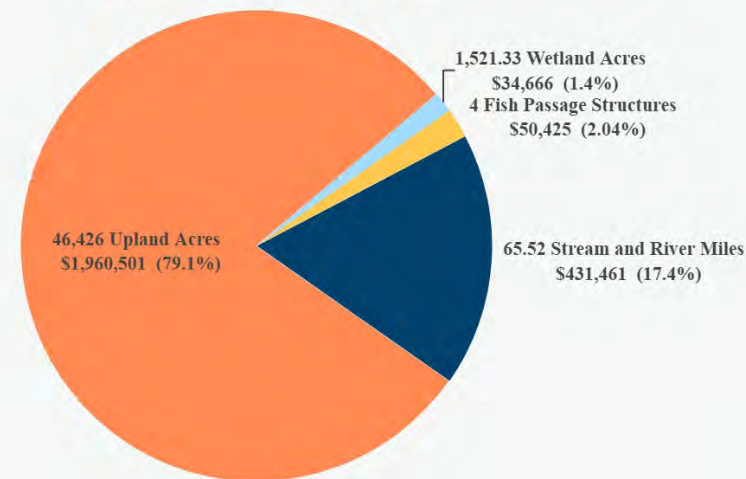
**4**

FISH PASSAGE STRUCTURES

# MONTANA



Investments by Habitat Type



Lower Richardson Project site. © USFWS



Project volunteers upgrade fencing to "wildlife friendly" to allow pronghorn to migrate underneath. ©USFWS

## PROJECT HIGHLIGHT:

### Lower Richardson Wildlife-Friendly Fence Project

Pronghorn on Montana's northern Great Plains undertake one of the longest land migrations on the continent, annually making the 120-km plus journey from wintering grounds in the shrub-steppe of central Montana north to their breeding areas in northern Montana and southern Saskatchewan. Along the way, they cross hundreds of barbed-wire fences, each one carrying potential risk of injury, entanglement, or impassability. Since 2019, Montana PFW has been working with a broad partnership, including Montana Fish, Wildlife and Parks (FWP), the Ranchers Stewardship Alliance (RSA), National Fish and Wildlife Foundation (NFWF) and others to identify and improve particularly important connectivity corridors for pronghorn and other big

game species, following Secretarial Order 3362 (Improving Habitat Quality in Western Big-Game Winter Range and Migration Corridors).

One example is the Lower Richardson Project, which removed 2.4 miles of old, dilapidated woven-wire fence with new, wildlife-friendly fence in a particularly critical linkage area for pronghorn. The project was a collaboration between RSA, PFW, the private landowner and the Hi-Line Sportsmen, a local hunter group. Project funding was through a NFWF Western Big Game Seasonal Habitat and Migration Corridors Fund and PFW. The old fence was removed with volunteer labor and project funds paid for the installation of the new fence, which was completed in fall of 2022. We are looking forward to seeing more animals moving freely through this important corridor this winter and in years to come!



Pronghorn crossing under a barbed wire fence in northeast Montana. ©USFWS

**\$259,368**  
PFW PROJECT INVESTMENT

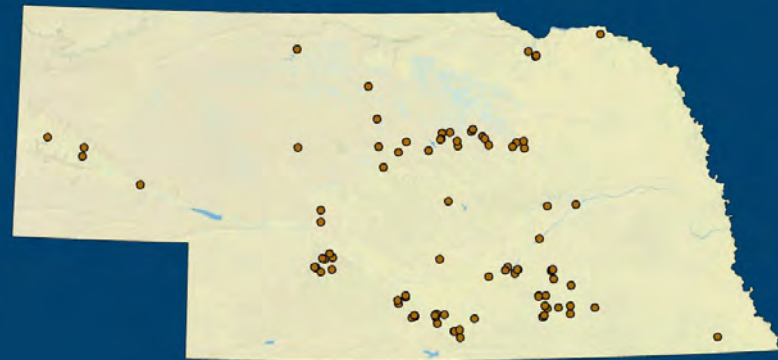
**\$2.5M**  
PARTNER CONTRIBUTION

**\$2.76M**  
TOTAL PROJECT INVESTMENT

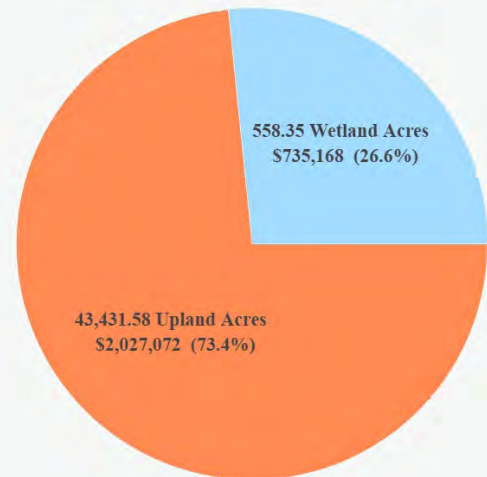
**\$1:9.6**  
LEVERAGE

**43,431**  
UPLAND ACRES  
**558.3**  
WETLAND ACRES

# NEBRASKA



Investments by Habitat Type



Wet meadow habitat in the Sandhills focus area of Nebraska. ©USFWS

## PROJECT HIGHLIGHT:

### Sandhills Wetland Restoration

The Sandhills of Nebraska is a 19,600 square-mile sand dune formation covered by native grasses in north-central Nebraska. The Sandhills represents the largest contiguous tract of grassland remaining in the United States and the largest stabilized sand dune area in the Western Hemisphere. The hydrology associated with these sand dunes has created a vast groundwater reservoir and 1.3 million acres of wetlands. The Sandhills as a whole contain over 1.1 million acres of palustrine and riverine wetlands, 85,000 acres of lacustrine wetlands, and over 11.5 million acres of grasslands. The Sandhills landscape contains abundant lakes, wetlands, wet meadows, and spring fed streams that are surrounded by a sea of grassland that provide excellent

habitat for resident and migratory wildlife with ranching being the primary economic use, with approximately 94% of the land in private ownership.

The primary purpose of this project was to restore and enhance approximately 257 acres of wet meadow/wetland habitat within the Sandhills of Nebraska. Historically, wet meadows such as this one, were ditched to facilitate water movement to allow for seasonal haying and grazing. Over time, these ditches became more incised and consequently, lowered the water table within the wet meadow/wetlands. This resulted in the de-watering of this wetland habitat and the subsequent reduction in value as wildlife habitat. This project focused primarily on restoring the hydrology, functions and values of this wet meadow/wetland by using existing side casted material from the ditch to create earthen plugs within the ditch. Additionally, an existing culvert was extended and a riser tube was added in order to raise the water level within the meadow. By installing the plugs and adding the riser tube to the existing culvert approximately 257 acres of wetland/wet meadow habitat was restored and enhanced for migratory waterfowl, shorebirds and other native wildlife species that utilize these habitats.



Wet meadow habitat in the Sandhills focus area of Nebraska. ©USFWS

Wet meadow habitat in the Sandhills focus area of Nebraska. © USFWS.

**\$102,238**

PFW PROJECT INVESTMENT

**\$142,139**

PARTNER CONTRIBUTION

**\$244,377**

TOTAL PROJECT INVESTMENT

**\$1:1.3**

LEVERAGE

**17.96**

UPLAND ACRES

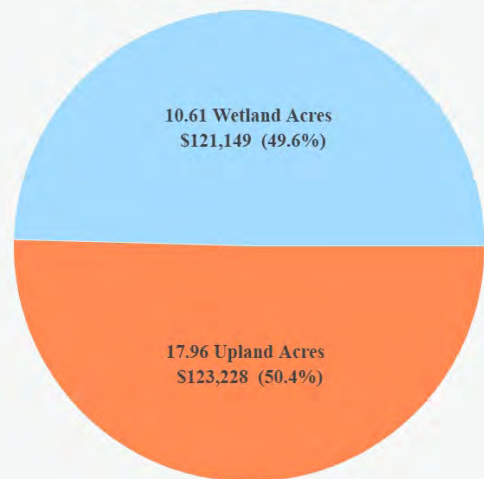
**10.61**

WETLAND ACRES

# NEVADA



Investments by Habitat Type



Restored banks, post restoration. © USFWS



Project site visits and process-based restoration utilized at project site. ©USFWS

## PROJECT HIGHLIGHT:

### West Walker River Habitat Enhancement Project

The Tailwater Ranch includes 500 acres of riparian habitat and approximately 4.5 miles of the West Walker River in Nevada. Due to alterations of the flood regime, changes to the vegetation community, and other anthropogenic factors, erosion has been occurring along the river leading to loss of riparian habitat, increased sediment load, and unstable banks. This project consisted of vegetation planting, streambank stabilization, and instream structures to improve habitat for migratory birds as well as aquatic species.

The objectives of habitat restoration activities were to:

- Stabilize streambanks to prevent additional erosion, reduce sediment, and preserve

intact riparian habitats.

- Improve vegetation structure along the stream.
- Improve the function of the stream.
- Maintain and enhance a viable recreational fishery.

Instream work included mechanically placed rock for erosion control and hand-built structures. The erosion control work was conducted at four meander sites within the upstream half-mile of the property. A series of rock J-Hook Vanes were constructed that will serve to move the high-velocity core of the channel toward the center of the stream and allow for vegetation recovery of the outside bend of the meander. In addition to the erosion control work, mid-channel and bank attached structures were hand built to improve channel complexity and fish habitat at base flow during irrigation period, and habitat structures were built in the thalweg at winter flow after irrigation ends, to create deep water cover. Upon completion of the stream work activities, native seed mixes, specific to each of the three distinct conditions of disturbed areas of the project (upland staging areas, graded bank slopes, and floodplain bench areas) were broadcast. This was a multi-year project culminating in 2022. The area is being monitored for river response and vegetative recovery.



Susan Abele (NV State Coordinator) with Kevin Swift (PBR Contractor). ©USFWS

**\$12,300**  
PFW PROJECT INVESTMENT

**\$5,000**  
PARTNER CONTRIBUTION

**\$17,300**  
TOTAL PROJECT INVESTMENT

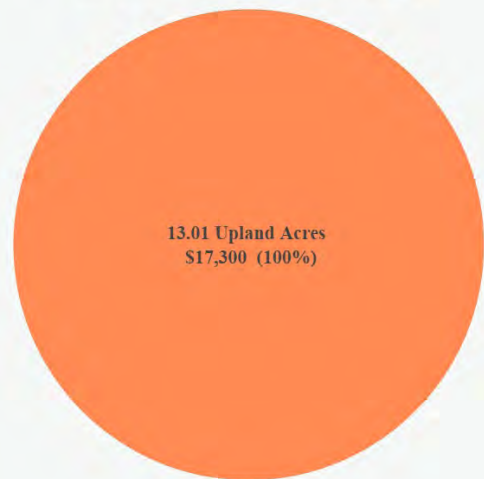
**\$1:0.4**  
LEVERAGE

**13**  
UPLAND ACRES

# NEW HAMPSHIRE



Investments by Habitat Type



Skidding / tree removal at project site to benefit the Karner Blue Butterfly. ©USFWS

## PROJECT HIGHLIGHT:

### Karner Blue Forestry Project – Concord, NH

The U.S. Fish and Wildlife Service (Service) New England Field Office (NEFO) Partners for Fish and Wildlife Program (PFW) and the New Hampshire Fish and Game Department (NHFG) worked in partnership to create Frosted elfin (*Callophrys irus*) and Karner Blue butterfly (*Plebejus melissa samuelis*) habitat on approximately 10 acres of land owned by the City of Concord, NH.

The City of Concord, The Service, and the New Hampshire Fish and Game Department (NHFG) entered into a Memorandum of Understanding Agreement on July 9, 1992, which gives permission to the Service and NHFG to conduct habitat management on the City of Concord's property.

The project was designed by NHFG staff primarily to habitat for these local at-risk pollinator species through the removal of hardwood trees and thinning of additional pitch pine to implement a prescribed fire on approximately 13 acres. The Service allocated funding to the contractor via an existing cooperative agreement between the Service and the Wildlife Management Institute, Inc. (WMI) to conduct forestry operations. The total cost of the project was \$12,300 with in kind support provided by the NHFG and PFW program staff.



Three photos show before and after progress of removing hardwood trees from ten acres of habitat utilized by at-risk species. ©USFWS

Tree thinning in progress at restoration site. ©USFWS

**\$88,725**

PFW PROJECT INVESTMENT

**\$136,752**

PARTNER CONTRIBUTION

**\$225,477**

TOTAL PROJECT INVESTMENT

**\$1:1.5**

LEVERAGE

**1.37**

STREAM AND RIVER MILES

**76.2**

UPLAND ACRES

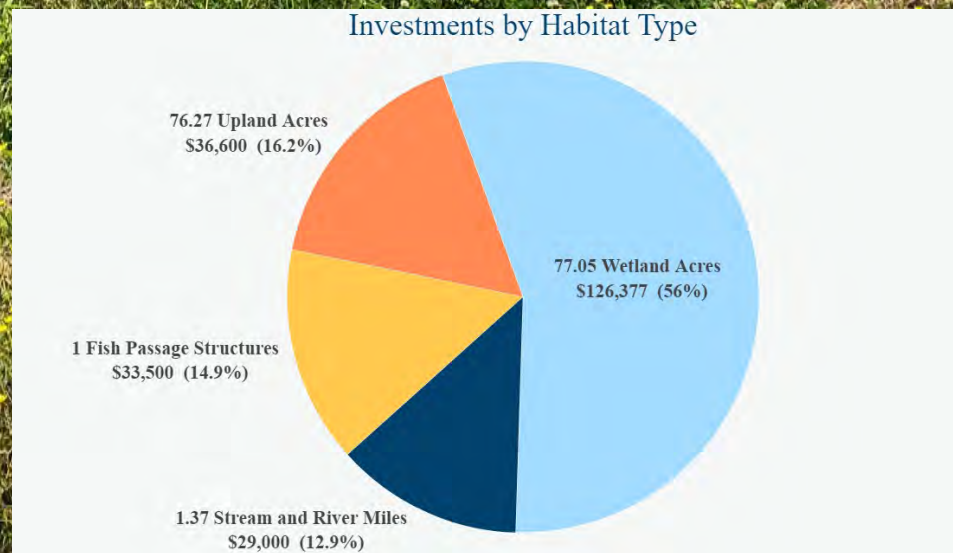
**77**

WETLAND ACRES

**1**

FISH PASSAGE STRUCTURE

# NEW JERSEY



Swede Run restored grassland. ©USFWS



Mark and plants at the Swede Run restoration site. ©USFWS

## PROJECT HIGHLIGHT:

Moorestown Township is working with the Service to restore grassland habitat for area-sensitive grassland-dependent migratory birds and the Xerces Society to establish a pollinator garden. The Service will also work with the Township to restore three vernal pools during a second phase of the project.

The Service worked with Moorestown Township and a local conservation group dedicated to protecting open space called Save The Environment of Moorestown (STEM) to restore a recently fallowed farm field to native grassland and pollinator habitat. The field is permanently protected by the township and dedicated to passive use with a recreational walking trail established around the outside edge. The community is interested in developing additional

passive recreation opportunities (hiking, birdwatching, nature observation, photography, etc.). The site is located within five miles of the Delaware River, making this an excellent place to attract migratory birds utilizing the Delaware River flyway. Given the size of this field (over 70 acres), it has the potential to attract area-sensitive, grassland-obligate breeding birds: grasshopper sparrow, eastern meadowlark, Savannah sparrow, American kestrel, horned lark. Edge-nesting birds will also benefit from this restoration project including eastern bluebird, blue-winged warbler, field sparrow, prairie warbler, indigo bunting, and wild turkey.

The Service performed pre- and post-restoration avian surveys; our monitoring documented at least five pairs of grasshopper sparrows. Native grasses often require up to three years to establish and we will continue to monitor avian response to the site as it matures.



Swede Run project sign. ©USFWS



**\$324,638**

PFW PROJECT INVESTMENT

**\$181,218**

PARTNER CONTRIBUTION

**\$505,856**

TOTAL PROJECT INVESTMENT

**\$1:0.5**

LEVERAGE

**1.2**

STREAM AND RIVER MILES

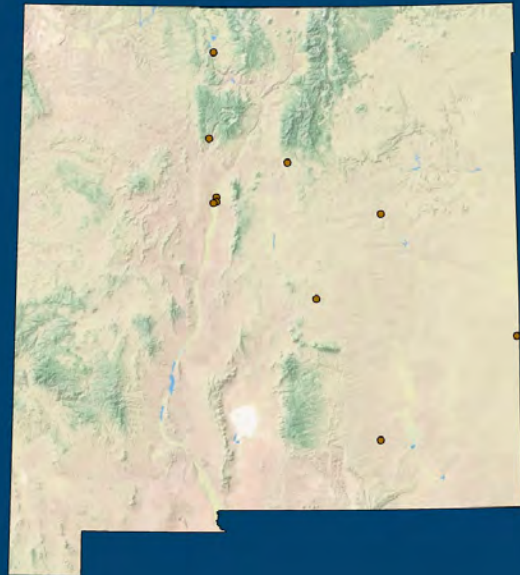
**4,146**

UPLAND ACRES

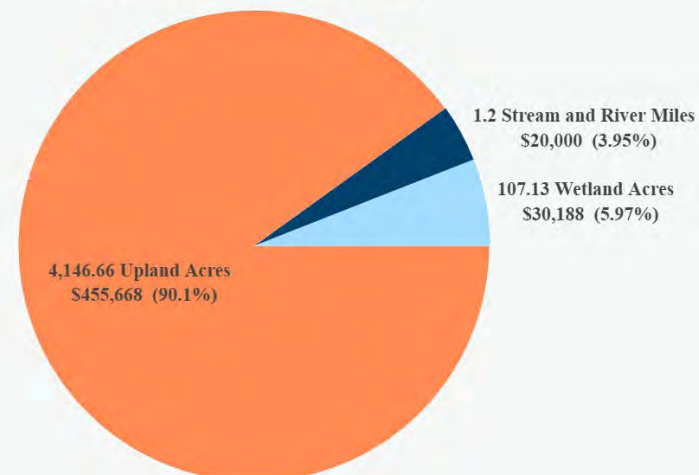
**107**

WETLAND ACRES

# NEW MEXICO



Investments by Habitat Type



Volunteers working to reestablish native riparian vegetation at Rio Grande Valley State Park. ©USFWS

## PROJECT HIGHLIGHT:

Collaborating with City of Albuquerque, Middle Rio Grande Conservancy District, University of New Mexico, and Community to Restore Native Riparian Vegetation along a Major Migratory Bird Corridor

This project reestablished native riparian vegetation where natural recuperation was absent due to a lack of overbank flooding. Located in the Rio Grande Valley State Park, along a stretch that was severely burned several years ago, the majority of revegetation work will be done through various community education and planting events. The community education work will include site planning and hands-on project based learning experiences for local students and community.

The planting work was accomplished through a collaboration between local land-management agencies,

community and regional planning students from a local university, and other community groups.

Restoring the native riparian vegetation will ensure this wildlife corridor will continue to be suitable habitat. In addition to re-introducing native woody tree riparian vegetation, we will also be planting a series of native shrubs and forbs that are ecologically missing from the Bosque. As a means to continue community engagement, a cultural botanical garden for local community members will be established.



Volunteers working to reestablish native riparian vegetation at Rio Grande Valley State Park. ©USFWS

**\$1,000**  
PFW PROJECT INVESTMENT

**\$2.22M**  
PARTNER CONTRIBUTION

**\$2.23M**  
TOTAL PROJECT INVESTMENT

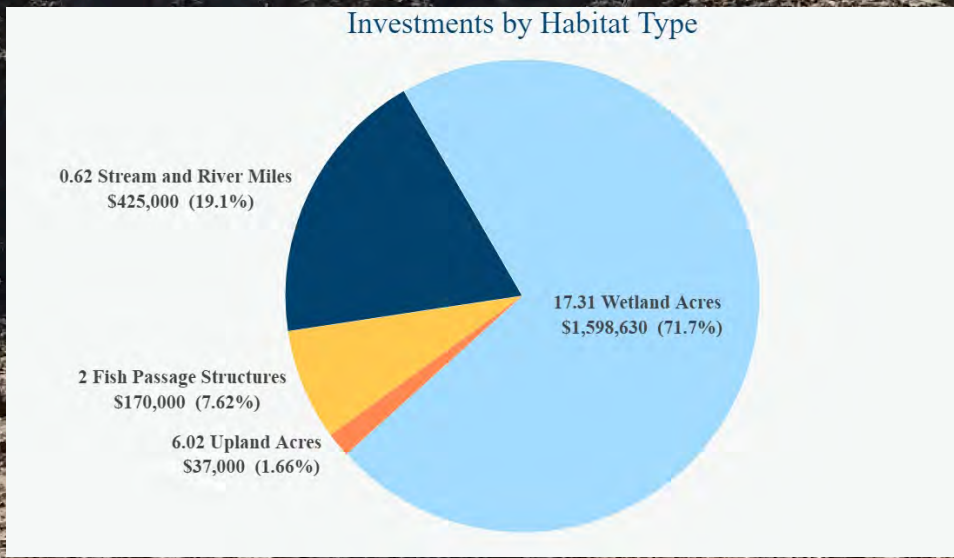
**\$1:2,229**  
LEVERAGE

**0.62**  
STREAM AND RIVER MILES

**6.02**  
UPLAND ACRES

**17.31**  
WETLAND ACRES

**2**  
FISH PASSAGE STRUCTURES



During restoration. © USFWS



Completed restoration. ©USFWS

### PROJECT HIGHLIGHT:

The New York Field Office's Partners for Fish and Wildlife Program partnered with a private landowner to establish a wetland complex of approximately five acres in Madison County, New York. The property is in a Nature Conservancy identified Resilient and Connected Network corridor. This complex consists of four potholes that are connected to a larger permanent wetland. The ability to control water levels on this larger wetland will be accomplished by means of a water control structure that was installed during construction of the earthen berm. The landowner completed all surveying, and has provided countless resources and time, and a substantial cost-share.

The Service provided financial and

technical assistance, materials, in-kind services, and oversight during the construction phase of the project. The project will provide high quality habitat for many species of waterfowl, specifically wood ducks; shorebirds, wading birds, and a host of other species.



Before and after restoration. ©USFWS

**\$178,871**  
PFW PROJECT  
INVESTMENT

**\$236,708**  
PARTNER  
CONTRIBUTION

**\$415,579**  
TOTAL  
PROJECT  
INVESTMENT

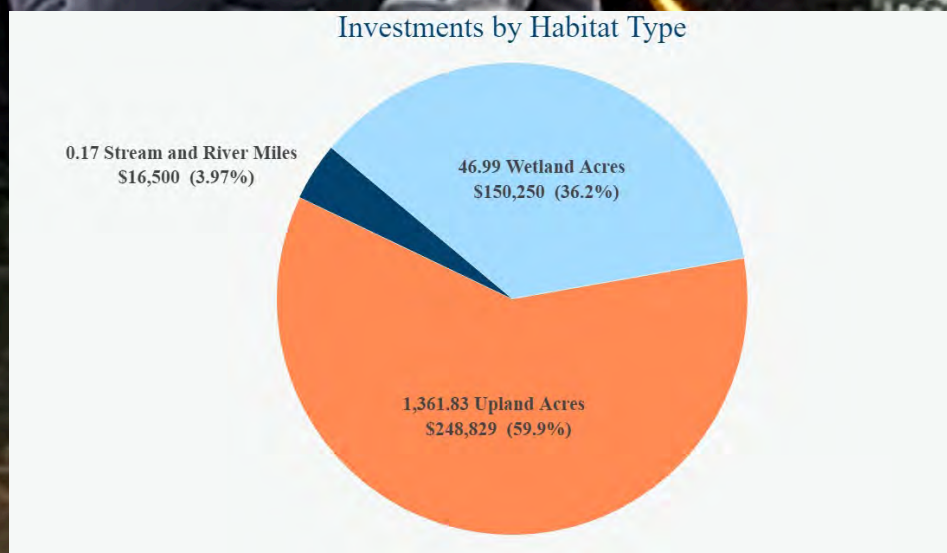
**\$1:1.3**  
LEVERAGE

**0.17**  
STREAM  
AND RIVER  
MILES

**1362**  
UPLAND  
ACRES

**47**  
WETLAND  
ACRES

# NORTH CAROLINA



Hellbender and mussel survey instream. ©LauraFogo /USFWS



Left to right: Streambank riparian restoration, Appalachian State University live stake planting day, Juvenile eastern Hellbender. ©Laura Fogo/USFWS

## PROJECT HIGHLIGHT:

### Todd Island Park

Todd Island Park (TIP), a protected 10-acre public park is located on the South Fork of the New River in Todd, Ashe County, NC. It is managed and owned by the Todd Community Preservation Organization-TCPO (<https://toddnc.org/about-tcpo-2/current-projects/todd-island-park-river-restoration-project/>). Crystal clear "Mountain Heritage Trout Waters" are popular and utilized by anglers and tourists. They host a native and stocked trout fishery, hiking trail, and habitat for at-risk, federally threatened, endangered species. Classified as a National Wild and Scenic River, the public enjoys canoeing and tubing the New River Paddle Trail, which starts in Todd.

Aquatic habitat connectivity:  
PFW, TCPO, Blue Ridge RC&D,

and partners utilized trackhoe equipment to restore 4,486 linear feet of eroding banks and river habitat. In-stream and bank stabilization structures incorporated rock and tree materials to build j-hooks, and cross vanes, and "boulder rock clusters" designed specifically for the Eastern hellbender, AKA "snot otter," the largest salamander on earth! Five acres of riparian buffers were planted with native trees, shrubs and pollinator seed mix. Reconnecting fragmented stream corridors upstream to quality habitat downstream increases resiliency for rare species.

Conservation/restoration benefits the at-risk green floater, federally threatened Virginia spiraea and Northern long-eared bat, federally endangered gray bat, candidate Monarch butterfly, and the state endangered Eastern hellbender. Biological outcomes include proactive conservation for at-risk species to help preclude the need to list the green floater and hellbender; restoration of pollinator habitat; preserving, enhancing, and restoring riparian buffers for bat roosting and foraging habitat, and building resilient aquatic ecosystems for all aquatic life.

Many species associated with longleaf pine forests like fox squirrels, Bachman's sparrow, brown-headed nuthatches, Northern bobwhite, and wild turkey are benefitting from the restoration of this property. Endangered red-cockaded woodpeckers are active only a mile south and it is anticipated that they may forage in the restored longleaf pine in the near future and perhaps one day nest there.

**\$112,401**  
PFW PROJECT  
INVESTMENT

**\$2.53M**  
PARTNER  
CONTRIBUTION

**\$2.64M**  
TOTAL  
PROJECT  
INVESTMENT

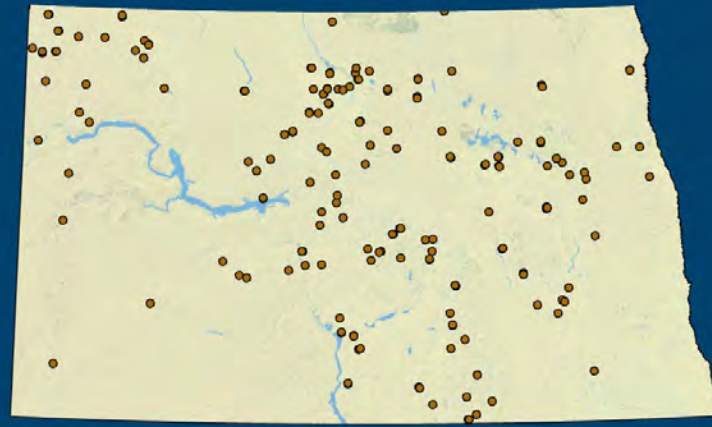
**\$1:22.5**  
LEVERAGE

**2.9**  
STREAM  
& RIVER  
MILES

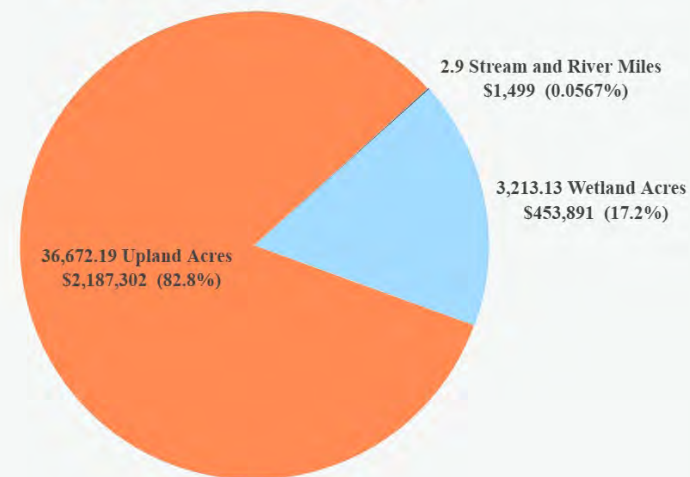
**36,672**  
UPLAND  
ACRES

**3,213**  
WETLAND  
ACRES

# NORTH DAKOTA



Investments by Habitat Type



Pollinator species utilizing the restored site. ©USFWS



Winter seeding using a tractor for winter seeding at the upland prairie project site in North Dakota. ©USFWS

## PROJECT HIGHLIGHT:

### Grass Restoration

Partners for Fish and Wildlife in North Dakota worked with one landowner to restore 182 acres of cropland to a diverse mix of 28 species of native grasses and forbs. This project is located in the Prairie Pothole Region focus area and also enhanced 47 acres of wetlands embedded in the restored grasslands. This project was a bit different than most of our grass restoration projects because of the unique seeding technique that was used. The property is surrounded by wetlands and can be difficult to access during the normal spring/summer planting season. Therefore, the grass was seeded directly into existing snow cover in late-winter/early-spring, prior to spring thaw, so that equipment could access the site while the ground was still frozen. In addition, winter grazing was also occurring on the site and the hoof

action from the cattle helps ensure good germination conditions and the snow provides important moisture once the seeds germinate.

PFW in North Dakota has also worked with this landowner on wetland restoration and grazing system projects on this same site and this grass seeding project will be integrated into the grazing system for proper management. The site has also been secured with USFWS perpetual grassland easements.



Photo of a restored prairie after seeding with native plants blooming the following season. ©USFWS

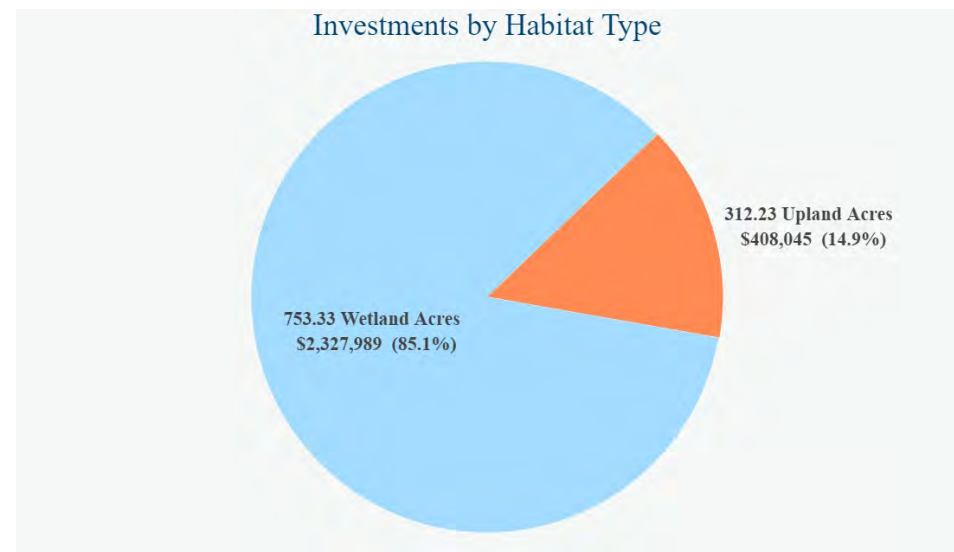
**\$67,808**  
PFW PROJECT INVESTMENT

**\$2.67M**  
PARTNER CONTRIBUTION

**\$2.73M**  
TOTAL PROJECT INVESTMENT

**\$1:39.3**  
LEVERAGE

**312**  
UPLAND ACRES  
**753**  
WETLAND ACRES



"After" restoration / completed project area where water now reconnects from Muddy Creek into the watershed. ©USFWS

**PROJECT HIGHLIGHT:**

waterfowl, wading birds, Indiana Bat, and Bald Eagle. It will also improving water quality within the Western Lake Erie Basin.

The project restored and reconnected approximately 16 acres of coastal marsh in Ottawa County, Ohio.

The area was previously a degraded wetland area where the dikes were failing and eroded. Invasive species such as Purple Loosestrife, Reed Canary Grass, and Phragmites were dominating the project areas.

Partners for Fish and Wildlife developed a design to rebuild the dikes while also installing a structure to reconnect the hydrology of the wetlands to the adjacent Muddy Creek.

The reconnection will also allow water from Muddy Creek to enter the wetland areas where the water can be filtered before it goes back into the watershed.

The restoration will benefit many wetland dependent species such as



Restored coastal marsh wetland area in Ottawa County, Ohio. ©USFWS

**\$331,886**  
PFW PROJECT INVESTMENT

**\$280,949**  
PARTNER CONTRIBUTION

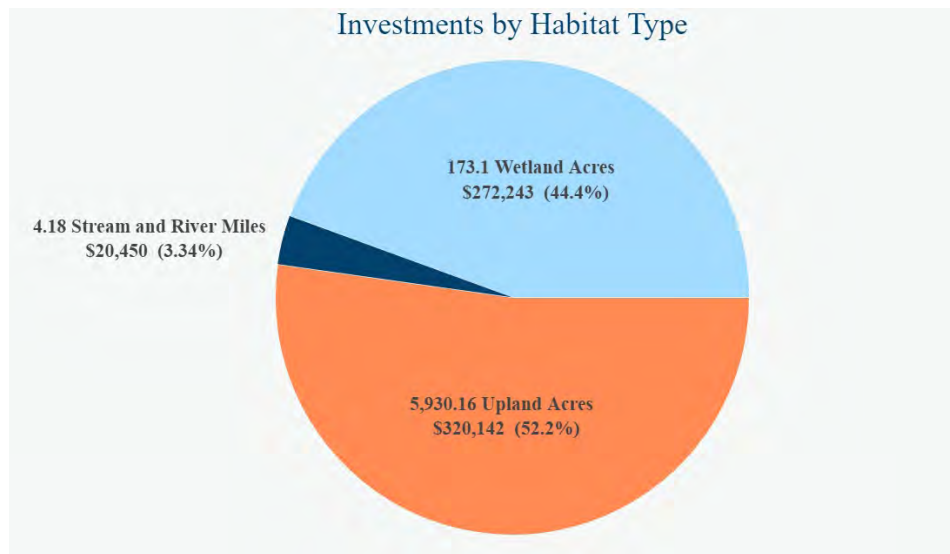
**\$612,835**  
TOTAL PROJECT INVESTMENT

**\$1:0.85**  
LEVERAGE

**4.18**  
STREAM AND RIVER MILES

**5,930**  
UPLAND ACRES

**173**  
WETLAND ACRES



This project entails the removal of 617 acres of eastern red cedar trees on the project site. ©USFWS

**PROJECT HIGHLIGHT:**

**Upland Project: Baker Casey Ranch**

This project restores important grassland habitat through the mechanical removal of 617 acres of eastern red cedar trees. Prescribed fire will be used as a tool to treat the 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. 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. Within 3-4 years following the mechanical cedar tree control, a prescribed burn is recommended

on the restoration area and any adjacent area of the ranch where cedars are invading. Prescribed fire should kill young remaining cedar trees, remove cedar tree skeletons, and improve grazing distribution. To insure 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.



Before and after restoration. ©USFWS

**\$397,027**

PFW PROJECT INVESTMENT

**\$7.8M**

PARTNER CONTRIBUTION

**\$8.2M**

TOTAL PROJECT INVESTMENT

**\$1:19.6**

LEVERAGE

**2.61**

STREAM AND RIVER MILES

**1,199**

UPLAND ACRES

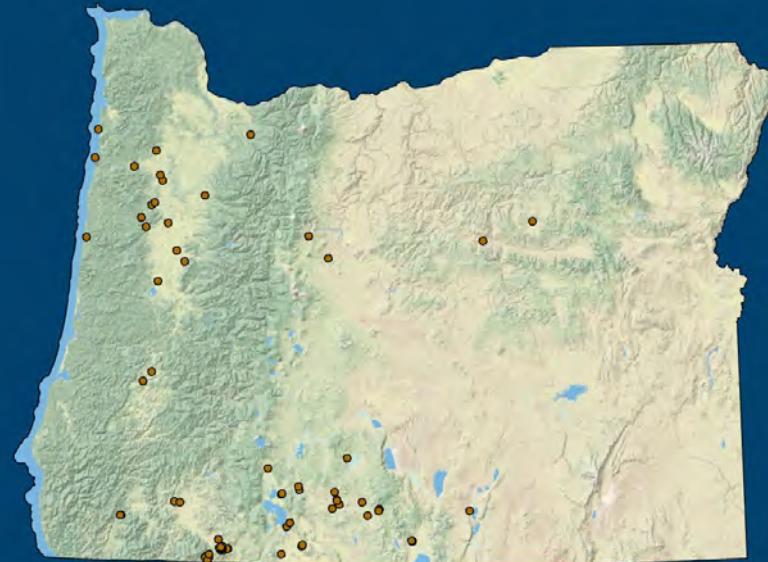
**360**

WETLAND ACRES

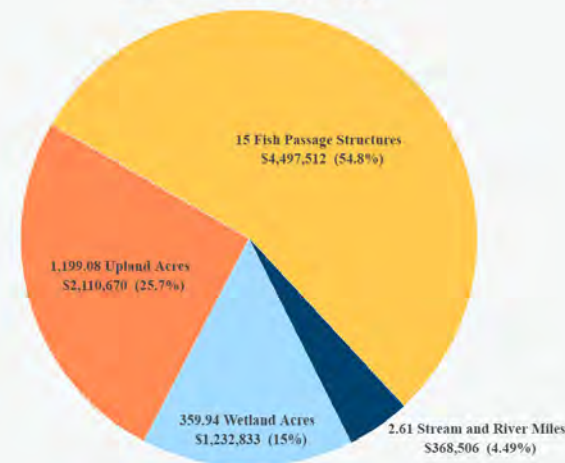
**15**

FISH PASSAGE STRUCTURES

# OREGON



Investments by Habitat Type



After dam removal. ©USFWS



Before and after dam removal restoration. ©USFWS

## PROJECT HIGHLIGHT:

### Partnering to Enhance Water Delivery and Open 18 miles of Fish Habitat for Salmonid Migration

In Josephine County (Oregon), two small dams on Slate and Welter Creeks have been diverting water for the landowner's domestic and irrigation uses for decades. Located on tributaries of the Applegate River, the dams were blocking upstream migrating fish habitat. Additionally, the dams had become a significant maintenance and safety issue for the landowner. Together with the Rogue River Watershed Council and Oregon Water Watch, the Partners for Fish and Wildlife team worked with the private landowners over the course of two years to remove three instream dams in a way that supported both the landowner's needs for water delivery and instream/riparian

wildlife habitat enhancements. Water for domestic uses and irrigation was diverted downstream of the former dams and delivered using a new passive, solar powered, water pumping system. This water delivery system will be more reliable, efficient, and safe for the landowner to maintain. Because the partners were able to find a collaborative and creative solution, nearly 18 miles of fish habitat is now available at all times of the year for juvenile and adult salmonid migration.



Large wood placement in stream. ©USFWS

**\$0**  
**PFW PROJECT INVESTMENT**

**\$2.29M**  
**PARTNER CONTRIBUTION**

**\$2.29M**  
**TOTAL PROJECT INVESTMENT**

**14**  
**STREAM AND RIVER MILES**

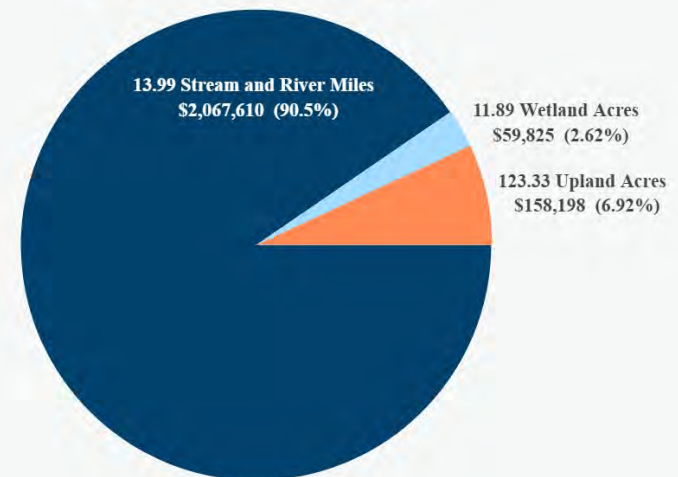
**123**  
**UPLAND ACRES**

**11.9**  
**WETLAND ACRES**

# PENNSYLVANIA



Investments by Habitat Type



Cooper's Run restoration crew. © USFWS.



Cooper's Run: during, crew and after restoration. ©USFWS

## PROJECT HIGHLIGHT:

### Cooper's Run Restoration

Cooper's Run is a trout fishery that winds through the heart of some of Lancaster County's finest dairy farms, twisting and turning before flowing through horse country where this project took place. Coopers dumps into the East Branch of Octoraro Creek, and the water eventually ends up in the Susquehanna River then the Chesapeake Bay.

The lack of stream buffers and unfettered livestock access has increased sediment, allowed the creek to widen, and raised stream temperatures in the watershed. The resulting instability and lack of fish and wildlife habitat was a concern of the owners of Coopers Run Stables and Woerth It Hollow Farm, so they contacted project partners Donegal Trout Unlimited and the Alliance for the Chesapeake Bay who secured a Pennsylvania Growing Greener Grant. Partners for Fish and Wildlife staff designed and permitted the restoration and worked with Unique Excavating and Pheasants Forever on

construction with the Lancaster County Conservation District.

The partners restored 2850 feet of stream – installing log vanes, rock cross vanes, random boulders, 1420 feet of muddill, four riffles, a livestock crossing, and pollinator plots on the restored banks. Streambank fencing and a riparian buffer planting followed. Overall, sediment was reduced approximately 214 tons per year. Highlighting the transformation, the Partners crew also worked with the Pennsylvania Fish and Boat Commission to restore habitat for threatened bog turtles on the property. The restoration increased trout, turtle, songbird and waterfowl habitat, stabilized the streambanks, reduced flooding, and gave the landowners a new appreciation of Coopers Run.



Undercut stream banks (before). ©USFWS



\$0

PFW PROJECT INVESTMENT

\$175,000

PARTNER CONTRIBUTION

\$175,000

TOTAL PROJECT INVESTMENT

76.32

UPLAND ACRES

# RHODE ISLAND



Application of prescribed fire. ©USFWS

## PROJECT HIGHLIGHT:

### Dutch Island WMA Restoration for New England Cottontail

Dutch Island Wildlife Management Area is a conservation area located in the west passage of Narragansett Bay, Rhode Island. In 1958, ownership of the majority of the Dutch Island was transferred to the State of Rhode Island from the United States government through the General Services Administration (GSA) and deeded "for use and maintenance as a reserve for the conservation of wildlife" (1958). The grounds of the lighthouse were retained by the U.S. Coast Guard but later transferred (in 1962 and 1984), giving the State complete ownership of the island. The site was previously owned and operated by the United States Army as a military base known as Fort Greble, until its closure in 1947. Under State ownership, supervision of the

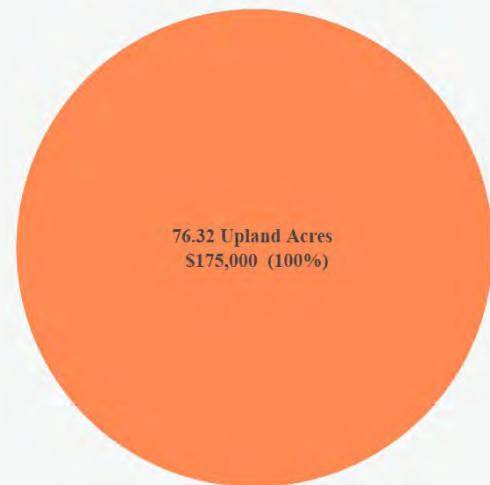
property was assigned to the Department of Environmental Management (DEM) Division of Fish and Wildlife (DFW) and is operated as Dutch Island Wildlife Management Area (WMA). Totalling eighty-five (85) acres, the WMA comprises the entire island and the site is managed as a conservation area to protect and sustain natural resources.

The New England Cottontail (NEC) restoration project is ongoing in attempts to restore NEC populations across its historic range. NEC populations have dwindled due to early successional habitat (young forest) loss which NECs depend on. In addition to young forest habitat creation, a breeding colony has been successfully created at Patience Island in Rhode Island's Narragansett Bay to support the translocation of NECs across its historic range. With its overwhelming success, there is a desire to create other island breeding colonies. Dutch Island, an 80-acre island located nearby is a candidate for a second breeding colony. Currently this Island is void of other rabbits such as eastern cottontails and snowshoe hare. To create the most suitable habitat for NEC's it was recommended that project partners conduct a prescribed burn on the island.

Prior to the burn, invasive shrubs and vines covered much of the island, and a large amount of dead woody debris from larger trees grew in poor condition from salt spray and limited soil quality. Primary tree species on the island include black locust, Norway maple, oak spp, cherry, and aspen. Much of the island is in shrub habitat dominated by honeysuckle and autumn olive and vines consisting of oriental bittersweet and black swallowwort. The prescribed burn aimed to reduce invasive shrub/vine cover and remove the buildup of vegetative debris that makes access to certain parts of the island difficult, while encouraging new growth at ground level to provide forage and cover for rabbits. Shrubs and trees that grow vigorously in the wake of a fire include blueberry, blackberry, black cherry, and many oaks, especially low, dense-growing scrub oak. In advance of any burning activities, it would also be necessary to do mechanical thinning/brush clearing to provide fire lines, and perimeters around burn units to allow for safe and efficient burning operations. This would be accomplished using skid steer mounted brush mowers or similar equipment. Extensive technical assistance was provided by the Partners for Wildlife program, with funding provided by the Coastal Program (\$50K) and the State of Rhode Island Division of Fish and Wildlife (\$120K).

In addition to its value for and NEC colony, young forest created through controlled burning attracts birds, mammals, reptiles, and a huge range of insects, including many beneficial butterflies, moths, and native pollinators; birds such as prairie warblers, and towhees quickly home in on new plant growth for feeding, nesting, and rearing young. This island is considered an important stopover site for migration of songbirds as well.

Investments by Habitat Type



Before thinning at project site. ©USFWS.

**\$110,050**  
PFW PROJECT INVESTMENT

**\$78,341**  
PARTNER CONTRIBUTION

**\$188,391**  
TOTAL PROJECT INVESTMENT

**\$1:0.7**  
LEVERAGE

# SOUTH CAROLINA



USFWS National RCW lead, Lindsey Troutman and partners discuss project results. ©USFWS

## PROJECT HIGHLIGHT:

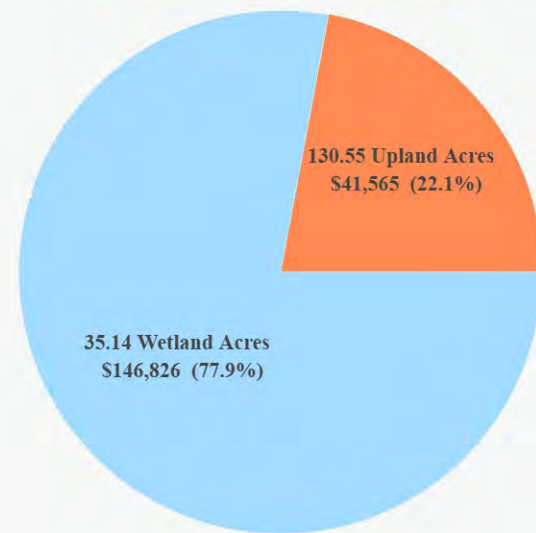
### Red-cockaded Woodpecker Habitat Enchantment and Recruitment Cluster Establishment

This project included 130 acres of hardwood control, 65 acres of prescribed fire and installation of 4 artificial red-cockaded woodpecker cavities on a 16,000-acre research center property (Hobcaw Barony) in Georgetown County, SC. The objectives of the project was to improve red-cockaded woodpecker habitat and establish a recruitment cluster. The center has qualified prescribed fire applicators on staff and is committed to burning the area on a 2–4-year interval to maintain a more diverse low-growing understory. Within a few months after the project was completed, a pair of RCWs claimed the cavities and successfully reproduced.



Mechanical mulching machine. ©USFWS

Investments by Habitat Type



**130**  
UPLAND ACRES  
**35**  
WETLAND ACRES

Mechanical midsotry reduction with RCW cavity trees in the background. © USFWS.

**\$112,309**

PFW PROJECT INVESTMENT

**\$1.14M**

PARTNER CONTRIBUTION

**\$1.25M**

TOTAL PROJECT INVESTMENT

**\$1:10.2**

LEVERAGE

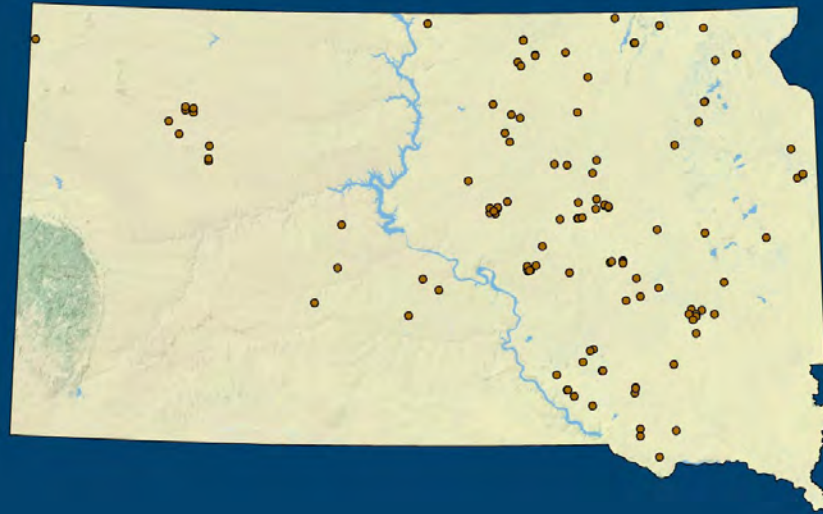
**24,110**

UPLAND ACRES

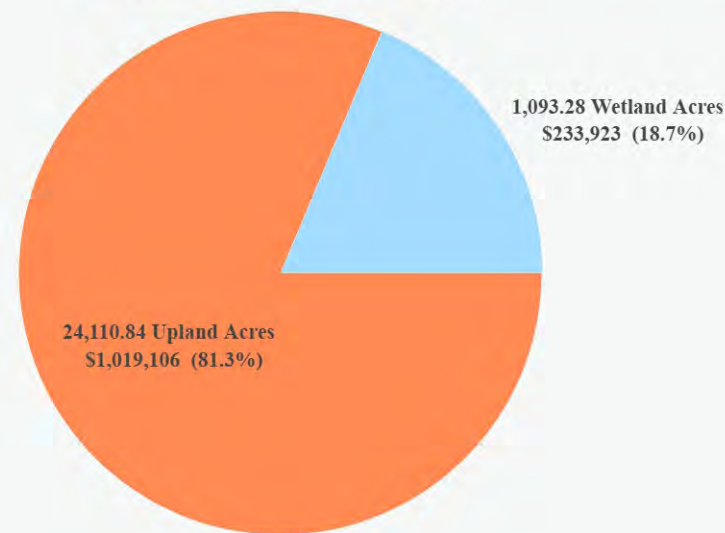
**1,093**

WETLAND ACRES

# SOUTH DAKOTA



Investments by Habitat Type



PFW grazing management project in the SD PFW Western Prairies Focus Area. ©USFWS

## PROJECT HIGHLIGHT:

### Installing New Management Tools for Grassland Enhancement and Ranching Sustainability Serves as a Core Conservation Strategy in South Dakota's Western Prairies Focus Area

Partners for Fish and Wildlife in South Dakota is built on a foundation of creating and strengthening relationships especially with landowners operating in grassland-based agriculture. While the ranching lifestyle is found throughout the state, it is an especially important economic factor in conserving grassland in the Western Prairies Focus Area. The ranching community manages these landscapes utilizing efficient grazing strategies promoting biodiversity and sustainability. Partners for Fish and Wildlife in South Dakota collaborates with the ranching community and conservation

partners across the state by providing technical and financial assistance to support innovative grazing strategies. These projects typically include installing wildlife friendly fence, livestock watering facilities, and restoring marginal cropland to a diverse mix of native perennial plants.

This past year Partners for Fish and Wildlife biologist partnered with a landowner to integrate a key piece of property into a larger grazing system. This tract was marginal cropland which was previously restored to grass utilizing the Conservation Reserve Program (CRP). Additionally, the boundary of the area was an old woven wire fence which can restrict wildlife movement. After the expiration of the CRP contract, the landowner partnered with PFW to install wildlife friendly fence. This project adds 76 new acres into a larger 4,529 acre grazing management plan which includes six other PFW projects over the past four years. While livestock grazing and plant biodiversity is the primary benefit for the landowner, the project also provides high quality habitat for western meadowlarks and grasshopper sparrows. This project is another example of the importance of partnering with the ranching community.



PFW grazing management project in the SD PFW Western Prairies Focus Area. ©USFWS

**\$154,372**

PFW PROJECT INVESTMENT

**\$390,862**

PARTNER CONTRIBUTION

**\$545,234**

TOTAL PROJECT INVESTMENT

**\$1:2.53**

LEVERAGE

**2.51**

STREAM AND RIVER MILES

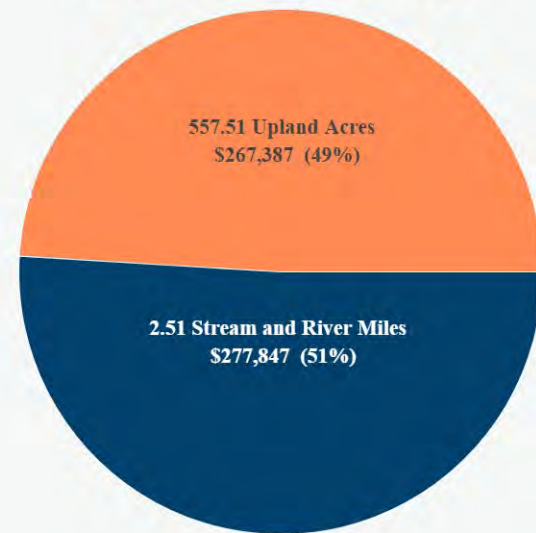
**558**

UPLAND ACRES

# TENNESSEE



Investments by Habitat Type



Wolf River restoration site. ©USFWS.



Fluted kidneyshell in the Wolf River. ©Jack Fetters/Tennessee Tech University

## PROJECT HIGHLIGHT:

### Wolf River G.S.

Partners for Fish and Wildlife in Tennessee completed a strategically planned livestock exclusion project to improve aquatic habitat in the Wolf River, Fentress County, Tennessee. Located within the Cumberland Plateau Focal Area, the Wolf River is occupied by the Fluted Kidneyshell, Cumberland Moccasinshell, and Tennessee Clubshell. This site, however, was not known to host any rare mussels, despite suitable substrate and host fish being present, presumably due to habitat conditions. The opportunity to enhance habitat conditions arose when PFW staff learned from partners that the adjacent landowner had a mutual interest in excluding his livestock from the river, due to cattle crossing the river and trespassing in his neighbor's crop and hay fields.

Working with the Fentress County Soil Conservation District, Tennessee Department of Agriculture, and Natural Resource Conservation Service, we developed a conservation plan with the landowner that met his objectives, while addressing resource concerns related to reducing non-point source pollution in the Wolf River. To achieve our goals, we installed approximately 4,100 linear feet of livestock fencing, 1 (one) alternative water source, and 1 (one) heavy use area, excluding 14 acres of riparian habitat from livestock. The landowner's operations and ability to management his livestock have improved, while Federal Trust Resources occupying the Wolf River continue to benefit from this restoration project. This project has served as a foundational step towards future projects in this important stream.



Top: Researchers snorkeling the Wolf River for mussell species. Bottom: Cattle grazing riparian areas. ©Dustin Boles/USFWS.

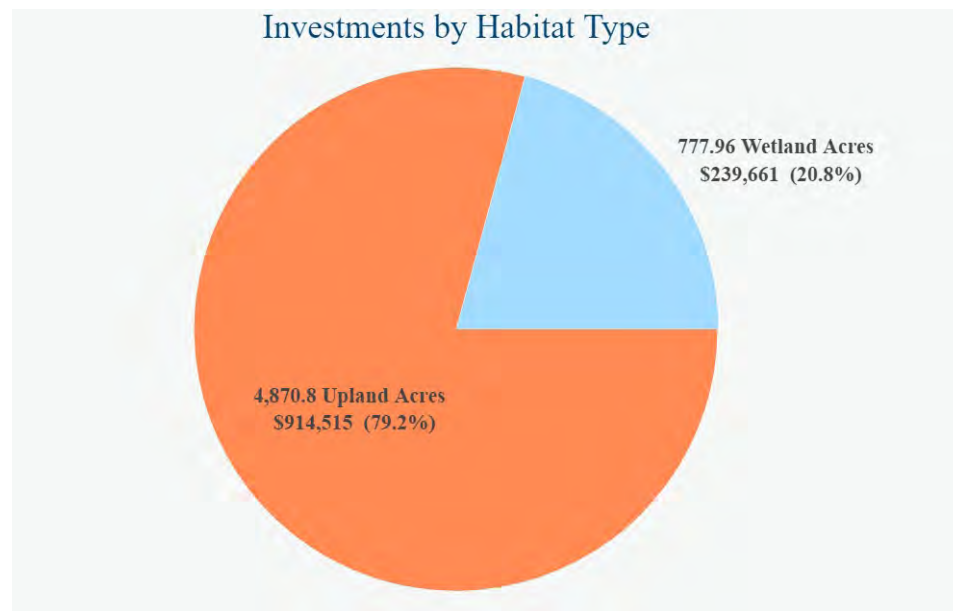
**\$471,999**  
PFW PROJECT  
INVESTMENT

**\$682,177**  
PARTNER  
CONTRIBUTION

**\$1.15M**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:1.45**  
LEVERAGE

**4,870**  
UPLAND  
ACRES  
**778**  
WETLAND  
ACRES



Helicopter platform. ©USFWS

## PROJECT HIGHLIGHT:

### Improving Habitat in the Salt Creek Watershed: Salt Cedar Restoration

In March 2021, as the pandemic was emerging, a Partners for Fish and Wildlife (PFW) biologist Duane Lucia in west Texas, partnered with the Stonewall County, Texas, NRCS Office on a project directed at watershed-level salt cedar eradication. The watershed, Salt Creek, is a tributary of the Brazos River and is critical habitat for the endangered smallmouth shiner and sharpnose shiner.

To accomplish this task and to ensure social distancing, a meeting was arranged in an open barn and parking lot, with area landowners, NRCS and PFW. During this meeting, everyone discussed the merits of the project to garner participation. Initially, the project targeted the

landowners in the western half of the watershed. However, due to unforeseen circumstances, the project was delayed, which provided an opportunity to target participation of the landowners in the eastern half of the watershed. With our PFW biologist stationed in Lubbock, two hours away, the Stonewall County NRCS Office were the local boots on the ground for the project for the PFW program.

In the end, all 22 landowners within the watershed participated in the project. In total, the project resulted in nearly 65 miles or 25,000 acres of salt cedar treatment along the watershed's drainages. As such, without the support of the Stonewall County NRCS Office who teamed to push and pull the wagon, this project would not have been such a success. As this project clearly demonstrates, working with our partners we can strategically restore more wildlife habitat for our Nation's trust resources.



Helicopter spraying. ©USFWS

**\$224,244**  
PFW PROJECT  
INVESTMENT

**\$677,940**  
PARTNER  
CONTRIBUTION

**\$902,184**  
TOTAL  
PROJECT  
INVESTMENT

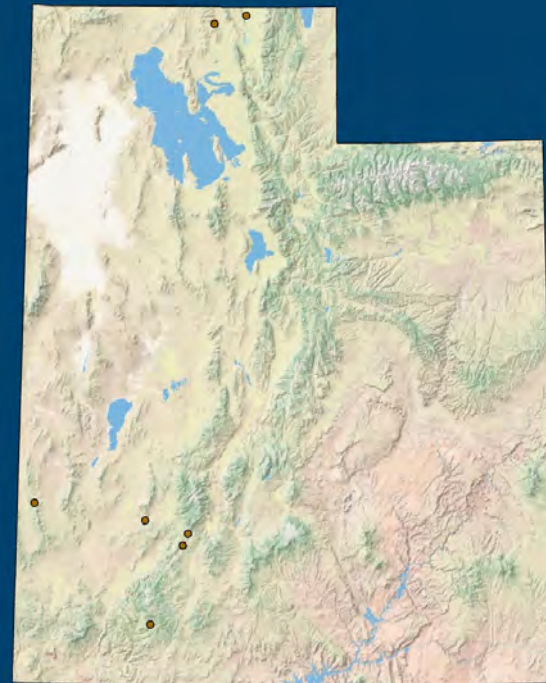
**\$1:3**  
LEVERAGE

**2.05**  
STREAM &  
RIVER MILES

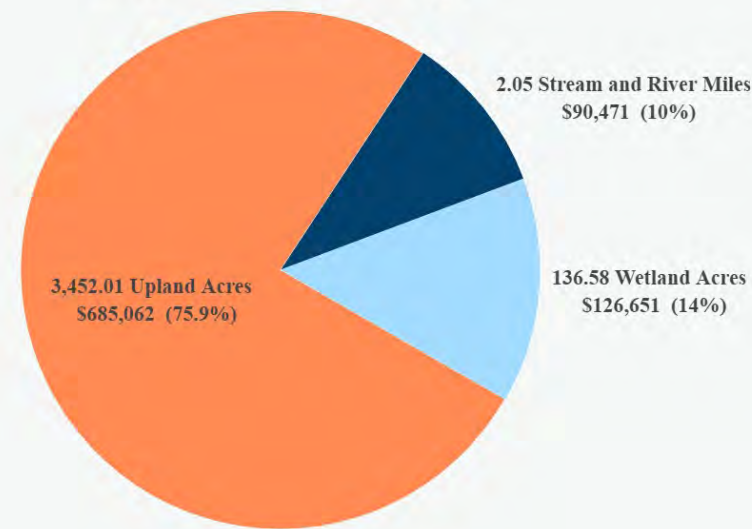
**3,452**  
UPLAND  
ACRES

**136.5**  
WETLAND  
ACRES

# UTAH



Investments by Habitat Type



After restoration. © Clint Wirick / USFWS.



Left to right: local contractors building structures, before restoration, after restoration. ©Clint Wirick/USFWS

## PROJECT HIGHLIGHT:

### Fremont Plateau Sagebrush Steppe Restoration

The Fremont Plateau in southern Utah is a hot spot for sagebrush steppe wildlife. Partners for Fish and Wildlife in Utah has targeted conservation on the plateau for several years, working with state and federal agencies, NGO's, landowners, grazing associations, and other conservation partners. These projects address many needs for priority habitats, species, and threats identified by numerous state and federal agencies, NGOs, and conservation organizations as being important for conservation and restoration in Utah. The area is important for greater sage-grouse, sage brush obligate songbirds, small mammals, pollinators, and big game. Some of this habitat has been categorized as CRITICAL for priority species such as mule deer,

sage-grouse, and other sage brush obligate species. Furthermore, the project falls within an identified Bird Habitat Conservation Area (BHCA) with shrub-steppe and wetland habitat listed as priority habitat types for conservation. Sagebrush dependent species such as sage-grouse, sage sparrow, and Brewer's sparrow are listed as priority birds needing conservation practices implemented here.

During fiscal year 2021, Utah PFW worked with landowners and other partners to plan and implement wet meadow restoration in addition to previously completed upland and spring habitat improvements. 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".

What a difference time, some management changes, and conservation work makes. The photos seen here were taken one year apart exactly. As you can see the water was in a trench. All we had to do was slow the flow and spread the water out across the meadow. We did this using simple hand-built rock structures with native rock and local contractors. Doing this type 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 project is part of an ongoing targeted approach to habitat restoration in the area to maximize watershed scale ecosystem benefits regardless of landownership. Utah PFW has been engaged and completed several wetland, stream, and upland projects in the area during the last 5-years. This project is one small piece of the larger conservation puzzle on the Fremont Plateau.

**\$57,110**  
PFW PROJECT INVESTMENT

**\$1.51M**  
PARTNER CONTRIBUTION

**\$1.56M**  
TOTAL PROJECT INVESTMENT

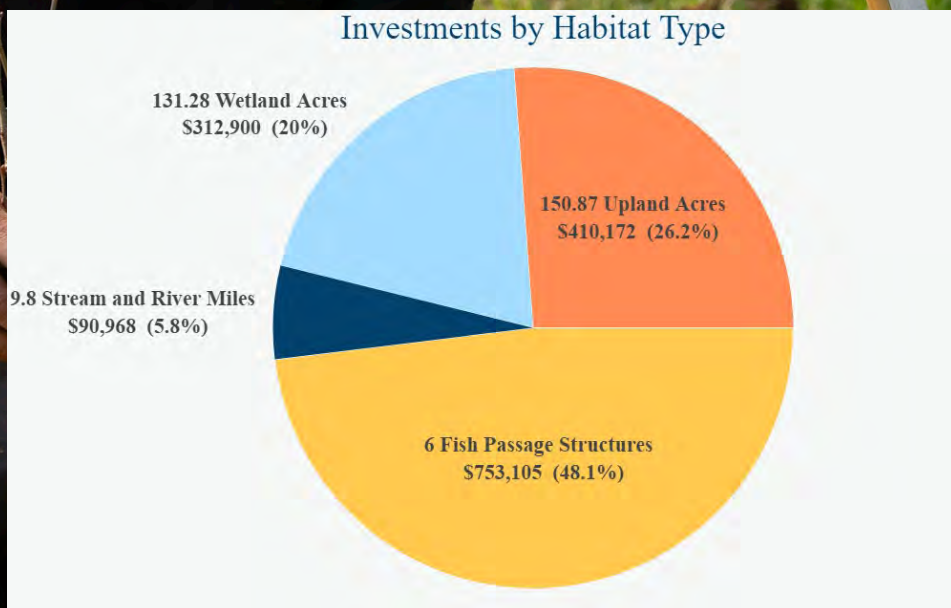
**\$1:26**  
LEVERAGE

**9.80**  
STREAM AND RIVER MILES

**151**  
UPLAND ACRES

**131**  
WETLAND ACRES

**6**  
FISH PASSAGE STRUCTURES



Restoration crew photo and the PFW staff photo: ©SunCommon.



Partners for Fish and Wildlife staff with partners, restoration in action. ©SunCommon

## PROJECT HIGHLIGHT:

### Winooski River Watershed Riparian Restoration Project

This project has been a high priority for riparian restoration for many years, but the previous landowners were not interested in a restoration project. Under new ownership the farm transitioned away from conventional dairy and made a commitment to protecting the river corridor. The new owners enthusiastically agreed to shift farming activities away from the dynamic floodplain and to focus production in less sensitive areas of the farm. In partnership with the Friends of the Winooski River, the USFWS worked with the landowner to restore a 50' wide buffer along their entire river frontage. This project balances the need to keep working lands working with the protection of sensitive habitat areas that benefit high-priority species.

The restoration project restored a total of 7.2 acres of critical riparian habitat planted with native trees and shrubs. The restored area will benefit migratory birds, brook trout, and high priority At-Risk species such as wood turtle. The project's sub-watershed is of very high importance for wood turtle populations in Vermont. The Orianna Society's wood turtle specialist has surveyed the general project area multiple times and found several wood turtle individuals.

The PFW program served as the project lead. All project design was completed by the PFW biologist, as well as oversight of planting volunteers and follow-up maintenance. Follow-up monitoring will be conducted by the PFW program for several years, including early spring surveys for wood turtles. The PFW program provided financial assistance to match the cost of plant material that was not covered by the Friends of the Winooski River's grant. The PFW program also assisted with follow-up maintenance around the planted stems to reduce vegetative competition and increase stem growth rates during the first two growing seasons.



Wood turtle photo: ©Kiley Briggs/The Orianna Society

**\$310,304**  
PFW PROJECT  
INVESTMENT

**\$326,472**  
PARTNER  
CONTRIBUTION

**\$636,776**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:1**  
LEVERAGE

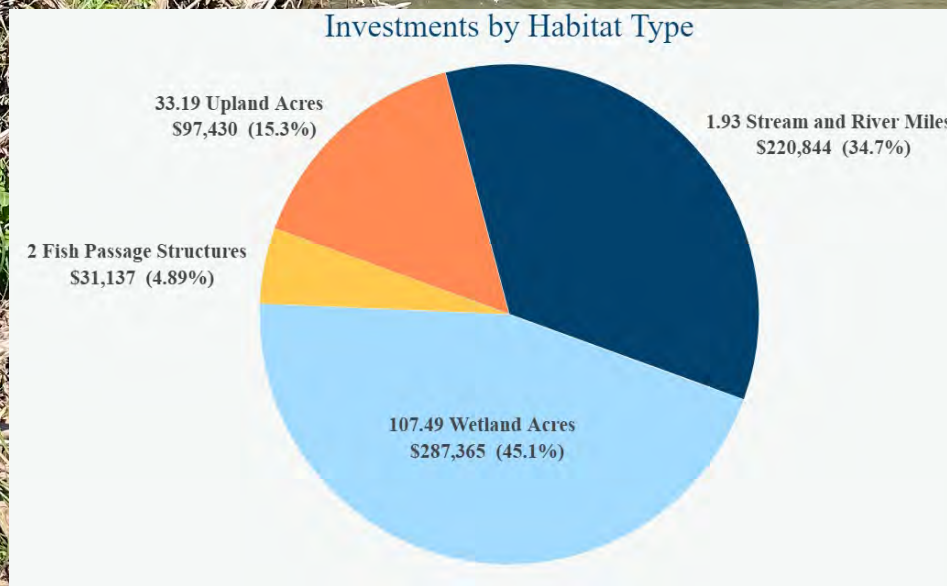
**1.93**  
STREAM  
AND RIVER  
MILES

**33**  
UPLAND  
ACRES

**107**  
WETLAND  
ACRES

**10**  
FISH  
PASSAGE  
STRUCTURES

# VIRGINIA



After restoration. ©USFWS.



Before, during and after restoration. ©USFWS

## PROJECT HIGHLIGHT:

### Upper Clinch River Aquatic Connectivity and Habitat Restoration Project

PFW staff and partners completed construction activities to restore and enhance over 6,000' of the Little River, a major tributary to the Clinch River in Southwest Virginia. The goal of this project was to restore bankfull channel dimensions for stability, resiliency and riparian community establishment while providing instream habitat improvement and complexity. Located on a working cattle operation, these activities also compliment recent farm infrastructure improvements delivered through the Tazewell County Soil & Water Conservation District. Aquatic species benefitting from this project include at-risk freshwater mussels (Cumberland moccasinshell, Tennessee clubshell) as well as the federally endangered

(slabside pearl mussel). All three species were found at this location during surveys completed in coordination with mussel biologists from the Virginia Department of Wildlife Resources. The reduction in accelerated bank erosion and sedimentation should improve habitat for these imperiled species as well as declining species such as the eastern hellbender which is also known to inhabit this reach.

This reach is also an active Project Healing Waters Fly Fishing, Inc. location, "dedicated to the physical and emotional rehabilitation of disabled active military service personnel and disabled veterans". Throughout construction of this project, PFW staff and partners were greeted by bald eagles, belted kingfishers, river otters, fly fishing enthusiasts, and one smiling landowner. Along with the private landowner and PFW, partners included Canaan Valley Institute, National Fish & Wildlife Foundation, Virginia Department of Wildlife Resources, Tazewell Soil & Water Conservation District, Tennessee Valley Authority, Southeast Aquatic Resources Partnership, and the Upper Tennessee River Roundtable.



Mussels collected during survey. ©USFWS



**\$395,921**  
PFW PROJECT  
INVESTMENT

**\$629,265**  
PARTNER  
CONTRIBUTION

**\$1.02M**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:1.6**  
LEVERAGE

**1.12**  
STREAM  
AND RIVER  
MILES

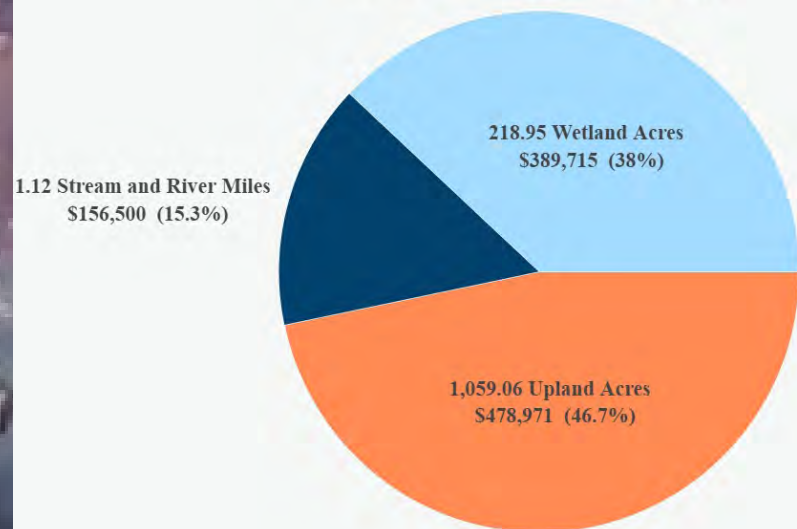
**1,059**  
UPLAND  
ACRES

**219**  
WETLAND  
ACRES

# WASHINGTON



Investments by Habitat Type



Lef to right: Compilation of photos documenting water control infrastructure installation in Glenwood Valley, Washington. Photo collage starts with site prep at the top left, reads left to right, ending with final install photo bottom right) Right Before (a) and after (b) photos of water control infrastructure at OK Ranch. ©USFWS

## PROJECT HIGHLIGHT:

**Collaborative Conservation and Resource Management Benefiting both Working Lands and Threatened Oregon Spotted Frog Populations**

Oregon spotted frogs (*Rana pretiosa*) are found in Pacific Northwest aquatic systems requiring connected stream and wet meadow habitat with full sun exposure to live and breed. This federally threatened species is state listed as endangered in Washington. Barriers to water connectivity and seasonal water availability are key threats to Oregon spotted frog (OSF) populations. In Glenwood Valley (Washington), Conboy Lake National Wildlife Refuge staff have been working for years to restore and maintain OSF habitat on the refuge recognizing that neighboring private lands are essential for landscape-level conservation. Thus, the Washington

Partners for Fish and Wildlife team partnered with local organization, Mt. Adams Resource Stewards and neighboring landowners to install water control infrastructure on ranches near the refuge. Leveraging PFW funding with shared vision, local materials, and volunteer labor, the team installed three water control structures to enhance late season water availability at priority locations. Seasonal water control allows ranchers to harvest hay in dry weather as well as maintain wet meadows for wildlife. As a result of this work, an estimated 150-300 acres of breeding, juvenile rearing, and adult OSF habitat has been enhanced as well as 6.4 miles of perennial stream channel connected providing benefits for both OSF and other wildlife species. For example, Sandhill cranes (*Grus canadensis*) have similar habitat requirements and exhibit higher breeding success when water remains on the landscape into early summer. In this area, collaboration between agencies and local ranchers has proven to be essential and effective for long-term conservation success.

Article published by Pacific Region USFWS: <https://medium.com/usfwspacificnw/make-hay-while-the-sun-shines-serve-wildlife-when-the-water-is-high-a916f0bced62>



Oregon spotted frog in breeding habitat in Glenwood Valley, Washington. ©USFWS

**\$35,000**  
PFW PROJECT INVESTMENT

**\$177,404**  
PARTNER CONTRIBUTION

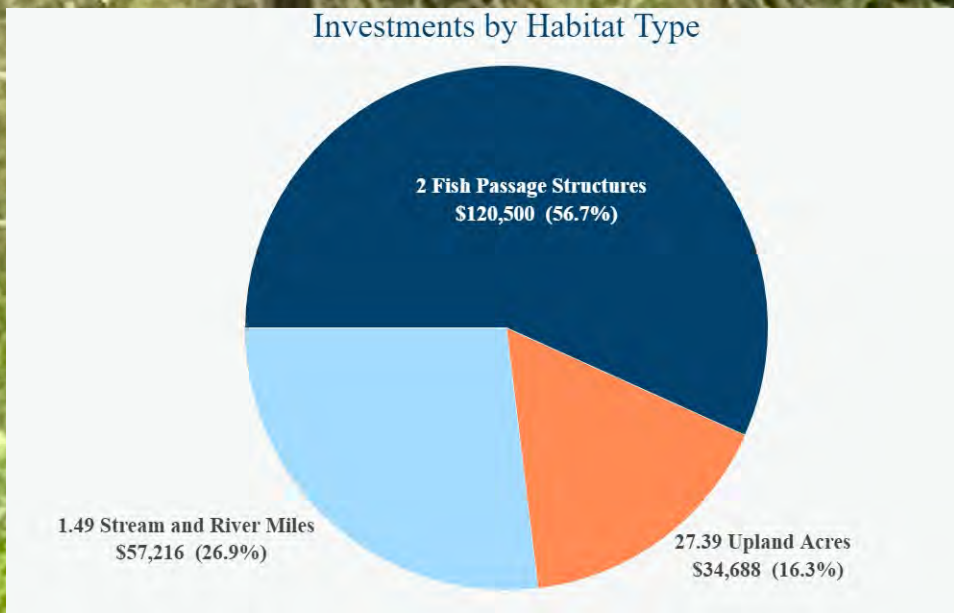
**\$212,404**  
TOTAL PROJECT INVESTMENT

**\$1:5**  
LEVERAGE

**1.49**  
STREAM AND RIVER MILES

**27.39**  
UPLAND ACRES

**2**  
FISH PASSAGE STRUCTURES



After restoration. © USFWS.



This project is the first in a landscape-scale effort to restore habitat in the watershed and our proud landowner is now seeking permanent protection through a conservation easement with the West Virginia Land Trust. ©USFWS

**PROJECT HIGHLIGHT:**

Partners for Fish and Wildlife in West Virginia teamed up with the West Virginia Conservation Agency to enhance and protect 1.3 miles of the South Fork of Potts Creek on a privately owned farm in Monroe Co, WV. The South Fork of Potts Creek is the only known stream in West Virginia that has a population of the federally endangered James spiny mussel (*Pleurobema collina*). Preferred habitat for the mussel is free-flowing streams that are free from silt. Mussel populations have declined rapidly during the past two decades and are now restricted to headwater streams in the James River watershed.

Due to previous land use activities including logging, iron ore mining and agriculture, streams within the watershed exhibit impaired water quality, degraded fish and wildlife

habitat, and decreased stream structure and function. The current threat to the watershed is degraded water quality from agricultural practices such as allowing livestock direct access to streams as well as runoff from production areas leading to increasing fecal coliform, nutrient and sediment loads.

Protection and enhancement practices included livestock exclusion fencing, armored stream crossings, riparian buffer plantings, and alternate livestock water sources. Implementation of these practices permanently exclude livestock from the stream, provide controlled stream access for livestock and equipment, decrease streambank erosion potential, improve in-stream habitat and water quality. This project is the first in a landscape-scale effort to restore habitat in the watershed and our proud landowner is now seeking permanent protection through a conservation easement with the West Virginia Land Trust.



Left: restoration in progress. Right: after restoration. ©USFWS

**\$228,301**

PFW PROJECT INVESTMENT

**\$1.14M**

PARTNER CONTRIBUTION

**\$1.37M**

TOTAL PROJECT INVESTMENT

**\$1:5**

LEVERAGE

**0.2**

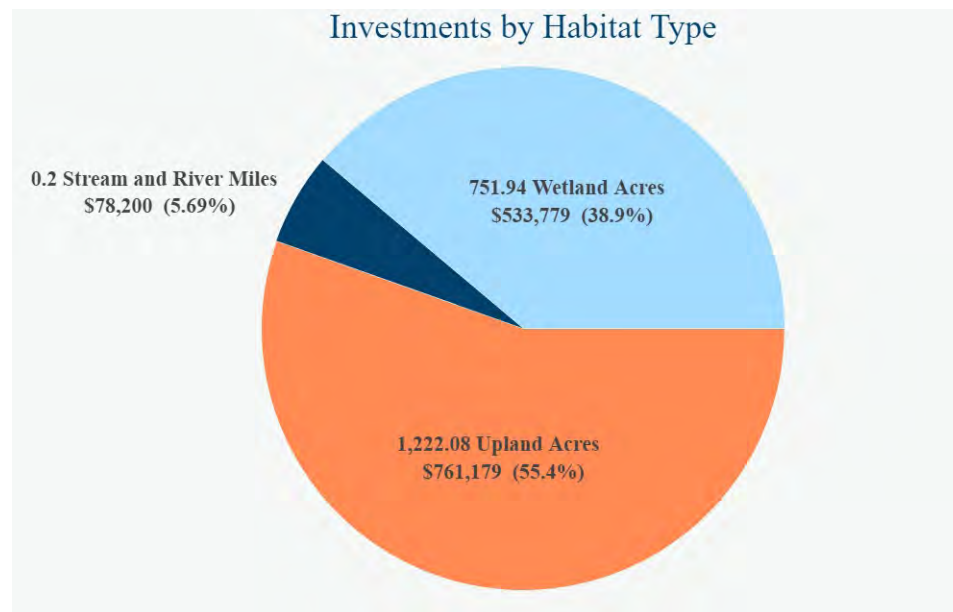
STREAM & RIVER MILES

**1,222**

UPLAND ACRES

**752**

WETLAND ACRES



Restoration in action. ©USFWS

## PROJECT HIGHLIGHT:

### Falk Wells Wildlife Area

Falk Wells Wildlife Area is a 379 acre property with 3 miles along the Sugar River. The property is popular with anglers, boaters, and hunters. This is the second of several wetland restoration projects on the property as crop leases expire. The county has already converted 35 acres of crop land to nesting habitat and 20 acres of restored savanna habitat. Project site is 33 acres of crop fields with drainage ditches draining them. Falk Wells is situated in rolling farmland with a mixture of hay and row crops. Some fields are subject to frequent flooding. This project will restore breeding and nesting habitat amongst over 500,000 Dane County residents. It provides a great opportunity to recruit, retain, and reactivate waterfowl hunters with learn to hunt programs with easy access by future hunters in

the County and at the University. Restoring wetlands and nesting habitat adjacent to the river will increase migratory and breeding capacity. Falk Wells will restore 14 acres of emergent wetland with 19 acres of nesting habitat adjacent. Falk Wells Wildlife Area is near the junction of three ecological landscapes. Species of Greatest Conservation Need documented include American Woodcock, Common Nighthawk, and Rusty Blackbird.



Aerial view of project site (above). Restoration in action (below). ©USFWS

**\$174,457**  
PFW PROJECT  
INVESTMENT

**\$3.99M**  
PARTNER  
CONTRIBUTION

**\$4.17M**  
TOTAL  
PROJECT  
INVESTMENT

**\$1:22.9**  
LEVERAGE

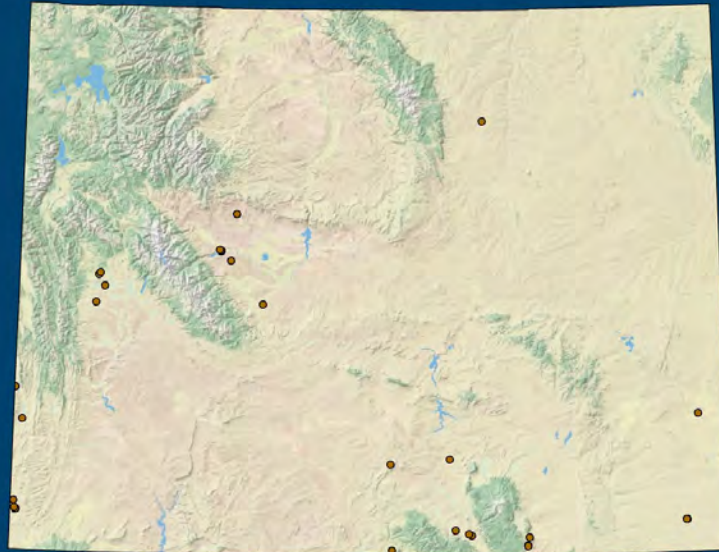
**15.3**  
STREAM  
AND RIVER  
MILES

**7,229**  
UPLAND  
ACRES

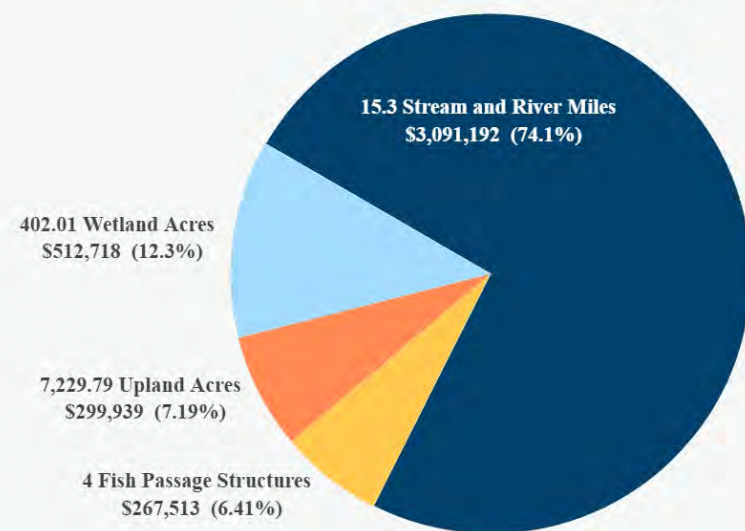
**402**  
WETLAND  
ACRES

**4**  
FISH  
PASSAGE  
STRUCTURES

# WYOMING



Investments by Habitat Type



Sage steppe habitat of northeast Wyoming. ©USFWS.



Landowners and conservation partnership. ©USFWS

## PROJECT HIGHLIGHT:

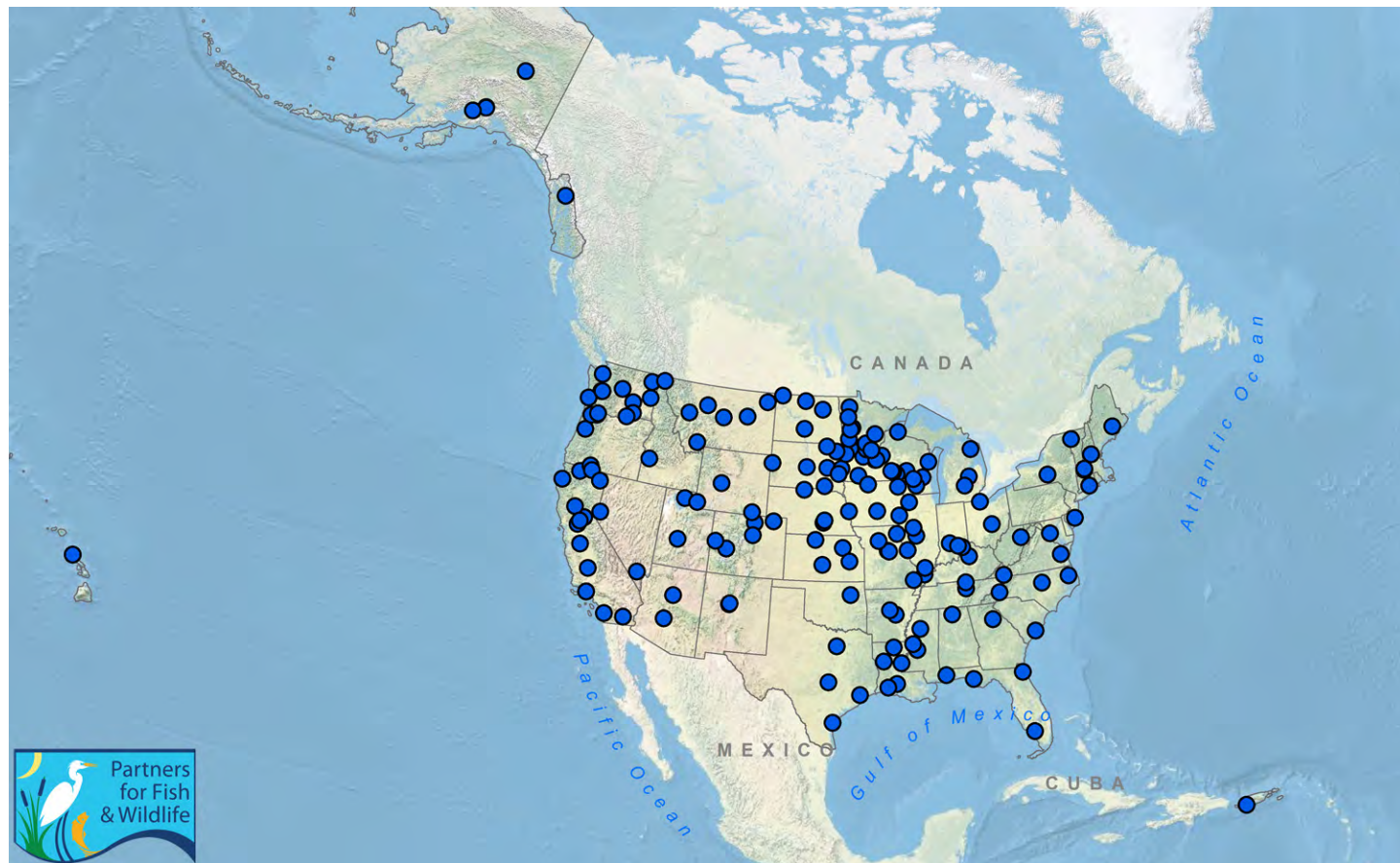
In 2015, a mother/son family ranch operation enrolled 36,872 acres into a Candidate Conservation Agreement with Assurances (CCAA) launching a long-term relationship with the US Fish and Wildlife Service's Wyoming Ecological Services Field Office and Wyoming Partners for Fish and Wildlife program. In the mixed sage steppe and grassland landscape of northeast Wyoming, the ranch is a locally important stronghold for sage grouse having five active sage grouse leks located on enrolled CCAA lands and another sixteen sage-grouse leks within four miles of the ranch. The landowners and conservation partnership identified the lack of livestock grazing management tools, invasive weeds and annual grasses, and other infrastructure as areas to address management and habitat needs for sage grouse and other sage dependent species.

Typical for the west, the ranch historically relied on streams and surface water structures (stock dams) for livestock water. The first conservation measure developed to address grazing management and operational flexibility was a recently completed livestock watering system consisting of wells, storage tanks, pipelines, and watering troughs to service 32,036 acres. This extensive system provides the landowners with the tool of reliable water to control when and where grazing will occur to help navigate an ever-changing climate and address habitat needs of sage grouse. The conservation partnership provided the necessary resources for the ranch operation to fully utilize a rotational grazing system that emphasizes stewardship of upland and riparian areas.



Completed tank with wildlife ramps installed installed. ©USFWS

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U.S. Fish & Wildlife Service  
<http://www.fws.gov/partners>

March 2023 Publication



Partnering with USDA Natural Resources Conservation Service at a wood stork restoration project in Hardee County, Florida. ©USFWS.

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