

2022

FISH AND AQUATIC CONSERVATION ANNUAL REPORT



Confluence

Connecting Partners and Conservation

Aerial view of the New River in West Virginia.
Photo credit: Ryan Hagerty/USFWS



Little White Salmon River. Photo credit: Jennifer Rowlen/USFWS

MESSAGE FROM MARTHA WILLIAMS

DIRECTOR, U.S. FISH AND WILDLIFE SERVICE

The Bipartisan Infrastructure Law's \$200 million investment to the U.S. Fish and Wildlife Service (Service) reflects the National Fish Passage Program's past successes and the confidence placed in this program to work with the conservation community to deliver transformative projects in aquatic ecosystems. These funds support our efforts to implement projects which, at their very core, help local, state, and Tribal communities tackle the climate crisis, advance environmental justice, and protect wildlife and natural resources. In 2022, we announced funding for 40 projects in 23 states and Puerto Rico that restore habitat connectivity for aquatic species while simultaneously reduce flooding risks and other public safety hazards caused by in stream obstructions.

In July 2022, the Service co-sponsored a workshop focused on fish passage opportunities through the Bipartisan Infrastructure Law at the National Conservation Training Center. The overarching purpose of the workshop was to bring together the diverse groups involved in aquatic connectivity to begin identifying our shared goals and to plot a course to make the most of this unprecedented opportunity. The workshop brought together more than one hundred practitioners from federal and state agencies, Native American Tribes, non-governmental organizations and other important partners organizations. And this workshop has already begun yielding results. An interagency task force continues to meet regularly and has recently launched an interactive map featuring BIL funded fish passage projects which can be viewed on the [Fish Passage Portal](#).

I have been lucky enough to visit a few of our BIL fish passage projects and see first-hand how these efforts connect and advance our conservation mission. These investments directly correlate to our [America the Beautiful](#) and [Great American Outdoors Act](#). Collectively, they are improving natural infrastructure and enhancing all of the work the Fish and Aquatic Conservation program is leading, a win-win for the Service and the fish, wildlife, and plants we are entrusted to protect in the public trust.



Martha Williams, Director, U.S. Fish and Wildlife Service

MESSAGE FROM DAVE MIKO

ACTING ASSISTANT DIRECTOR, FISH AND AQUATIC CONSERVATION

In 2022, we celebrated the 150th anniversary of the National Fish Hatchery System, the premier aquaculture system in the world. The System was created in 1872 with the original goal of boosting production of fish to support commercial fisheries and feed communities. Over the years, the System has evolved to meet the varying needs of conservation and in addition to our long-term commitment supporting recreational, commercial, and subsistence fishing we are also focused on conserving at-risk, threatened, or endangered species.

The Fish and Aquatic Conservation program continues to evolve as well. We employ the latest advances in fields like genetics, physiology, population modeling, and aquatic habitat design to ensure healthy environments for both captive and wild aquatic species populations. Our invasive species program continues to lead with early detection and monitoring systems to prevent and limit the impact of invasive species. And our more than 1,200 dedicated permanent, term, and seasonal employees nationwide work to ensure America's fisheries are among the world's richest in abundance and diversity.

On page five, we show how all the Fish and Aquatic Conservation pieces work together. The programs build on the science, innovation, and creativity of its staff and offices to address current and future challenges of mitigating climate change, preventing and managing invasive species, reconnecting waters, restoring habitats, and removing barriers to accessing nature.



Dave Miko, Acting Assistant Director,
Fish and Aquatic Conservation



Fly fishing on the Gallatin River. Photo credit: Melissadoar/Adobe Stock

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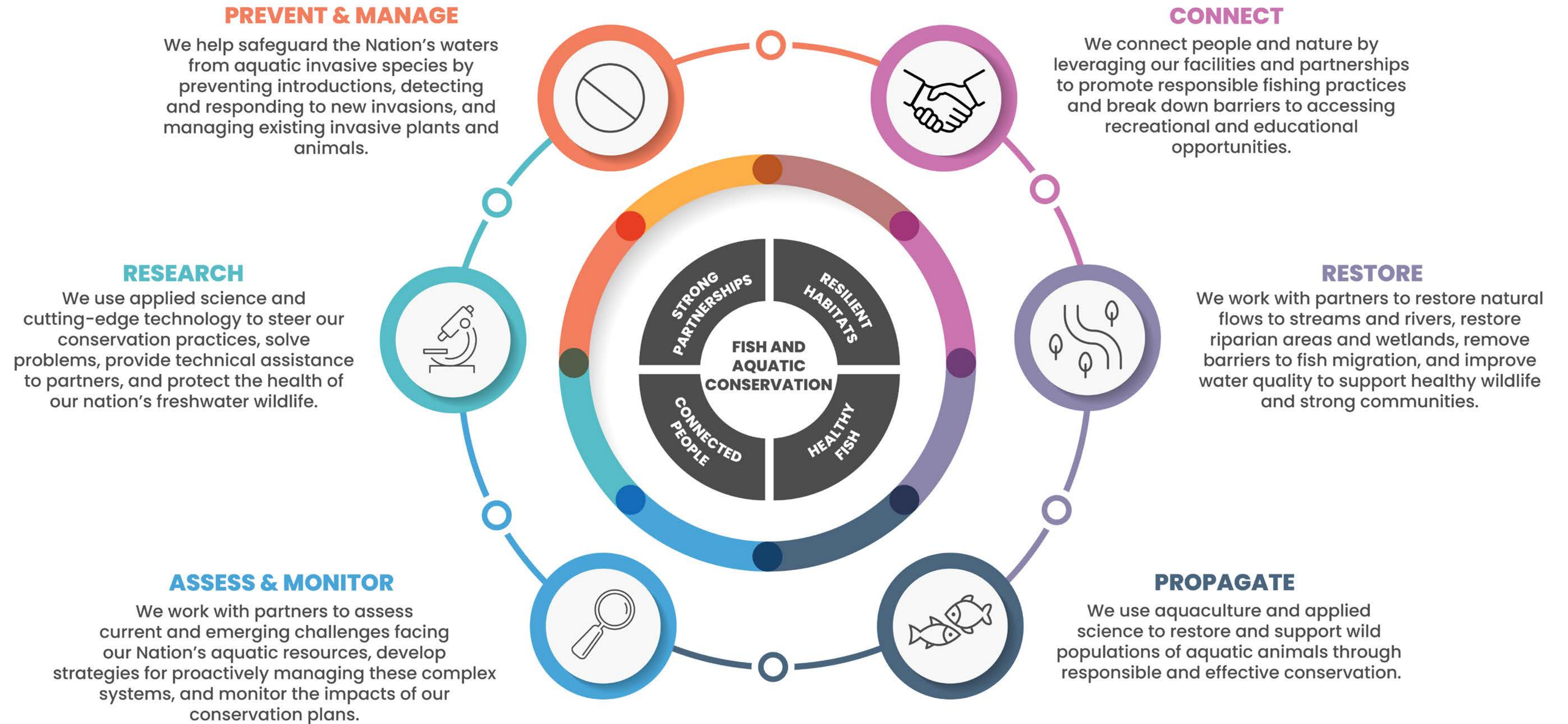
Upper Platte River. Photo credit: Public Domain

FISH AND AQUATIC CONSERVATION

The Fish and Aquatic Conservation programs work together to deliver resilient habitats, healthy fish, connected people, and strong partnerships.

As the oldest federal conservation effort in the country, Fish and Aquatic Conservation takes a unique holistic approach to achieving the conservation mission of the U.S. Fish and Wildlife Service.

From habitat restoration to aquatic invasive species prevention, captive propagation to population assessment and monitoring, our programs are driven by the best advances in applied science and grounded in strong partnerships.



MEET THE FISH AND AQUATIC CONSERVATION MANAGEMENT TEAM

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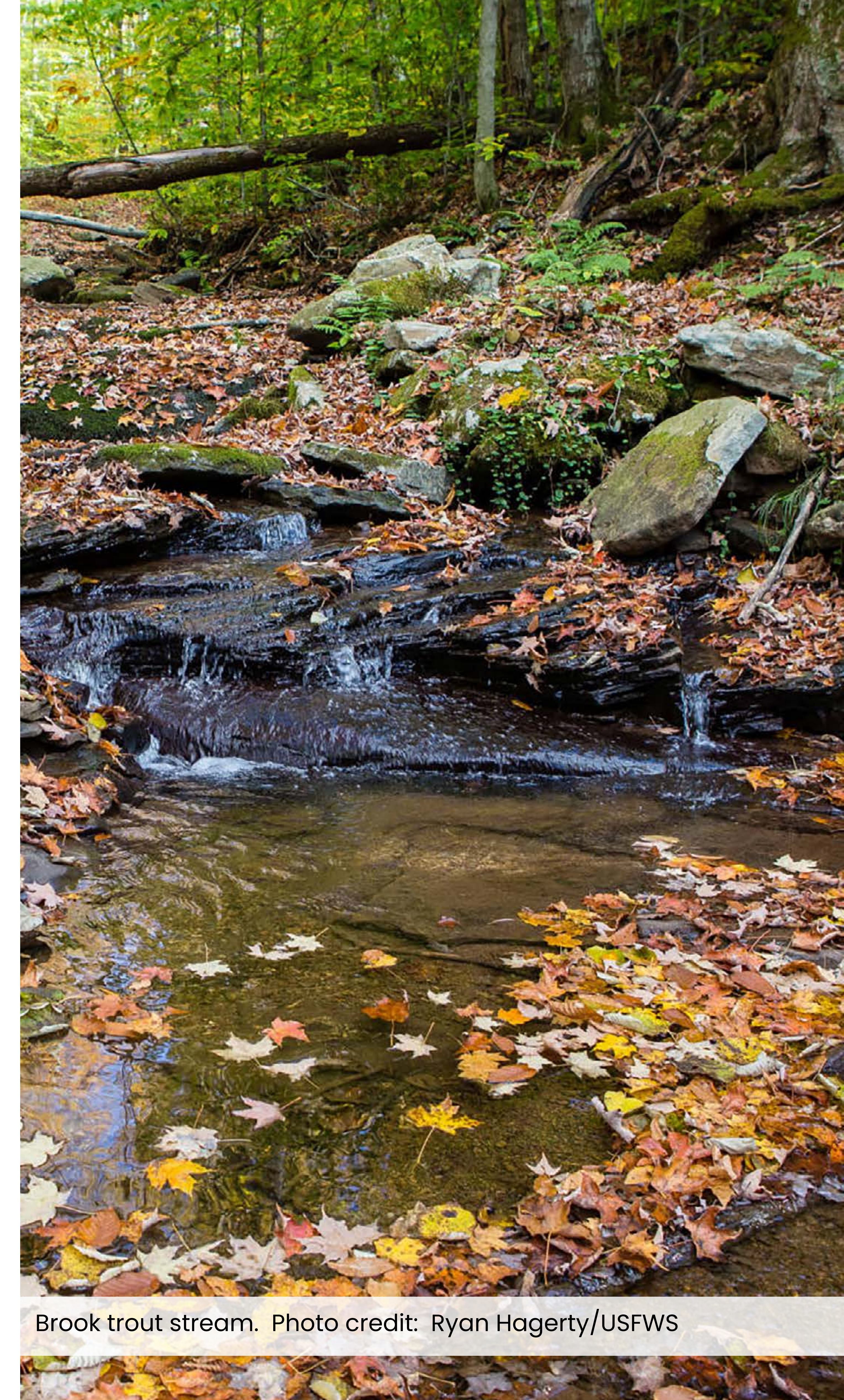
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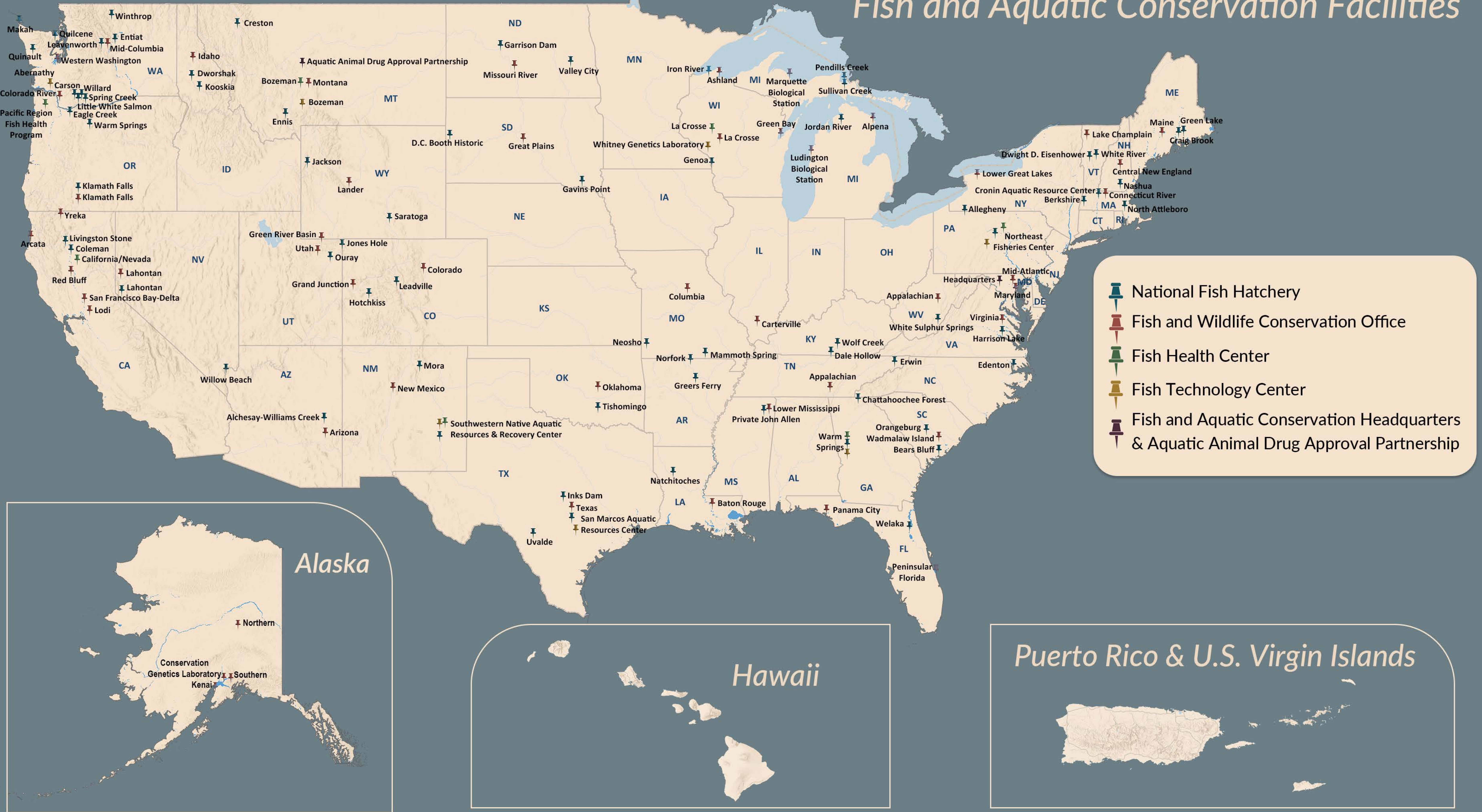
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Assistant Regional Director
KAYLEE ALLEN
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ROBERT CLARKE
Deputy Assistant Regional Director
BAKER HOLDEN



Brook trout stream. Photo credit: Ryan Hagerty/USFWS

Fish and Aquatic Conservation Facilities



- National Fish Hatchery
- Fish and Wildlife Conservation Office
- Fish Health Center
- Fish Technology Center
- Fish and Aquatic Conservation Headquarters & Aquatic Animal Drug Approval Partnership



HATCHING SUCCESS - NATIONAL FISH HATCHERY SYSTEM

Fish and other aquatic animals need our help. The world's rivers and lakes once teemed with abundant and diverse communities of fish, invertebrates, and plants. However, aquatic species now represent some of the most imperiled organisms on the planet. As the agency celebrates the 50th anniversary of the Endangered Species Act in 2023, the role of the National Fish Hatchery System as a national leader in the field of captive propagation is more important than ever.

Captive propagation can be a unique and powerful tool for wildlife conservation when used to recover wild populations and support sustainable recreational fisheries. National fish hatcheries support conservation by raising aquatic wildlife to recover federally listed threatened or endangered species, improving sustainable recreational fishing, supporting fisheries that have been impacted by a federal dam, and preventing at-risk species from becoming endangered. In addition to a network of hatcheries, the National Fish Hatchery System operates 13 applied science facilities that assist fish production programs by advancing the fields of genetics, physiology, pathology, and nutrition.



90
**Federally Listed Species
Raised in a National
Fish Hatchery**



20.4 million
**Federally Listed Animals Released
or Transferred From a
National Fish Hatchery**

The Great American Hatchery Road Trip!



The National Fish Hatchery System has been improving recreational fishing and restoring aquatic species since 1872, so what better way to celebrate the 150th anniversary than by road tripping to our facilities that are over 100 years old! Fish hatcheries have something for everyone in your travel group, so buckle those seatbelts and hit the road!



Cumberland River at Big South National River and Recreation Area in Tennessee. Photo credit: Patrick Jennings/Adobe Stock



50 million
Eggs Transferred
Through the National
Broodstock Program

118 million
Sport Fish Stocked to
Support Recreational
Fisheries

124 million
Fish Released
by National Fish
Hatcheries



Circular tanks used in the PRAS system. Photo credit: USFWS

Water Conservation Project at Leavenworth National Fish Hatchery Shows Early Success for Salmon

No one appreciates the value of water more than the staff at Leavenworth National Fish Hatchery, Washington. Leavenworth draws water from Icicle Creek to raise 1.2 million Chinook salmon annually. According to the 2022 hatchery Climate Change Vulnerability Report, over the next 20 years climate change will alter Icicle Creek and impact the surrounding landscape. The hatchery is using this information to think outside of the raceway and has installed state-of-the-art fish-rearing circular tanks known as partial recirculating aquaculture systems. These tanks are more efficient in terms of water conservation, which could lead to a 50% decrease in the amount of water needed to raise salmon.



Gila trout. Photo credit: Craig Springer/USFWS

Stocking Fish by Mule Train

In October 2022, 377 one-year-old and 68 two-year-old Gila trout broodstock were loaded onto a mule train, hauled into the Gila wilderness and stocked into Sapillo Creek. The fish were evacuated from Mora National Fish Hatchery in New Mexico during the Hermit's Peak/Calf Canyon fires. Staff discovered the fish had shed their tags sometime during their rearing cycle at the hatchery and could not be sorted into their respective lineages. Without proof of lineage, the trout could not be used as hatchery broodstock and were stocked in the Gila wilderness.



Texas wild rice. Photo credit: USFWS



Icicle Creek at Leavenworth National Fish Hatchery. Photo credit: Julia Pinnix/USFWS

Sturgeon Distribution Season Begins with a Flourish

The lake sturgeon that Genoa National Fish Hatchery, Wisconsin, collects typically spawn from mid-April to mid-June. They can grow as much as two inches a month at this stage, which helps them avoid predation in the wild. Due to lake sturgeon being such prolific egg producers, the hatchery outgrows its tank space where young fingerlings are raised. The surplus fry are used in other conservation agencies restoration programs and for sea lamprey control treatment research. The research ensures treatments are effective and safe for lake sturgeon fry still residing in their birth or natal streams. Surplus lake sturgeon in 2022 totaled 68,000.



Small lake sturgeon. Photo credit: USFWS

National Fish Hatchery Completes Record-Breaking Spawning Season

Erwin National Fish Hatchery, Tennessee, had a big year in the National Broodstock Program. After compiling the data from another successful season, staff at Erwin determined they had shipped the most eggs in the facility's 125-year history! The season's total came to just under 17 million eggs shipped to 30 different facilities in 18 states. Considering the hatchery has been producing trout and trout eggs since 1897, it is no small feat to break all previous station spawning records. The trout eggs go to support recreational fishing around the country.



Eggs packed in cooler tray. Photo credit: Ryan Hagerty/USFWS



Lane Eubanks, Chickahominy Indian Tribe and Rachel Mair, Hatchery Manager, Harrison Lake National Fish Hatchery Photo credit: Jaclyn Zelko/USFWS

Tribal Citizens Train at Harrison Lake National Fish Hatchery

In 2022, two Tribal citizens were welcomed at Harrison Lake National Fish Hatchery, Virginia. For a year and a half, the hatchery will train Tribal citizens on fish culture and on freshwater mussel production, funded in part through a Tribal Wildlife Grant. The grant will help the Upper Mattaponi Indian Tribe prepare for building a hatchery to raise American shad, alewife, blueback herring, and possibly freshwater mussels. The hatchery and the Virginia Fish and Wildlife Conservation Office will also be working closely with Tribes to evaluate the status of migratory fishes and freshwater mussels and to restore key habitats.



Signage in front of Kendall Warm Springs. Photo credit: USFWS

Relay Team Transports Endangered Fish Species

At the end of May 2022, Fish and Aquatic Conservation facilities worked together for safe and nimble transit of the endangered Kendall Warm Springs dace. Staff from the Jackson National Fish Hatchery, Wyoming, helped collect the dace, which then traveled from western Wyoming to Gavins Point in the far east corner of South Dakota, a 14-hour drive. The transport was a success thanks to staff from Jackson and Gavins Point National Fish Hatcheries and D.C. Booth Historic National Fish Hatchery and Archives. Teamwork between the national fish hatcheries and various partners ensured the safe transport of this endangered species.



Pond at Leadville National Fish hatchery. Photo credit: Sandra Foyt/Adobe Stock



Sugar Creek on Arnold Road. Photo credit: USFWS

Klamath Basin Partnership a First for Endangered Suckers

On April 21, 2022, a total of 1,712 endangered juvenile Lost River and shortnose suckers got some new digs - a newly constructed private pond. The fish were raised as part of the captive sucker rearing program at Klamath Falls National Fish Hatchery, Oregon. This was the first time a Partners for Fish and Wildlife project and the Klamath Falls Fish and Wildlife Office collaborated with a group of landowners to stock endangered fish in a pond that sits within an actively managed agricultural field. The Service worked with the landowners to come up with a plan which can be a model for other landowners doing similar restoration projects throughout the Basin.

Trip the Light “Fin”tastic

Biologists have used creativity and determination to release fish over the last 150 years. Releasing fish where they need to be can get complicated, but the National Fish Hatchery System has managed to find some creative ways over the years to get the job done while prioritizing fish health and safety. Before we had tanker trucks and the other insulated methods, fish were stored in milk cans or buckets and carried by railcar, horseback, and wagons. The current and most common method is by fish distribution truck, but in some cases, hiking in with a backpack or flying in the fish on a helicopter is used when no roads exist.



Endangered juvenile suckers are flushed out of the transport tank into a net for release in the wetland pond. Photo credit: USFWS



Hotchkiss National Fish Hatchery large fish distribution truck for easy to reach reservoirs. Photo credit: USFWS

RESTORING OUR RIVERS AND RECOVERING OUR SPECIES - FISH AND WILDLIFE CONSERVATION OFFICES

Looking from the center of a stream with large boulders in a forest.
Photo credit: DSBurnside/Adobe Stock



6,600
Acres Restored to
Benefit Aquatic Species

Freshwater ecosystems are some of the most biodiverse places on the planet. They cover less than one percent of the planet's total surface, yet they're home to almost a quarter of all vertebrate species – including over half of all the world's fish species.

Despite their global importance, freshwater ecosystems and the species that inhabit them have been heavily impacted by habitat loss, changes in aquatic connectivity, aquatic invasive species, and pollution. In the United States alone, over fifty aquatic species have already been declared extinct and many others are critically endangered or threatened.

The U.S. Fish and Wildlife Service's Fish and Wildlife Conservation Offices are dedicated to the protection, restoration, and recovery of our nation's freshwater ecosystems and everything that lives in them. They monitor the health of our nation's waterways, restoring habitat, and recovering threatened and endangered species to ensure a safe and healthy future for our waterways.

NATIONAL FISH HABITAT PARTNERSHIP

The National Fish Habitat Partnership leverages federal, state, Tribal, and private resources to address the nation's biggest fish habitat challenges. In 2022, the Service and other fish habitat partners implemented 78 projects in 37 states to restore stream banks, remove barriers to fish migration, reduce erosion from farm and ranchlands, and identify conservation needs for fish and their habitats.



Topeka shiner monitoring in southwest Minnesota. Photo credit: Scott Ralston/USFWS



50
Federally Listed Species
We Work to Recover



303
Population Assessments
Conducted

MONITORING AND ASSESSMENT

To track the health of our freshwater resources, Fish and Wildlife Conservation Offices specialize in collecting information on fish populations and their habitats nationwide. The offices operate monitoring programs throughout the year in watersheds across the country. The data collected by these programs lets us know what species need protection, which recovery efforts are working, and allow us to monitor for the spread of dangerous invasive species.

We share this data with our partners to help make important decisions about what conservation efforts are working, where more efforts are needed, and to understand the impacts of climate change.



A bed of healthy freshwater pearlshell mussels. Photo credit: Roger Tabor/USFWS

Mussel Bound in the Basin

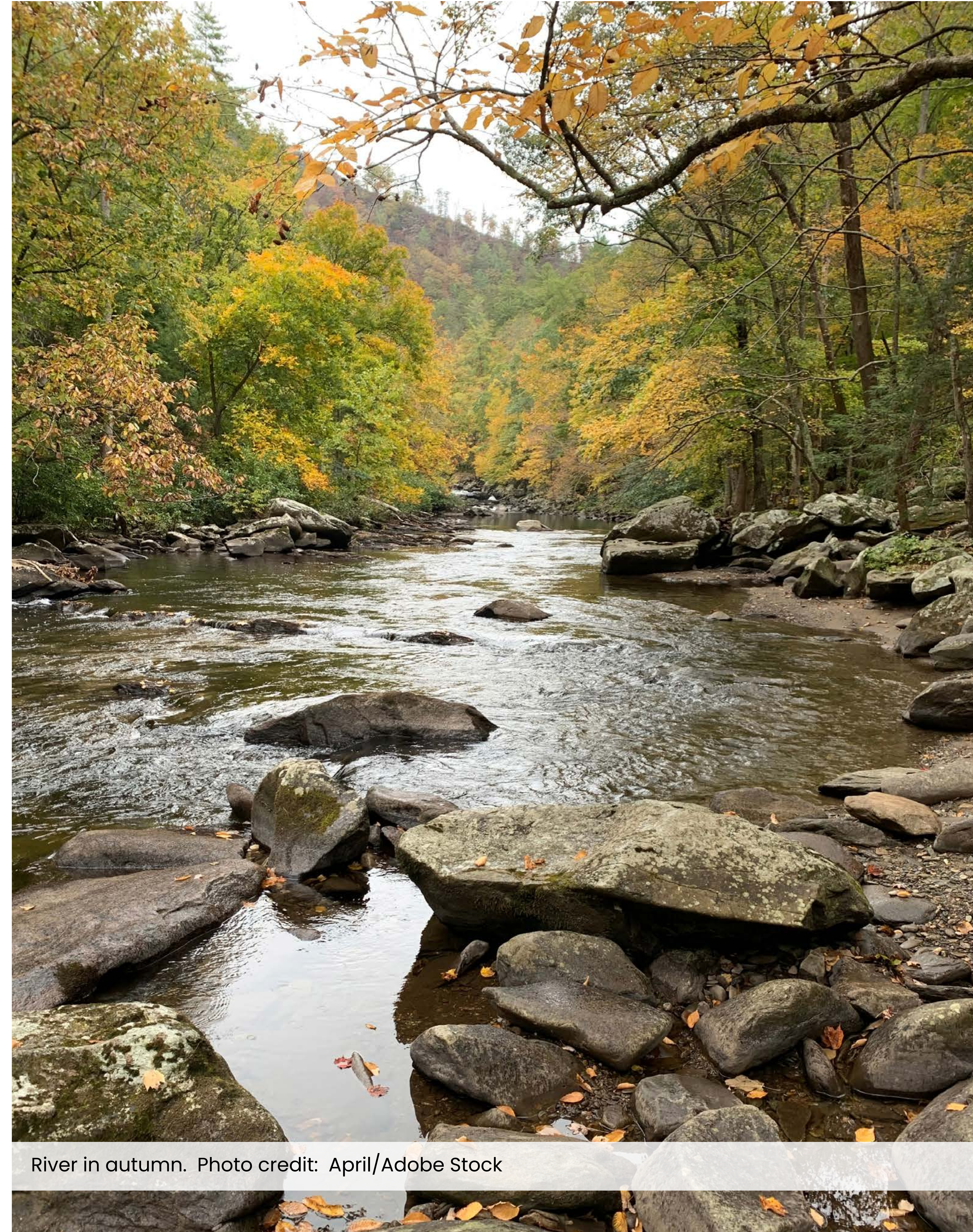
Fish biologists from Arcata Field Office, California, along with partners, channeled their inner mussel – and flexed their own muscles – to snorkel sites surveying for freshwater mollusks. In addition to muscle power, the team leveraged their combined knowledge of specific areas within the Klamath Basin to identify sampling locations with help from a database of historical mussel bed sites. The survey will help fill gaps in the known information for California’s native freshwater mussels as part of a larger, nationwide collaborative project led by the U.S. Fish and Wildlife Service. The goal is to develop condition status assessment tools to determine the health and abundance of freshwater mussels.



Jessica Radich and Jenna King are part of the regional dive team. Photo credit: USFWS

Choccolocco Creek Dive Team Project

Due to operation changes from a water supply storage reallocation study and updates to project water control manuals, the U.S. Fish and Wildlife Service and other agencies were concerned about the potential influence on three listed snails and their habitat, the painted rocksnail, the tulotoma snail, and the cylindrical lioplax. Staff from Panama City Fish and Wildlife Conservation Office, Florida, and Warm Springs National Fish Hatchery, Georgia, are part of the regional dive team who collected, identified, and counted snails, and are monitoring changes over time. These baseline biomonitoring assessments involved three river reaches over three days and fifteen dive and snorkel sites per reach.



River in autumn. Photo credit: April/Adobe Stock



Roadway stream crossing. Photo credit: Public Domain

NATIONAL FISH PASSAGE PROGRAM

Migratory fish rely on free-flowing connected rivers for their survival. Millions of obsolete or poorly designed dams, roads, and levees in the United States keep fish and other aquatic species from moving freely to feed, migrate, and reproduce. These barriers disrupt healthy ecosystems and are a major cause for the decline in fish populations. The National Fish Passage Program provides funding and technical assistance to help remove barriers and reconnect aquatic habitats.

Removing obsolete and dangerous infrastructure can also eliminate public safety hazards, improve climate resilience, and restore river ecosystems. In 2022, increases in funding through the Bipartisan Infrastructure Law enabled a dramatic expansion of conservation work to benefit both aquatic ecosystems and their surrounding communities.



111
Barriers
Removed



3,089
Stream Miles
Reopened



Barriers disrupt healthy ecosystems. Photo credit: Public Domain

78 More Miles of Connectivity for Endangered Mussels

The 268-mile-long Wapsipinicon River in eastern Iowa provides habitat for 90 species of fish and 18 species of mussels including the endangered Higgins' eye mussel. To re-establish a naturally reproducing population to the river, the La Crosse Fish and Wildlife Conservation Office, Wisconsin, and partners have been removing and modifying dams on the river. In fall of 2022 progress continued with modification of a dam to reconnect 78 miles of mainstem river for walleye, largemouth, and smallmouth bass to swim freely and have access to tributary habitat. These species are the host for Higgins' eye mussels and essential to expanding its range upstream.

Northern Wisconsin: City Creek Fish Passage Project Completed

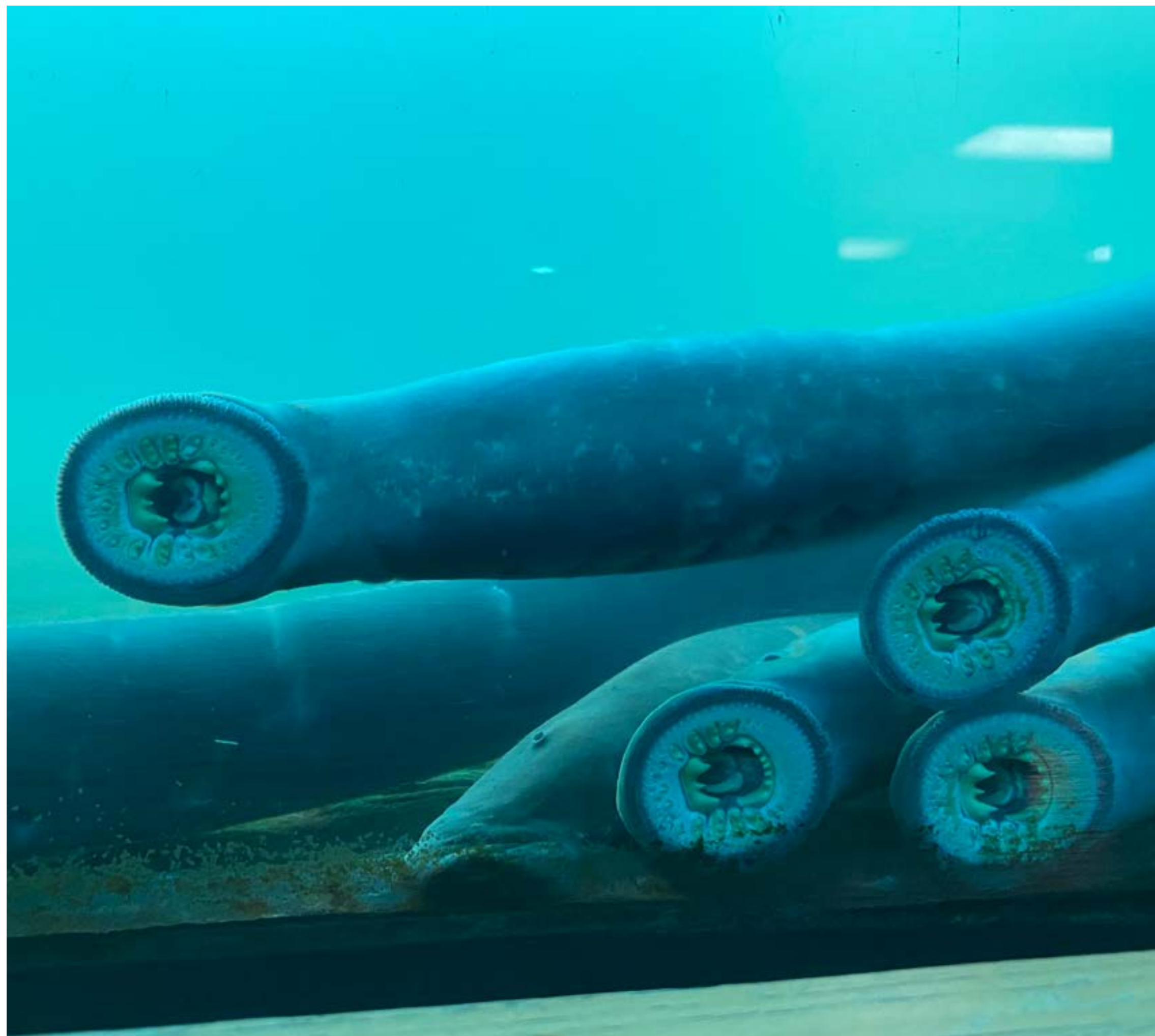
Ashland Fish and Wildlife Conservation Office, Wisconsin, and partners, recently completed a high priority brook trout passage project on City Creek, a Class II trout stream. A snowmobile trail spanning the stream was found to be a full passage barrier to brook trout. Using funding from the National Fish Passage Program, the site was restored with a bottomless arch structure to facilitate passage of brook trout and other aquatic life. On-the-ground results included 1.5 stream miles reconnected, erosion control, and sediment reduction. This project contributes to aquatic habitat enhancement of the Bad River watershed.



Smallmouth bass. Photo credit: Brett Billings/USFWS



Underwater brook trout: Photo credit: USFWS



Pacific lamprey attach to the viewing window at Bonneville Dam as they migrate up the Columbia River to breeding grounds. Photo credit: Public Domain

Columbia River Fish and Wildlife Conservation Office's National Fish Passage Program Project Receives State Land Board Award

U.S. Fish and Wildlife Service staff were part of a team recognized by the Oregon State Land Board for the Three Rivers Fish Passage Restoration Project, funded in part by the Columbia River Fish and Wildlife Conservation Office, Washington. This project highlights one of the first fully compliant fish ladders for adult Pacific lamprey, an anadromous fish native to the Pacific Northwest. The National Fish Passage Program contributed funding, technical, and species expertise, and permitting compliance. The project resulted in 14 miles of upstream passage for federally listed coho and three species of concern – winter steelhead, Pacific lamprey, and coastal cutthroat trout.



Bonytail chub. Photo credit: Kevin Kappenman/USFWS

Arizona Fish Passage Projects Connect Habitat for Threatened and Native Species

The Arizona Fish and Wildlife Conservation Office is involved in projects across the state to reconnect fragmented aquatic habitat for native species which includes the threatened Apache trout and Little Colorado spinedace. Other native fish are the loach minnow, Gila topminnow, desert pupfish, razorback sucker, humpback chub, and bonytail chub. Recent projects by the conservation office involved removal of a derelict fish barrier and logjam on Big Bonito Creek on the Fort Apache Indian Reservation, reconnecting nearly 8 miles of in-stream habitat, and reconnecting isolated backwaters to the lower Colorado River to open razorback sucker habitat in Moovalya Marsh on the Colorado River Indian Tribe Reservation.



The Box Mill Dam was the first barrier on China Lake Outlet Stream. Photo credit: Bryan Sojkowski/USFWS



Marion Ice Plant dam removal. Photo credit: USFWS



Construction crews demolishing Town Dam on the Sabattus River in Maine. Photo credit: Catherine Birmingham/ASF

BIPARTISAN INFRASTRUCTURE LAW FUNDING THROUGH THE NATIONAL FISH PASSAGE PROGRAM

[Bipartisan Infrastructure Law Brings Big Wins for Fish Passage and Local Communities](#)

Less than one year from the passing of the Bipartisan Infrastructure Law, jackhammers are demolishing dams, new channels are being cut, undersized culverts are being pulled from rivers, and more than 100 other barriers are slated for removal from rivers across the country to allow fish to swim freely once more. The infrastructure law is delivering a historic investment in aquatic ecosystem restoration – including \$200 million over five years for the National Fish Passage Program and partners to restore free-flowing waters, improve fish migration, address threats from climate change, and protect vulnerable communities from flooding.



Rock ramp dam removal. Photo credit: USFWS

Stronger than the Sum of Its Parts: Fish Passage in the Upper Clark Fork River

When the Upper Clark Fork Fish Passage Initiative project received funds from the Bipartisan Infrastructure Law, the additional funding helped move the project from drawings on paper to on-the-ground action. Sections of the Clark Fork River are critical for fish migrating to their spawning grounds. The Montana Fish and Wildlife Conservation Office and numerous partners are working together to improve the river's connectivity for bull trout and other fish. When completed, the project will re-open 55 miles and 270 acres of critical habitat for bull trout and benefit other species like westslope cutthroat trout.

Alaska Fish Passage Project to Open 70 Miles of Salmon Habitat

A road-stream crossing failing during high flows is a violent, forceful event. This happened on the Little Tonsina River when it reached flood stage and overwhelmed an access road in Alaska's Valdez-Cordova Borough— homelands to Ahtna people and an area that Sugpiaq and rural Alaskans depend on for access to hunting and fishing, wild food security, and cultural ties to the land. Bipartisan Infrastructure Law funding combined with partner funding efforts, collaboration, and technical support, will finally let the Little Tonsina flow free and provide a reliable ribbon of access for hunters, anglers, and infrastructure maintenance in a sparsely-roaded area.

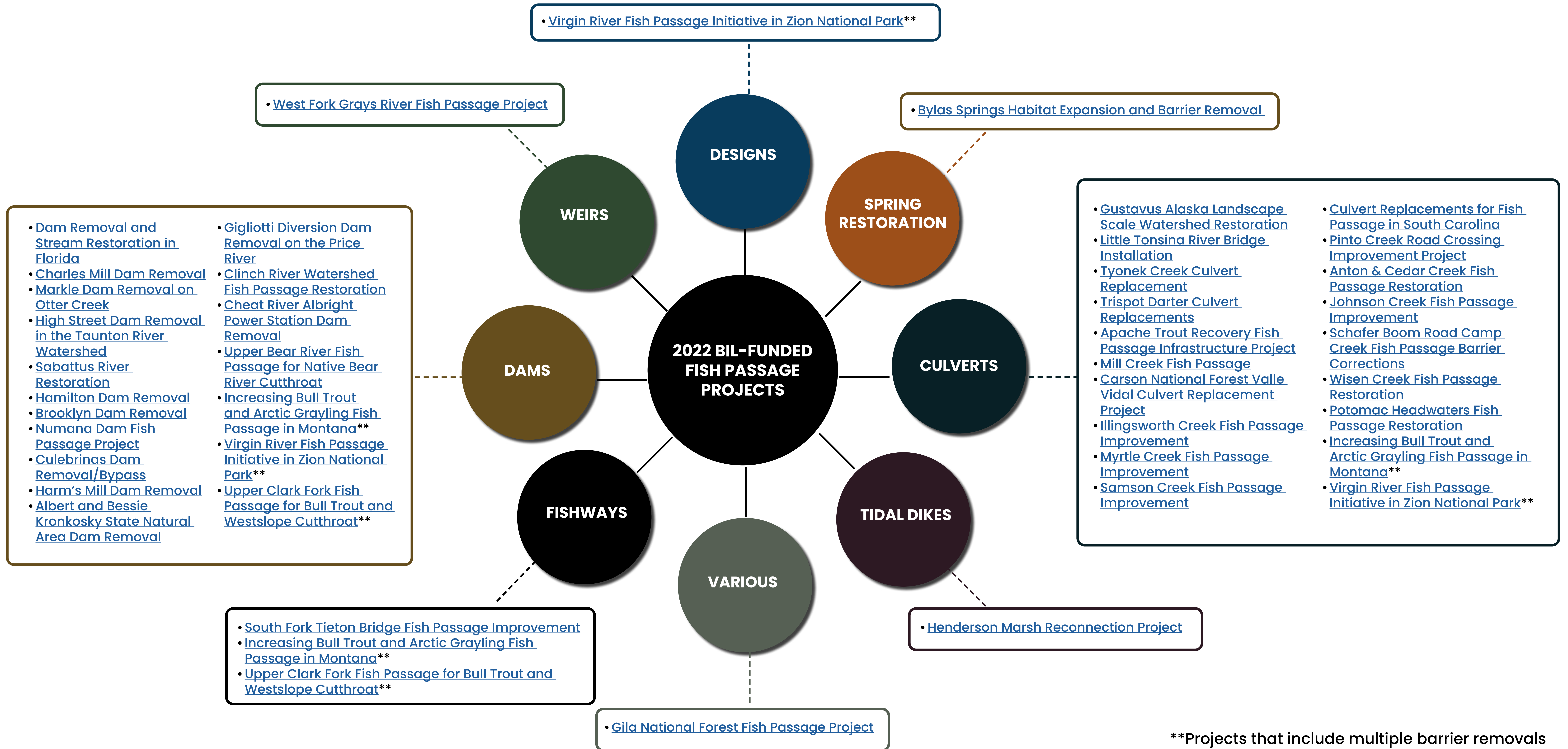


Bull trout. Photo credit: Joel Sartore/National Geographic Society



Two undersized culverts on the Little Tonsina River in Alaska. Photo credit: USFWS

2022 BIPARTISAN INFRASTRUCTURE LAW FUNDED FISH PASSAGE PROJECTS



**Projects that include multiple barrier removals

APPLYING SCIENCE TO CONSERVATION CHALLENGES

Shallow riverbed. Photo credit: Richard/Adobe Stock

The U.S. Fish and Wildlife Service's Fish and Aquatic Conservation program is advancing cutting-edge technologies across the country that will shape the future of aquatic conservation for years to come.

From developing new genetic markers to help prevent the next invasion of aquatic invasive species, to pioneering new captive propagation techniques that ensure a future for threatened and endangered species, our national network of fish hatcheries, fish technology centers, fish health centers, fish and wildlife conservation offices, and the Aquatic Animal Drug Approval Partnership use applied science and technology to steer our conservation practices.



Lower Columbia River Fish Health Center conducting genetics, fish health, and DNA testing. Photo credit: Ryan Hagerty/USFWS

APPLIED CONSERVATION SCIENCE ACROSS THE COUNTRY



FISH TECHNOLOGY CENTERS

Fish Technology Centers develop new techniques to address problems encountered in hatchery operations and aquatic resources management. They use cutting edge genetics technologies, formulate novel diets for species, study fish behavior in flumes and swim chambers, and study reproduction, stress, and thermal tolerance in aquatic animals so we have a better understanding of the rare aquatic animals that are reared in the National Fish Hatchery System.



FISH AND WILDLIFE CONSERVATION OFFICES

Fish and Wildlife Conservation Offices provide technical assistance to Tribes, conduct scientific studies into fishery problems, restore habitat through the National Fish Passage Program and the National Fish Habitat Action Plan, and collaborate with partners to conserve migratory fishes that cross multiple jurisdictions.



FISH HEALTH CENTERS

Fish Health Centers work on the front lines to periodically inspect the health status of hatchery species using validated protocols for specific disease-causing viruses, bacteria, and parasites. They also monitor health in wild aquatic animals and respond to calls for assistance from partners observing losses in wild fish (fish kills). Fish Health Centers also assist hatchery staff in health management activities like vaccinating fish and providing diagnostic support.



AQUATIC ANIMAL DRUG APPROVAL PARTNERSHIP

The Aquatic Animal Drug Approval Partnership is the only program in the United States singularly dedicated to obtaining U.S. Food and Drug Administration approval of new medications, including disease treatments, spawning aids, and anesthetics for use in fish culture and fisheries management. The partnership plays an important role nationally to address fish health and production needs to raise healthy fish for natural resource conservation and commercial aquaculture purposes.

FISH TECHNOLOGY CENTERS



Arctic grayling. Photo credit: Ryan Hagerty/USFWS

Raise the Roof at Bozeman Fish Technology Fish Passage Research Lab

Neither rain or snow, nor heat or the gloom of night can keep fish passage researchers at the Bozeman Fish Technology Center, Montana, from studying fish swimming and leaping abilities. The center has constructed a building that will provide insulated and heated space over their research flume. The open-channel flume is used to study fish locomotion, swimming abilities, leaping abilities, behavior at barriers, and other characteristics that affect fish passage. Arctic grayling and westslope cutthroat trout are a few species that will benefit from information collected during year-round studies. The flume is unique among U.S. Fish and Wildlife Service facilities.



An x-ray system showing the generator and the DR panel which sends images wirelessly to a laptop. Photo credit: Doug Peterson/USFWS

X-rays: An Older Technology with New Applications

New x-ray equipment at Abernathy Fish Technology Center gives researchers a new set of eyes: X-ray technology can answer any number of questions about fish health, physiology, and reproductive status. Abernathy Fish Technology Center in Washington uses a portable digital x-ray system that allows scientists to obtain and view x-ray images within seconds. In recent studies, scientists used x-rays to confirm PIT tag retention in brook trout and revealed instances in where a tag was lost by one fish and eaten by another; they also investigated how long ingested tags remained inside the digestive systems of Pacific salmon.



Swimming abilities are determined using open channel flume experiments. Photo credit: Ryan Hagerty/USFWS



Five-hundred-year-old cypress. Photo credit: Vince Shaft/Adobe Stock

FISH AND WILDLIFE CONSERVATION OFFICES

Connecting the Dots through Partnerships

Many times, the complex questions we strive to answer as biologists span beyond our personal or office capacities (physical, geographic, etc.). This is where partners help to connect the dots, or we serve as a dot connection for our partners. The Baton Rouge Fish and Wildlife Conservation Office, Louisiana, is one of several partners that deploy and maintain an acoustic telemetry array in several river systems or estuaries to detect tagged American eel as they migrate downstream toward the Sargasso Sea. This long-term and large spatial scale project will provide a better understanding of migration dynamics and pathways, barrier impacts, and escapement of the American eel.



American eel. Photo credit: USFWS

Tag and Follow: A Day Tracking Sturgeon in the San Joaquin River

When the Lodi Fish and Wildlife Office team from California started looking for white sturgeon to tag in the San Joaquin River in March, they knew some days would be uneventful and others would put them to the test. Their first morning on the river, they waited to see which kind of day it would be. Their job was to surgically implant tiny acoustic transmitters, or tags, in white sturgeon and other fish. In eight years of tagging, the Lodi office has implanted over 100 transmitters in white sturgeon, but this day turned into one for the record books.



A white sturgeon in the San Joaquin River. Photo credit: Brandon Honig/USFWS

FISH HEALTH CENTERS



Channel catfish. Photo credit: Ryan Hagerty/USFWS

Wild Fish Health Survey – Protecting Wild Fishes

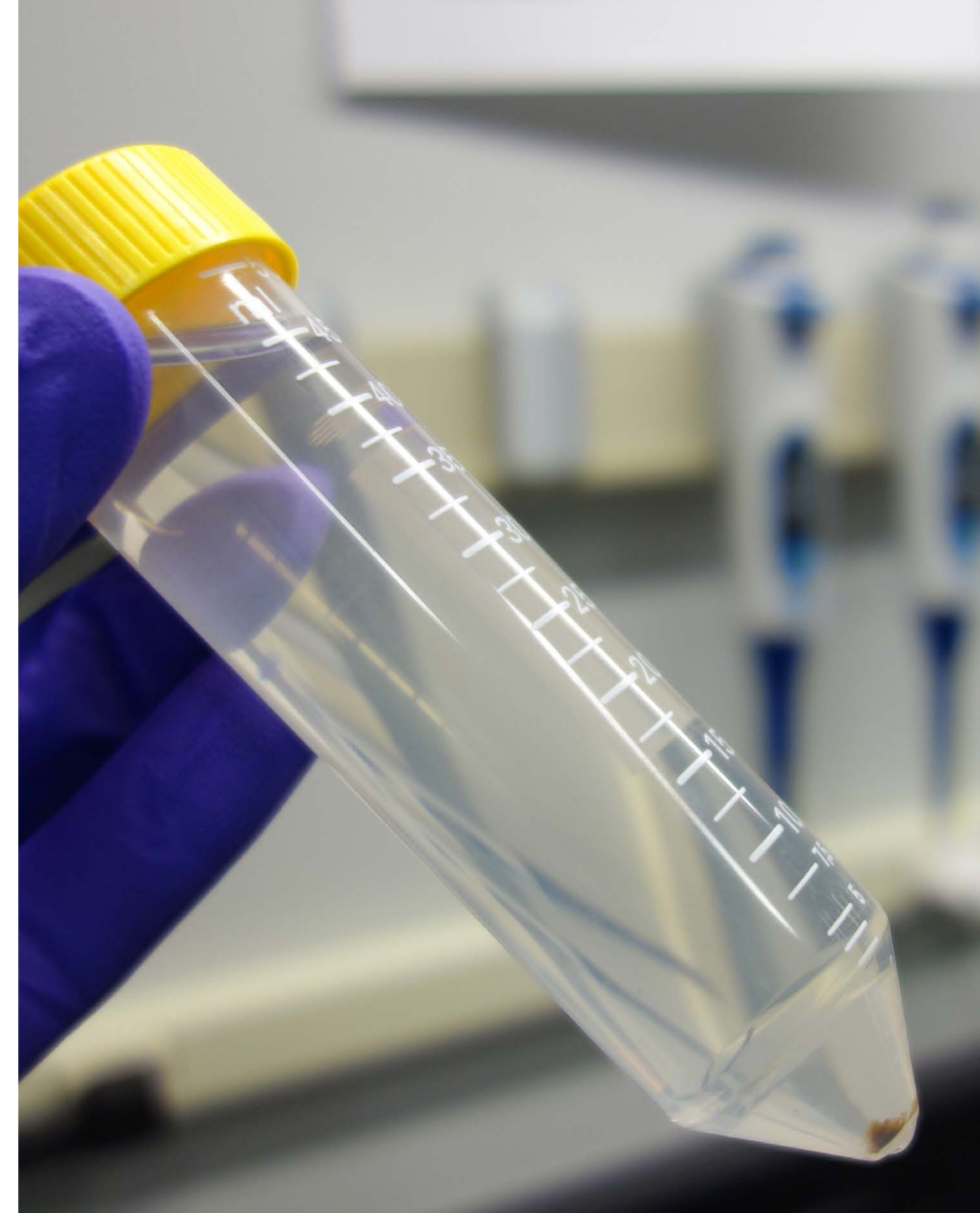
In 2022 the U.S. Fish and Wildlife Service’s fish health centers launched a new tool to help in the fight to protect wild fisheries. The Wild Fish Health Survey Mapper provides real-time surveillance of pathogens in wild aquatic animal populations. As climate change drives human, animal, and disease migrations, the data collected by the National Wild Fish Health Survey will become increasingly important in our efforts to conserve freshwater fish and aquatic species for future generations. The information collected by the National Wild Fish Health Survey helps biologists and fisheries managers decide where and how to manage aquatic animals and to model for future pathogen occurrences. This is the only such information available and it is the oldest data set of this nature in existence.

Leading Experts in Parasitology Visit La Crosse Fish Health Center

Imagine having the opportunity to work alongside the leading experts in your field. La Crosse Fish Health Center did get that opportunity when experts in parasitology visited La Crosse in November of 2022. The collaboration supported the distinguished scientists current research and helped shed new light on past collections from the same water bodies. To have these world experts in your lab to exchange information about techniques, morphology, and biology of parasites was an invaluable experience that will surely elevate the ability of the center to conserve and protect fish and aquatic species in the future.



Dr. Scholz looks for tapeworms in sucker intestines. Photo credit: Cristina Stahl/USFWS



Pellet of eDNA in vial at the Whitney Genetics Lab. Photo credit: USFWS

AQUATIC ANIMAL DRUG APPROVAL PARTNERSHIP

28th Annual Aquaculture Drug Approval Coordination Workshop

July 25 – 28, 2022, the Aquatic Animal Drug Approval Partnership program met with partners in person and virtually for the 28th Annual Aquaculture Drug Approval Coordination Workshop in Bozeman, Montana. Discussions involved updates regarding drug approvals and research, Investigational New Animal Drugs, emerging diseases and challenges, and other drug related needs. This was the first in-person meeting since the beginning of the COVID-19 pandemic and the first hybrid meeting that AADAP has hosted with the option for attendees to join in virtually. Partners in attendance included 76 virtual and 45 in-person participants.

Dedication to Healthy Fish

Each year the Aquatic Animal Drug Approval Partnership, located in Bozeman, Montana, works with federal, state, Tribal, private partners, and stakeholders to ensure fish culturists have access to a well-stocked fish medicine chest. In 2022, AADAP researchers led two studies evaluating the effectiveness of a novel spawning hormone for catfish, reported to the U.S. Food and Drug Administration evidence of efficacy of an external bacteria treatment in rainbow trout, and published a review article in the Journal of Aquatic Animal Health. AADAP's National Investigational New Animal Drug program completed a total of 903 studies across 261 facilities and 42 states, resulting in over 24 million fish treated for restoration, recreation, and the dinner table.



Yellowstone cutthroat trout. Photo credit: Jay Fleming/NPS



Rainbow trout. Photo credit: USFWS



Juvenile northern pike. Photo credit: Brett Billings/USFWS

PROTECTING OUR WATERS - AQUATIC INVASIVE SPECIES

Invasive four leaf clover lily. Photo credit: George Gentry/USFWS

Aquatic invasive species cause tremendous harm to our environment, economy, and health. They can crowd out and eat native plants and wildlife, spread diseases, and damage infrastructure. We work to protect our waterways and communities from threats of invasive species through partnerships, grants, and co-chairing the Aquatic Nuisance Species Task Force.

In 2022, in partnership with Department of the Interior's Invasive Species Task Force, the Service developed a National Early Detection Rapid Response Framework and Operational Plan towards advancing "3 in 3 for the WIN". Here "N" in WIN stands for National EDRR Framework and represents one of three invasive species initiatives prioritized over three years.



Silver carp jumping in the Fox River. Photo credit: Ryan Hagerty/USFWS

COMBATTING THE THREAT OF AQUATIC INVASIVE SPECIES – THE AQUATIC NUISANCE SPECIES TASK FORCE

The Aquatic Nuisance Species Task Force is the only Federally-mandated intergovernmental organization solely dedicated to preventing and controlling aquatic invasive species. Accomplishments during 2022 include developing a National Priorities Research List, assessing National ANS outreach campaigns, establishing an ANS Outreach Community of Practice, and developing a model process for a pilot National Rapid Response Fund. The Task Force continues to guide development of State and Interstate ANS Management Plans, which are eligible for funding from the ANS Management Plan Grant Program maintained by the Service. In 2022, the Service awarded cost-share grants for implementation of 43 Plans.

INJURIOUS WILDLIFE LISTINGS AND ECOLOGICAL RISK SCREENING SUMMARIES PREVENT INVASIONS

U.S. Fish and Wildlife Service has authority from Congress to limit importation and transportation of certain types of wildlife species by designating them as injurious. Injurious species will likely cause harm if they become established in U.S. environments outside their natural range. The Aquatic Invasive Species Program uses science-based approaches to identify high-risk species and pathways of introduction into the United States, including Ecological Risk Screening Summaries. ERSS identify aquatic species with the highest risk of becoming invasive in U.S. ecosystems to prioritize them for evaluation for injurious listing. A total of 1,665 screening summaries have been completed with 45 published in 2022.

PRIORITIZING AND RESPONDING TO INVASION RISK – EARLY DETECTION AND RAPID RESPONSE

Early Detection and Rapid Response is a coordinated approach to find and eradicate invasive species before they have the chance to establish or spread. The Aquatic Invasive Species Program uses ‘horizon scans’ at the national, regional, and basin level to prioritize high-risk invasive species and pathways. Then targeted surveillance, such as environmental DNA or traditional field sampling techniques are used to detect new invaders early so that a rapid response can eradicate them before they cause harm to U.S. resources. The Service participates in multi-partner emergency response activities annually, providing underwater remotely-operated vehicle, scuba, subject matter, and Incident Command System expertise.

A photograph showing a dense field of yellow wildflowers in the foreground, with purple loosestrife plants in the background. The scene is set in a natural, outdoor environment with trees visible in the distance.

Invasive purple loosestrife. Photo credit: Karen Hollingsworth/USFWS



Swamp eels. Photo credit: Dr. John Galvez, Peninsular Florida FWCO/USFWS

Searching for Aquatic Invasive Species in South Florida

In 2022, the Nonnative Fish Slam and Fish Chat was held in South Florida to conduct early detection surveys in areas that may potentially have new introductions of aquatic species. The event is also an opportunity for agencies involved in aquatic invasive species management to share what projects they have been working on, issues they are seeing, and allow for open discussions with colleagues. More than 35 fish biologists in 12 teams sampled canals and waterbodies using electrofishing boats and a variety of sampling gear. Over 14 species of non-native fish and one species of non-native amphibian were captured and documented.



Tyee Springs and yellow flower. Photo credit: Jennifer Rowlen/USFWS

Getting Back to Pristine at Tyee Springs

Tyee Springs is located upstream from Carson National Fish Hatchery, Washington, and is a water source for the hatchery. In this seemingly pristine setting, swims the non-native, invasive, brook trout. These non-native trout in Tyee Springs can be a source of devastating sickness that can be transferred to the hatchery fish as well as downstream into endangered fish populations on the Wind River. The Columbia River Fish and Wildlife Conservation Office, Washington, is working to eliminate these non-native species through a program called the Trojan Y Chromosome Technique. Over the past several years more than 5,000 brook trout have been removed from the springs.



Invasive giant salvinia. Photo credit: David Britton/USFWS



Invasive water hyacinth in Louisiana swamp. Photo credit: Cavan/Adobe Stock

Working at the Invasion Front: Carp in the Red River

At the Texas-Oklahoma border lies the Denison Dam and just below the dam is the Red River. This is where the Oklahoma Fish and Wildlife Conservation Office began their battle against invasive bighead and silver carp as part of a multi-agency effort. To determine whether invasive carp are successfully spawning in the river below the dam, conservation office biologists spent the 2022 field season collecting samples from sections of the Red River. Samples are being tested for invasive carp genetic material and the data will inform us of the demographics of this population of invasive carp as well as the reproductive stage of the fish throughout the year.



Fisheries biologist holds massive bighead carp Photo credit: Ryan Hagerty/USFWS

Saving Sturgeon One Night at a Time

Sea lampreys are voracious, invasive predators that threaten the health of the Great Lakes fish community. To keep sea lamprey populations in check, lampricides are applied to streams throughout the Great Lakes. Due to sea lamprey found in the Muskegon River, the Green Bay Fish and Wildlife Conservation Office in Wisconsin, the Little River Band of Ottawa Indians, and the Sea Lamprey Risk Management Team collaborated to remove young-of-year lake sturgeon, a species of concern, from the river prior to treatment. The team worked nights to collect the sturgeon that were housed safely until after the lampricide cleared the river, then the fish were tagged and released back into their respective river sections.



Biologist holding a baby lake sturgeon. Photo credit: USFWS



Individual mussels tend to be quite small. While a zebra mussel can grow up to two inches long, most are less than an inch. Photo credit: Deborah Kornblut/USFWS

Alaska Invasive Species Awareness Week

During Invasive Species Awareness Week in 2022, the U.S. Fish and Wildlife Service in Alaska held a public event at a Cabela’s storefront. The event was held to demonstrate how boaters and anglers can help prevent the spread of invasive species by identifying and reporting potential invaders. The Service has ramped up its focus on invasive zebra mussels that cause problems by attaching to infrastructure, clogging water pipes, and changing the marine environment they’re in. “As mussels have moved west from the Great Lakes they are starting to move north as well,” said Service biologist Mike Buntjer.



Adult sea lamprey. Photo credit: USFWS

Sea Lamprey Control in Lake Champlain Basin

Sea lamprey are a jawless, parasitic fish native to the Atlantic Ocean that entered Lake Champlain through shipping canals. Their aggressive behavior and appetite for the bodily fluids of fish wreaked havoc on native fish populations and decimated an already vulnerable lake trout and salmon fishery. For over 30 years the U.S. Fish and Wildlife Service and partners have worked to protect Lake Champlain by controlling the invasive sea lamprey. Prior to the Service’s leadership in controlling sea lamprey in Lake Champlain, parasitic wounding rates were impacting the recovery of lake sturgeon. Since working with partners to control sea lamprey, wounding rates have dropped by 92%, and are now at historic lows.



Invasive large wall of hydrilla. Photo credit: Ryan Hagerty/USFWS

FULFILLING TRIBAL TRUST AND SUBSISTENCE RESPONSIBILITIES



Lower Snake River. Photo credit: Doug Nemeth/USFWS

Natural resource management programs operated by federally recognized Tribes protect the traditional, cultural, spiritual, medicinal, subsistence, recreational, and economic needs of their communities within their respective Tribal lands. The Fish and Aquatic Conservation program is a co-steward with many Tribes regarding these incredible natural and cultural resources.

For decades, the Fish and Aquatic Conservation program has partnered with Tribes to stock fish in Tribal waters and provide technical assistance for fish and wildlife resource management needs on Tribal lands. This includes co-management of salmon stocks in the Pacific Northwest as well as lake trout and other species in the Great Lakes. We pursue these collaborative management efforts not just to fulfill our Tribal Trust responsibilities and acknowledge Tribal treaty rights, promote sustainable management of important Tribal fisheries and wildlife, but also to ensure the benefits of resource conservation are accessible to everyone.



Yakama Tribal member nets a salmon in the Klickitat River. Photo credit: Ryan Hagerty/USFWS



Adult burbot in holding tanks. Photo credit: Kootenai Tribe of Idaho

Burbot Across the Border

Burbot, a keystone species in the Kootenai River, once sustained a culturally significant fishery and winter food source for the Kootenai Tribe. When burbot became a species of concern in Idaho and Red-Listed, because of risk of extinction in British Columbia, the Kootenai Tribe partnered with other agencies to investigate burbot aquaculture. The burbot population in the river has now grown from an estimated 50 fish to more than 50,000. The success of the program is dependent on transfers of burbot from the Tribal hatchery to north Idaho and Canada. A multi-year effort that takes great determination by the Tribe, the U.S. Fish and Wildlife Service, and all agencies involved.



Moose Brook finished bridge in Houlton, Maine. Photo courtesy of Sue Young/Houlton Band of Maliseet Indians

Water (and Fish) Under the Bridge

Near the Maine-Canada border, a conservation project more than 10 years in the making has wrapped! A community is now safer from floods, nearly 10 miles of stream for fish passage has been opened, and an important stream for brook trout habitat, Moose Brook, has been reconnected to the Meduxnekeag River. An old, perched culvert posed a serious flood risk to a small town and the Houlton Band of Maliseet Indians. Over the years, the Tribe's connection to the land had been disrupted by industrial development. For these reasons, restoring Moose Brook and its native species was one of the Tribe's top priorities.



The Kootenai River in the Kootenai National Forest. Photo credit: MelissaMN/Adobe Stock



Alaska Prince of Wales island Ketchikan aerial view. Photo credit: Andrea Izzotti/Adobe Stock

Fish of the Week Podcast! Prince of Wales Island Sockeye Salmon

Prince of Wales Island, Alaska, is a temperate rainforest and sockeye salmon are the “lifeblood” of this special place. The Indigenous peoples of Klawock have been in the area for 10,000 – 12,000 years and chose this area because of the sockeye. Prince of Wales Island has had some of the strongest sockeye runs in the world. But lately, there have been dismal returns. This hits communities in a way that’s difficult to describe to others. When elders were interviewed, the decline of sockeye was described as a feeling of pending starvation. The Indigenous peoples are so connected to the fish, it deeply affects their way of life.

Endangered Salmon Returned Home for First Time Since 1940s

It comes as no surprise that state, federal, and Tribal partners must move quickly to counteract drought in the Pacific southwest. When scientists proposed a seemingly new idea of moving endangered winter-run Chinook salmon into historical habitat upstream of Shasta Dam the summer of 2022, it wasn’t a new idea at all. The Winnemem Wintu, who are also known as the Middle Water People of the McCloud River, have a centuries-long history of transporting salmon past barriers. The McCloud River project is one of several actions the agencies quickly collaborated on to help stave off the species’ extinction in the face of ongoing drought and rising water temperatures.



Sockeye spawners. Photo credit: Katrina Liebich/USFWS



Winter-run Chinook salmon eggs. Photo credit: Laura Mahoney/USFWS

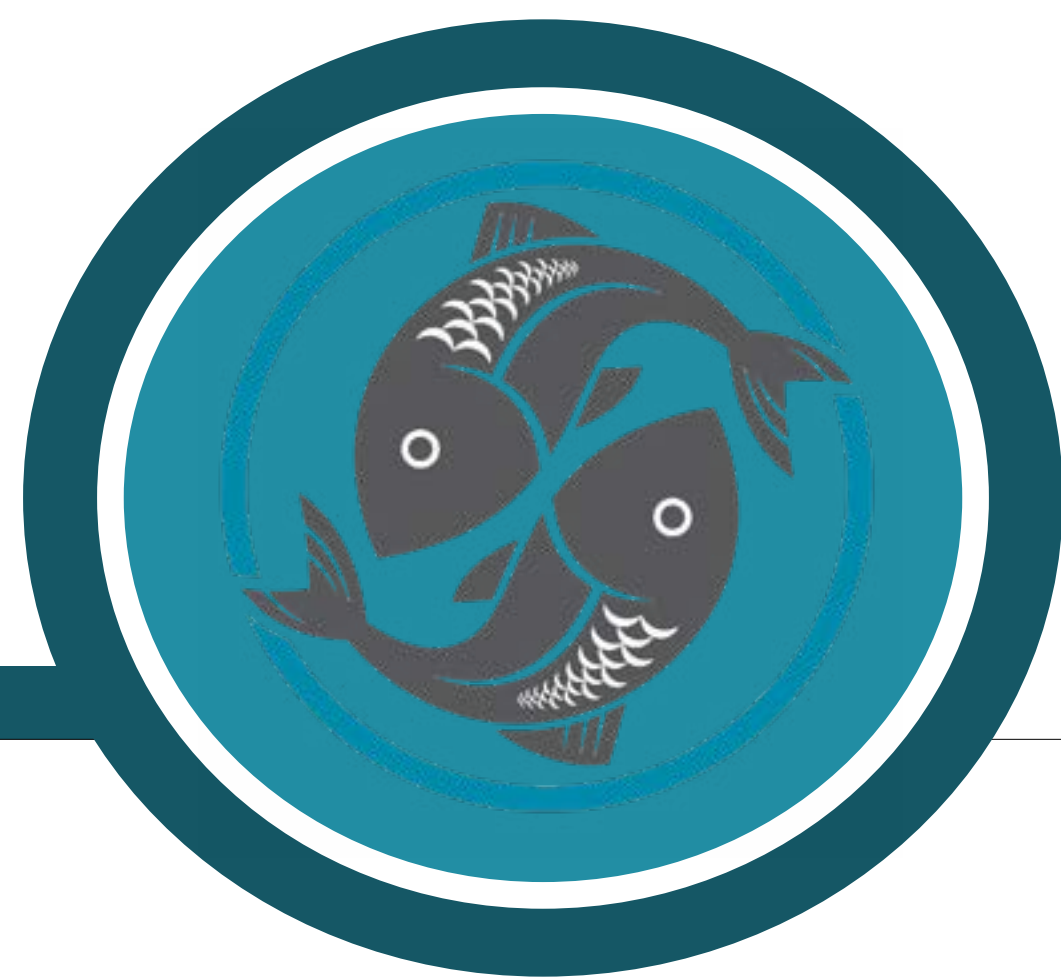
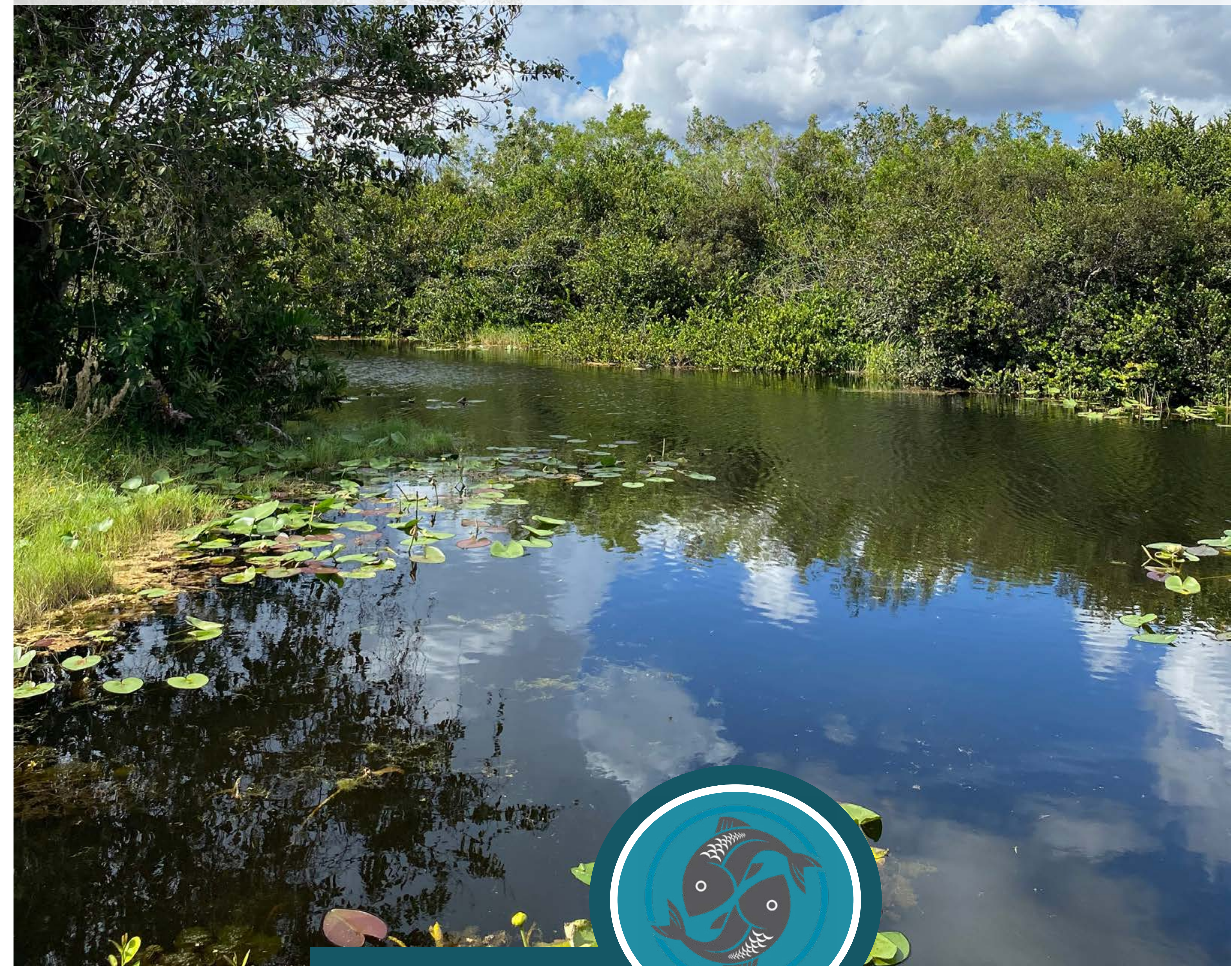


Refuge staff gaining cross-program experience provided by FAC during the electrofishing collection of bowfin and Florida gar for stocking at the Miccosukee Reserve Area - Old Tamiami Canal. Photo credit: John Galvez/USFWS

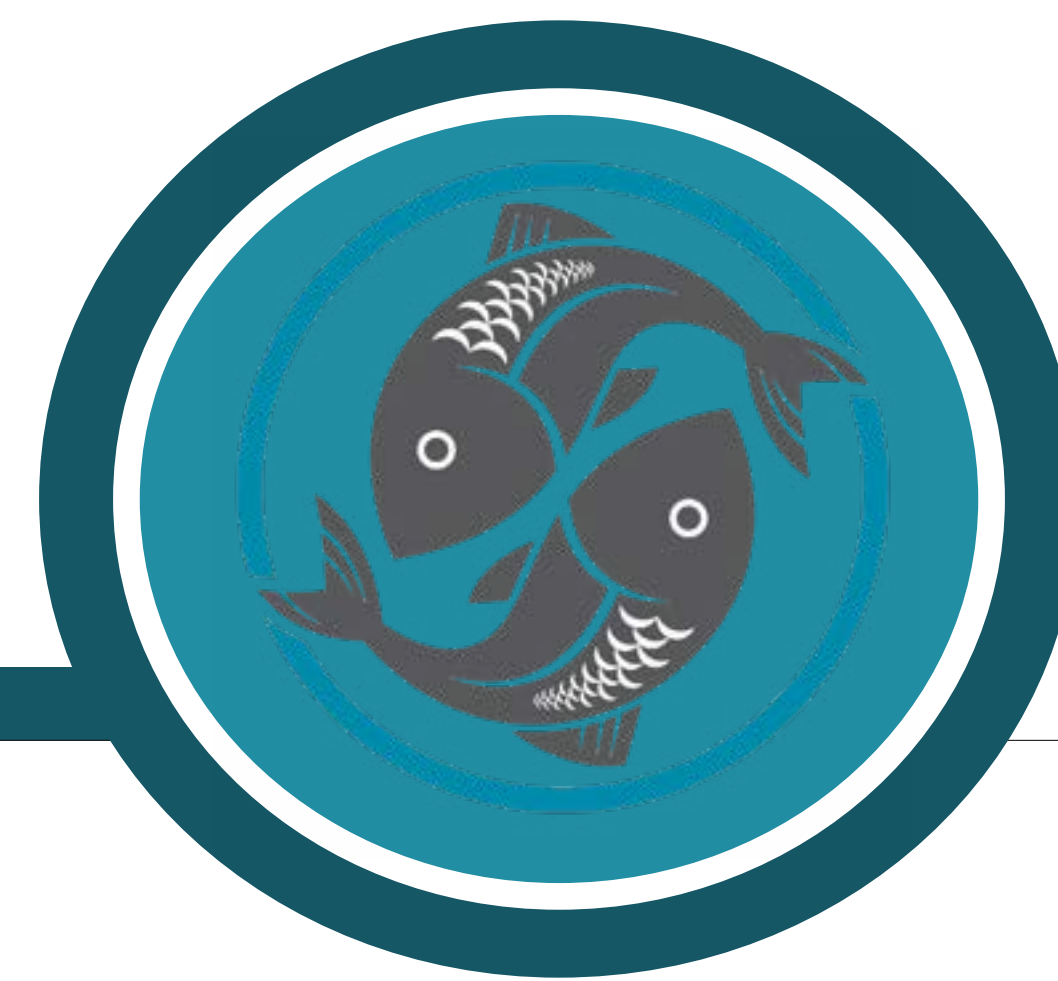
Old Tamiami Canal Restoration with the Miccosukee Tribe of Indians of Florida

In November of 2022, Fish and Aquatic Conservation staff from Peninsular Florida Fish and Wildlife Conservation Office and Welaka National Fish Hatchery, Florida, relocated 60 Florida gar and 15 bowfin to the Old Tamiami Canal on the Miccosukee Tribe of Indians of Florida Reserve Area. These species are culturally significant and are part of the traditional diet of the Miccosukee Tribe. Just a short walk from the canal is the Miccosukee Tribe school grounds. Taking advantage of an educational opportunity, teachers and students of the Tribal school were able to assist with stocking the fish in their canal.

Old Tamiami Canal restoration. Photo credit: Cedric Doolittle/USFWS



23.8 million
Fish Distributed to
Tribal Lands

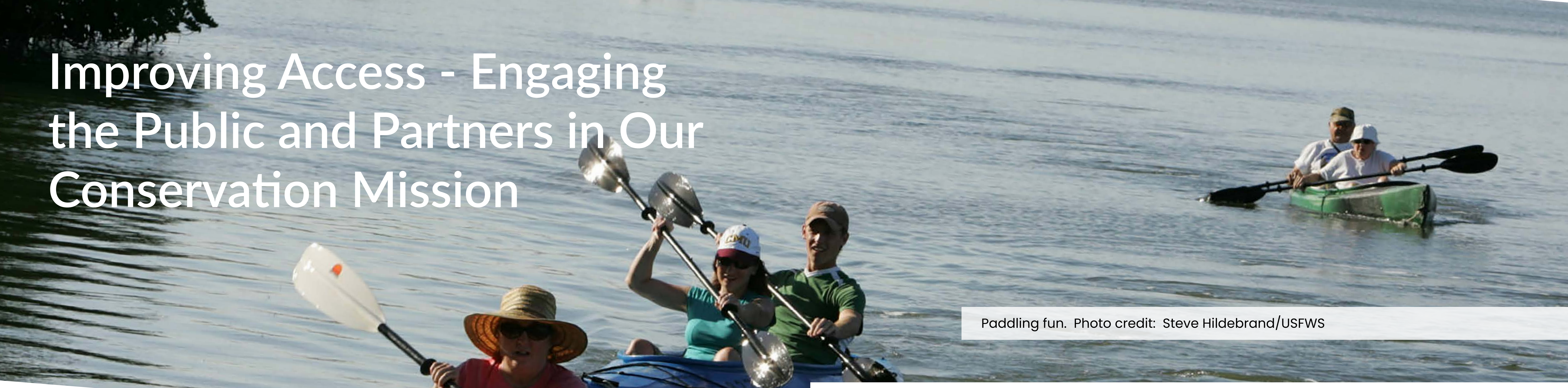


60
Tribes Stocked with Fish
for Recreational and
Subsistence Fisheries



47
Tribal Conservation
Partnerships with Fish and
Wildlife Conservation Offices

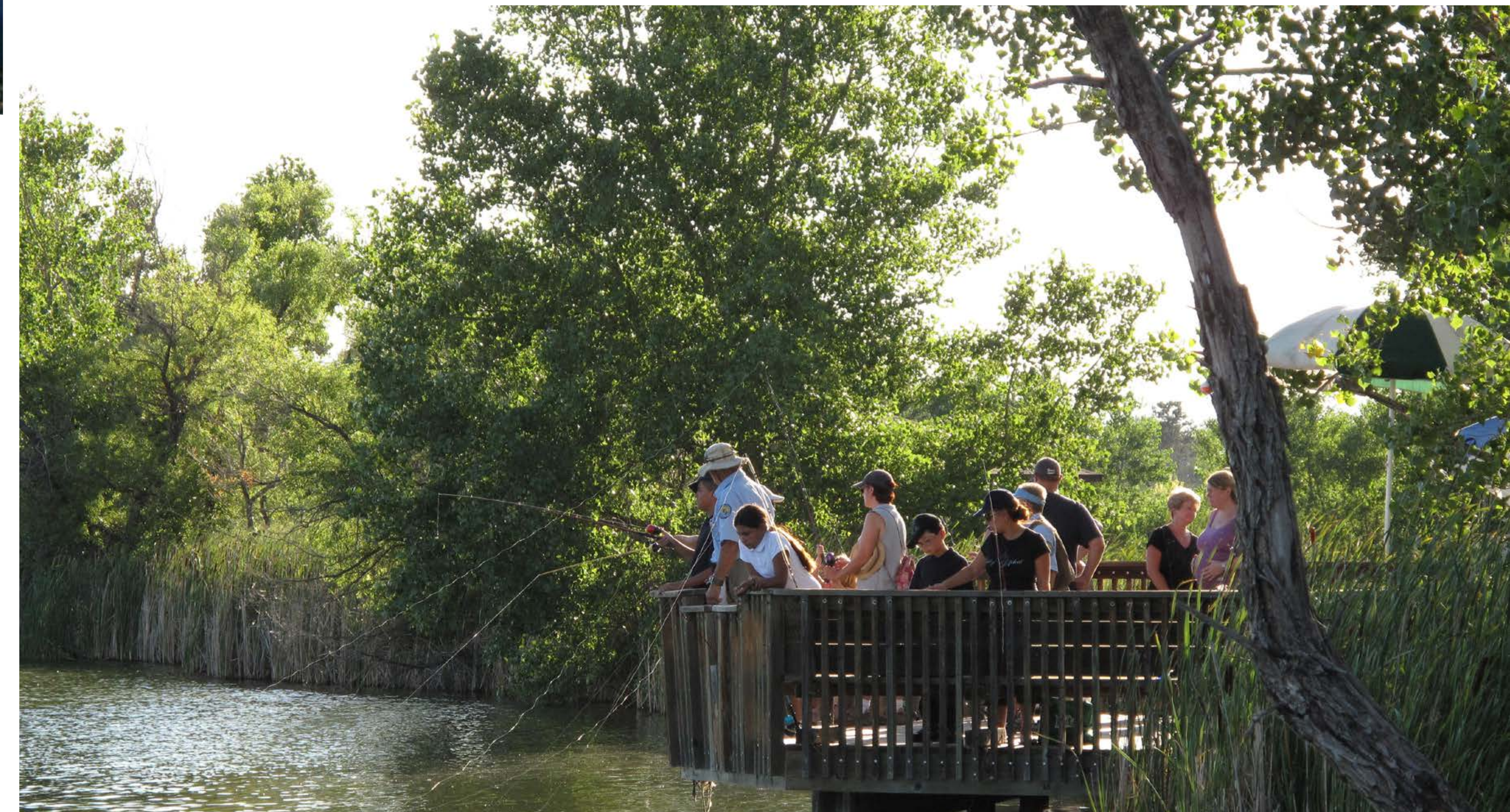
Improving Access - Engaging the Public and Partners in Our Conservation Mission



Paddling fun. Photo credit: Steve Hildebrand/USFWS

Everyone deserves access to clean, safe, and local opportunities to connect with nature. Hiking, hunting, fishing, and wildlife watching can help connect people with nature and empower the next generation of conservationists. Wildlife-related recreation and access to nature also provide vital funding for conservation, support local economies, and improve the physical, psychological, and social health of everyone.

Fish and Aquatic Conservation works to increase access to recreation by collaborating with industry, associations, and Friends Groups, as well as other federal agencies, and state and Tribal governments. The fish passage, habitat restoration, and water quality monitoring work in and near urban areas contributes to clean healthy aquatic environments. The work increases resilience to flooding and other climate risks and builds on the Service's commitment to racial equity and social and environmental justice goals.



Fishing trip Rocky Mountain Arsenal. Photo credit: Stephanie Raine/USFWS

URBAN WILDLIFE CONSERVATION PROGRAM

The Fish and Aquatic Conservation program contributes to the Service-wide Urban Wildlife Conservation Program by leveraging its facilities to host fishing and other recreational events, working with partners on events in and near urban centers, and by collaborating across sectors to promote access to nature and recreational opportunities.

The fish passage, habitat restoration, and water quality monitoring work in and near urban areas contributes to clean healthy aquatic environments. The work increases resilience to flooding and other climate risks and builds on the Service's commitment to racial equity and social and environmental justice goals.

Critical Elements:

1. Community-focused: Prioritize community needs with long-term commitments.
2. Intentional: Adopt community engagement methods that are well-informed, purposeful and measurable.
3. Inclusive: Implement equitable solutions to involve the community in solving conservation challenges.
4. Collaborative: Form long-term transformational relationships with community partners and across Service programs with the goal of increasing the collective impacts of conservation efforts.

Research indicates that in recent years, new participants are more likely to be female, younger, living in an urban area, and be more diverse than existing participants. This gives us much to build on in terms of growth in participation and diversity of anglers. Our opportunity is learning from this growth and working to remove barriers to participation in fishing and other connections with nature.



Youth being taught how to fish in Anchorage, Alaska. Photo credit: Ryan Hagerty/USFWS



Vernal pool on Camp Pendleton. Photo credit: USFWS

CONNECTING LANDS, WATERS, AND CONSERVATION PARTNERS

Camp Pendleton named Service's Military Conservation Partner of the Year

Marine Corps Base Camp Pendleton, California, received the U.S. Fish and Wildlife Service's 18th Annual Military Conservation Partner Award. The base collaborated with the Service, the state of California, and public and private organizations to restore and protect habitat for 19 federally endangered and threatened species. Camp Pendleton's conservation efforts support recovery of the tidewater goby, coastal California gnatcatcher, numerous other fish and bird species, and the last remaining coastal populations of the arroyo toad. Their fish passage projects contribute to recovery of southern California steelhead and other imperiled fish. The base supports outdoor recreation programs including hunting, fishing, hiking, camping, swimming, and surfing.



Arroyo toad. Photo credit: Will Flaxington

RECREATION AND EDUCATION

Sport Fishing and Boating Partnership Council

The [Sport Fishing and Boating Partnership Council](#) functions under the Federal Advisory Committee Act and is comprised of national and regional leaders in angling and boating who represent a wide range of stakeholder organizations. Since its establishment in 1993, the Council has provided critical input on the development and implementation of Service programs that affect conservation strategies that benefit recreational fishing and boating resources. The Fish and Aquatic Conservation program manages this important partnership, facilitating meetings and research on behalf of the Council. The Bipartisan Infrastructure Law directed the Council to advise both the Department of Interior and the Department of Commerce on issues related to recreational fishing and boating beginning in 2023.

National Outreach and Communications Program - Recreational Boating and Fishing Foundation

The [National Outreach and Communications Program](#) is a visionary long-term effort to improve communications with anglers, boaters, and the public regarding fishing and boating opportunities, reduce barriers to participation, and promote safe fishing and boating practices as well as the conservation and the responsible use of the Nation's aquatic resources. Since 1999, FAC has worked with the Recreational Boating and Fishing Foundation, industry partners, and other state and federal agencies to implement the National Outreach and Communications Program – which is one of the largest single grants awarded by the Service. In 2022, the Service announced a new five-year, \$70 million cooperative agreement to continue implementing the NOCP to continue to improve fishing and boating access while engaging outdoor enthusiasts in natural resource stewardship.

Improving Recreational Access

Hiking, hunting, fishing, and wildlife watching can help connect people with nature and empower the next generation of conservationists. Wildlife-related recreation and access to nature also provide vital funding for conservation, support local economies, and improve the physical, psychological, and social health of everyone. The Fish and Aquatic Conservation program is eliminating barriers that prevent people from connecting to the natural world around them and protecting our shared natural resources for future generations to enjoy.



Reducing barriers to fishing and boating opportunities is an important part of the National Outreach and Communication Program. Photo credit: Recreational Boating and Fishing Foundation



Rainbow trout run. Photo credit: USFWS

Apache Trout Crew Helps with Fishing Derby

The 17-member Apache Trout Crew of the Arizona Fish and Wildlife Conservation Office in Whiteriver, assisted with a youth fishing derby hosted by the White Mountain Apache Tribe Game and Fish Department in June of 2022. More than 550 kids had the opportunity to fish for rainbow trout and win prizes. Trout were provided by the Alchesay- Williams Creek National Fish Hatchery Complex, Arizona. The Apache Trout Crew assisted with the kids' fishing tanks, measuring stations, and preparation of meals for the derby participants and their families. Eight of the crew were local Tribal members, who normally work to support the Tribe's efforts to recover Apache trout on their lands.



A participant of the 2022 Wounded Warrior Fishing Derby at Wolf Creek National Fish Hatchery holding his 7 pound striper. Photo credit: Makenzie Foster/USFWS

Wolf Creek National Fish Hatchery Hosts 9th Annual Wounded Warrior Fishing Event

Wolf Creek National Fish Hatchery, Kentucky, held its 9th Annual Wounded Warrior Fishing Event September 7, 2022, for any veteran who suffered an injury related to their service. With the help of multiple sponsors, volunteers, and staff, participants were able to enjoy a full day of free fishing, fun, and fellowship. The fishing guides volunteered to process and bag the fish that were caught so each veteran could leave with a portion of the day's catch. Lunch was provided by the Friends of Wolf Creek National Fish Hatchery, Inc. The hatchery is proud to give back to those who have given the most.



Ice fishing at Genoa National Fish Hatchery. Photo credit: USFWS



Archery at Wolf Creek National Fish Hatchery. Photo credit: Marsha Hart/USFWS

We're More Than Just Fish!

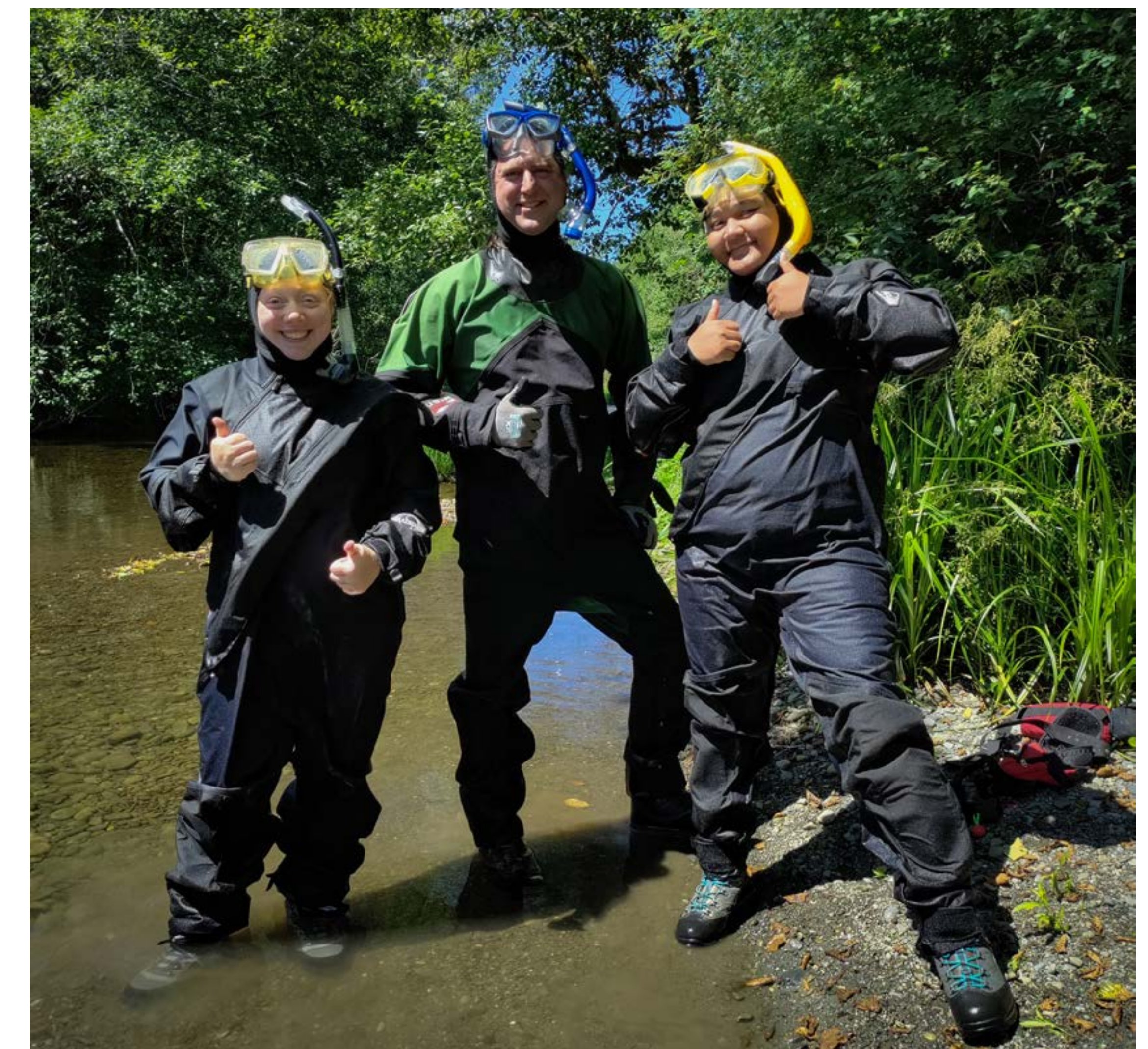
Besides producing approximately 1.4 million yearling fish for restoration purposes in the upper Great Lakes every year, Iron River National Fish Hatchery in Wisconsin, offers many rewarding experiences for visitors, such as cross-country skiing, a snowshoe lending program, a 3D archery range, hunting opportunities, and much more. All these amenities are wonderful but not readily accessible to people with mobility issues. Introducing... the tracked wheelchair lending program! The hatchery and the Friends of Iron River partnered to purchase a tracked wheelchair for use on hatchery grounds for anyone with mobility issues. The chair is adjustable making it a versatile machine for both youth and adults and the tracks are rugged and perfect for both winter and summer use.



A tracked wheelchair in front of the Simpson Trail sign at Iron River National Fish Hatchery in Wisconsin. Photo credit: USFWS

Student Finds Her Future Through Fisheries Internship

In 2022, Suzena Arias worked as an intern with the Western Washington Fish and Wildlife Conservation Office. Suzena received the internship through the U.S. Fish and Wildlife Service's partnership with the Minorities in Agriculture Natural Resources, and Sciences (MANRRS), Chapter at Washington State University, and the Hispanic Access Foundation. While with the Western Washington office, Suzena worked on several fish sampling projects including capturing, tagging, and recording data from salmon on the Elwha River. Suzena's advice for others, "I am so excited to have gotten a glimpse of my future and extremely grateful for MANRRS and the Service for allowing me the opportunity of a lifetime."



MANRRS interns Hallie Morris (left) and Suzena Arias pose with Service employee prior to conducting a snorkel survey for juvenile salmon. Photo credit: Typhanie Shepherd/USFWS

WE ARE FISH AND AQUATIC CONSERVATION

NATIONAL FISH HATCHERIES

ARIZONA
[ALCHESAY NFH](#)
[WILLIAMS CREEK NFH](#)
[WILLOW BEACH NFH](#)
ARKANSAS
[GREERS FERRY NFH](#)
[MAMMOTH SPRING NFH](#)
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CALIFORNIA
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[WARM SPRINGS NFH](#)
IDAHO
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KENTUCKY
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MAINE
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[EDENTON NFH](#)

NORTH DAKOTA
[GARRISON DAM NFH](#)
[VALLEY CITY NFH](#)
OKLAHOMA
[TISHOMINGO NFH](#)
OREGON
[EAGLE CREEK NFH](#)
[WARM SPRINGS NFH](#)
[KLAMATH FALLS NFH](#)
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[ORANGEBURG NFH](#)
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[D.C. BOOTH HISTORIC NFH](#)
[GAVINS POINT NFH](#)
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[ERWIN NFH](#)
TEXAS
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[SAN MARCOS AQUATIC RESOURCE CENTER](#)
[UVALDE NFH](#)
UTAH
[JONES HOLE NFH](#)
[OURAY NFH](#)
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[DWIGHT D. EISENHOWER NFH](#)
[WHITE RIVER NFH](#)
VIRGINIA
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[LITTLE WHITE SALMON NFH](#)
[MAKAH NFH](#)
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[WILLARD NFH](#)
[WINTHROP NFH](#)
WEST VIRGINIA
[WHITE SULPHUR SPRINGS NFH](#)
WISCONSIN
[GENOA NFH](#)
[IRON RIVER NFH](#)
WYOMING
[JACKSON NFH](#)
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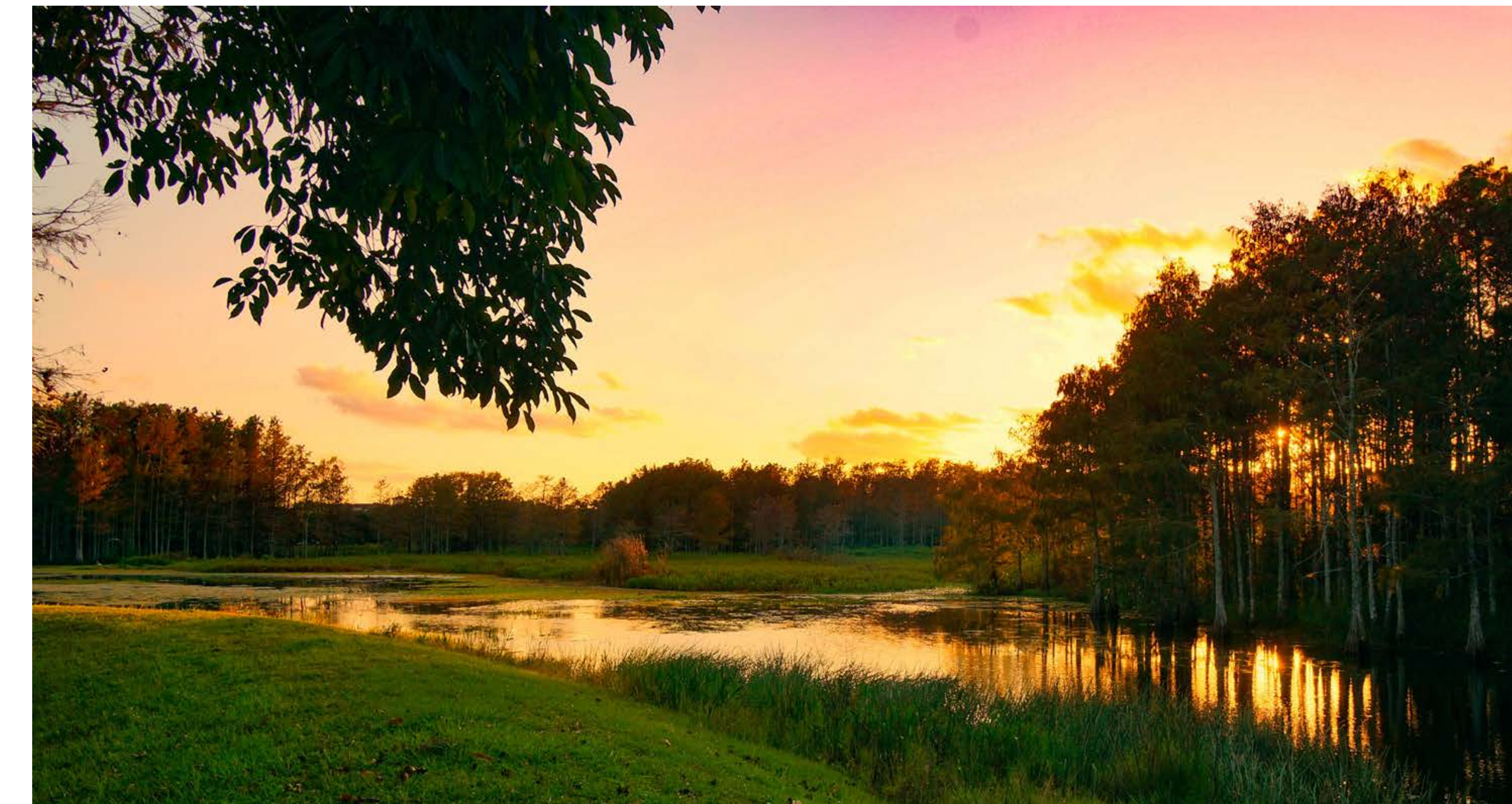
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Louisiana swamp sunset and silhouette. Photo credit: Jaimie Tuchman/Adobe Stock