

U.S. Fish & Wildlife Service

An Enduring Legacy of Conservation

Fish and Aquatic Conservation 2021 Annual Report



Mission:

We work with our partners and engage the public, using a science-based approach, to conserve, restore, and enhance fish and other aquatic resources for the continuing benefit of the American people.



Vision:

The Fish and Aquatic Conservation program will be a national leader in achieving sustainable populations of fish and other aquatic species and conserving and restoring their habitats for the benefit of current and future generations.

Cover photo: Sam Stukel/USFWS

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Introduction To Fish and Aquatic Conservation

In 2021, we celebrated the 150th anniversary of the U.S. Fish and Wildlife Service. From its inception in 1871 as the U.S. Commission of Fish and Fisheries, the Service has celebrated a long and proud history of working to conserve and protect the nation's fish and aquatic resources. Over the 150-year history, the mission and profile of the Service's Fish and Aquatic Conservation program has evolved from a primary focus on restoring fish stocks for commercial harvest, to conserving, restoring, and enhancing fish and other aquatic resources for the continuing benefit of the American people.

This expanded mission is further reinforced by the America the Beautiful campaign launched in 2021. Among the broader priorities, the campaign specifically calls for expanding collaborative conservation of fish and wildlife habitats and corridors, supporting Tribally led conservation and restoration priorities, and increasing outdoor opportunities for nature-deprived communities. During the COVID-19 pandemic, a record number of Americans looked to outdoor recreation and connections with nature, many of them turning or returning to recreational fishing in record numbers. An estimated 52 million people went fishing in 2021, according to a special report by the Recreational Boating and Fishing Foundation.

These experiences were enhanced by our close collaboration with other federal agencies, Tribes, states, landowners, partners, and stakeholders.

As the challenges have increased so have our tools and expertise to restore habitat, prevent and control invasive species, help manage fish and wildlife resources, foster outdoor recreational opportunities, and connect the public to America's great outdoors. The Service's aquatic conservation work is led by a dedicated and highly skilled workforce of more than 1,200 permanent, term, and seasonal employees nationwide.

America's fisheries are among the world's richest in abundance and diversity. Fish and Aquatic Conservation is building on the science, innovation, and creativity of its staff and programs as it addresses the current and future challenges of mitigating climate change, preventing and managing invasive species, reconnecting waters, restoring habitats, and removing barriers to accessing nature.

In 2021:

- **71 hatcheries that make up the National Fish Hatchery System raised and stocked over 110 million fish to support recreational fishing, Tribal subsistence fisheries, and the recovery and restoration of imperiled species.**
- **51 Fish and Wildlife Conservation Offices worked to monitor and control invasive species, protect imperiled species, evaluate native fish stocks and their habitats, and work with our partners to solve conservation problems.**
- **6 Fish Health Centers worked on the front lines, preventing the spread of aquatic viruses, keeping our wild and hatchery fish healthy, and providing technical assistance to federal, state, and Tribal partners as well as to the private aquaculture industry.**
- **7 Fish Technology Centers guided science and technology that is foundational to species and habitat conservation in the U.S. and develop new techniques to solve problems in hatchery operations and aquatic resource management.**
- **The Aquatic Animal Drug Approval Partnership provided therapeutic treatments that benefited 9.5 million fish.**
- **The Aquatic Invasive Species Branch led a multi-agency effort with partners to address a zebra mussel outbreak in the aquarium trade industry, 46 states reported finding contaminated moss balls in stores.**
- **The Fish and Aquatic Conservation program provided over \$59 million in financial assistance to restore and conserve aquatic resources.**

Meet the Fish and Aquatic Conservation Management Team

Dave Miko - Deputy Assistant Director

Teresa Lewis - Division Chief

Marilyn Bisenieks - Chief, Branch of Budget and Information Management

Marilyn "Guppy" Blair - Chief, Branch of Aquatic Animal Drug Approval Partnership

Eric MacMillan - Chief, Branch of Aquatic Habitat and Species Conservation

Craig Martin - Chief, Branch of Aquatic Invasive Species

Tom McCann - Chief, Branch of Communications and Partnerships

Nate Wilke - Chief, Branch of Hatchery Operations and Applied Science

PACIFIC REGION

Judy Gordon - Assistant Regional Director
Kyle Hanson - Deputy Assistant Regional Director

SOUTHWEST REGION

Stewart Jacks - Assistant Regional Director
Jason Davis - Deputy Assistant Regional Director

MIDWEST REGION

Aaron Woldt - Assistant Regional Director
Brian Elkington - Deputy Assistant Regional Director

SOUTHEAST REGION

Allan Brown - Assistant Regional Director
Steve Jackson - Deputy Assistant Regional Director

NORTHEAST REGION

Rick Jacobson - Assistant Regional Director
Lowell Whitney - Deputy Assistant Regional Director

MOUNTAIN-PRAIRIE REGION

Greg Gerlich - Assistant Regional Director
Kevin Johnson - Deputy Assistant Regional Director
Maureen Gallagher - Deputy Assistant Regional Director

ALASKA REGION

Peter Fasbender - Assistant Regional Director
David Wigglesworth - Deputy Assistant Regional Director

PACIFIC SOUTHWEST REGION

Kaylee Allen - Assistant Regional Director
Robert Clarke - Deputy Assistant Regional Director
Baker Holden - Deputy Assistant Regional Director

Hatching Success - National Fish Hatchery System

Meet your National Fish Hatchery System.

The U.S. Fish and Wildlife Service's National Fish Hatchery System uses aquaculture to raise fish and aquatic species for successful release and survival in natural settings. Our mission is to restore and support wild populations of aquatic animals through responsible and effective conservation aquaculture and applied science.

We raise fish (a LOT of fish).

In 2021, we released 110 million fish to support conservation, recreation, and subsistence fisheries. We raise big fish, like the endangered pallid sturgeon, and tiny fish, such as the colorful candy darter. We raise familiar fish, such as salmon, and ancient species, such as paddlefish. We raise sunfish to help support mussel conservation, and we raise walleyes that help feed communities. We ship fish eggs in the mail and deliver them in trucks to a lake or river near you.



Rainbow trout. Credit: Sam Stukel/USFWS



Redear sunfish. Credit: Sam Stukel/USFWS

A legacy of aquatic conservation.

The National Fish Hatchery System was created in 1872 to address collapsing fisheries across the country. The original goal of the hatchery system was to boost production of fish to support commercial fisheries and feed communities. Over the years, the system has evolved to meet the changing needs of conservation. Some national fish hatcheries still raise fish that support recreational, commercial, and subsistence fishing, but many are now focused on conserving at-risk, threatened, or endangered species.

Hatcheries are now supported by 13 fish technology and fish health centers that are dedicated to advancing fisheries science and technology. They employ the latest advances in fields like genetics, physiology, pathology, modeling, and nutrition to ensure that hatcheries are healthy environments for both captive and wild populations.

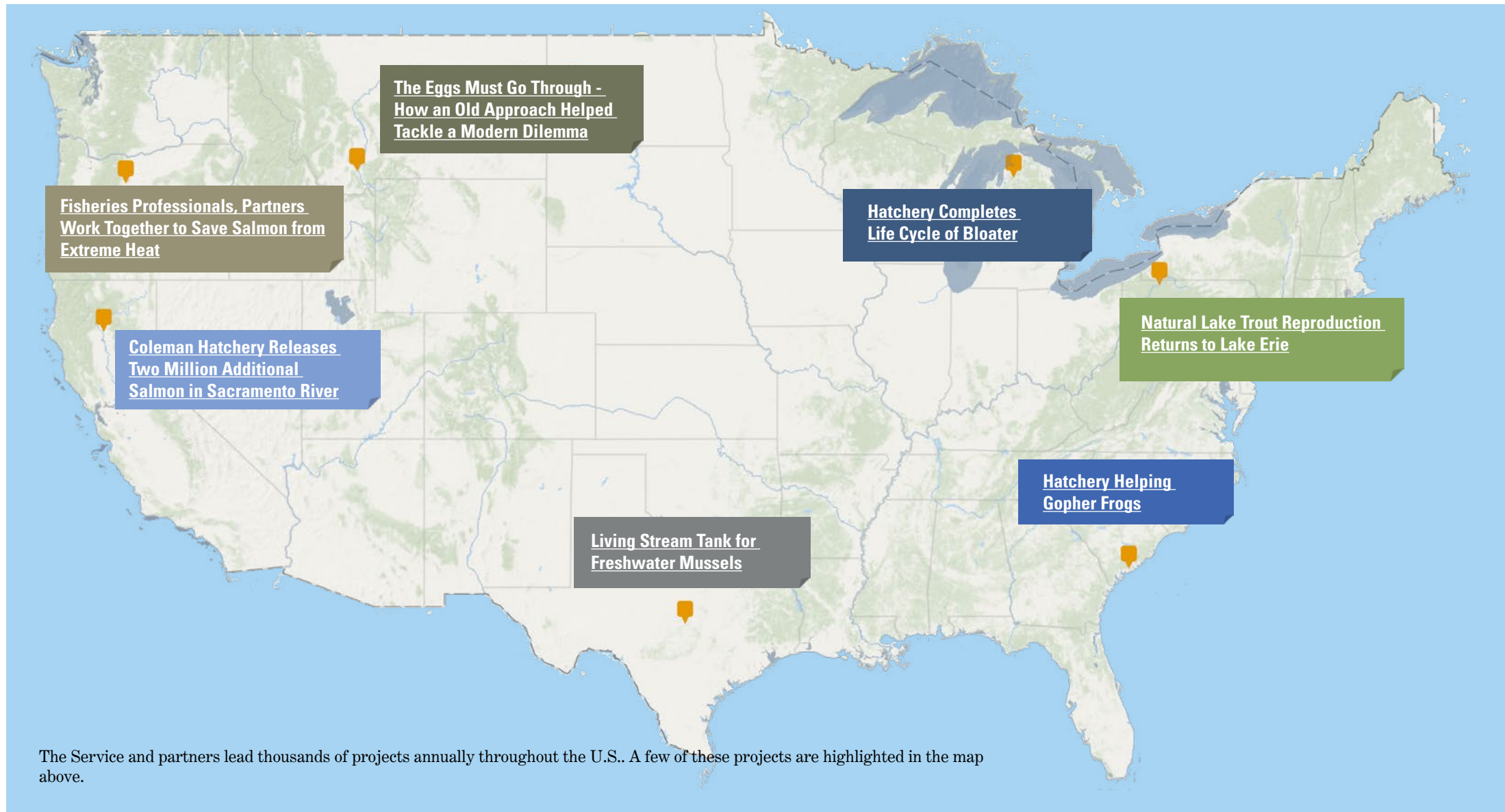
Conserving for the future.

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. Habitat loss and fragmentation, invasive species, and climate change are some of the primary factors in the decline of aquatic species. Hatcheries support conservation by raising aquatic wildlife to recover federally listed threatened or endangered species, improve recreational fishing, and prevent at-risk species from becoming endangered.

Enhancing recreational fishing.

Participation in outdoor activities such as hiking, hunting, fishing, and wildlife watching connect people with nature and empower the next generation of conservationists. For many, fishing represents a way of life, a connection to wildlife, and a sustainable way to support family and community. Through fishing, we can connect with nature and the world around us. The National Fish Hatchery System is dedicated to ensuring healthy sustainable fisheries for future generations.

Highlights from Across the U.S.



Gopher frog. Credit: USFWS

Hatchery Helping Gopher Frogs

Bears Bluff National Fish Hatchery in South Carolina has been working with partners to protect a declining population of gopher frogs. Loss of seasonal wetland habitat used for breeding is the primary threat for these amphibians. Hatchery staff collect frog eggs in winter and transfer them at the tadpole stage to outdoor water enclosures, where they remain until they grow into frogs. Biologists clip the new gopher frogs' toes to preserve their genetics and identify them in future recapture studies, then release them back into the wild. In 2021, Bears Bluff successfully released 483 gopher frogs.



A lake trout. Credit: USFWS

Natural Lake Trout Reproduction Returns to Lake Erie

For the first time in over 60 years, natural lake trout reproduction has been documented in Lake Erie, which contains some of the largest lake trout available to anglers in New York. The recent discovery is the result of an acoustic telemetry study. Recently hatched fry were collected in May of 2021 and positively identified by Trent University as lake trout through genetic bar-coding. This success is from the combined efforts of Allegheny National Fish Hatchery in Pennsylvania and New York State Department of Environmental Conservation.

Hatchery Completes Life Cycle of Bloater

In 2021, the Jordan River National Fish Hatchery in Michigan, successfully reared bloaters to maturity – a first for the National Fish Hatchery System. Spawning operations in 2018 on wild bloater populations on Lake Michigan produced fish that were shipped to the hatchery. These fish became the founding stock of the hatchery system's efforts to create a captive breeding population for this species. These fish and younger year classes yet to mature, will be producing millions of eggs annually for the National Fish Hatchery System and partner agencies helping to sustain populations.



Bloater brood fish. Credit: USFWS



Staff at Little White Salmon National Fish Hatchery remove planks to release juvenile salmon to the Columbia River. Credit: Brent Lawrence/USFWS

Fisheries Professionals, Partners Work Together to Save Salmon from Extreme Heat

The summer of 2021, the Pacific Northwest reached temperatures that exceeded all-time highs. Staff at Columbia River National Fish Hatchery Complex knew the 110+ degree days would impact water temperature and the juvenile salmon at hatcheries in the complex. Fortunately, Fish and Aquatic Conservation staff and Tribal partners were ready for the challenge. Working together staff moved as fast as possible to transfer 348,000 spring Chinook salmon to another facility with cooler water and available raceways and 7.15 million juvenile fall Chinook salmon were released ahead of schedule to make their way to the Pacific Ocean before river temperatures hit the danger range.

Coleman Hatchery Releases Two Million Additional Salmon in Sacramento River

Recent drought issues in the Sacramento River led to a decrease in river salmon production. In an effort to increase wild spawning, restore numbers, and boost recreational fishing opportunities, local stakeholders worked with California's Coleman National Fish Hatchery to release two million juvenile fall-run Chinook salmon in 2021. Transporting these smaller fish for the release was a first for the hatchery and served as an example of staff working alongside partners to evaluate and develop new tactics to overcome challenges posed by climate change.

The Eggs Must Go Through - How an Old Approach Helped Tackle a Modern Dilemma

Ennis National Fish Hatchery in Montana relies on shipping companies to get their trout eggs to where they need to go. When supply lines were disrupted by the COVID-19 pandemic, Ennis found a more reliable way to deliver the eggs. Their method of choice, the Pony Express (with a twist). Staff relayed the fertilized eggs by SUV from Ennis to Gavins Point National Fish Hatchery in South Dakota, making short stops at several fisheries facilities along the way. Ennis is the main brood source for seven strains of rainbow trout eggs, including eggs shipped to Gavins Point as a food source for their endangered pallid sturgeon brood program.



Fall run Chinook salmon. Credit: Ryan Hagerty/USFWS



Rainbow trout eggs beginning to hatch. Credit: Sam Stukel/USFWS

Living Stream Tank for Freshwater Mussels

When Texas Parks and Wildlife noted the drastic decline of native mussels, Inks Dam National Fish Hatchery stepped in to find solutions to support their recovery. An agreement with the San Antonio River Authority led to the hiring of a researcher whose work on in-vitro mussel culture had been successful. Additionally new host fish were tested to see if they were suitable for specific mussel species, and new systems were designed and developed including a living stream. Mussels require a host fish to complete their life cycle, and the 40-foot living stream mimics natural conditions in a controlled environment.



Living stream tank created to mimic various habitats. Credit: USFWS



Shovelnose sturgeon barbels. Credit: Sam Stukel/USFWS

Where do National Fish Hatchery System fish go?

16 million

Sport fish stocked to support recreational fisheries.

8.6 million

Fish stocked on Tribal lands or with Tribal impacts.

373,000

Fish stocked on military lands for recreation and conservation.

63

Tribes stocked with fish for conservation, recreational and subsistence fisheries.

45

States stocked with fish for conservation, recreational and subsistence fisheries.



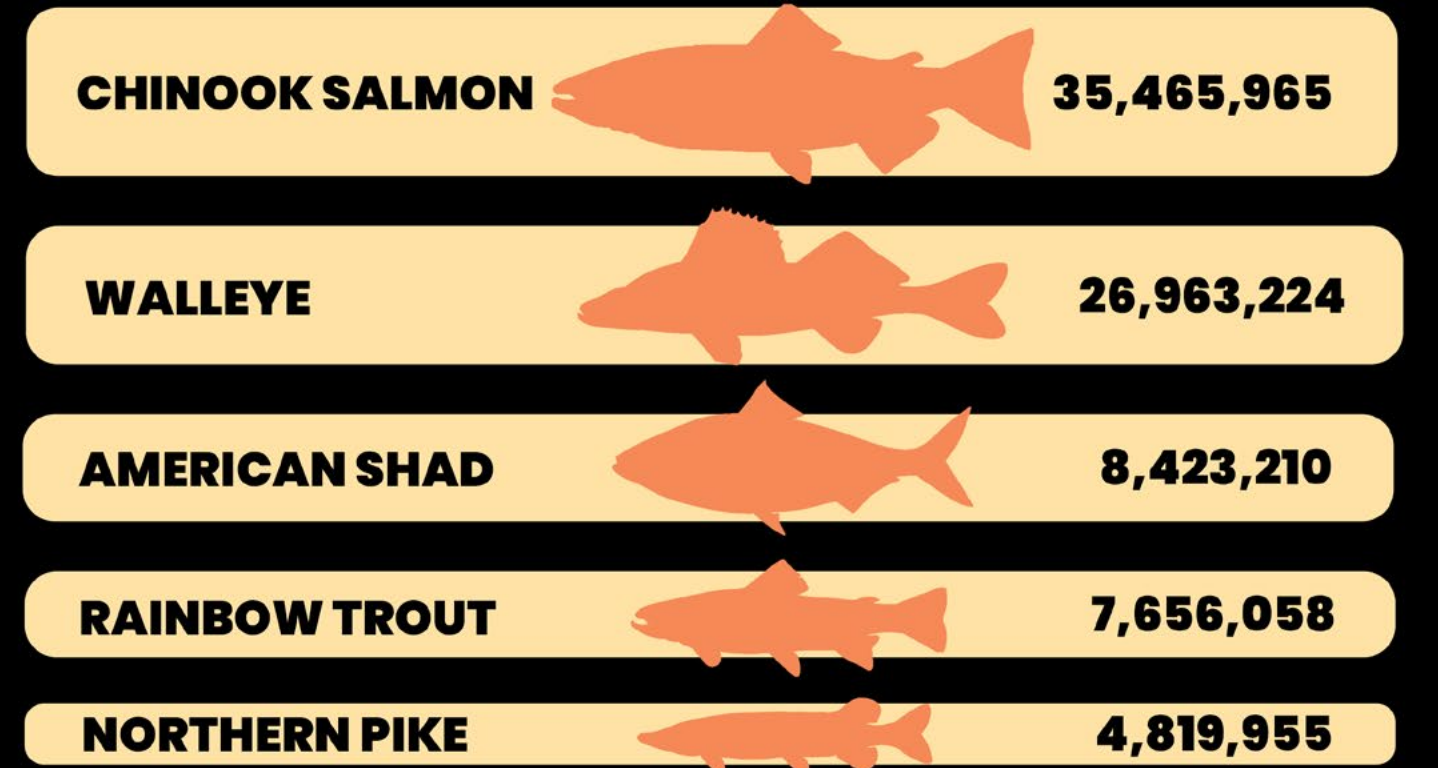
National Fish Hatchery System:

Numbers of T&E* Species Raised

*Threatened & Endangered



Top 5 Fish Species Stocked



Restoring Our Rivers - Fish and Wildlife Conservation Offices



Free-flowing rivers are important for the survival and health of fish populations. Credit: USFWS



Channel catfish. Credit: Sam Stukel/USFWS

Habitat loss, fragmentation, and degradation threaten the productivity and resilience of our nation's freshwater ecosystems. The health of these waters supports valuable recreational fisheries, provides inland shipping channels and renewable hydropower, provides clean water for millions of people, and even protects communities from floods.

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 2021, the Service and other fish habitat partners implemented 85 projects in 34 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.



Connecting Lands, Waters, and Conservation Partners

Working under the authority of the Sikes Act, the Fish and Aquatic Conservation program leads a Service-wide effort to support the conservation and management of fish and wildlife resources on military installations. The Department of Defense manages approximately 27 million acres of land on 338 military installations, some of which are available to the public for recreation and are largely protected from development. These lands support the preservation of ecologically important native habitats such as old-growth forests, tall-grass prairies, coastal beaches, and wetlands making military installations a haven for fish, wildlife, and plants, including rare and unique species.



Gopher tortoise. Credit: Bob Karlen/USACE

Camp Shelby - Recipient of the 2021 Military Conservation Award

In 2005, the U.S. Fish and Wildlife Service established the Military Conservation Partner Award to recognize military installations for exceptional cooperative conservation efforts. The National Guard's Camp Shelby Joint Forces Training Center was the recipient of the 2021 Military Conservation Partner Award.

Camp Shelby was recognized for their success in implementing landscape ecological management for threatened and endangered species in its long leaf pine ecosystem, such as the black pine snake, the red-cockaded woodpecker, the dusky gopher frog, and the gopher tortoise.

Monitoring and Assessment

The network of 51 fish and wildlife conservation offices operate monitoring and assessment programs in watersheds across the country. Biologists catch and mark fish for future study, track remnant DNA that species leave behind in the water column, and work with anglers to monitor catch and learn about trends in seasonal patterns or invasive species presence. All this information on the status and trends of fish populations is used to evaluate the impact of fishing regulations, the success of habitat improvements, and the overall health of fish populations and fisheries nationwide. Using this information, managers can adjust key management strategies or conservation decisions as needed. For example, we have been able to adapt emerging fish passage technologies to meet local needs, apply lessons learned from riparian area restoration to other parts of the country, and provide critically needed oversight to partnership efforts to restore fish habitat from mountain streams to the coast. Using this information, managers can also gain new insight into the impacts of climate change on fish and aquatic wildlife.

Improving Collaborative Conservation

In 2021, we commissioned four reports to evaluate current species and habitat conservation efforts by the Service and its partners. These reports identify gaps between the current state of species conservation and the future we hope to achieve. These reports will be used to refine our assessments, inform our restoration approach, and guide monitoring efforts for greater effectiveness and impact.

Lodi Women Power Historic Fish Monitoring Effort

Stephanie Durkaez and Vanessa Tobias with the Lodi Fish and Wildlife Office, California, are two of several women who design and manage one of the largest, most complex fish-monitoring programs ever undertaken in California, the Enhanced Delta Smelt Monitoring program. The team has overcome challenges and worked to make the monitoring program sustainable and resilient. The number of Delta smelt caught by the monitoring program has dropped drastically in recent years, and there are now fewer in the wild than ever before. The Service supplements the population by releasing hatchery-raised fish and will continue tracking progress.



Supervisory fish biologist Stephanie Durkaez holds a juvenile white sturgeon caught by her Enhanced Delta Smelt Monitoring crew. Credit: Justin Dummitt/USFWS

Mapping Lake Sturgeon Habitat in Ohio

In spring of 2021, the Alpena Fish and Wildlife Conservation Office in Michigan began a lake sturgeon habitat mapping project of a river that historically supported a spawning population of the species. Impacts from pollution and habitat fragmentation likely lead to the loss of spawning runs, but with improved water quality and artificial barriers removed, the river could again be home to lake sturgeon. Alpena worked with partners to map substrate types and channel bathymetry to quantify the amount of suitable habitat for spawning adults.

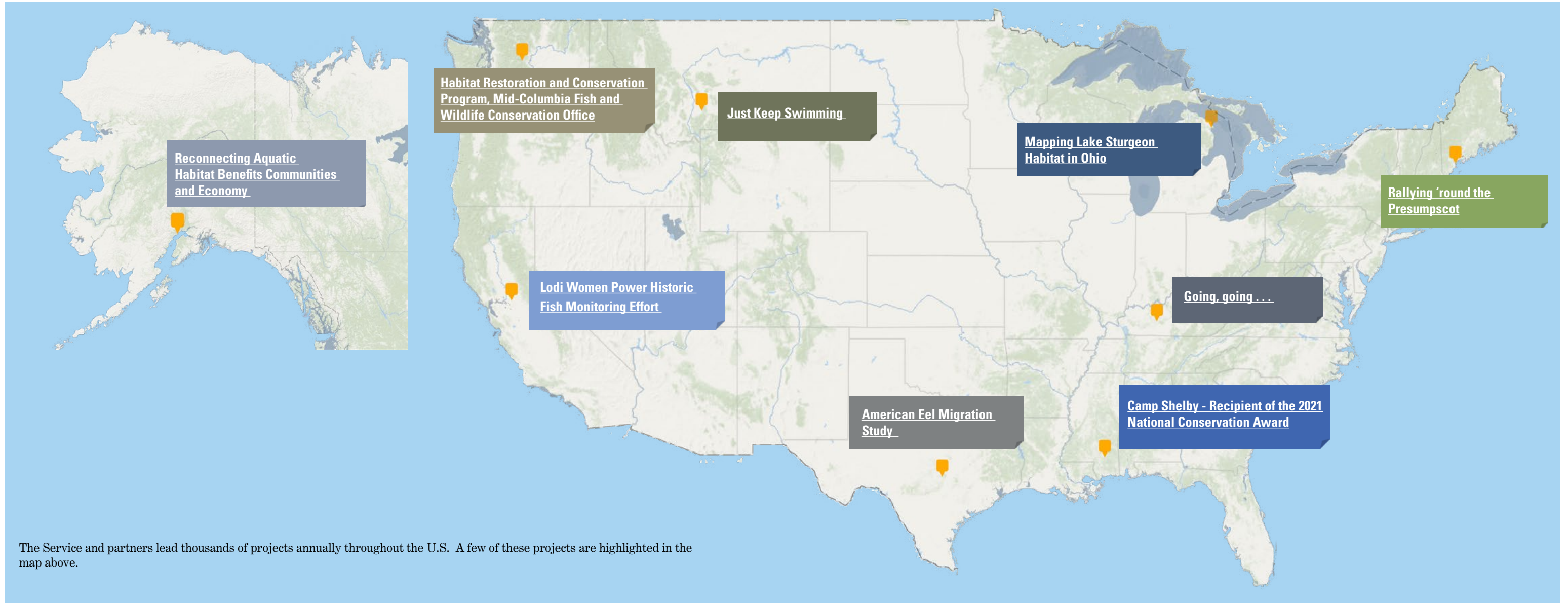


A juvenile lake sturgeon. Credit: USFWS



Razorback sucker. Credit: Sam Stukel/USFWS

Highlights from Across the U.S.



The Service and partners lead thousands of projects annually throughout the U.S. A few of these projects are highlighted in the map above.

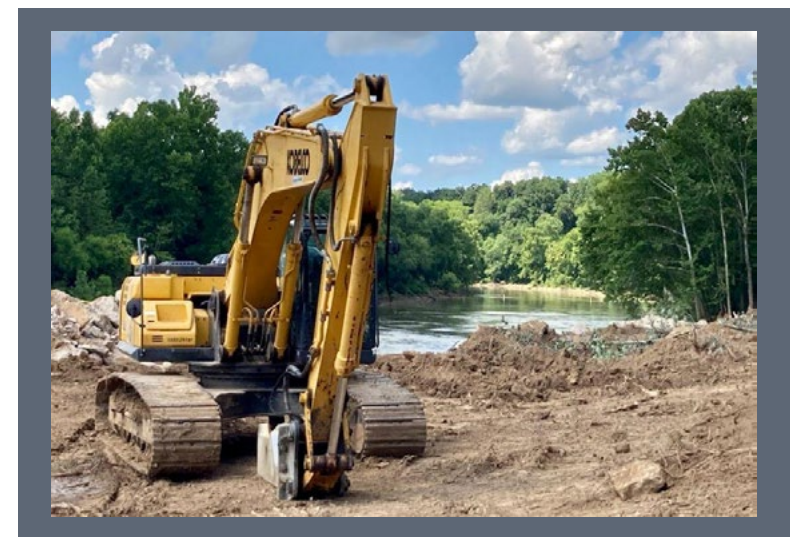
National Fish Passage Program

Migratory fish rely on free-flowing connected rivers for their survival. Millions of obsolete or poorly designed dams, roads, and levees in the U.S. 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 such as Pacific salmon, brook trout, and shad.

The National Fish Passage Program provides funding and technical assistance to help remove or bypass barriers and reconnect aquatic habitats that support healthy fisheries. By removing obsolete and dangerous infrastructure we eliminate public safety hazards, improve climate resilience, and restore river ecosystems. Improved infrastructure also benefits communities by saving money in long-term repair and replacement costs.

Going, going . . .

June 28, 2021, officials from local, state, and federal governments gathered to take a last look at lock and dam No. 5, near Bowling Green. The removal of that dam was part of the \$4.6 million project, led by the U.S. Fish and Wildlife Service, to remove Green River structures that had been in place since 1900. The structures were originally built to help barges travel toward the Ohio River. Kentucky's Green River is considered one of the most biodiverse in the world. Removing the lock and dam created an even better habitat for fish, mussels, and crayfish.



Removal of lock and dam No. 5 from the Green River in Kentucky. Credit: Mark Davis



An American eel in the Susquehanna River following its release from being tagged. Credit: Josh Newhard/USFWS

American Eel Migration Study

The Texas Fish and Wildlife Conservation Office partnered with the Texas Coastal Ecological Service Field Office, Texas Parks and Wildlife Department, Louisiana Department of Wildlife and Fisheries, and the Sabine River Authority to conduct a five-year American eel migration study at the Toledo Bend Dam on the Sabine River. The study was prompted by a Federal Energy Regulatory Commission relicensing agreement for hydroelectric power dams. Methods include boat electrofishing, backpack electrofishing, and eel ramp traps. Results from this five-year study will determine if permanent fish passage structures are needed for American eel.

Reconnecting Aquatic Habitat Benefits Communities and Economy

The Southern Alaska Fish and Wildlife Field Office is leading a multi-year effort to reconnect habitat and restore fish passage in partnership with the Native Village of Tyonek. Salmon are integral to the cultural identity and food security of this Dena'ina Athabascan community in rural Alaska. Investing in fish passage provides direct economic inputs to local contractors, economic opportunities through commercial fishing, and cultural connections. Tyonek Creek is one of the largest and most important salmon streams in this region. Two projects in progress and supported with Bipartisan Infrastructure Law funding will restore Coho salmon access to 20 miles of spawning and rearing habitat. These projects, coupled with other completed projects, will result in a barrier-free Tyonek Creek watershed.



An undersized culvert in the Tyonek Creek watershed that is typically plugged with debris. Credit: USFWS



Sauger. Credit: Sam Stukel/USFWS

Rallying 'round the Presumpscot

In spring 2021, for the first time in possibly 120 years, sea-run fish were seen in a section of the Presumpscot River that had been blocked to migratory fish. For over two decades, the Service and partners worked to remove obstacles and restore the river to free-flowing, re-opening habitat to migratory fish and expanding opportunities for recreation. The Saccarappa Falls dam in Maine was the next obstacle to remove. Through dam removal, fish passage installation, and stocking, river herring, Atlantic salmon, and American shad are again being seen along this scenic portion of the Presumpscot River.

Just Keep Swimming

Bull trout are a federally threatened species and westslope cutthroat trout are one of two sub-species of native cutthroat trout in Montana, both of which are declining due to habitat alterations. During irrigation season in Montana, water from Lolo Creek is diverted for agricultural use and fish often get swept along with the flow into the Lolo ditch with no chance to return to the creek. With funding from the National Fish Passage Program, the Montana Fish and Wildlife Conservation Office and partners constructed a fish screen to prevent the fish from entering the ditch.

Habitat Restoration and Conservation Program, Mid-Columbia Fish and Wildlife Conservation Office

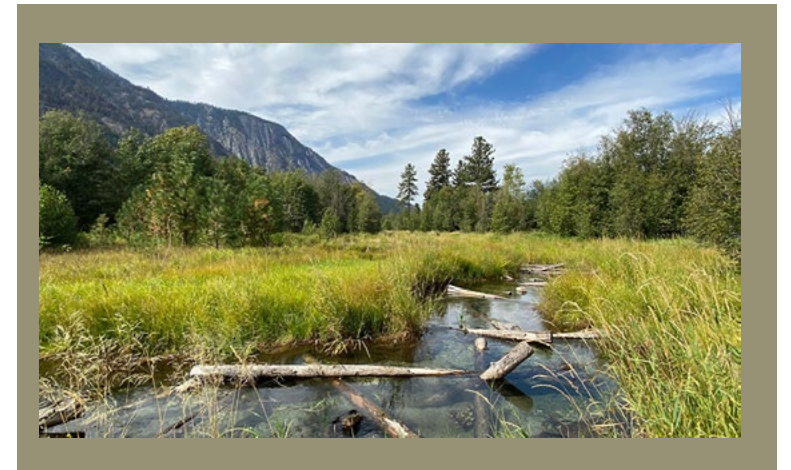
The Mid-Columbia Fish and Wildlife Conservation Office works with partners to enhance and restore aquatic habitats. This is done through innovative techniques and best available science for the benefit of native species in the Mid- and Upper Columbia. In 2021 Swauk Creek Consolidation Project consolidated two irrigation diversions into a single diversion and installed a fish screen. At the consolidated point a fishway was constructed, the irrigation ditch was reworked to reduce evaporation and infiltration, resulting in conserved water to benefit instream flow. Last, cottonwood trees were planted to provide shade and woody debris for the stream and floodplain.



Alewife or river herring. Credit: Ryan Hagerty/USFWS



Bull trout sampling efforts. Credit: Oregon Department of Fish and Wildlife



Successful restoration project. Credit: Robes Parrish/USFWS

Applying Science to Conservation Challenges

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.

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.



Abernathy Creek Peamouth. Credit: Roger Tabor/USFWS



Pallid sturgeon. Credit: Sam Stukel/USFWS

Applied Conservation Science Across the Country

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 Passage...Now Boarding

Service staff installed a state-of-the-art flume at the Bozeman Fish Technology Center located in Montana. The fish passage test bed facility is the only one owned and operated by the Service. This flume is used to study the ability of fish to navigate fish passage structures. Fish won't enter a poorly designed fishway or might not be able to swim through it. Beyond answering fish passage design questions, this collaborative research effort with Montana State University will help train future engineers, biologists, and ecologists.



Data collection at the end of a fish passage trial. Credit Adrian Sanchez-Gonzalez/MSU

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.

Flying High with Endangered Humpback Chub

Each fall approximately 300 endangered humpback chubs can be found soaring high above the Little Colorado River on the way to their new home upstream. This helicopter transport is a conservation effort by Arizona Fish and Wildlife Conservation Office biologists to collect juvenile humpback chub and release them upstream. Staff introduces juvenile chubs to a section of the river they did not previously occupy in the hopes they will either stay or return later to spawn. With this process and additional monitoring, the office hopes to establish and document an extension and expansion of the chub population.



A volunteer holding a humpback chub captured in the Little Colorado River. Credit: Pam Sponholtz/USFWS

The Aquatic Animal Drug Approval Partnership supports the development of new, safe, and effective U.S. Food and Drug Administration-approved medications and spawning aids for use in aquaculture. The partnership plays an important role nationally to address fish health and production needs to raise healthy fish for natural resource conservation, recreational, and commercial aquaculture purposes.

The One and Only

The Aquatic Animal Drug Approval Partnership is the only program in the U.S. singularly dedicated to obtaining U.S. Food and Drug Administration approval of new medications for use in fish culture and fisheries management. This small team of research professionals contribute thousands of hours in the lab and field to make sure that fisheries managers across the country have access to a well-stocked fish medicine chest. In 2021, the Aquatic Animal Drug Approval Partnership's National Investigational New Animal Drug Program completed a total of 883 studies and treated 16,500,000 fish using disease / parasite medication. The end result - almost 10 million fish saved for restoration and recreation.



AADAP staff transferring fingerling rainbow trout into a bucket for a sedation study. Credit: USFWS

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.

Wild about the Wild Fish Health Survey

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 better predict future pathogen occurrences. This data can establish safe zones and areas where movement of aquatic animals can take place without endangering the health of wild fish populations. The publicly accessible database has been upgraded and fully integrated within a U.S. Fish and Wildlife supported Geographic Information System. This system allows researchers, state fisheries managers, and the public to search, explore, and download the data for further analysis.



Dolly Varden are found throughout the arctic and subarctic regions worldwide. Credit: Ryan Hagerty/USFWS

Vitamin Deficiency Affects Fish

When disoriented fish caught the attention of staff members at the Coleman National Fish Hatchery in California, biologist at the California-Nevada Fish Health Center went searching for answers. An internet discovery led the team into trying vitamin B1, critical to the functioning of cells and converting food into energy. By bathing and injecting the fish with thiamine, Coleman was able to temporarily reverse the problem and reduce mortality. But it's a short time fix. The troubling condition indicates something is amiss in the Pacific Ocean, the last place the fish eat before entering fresh water to spawn.



The California Nevada Fish Health Center wet laboratory has tanks and temperature controls that are used in applied research projects. Credit: USFWS

Protecting Our Waters - Aquatic Invasive Species

Aquatic invasive species cause tremendous harm to our environment, our economy, and our health. They can drive out and eat native plants and wildlife, spread diseases, and damage infrastructure. We work to protect our waterways and the communities that depend on them from the threat of invasive species through partnerships, grants, and supporting the work of the Aquatic Nuisance Species Task Force. In 2021, we drafted *U.S. Fish and Wildlife Service Report to Congress on Current Efforts to Prevent the Introduction of Invasive Species to Uninvaded Ecosystems* and contributed to the DOI Invasive Species Strategic Plan.

Combatting the Threat of Aquatic Invasive Species

The Aquatic Nuisance Species Task Force coordinates a unified public-private network dedicated to combatting the threat of aquatic invasive species in waterways across the nation. Among its many strategies, the Task Force provides guidance and technical support to develop state or interstate management plans for aquatic nuisance species. In 2021, the Task Force approved state plans from Alabama and Colorado, raising the total number of approved plans nationally to 45.



Zebra mussels. Credit: Sam Stukel/USFWS

Injurious Wildlife Listings and Ecological Risk Screening Summaries Prevent Invasions

The Aquatic Invasive Species program uses horizon scanning, a systematic examination of future potential threats, predictive modeling, and other tools to identify high-risk species and pathways of introduction into the U.S..

You may have never heard of the list of injurious wildlife, and when it's working its best, you'll never see the species it targets. The list regulates species expected to cause harm if they were to become established in U.S. environments outside their natural range. Ecological Risk Screening Summaries identify aquatic species with the highest risk of becoming invasive in U.S. ecosystems to prioritize them for injurious listing evaluations and mitigation.

Since 1952:

- **1,510 - Species evaluated with an Ecological Risk Screening Summary**
- **288 - Species preemptively listed as injurious.**
- **0 – Number of preemptive listed species that have entered our ecosystem**

Identifying and Responding to Invasion Risk

Once an invasive species is already present in the U.S., we prevent its establishment and spread through early detection and rapid response actions to detect, rapidly respond to, and eradicate these new invasions.

Early Detection and Rapid Response uses horizon-scanning technologies to identify species and vectors that present the greatest risk to the U.S., invasion hotspot analyses to identify areas most likely to be invaded, and molecular-based tools like environmental eDNA to detect invading organisms at the earliest point possible.

Invasive Zebra Mussels Found in Moss Balls

In the Spring of 2021, invasive zebra mussels were found in moss balls, a plant product sold at aquarium, garden, and pet supply stores. Zebra mussels are regarded as one of the most destructive invasive species in North America and there is concern that live mussels from moss balls could be released into waterways and cause significant damage. The Fish and Aquatic Conservation program provided a national communication response for the incident, coordinating information between the private sector, states, and federal agencies. Our website served as a central resource for timely messaging and disposal instructions, and was frequently cited by media and partners.



A zebra mussel nestled inside a moss ball. Credit: USGS

What are some of the economic impacts and management costs of invasive species.

INVASIVE SPECIES	ESTIMATED ADVERSE ECONOMIC IMPACTS	ESTIMATED MANAGEMENT EXPENDITURES
Invasive carps impact commercial, recreational, and subsistence fisheries, as well as recreation and tourism.	10 Year Projection: \$2.4 billion to the Great Lakes recreational fishery, and potentially \$102 million to the Great Lakes commercial fishery if grass carp becomes widespread.	\$58 million in 2017 for invasive carps in the Ohio and Upper Mississippi River Basins.
Zebra and quagga mussels can impact agriculture, damage electric power and water infrastructure, and harm recreation, fisheries, and tourism.	Projected \$500 million per year in if they become established in the Pacific Northwest region.	More than \$13.2 million per year is spent on prevention efforts in the Pacific Northwest.
Elodea can harm subsistence, recreational fishing, boating, and tourism.	Projected: \$159 million per year to the Alaskan commercial sockeye fishery if elodea is unmanaged.	\$1.3 million spent on management in 2020.
Brown tree snakes decimate power grids, recreation and tourism, and poses national security risks.	Actual: \$4.5 million per year (Guam) Projected: \$593 million to \$2.1 billion per year in Hawaii	Actual: \$8.2 million in 2019 (Guam)

Source: DOI Invasive Species Strategic Plan 2021-2025



Elodea or Canadian waterweed, is native to much of North America but is Alaska's first aquatic invasive plant.

Monitoring Alaska's First Invasive Plant

Elodea can decrease water flow speeds in salmon streams causing sedimentation that can cover existing salmon eggs or destroy the spawning beds. It can also impede boat and float plane travel in infested waters. Alaska Fish and Aquatic Conservation staff, in collaboration with Alaska Refuge staff, the Alaska Department of Natural Resources, Tribal entities, Soil and Water Conservation Districts, the Seaplane Pilots Association, and others, conducted statewide early detection surveys for elodea species. Survey locations were prioritized through assessing float plane and watercraft movements throughout the region and by modeling to determine the most suitable habitat for elodea establishment. The Service is working closely with local partners to eradicate newly discovered elodea infestations and prevent its spread to other areas of the state.

Great Lakes Hotspots

Working with partners, a Great Lakes-wide Early Detection Rapid Response program was implemented to protect aquatic species and a \$7 billion fishery in the Great Lakes. High-priority areas include "invasion hotspots" for potential entry of nonnative fish (e.g., ruffe and tubenose goby), invertebrates (e.g., bloody red shrimp), plants (e.g., hydrilla and water chestnut), and areas that may provide pathways for expansion of invasive carp into new waterways. Sites are sampled annually using a variety of traditional and molecular surveillance techniques. If nonnative species are found, the findings are communicated internally and with partners so that the appropriate response actions may be taken.

Tracking Species of Concern by Identifying Genetic Markers

Genetic techniques rely on validated species-specific DNA markers, a DNA sequence with a known physical location on a chromosome. However, many species of concern do not have markers yet, as this is a relatively new science. The Service's conservation genetics laboratories prioritize determining markers for species at high risk of establishment and species already found in the U.S. at high risk for range expansion outside their native range. This research protects aquatic resources and improves our ability to achieve conservation goals.

Informing Conservation Efforts through eDNA

To inform national fish hatcheries in the Pacific Northwest Region, monitoring is conducted using environmental DNA (eDNA) surveillance. The surveillance focuses on high-priority aquatic invasive species, such as quagga and zebra mussels and New Zealand mudsnails. When DNA from aquatic invasive species is detected through eDNA monitoring, sampling using more traditional field protocols (e.g., plankton tows, artificial substrate deployment, visual shoreline monitoring) is conducted in collaboration with state or Tribal partners to gather the additional information needed to develop appropriate risk mitigation measures.



Biologists prepare tubes for water sample collection during an invasive carp eDNA sampling event. Credit: USFWS



eDNA being processed with PCR machine at Whitney Genetics Lab. Credit: USFWS



A cluster of zebra mussels. Credit: Sam Stukel/USFWS

Fulfilling Tribal Trust and Subsistence Responsibilities

Natural resource management programs operated by Tribes protect the spiritual, cultural, medicinal, subsistence, recreational, and economic needs of their communities. The Fish and Aquatic Conservation program is a shared steward with Tribes of many of 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 and 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. In 2021, 8.6 million fish were stocked for the benefit of 63 Tribal communities.

Our offices pursue these collaborative management efforts not just to fulfill our Tribal Trust responsibilities and to promote sustainable management of important Tribal fisheries and wildlife, but also to realize opportunities for resource conservation to benefit all Americans.



Tribal anglers bring in salmon at a fishing location on Icicle Creek, Leavenworth, Washington. Credit: USFWS

Back in SoCal

Lamprey are culturally significant to Native American Tribes in California that have been fishing for salmon, sturgeon, and lamprey since time immemorial. Reduced numbers of lamprey in winter runs were a concern to fisheries biologist and Tribes who are working together to pave the way for lamprey recolonization in the Santa Margarita River in Southern California. A fish ladder provided an easier pathway for lamprey to get into the river and a lamprey friendly system like what was installed at Van Arsdale dam in Northern California, is being considered. Ongoing conservation efforts are paying off, with more lamprey observed in the recent winter run.



Pacific lamprey is a native species to the Pacific West. Credit: John Heil/USFWS



Coho Salmon. Credit: USFWS

A Partnership older than the U.S. Fish and Wildlife Service

Lander Fish and Wildlife Conservation Office in Wyoming, has assisted the Eastern Shoshone and Northern Arapaho Tribes of the Wind River Reservation with fisheries conservation since 1941. In 1972 the office was enlarged to include wildlife conservation. The 2.2 million acre reservation provides an abundance of habitat for native cutthroat trout, burbot, and sauger as well as a variety of non-native fish. Landers provides Tribal assistance in areas such as fishery management and stocking of native fish species, conservation work, population management and GPS collaring to study migration pathways of big game, restoration of habitats, natural resource-related law enforcement, and engagement of Tribal youth.



Tribal warden with a burbot from a fishery survey. Credit: USFWS



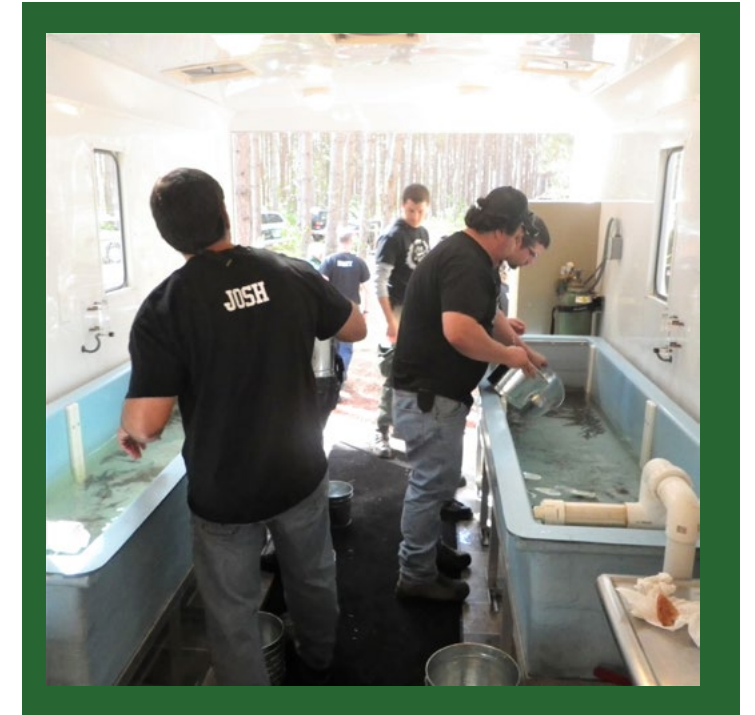
Weathering the Pandemic: Makah Hatchery Staff Comes Together During Extreme Isolation

Makah National Fish Hatchery is a Tribal Trust facility located on the Makah Reservation in Washington. The hatchery partners with the Tribe to raise salmon and steelhead. When the COVID-19 pandemic reached the hatchery and reservation, staff met these new challenges with resolve, teamwork, and self-reliance. The routine of caring for 2.3 million fish when nothing else in the world was routine helped staff endure the pandemic. The relationships and self-sufficiency demonstrated during the pandemic have strengthened the Tribal Trust and ability to reach conservation goals.

Working at the hatchery during the pandemic. Credit: USFWS

Working with Tribal Partners to Achieve Shared Conservation Goals

As part of a growing commitment to Tribal partners, the Green Bay Fish and Wildlife Conservation Office in Wisconsin, reached out to Tribes for projects to support. From this effort, they were invited to join the Lake Winnebago wild rice collaborative by the Brothertown Indian Nation of Fond Du Lac, Wisconsin. Other projects with Tribal partners range from road stream crossing inventories and monitoring to larval lake sturgeon drift collections, aquatic habitat restoration, lake trout rehabilitation, and lake whitefish science. Green Bay's Tribal partnerships include the Gun Lake Tribe, Little River Band of Ottawa Indians, and the Menominee Indian Tribe of Wisconsin.



Gun Lake Tribal members prepare raised lake sturgeon to be released. Credit: Rob Elliot/USFWS



Tribal Wildlife Grants Provide Opportunities for Partnerships in Conservation of Shared Natural Heritage, Cultural Priorities

In October 2021, the U.S. Fish and Wildlife Service awarded more than \$6.6 million in Tribal Wildlife Grants to federally recognized Native American and Alaska Native Tribes for projects to bolster fish and wildlife conservation. The Upper Mattaponi Indian Tribe in Virginia (Mattaponi River Cultural Species Assessment and Fisheries Training Project) received \$200,000. The Tribe will use the grant to plan and train at Harrison Lake National Fish Hatchery in hatchery operations and fish and mussel culture, assessing barriers to fish migration, and surveying and monitoring species. Their goal is to build a Mattaponi River hatchery that meets their aquatic species recovery needs.

A Tribal intern along with Harrison Lake National Fish Hatchery's Project Leader, Rachel Mair. Credit: Jaelyn Zelko/USFWS

Subsistence - A Way of Life for Alaska Tribes

Subsistence fisheries are essential to cultural, nutritional, economic and spiritual well being of Alaska Native peoples. For many Alaska villages and Tribes, there are no alternative food sources. The Alaska National Interest Lands Conservation Act recognized this by providing rural Alaska residents a subsistence priority to harvest fish and wildlife on Federal lands. In partnership with the Office of Subsistence Management and the Alaska National Wildlife Refuge System, the Alaska Fish and Aquatic Conservation program plays a significant role in fulfilling the federal subsistence mandate and Service Tribal Trust responsibilities, including federal in-season management for subsistence fisheries, Tribal consultation and outreach, participation in Federal Subsistence Board processes, and conducting and funding field work to monitor fish stocks and to fill species and habitat information gaps identified as priorities by subsistence users.



Sockeye, or red salmon are one of several salmon species harvested for subsistence. Credit: USFWS

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

Everyone deserves access to clean, safe, and local opportunities to connect with nature, and throughout the pandemic people sought these experiences in record numbers. 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.

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.

According to the Recreational Boating and Fishing Foundation's special report on fishing activities, roughly 52 million Americans went fishing in 2021, up 4.5% over 2019. 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.

The Urban Wildlife Conservation Program has established standards of excellence that guide the work, and critical elements to building long-term, meaningful relationships necessary for success.

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.



Chad Brown, right, founder of Soul River Inc "Runs Wild" teaches youth to fish. Credit: Chad Brown Soul River Inc

With more than a dozen of our facilities within a 60 minute drive of urban areas, and significant work in and near urban waterways, Fish and Aquatic Conservation program will continue to support the urban program and improve access to fishing and other recreational opportunities for urban communities.

Anchorage Alaska Urban Fishing Program

In its 12th year, external affairs, Fish and Aquatic Conservation and refuges jointly support this outreach program. Community partners include Boys and Girls Clubs, Alaska Geographic, State of Alaska Office of Boating Safety, and others. Service staff and program mentors provide diverse urban youth with first fishing experiences and learning opportunities focused on ethical fishing techniques, cooking the catch, and outdoor safety/preparedness. Youth become confident and competent in outdoor situations through hands-on demonstrations and repetitive training in classroom and outdoor settings. A goal of this program is to instill life-long appreciation and stewardship of Alaska's fish and waterways.



All smiles and fun during an Anchorage youth fishing day. Credit: Katrina Liebich/USFWS

Recreation and Education

Sport Fishing and Boating Partnership Council

Cooperative partnerships are a cornerstone of accomplishing effective management and conservation goals. 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.

National Outreach and Communications Program - Recreational Boating and Fishing Foundation

Fishing and boating participation are important to our nation's economy and fund much of our nation's aquatic resource conservation through the sale of state fishing licenses and the grant programs funded from the Sport Fish Restoration and Boating Trust Fund. Since 1999, the Fish and Aquatic Conservation program has worked with the Recreational Boating and Fishing Foundation, industry partners, and other state and federal agencies to implement a National Outreach and Communications Program through the Trust Fund. The program is one of the largest single grants awarded by the Service.

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.



Credit: Recreational Boating and Fishing Foundation

Yakama Nation Fisheries, Service Working Together to Save Migrating Adult Sockeye Salmon

The Yakama Nation Fisheries and Little White Salmon National Fish Hatchery worked together in hopes of helping some of the thousands of sockeye salmon in peril due to the abnormally warm water temperatures across the Columbia River Basin. A plan was developed to allow the sockeye to reach a temporary holding pen on the fish ladder at the hatchery before being transported by the Yakama Nation to a new spawning area. The efforts took some time to catch on, but 527 late arriving spring Chinook used the fish ladder later in the year.



The sun glistening off a sockeye salmon, one of the smaller species of Pacific salmon. Credit: Lisa Hupp/USFWS

My Advice for Other Black Kids: Pursue Your Passion

Nicole Hams is a science communication and outreach biologist with the Columbia River Fish and Wildlife Conservation Office. She's always been drawn to nature and outdoor spaces which brought a calmness and stability to her otherwise chaotic world. But a career in natural resources, initially, didn't seem like the career path she would be pursuing, considering the lack of representation from Black conservationists. Then, a year from finishing her doctoral program, she changed her career trajectory. It all started when she got involved in Minorities in Agriculture, Natural Resources, and Related Sciences. She now helps develop and manage internship opportunities for students through her involvement with the Directorate Fellowship Program.



Nicole removing plasma separated from packed red blood cells. Credit: USFWS

We are Fish and Aquatic Conservation

Abernathy Fish Technology Center Alchesay National Fish Hatchery Allegheny National Fish Hatchery Alpena Fish and Wildlife Conservation Office Appalachian Fish and Wildlife Conservation Office Arcata Fish and Wildlife Office Arizona Fish and Wildlife Conservation Office Ashland Fish and Wildlife Conservation Office Baton Rouge Fish and Wildlife Conservation Office Bears Bluff National Fish Hatchery Berkshire National Fish Hatchery Bozeman Fish Health Center Bozeman Fish Technology Center California/Nevada Fish Health Center Carson National Fish Hatchery Cartersville Fish and Wildlife Conservation Office Central New England Fish and Wildlife Conservation Office Chattahoochee Forest National Fish Hatchery Coleman National Fish Hatchery Colorado Fish and Wildlife Conservation Office Columbia Fish and Wildlife Conservation Office Columbia River Fish and Wildlife Conservation Office Connecticut River Fish and Wildlife Conservation Office Conservation Genetics Laboratory Craig Brook National Fish Hatchery Creston National Fish Hatchery Cronin Aquatic Resources Center Dale Hollow National Fish Hatchery D.C. Booth Historic National Fish Hatchery Dwight D. Eisenhower National Fish Hatchery Dworshak National Fish Hatchery Eagle Creek National Fish Hatchery Edenton National Fish Hatchery Ennis National Fish Hatchery Entiat National Fish Hatchery Erwin National Fish Hatchery Garrison Dam National Fish Hatchery Gavins Point National Fish Hatchery Genoa National Fish Hatchery Grand Junction Fish and Wildlife Conservation Office Great Plains Fish and Wildlife Conservation Office Green Bay Fish and Wildlife Conservation Office Green Lake National Fish Hatchery Green River Basin Fish and Wildlife Conservation Office Greers Ferry National Fish Hatchery Harrison National Fish Hatchery Idaho Fish and Wildlife Conservation Office Inks Dam Fish Hatchery Jackson National Fish Hatchery Jordan River National Fish Hatchery Juneau Fish and Wildlife Conservation Office Klamath Falls National Fish Hatchery Klamath Falls Fish and Wildlife Office Kooskia National Fish Hatchery La Crosse Fish and Wildlife Conservation Office Lahontan Fish and Wildlife Conservation Office Lake Champlain Fish and Wildlife Conservation Office Lake Champlain Fish and Wildlife Conservation Office Lander Fish and Wildlife Conservation Office Leadville National Fish Hatchery Little White Salmon National Fish Hatchery Lodi Fish and Wildlife Office Lower Mississippi National Fish Hatchery Ludington Biological Station Maine Fish and Wildlife Conservation Office Marquette Biological Station Maryland Fish and Wildlife Conservation Office Mid-Columbia Fish and Wildlife Conservation Office Mid-Atlantic Fish and Wildlife Conservation Office Missouri River Fish and Wildlife Conservation Office Montana Fish and Wildlife Conservation Office Mora National Fish Hatchery Nashua National Fish Hatchery Natchitoches National Fish Hatchery Neosho National Fish Hatchery New Mexico Fish and Wildlife Conservation Office Norfolk National Fish Hatchery North Attleboro National Fish Hatchery Northeast Fishery Center Northern Alaska Fish and Wildlife Office Oklahoma Fish and Wildlife Conservation Office Orangeburg National Fish Hatchery Ouray National Fish Hatchery Pacific Region Fish Health Program Panama City Fish and Wildlife Conservation Office Pendills Creek National Fish Hatchery Peninsular Florida Fish and Wildlife Conservation Office Private John Allen National Fish Hatchery Quilcene National Fish Hatchery Quinault National Fish Hatchery San Francisco Bay-Delta Fish and Wildlife Office Red Bluff Fish and Wildlife Office San Marcos Aquatic Resource Center Southwestern Native Aquatic Resources & Recovery Center Saratoga National Fish Hatchery Southern Alaska Fish and Wildlife Office Spring Creek National Fish Hatchery Sullivan Creek National Fish Hatchery Texas Fish and Wildlife Conservation Office Tishomingo National Fish Hatchery Utah Fish and Wildlife Conservation Office Uvalde National Fish Hatchery Valley City National Fish Hatchery Virginia Fish and Wildlife Conservation Office Wadmalaw Island Fish and Wildlife Conservation Office Warm Springs Fish Health Center Warm Springs National Fish Hatchery Warm Springs National Fish Hatchery Warm Springs Fish Technology Center Welaka National Fish Hatchery Western Washington Fish and Wildlife Conservation Office White River National Fish Hatchery White Sulphur Springs National Fish Hatchery Whitney Genetics Laboratory Willard National Fish Hatchery Williams Creek National Fish Hatchery Willow Beach National Fish Hatchery Winthrop National Fish Hatchery Wolf Creek National Fish Hatchery Yreka Fish and Wildlife Office



List of Facilities

National Fish Hatcheries

Arizona Alchesay NFH Williams Creek NFH Willow Beach NFH	Arkansas Greers Ferry NFH Mammoth Spring NFH Norfolk NFH	California Coleman NFH Livingston Stone NFH	Colorado Hotchkiss NFH Leadville NFH	Florida Welaka NFH	Georgia Chattahoochee Forest NFH Warm Springs NFH	Idaho Dworshak NFH Kooskia NFH	Kentucky Wolf Creek NFH	Louisiana Natchitoches NFH	Maine Craig Brook NFH Green Lake NFH	Massachusetts Berkshire NFH North Attleboro NFH Cronin Aquatic Resources Center	Michigan Jordan River NFH Pendills Creek NFH Sullivan Creek NFH	Mississippi Private John Allen NFH	Missouri Neosho NFH	Montana Creston NFH Ennis NFH	Nevada Lahontan NFH	New Hampshire Nashua NFH	New Mexico Mora NFH SW Native Aquatic Resources & Recovery Center	North Carolina Edenton NFH	North Dakota Garrison Dam NFH Valley City NFH	Oklahoma Tishomingo NFH	Oregon Eagle Creek NFH Warm Springs NFH Klamath Falls NFH	Pennsylvania Allegheny NFH Northeast Fishery Center	South Carolina Bears Bluff NFH Orangeburg NFH	South Dakota D.C. Booth Historic NFH Gavins Point NFH	Tennessee Dale Hollow NFH Erwin NFH	Texas Inks Dam NFH San Marcos Aquatic Resource Center Uvalde NFH	Utah Jones Hole NFH Ouray NFH	Vermont Dwight D. Eisenhower NFH White River NFH	Virginia Harrison Lake NFH	Washington Carson NFH Entiat NFH Leavenworth NFH Little White Salmon NFH Makah NFH Quilcene NFH Quinault NFH Spring Creek NFH Willard NFH Winthrop NFH	West Virginia White Sulphur Springs NFH	Wisconsin Genoa NFH Iron River NFH	Wyoming Jackson NFH Saratoga NFH
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Fish and Wildlife Conservation Offices


Alaska Southern Alaska FWO Conservation Genetics Laboratory Northern Alaska FWO Kenai FWO Juneau FWO	Arizona Arizona FWO	California Arcata FWO San Francisco Bay-Delta FWO Lodi FWO Red Bluff FWO Yreka FWO	Colorado Colorado FWO Grand Junction FWO	Florida Panama City FWO Peninsular Florida FWO	Idaho Idaho FWO	Illinois Cartersville FWO	Louisiana Baton Rouge FWO	Maine Maine FWO	Maryland Maryland FWO Mid-Atlantic FWO	Massachusetts Connecticut River FWO	Michigan Alpena FWO Ludington Biological Station Marquette Biological Station	Mississippi Lower Mississippi River FWO	Missouri Columbia FWO	Montana Montana FWO	Nevada Lahontan FWO	New Hampshire Central New England FWO	New Mexico New Mexico FWO	New York Lower Great Lakes FWO	North Dakota Missouri River FWO	Oklahoma Oklahoma FWO	Oregon Klamath Falls FWO	South Carolina Wadmalaw Island FWO	South Dakota Great Plains FWO	Tennessee Appalachian FWO	Texas Texas FWO	Utah Green River Basin FWO Utah FWO	Vermont Lake Champlain FWO	Virginia Virginia FWO	Washington Columbia River FWO Mid-Columbia FWO Western Washington FWO	West Virginia Appalachian FWO	Wisconsin Ashland FWO Green Bay FWO La Crosse FWO	Wyoming Lander FWO
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National Fish Health Centers

California California/Nevada FHC	Georgia Warm Springs FHC	Montana Bozeman FHC	New Mexico SW Native Aquatic Resources & Recovery Center	Oregon Pacific Region Fish Health Program	Pennsylvania Lamar FHC	Wisconsin La Crosse FHC
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National Fish Technology Centers

Georgia Warm Springs FTC	Pennsylvania Northeast Fishery Center	Montana Bozeman FTC	New Mexico SW Native Aquatic Resources & Recovery Center	Texas San Marcos Aquatic Resource Center	Washington Abernathy FTC	Wisconsin Whitney Genetics Laboratory
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**U.S. Fish & Wildlife Service
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