



Fish and Aquatic  
**CONSERVATION**  
est. 1871



# Healthy Rivers, Communities, and Economies

*The socioeconomic benefits of the  
Bipartisan Infrastructure Law investment  
in the National Fish Passage Program*

*Construction at the site of the Upper Town Dam in Lisbon, Maine.  
Photo credit: Maine Department of Marine Resources*

# Introduction

Barriers in streams such as dams and undersized culverts can inhibit or block the ability of fish and other aquatic organisms to carry out their lifecycles and access key habitats. The U.S. Fish and Wildlife Service's National Fish Passage Program works with partners across the country to identify, assess, and remove fish passage barriers on a voluntary basis. Since 1999, the Program has worked with partners to remove over 3,500 aquatic barriers and reopen 64,000 stream miles to passage.

The Bipartisan Infrastructure Law was signed into law on November 15, 2021, and included \$1.2 trillion for projects like new roads and bridges, passenger rail, and broadband development. It also provided \$200 million to the Service for restoring fish and wildlife passage by removing in-stream barriers and providing technical assistance through the National Fish Passage Program. Program projects funded to date under the Law have been diverse, and include dam removals, fishway constructions, and replacement of road culverts. These projects reopen waterways for fish, mussels and other aquatic species and also provide key benefits to the surrounding human communities, including both short- and long-term economic benefits, as well as quality of life improvements.

This report will explore these short- and long-term benefits provided by the Bipartisan Infrastructure Law funding through an analysis of project expenditures and a closer look at a set of projects. These case studies illustrate how meaningful these projects can be for their communities.



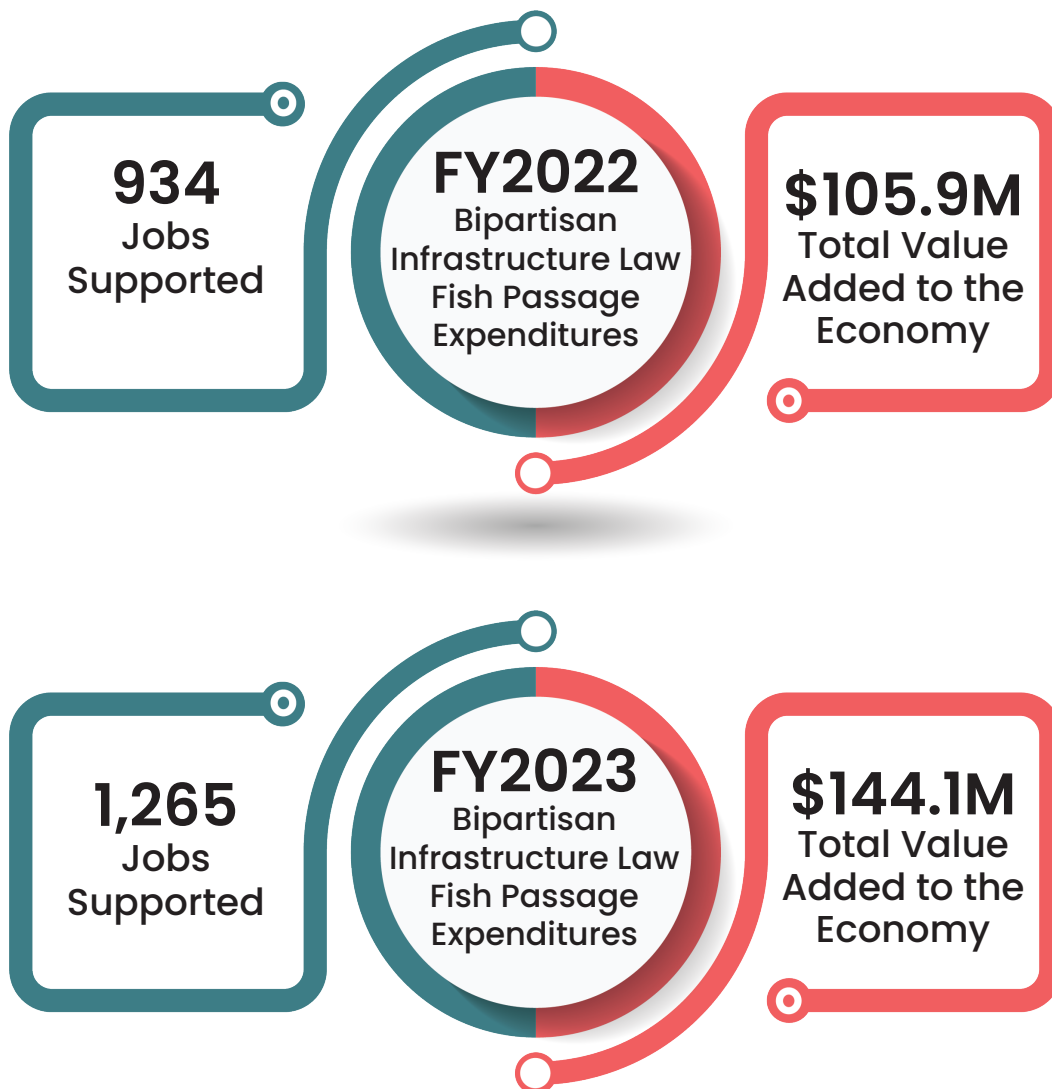
*An undersized culvert in St. Clair County, Alabama, caused flooding issues for the local community. Photo credit: USFWS*

# Short-term Economic Impacts

Any expenditures spent on fish passage related projects will have some immediate economic impacts, including supporting local biologists to provide technical assistance, hiring consultants or engineers to support design, and hiring construction contractors to implement the project. The construction activities will often include buying materials, site mobilization/demobilization and renting heavy equipment, among other things.

A program-wide analysis of Bipartisan Infrastructure Law-funded fish passage projects used the economics modeling software IMPLAN to estimate impacts of project expenditures including both Service and partner funding. IMPLAN sectors were assigned to fiscal years 2022 and 2023 project expenditures based on the type of project (e.g., culvert replacement vs. dam removal) and funding recipient. IMPLAN results were modeled using the 2022 national level model/data.

## *Estimated Economic Impacts of Fish Passage Funding*



# Long-term Economic Impacts and Value

Following project completion there are also long-term social and economic benefits provided to communities. Longer term benefits are harder to model due to specific characteristics unique to each project and community. However, these benefits are often substantial for the local community.

The case studies below provide insight into the long-term benefits provided by fish passage improvement projects in their respective communities. Each project demonstrates the importance of partners working together to improve fish habitat and the ways these projects benefit human communities.

## Fish Passage Community Benefits

### RECREATION

Barrier removal can lead to new kayaking, boating, and swimming opportunities. These improved habitats can also boost fish populations, enhancing recreational angling.

### FLOOD RESILIENCE

Undersized road culverts are prone to plugging with debris, causing flooding of roads and properties. Fish passage replacement culverts and bridges are designed to ensure they pass flood flows.

### WATER QUALITY

Improved aquatic connectivity reduces our vulnerability to catastrophic events such as drought or poor water quality, caused by altered flows and increased sediment loads.

### PUBLIC SAFETY

Aging dams and spillways can present fall and drowning risks for recreational users. Removing barriers improves public safety by eliminating these hazards.

### CULTURAL VALUE

Returning habitats to natural conditions often restores cultural connections for local communities, both through the protection of culturally significant species or increased subsistence opportunities.

### INFRASTRUCTURE

Undersized culverts can lead to flooding, causing severe road damage and disruptions to transportation systems. Replacing them with bridges or natural bottom culverts reduces flooding and road closures or delays.

# Supporting a New State Park

## Albert and Bessie Kronkosky State Natural Area

### PROJECT DESCRIPTION:

The Albert and Bessie Kronkosky State Natural Area in Texas is a 3,000-acre site that was donated to the Texas Department of Parks and Wildlife in 2011. The site is being prepared to open to the public as a State Natural Area, however, one major hurdle remains before the site can be opened to the public. An earthen dam impeding the flow of a small spring system is inconsistent with the goals of State Natural Areas and needs to be removed. The National Fish Passage Program provided \$130,000 in Bipartisan Infrastructure Law funding to assist in removing this hurdle and expediting the site's opening.

### QUICK FACTS

Location: San Antonio, Texas

NFPP project funding: \$130,000

Type of barrier: Dam

Species benefited: Texas salamander

### BENEFITS:

**Boosting Economics:** The opening of the Albert and Bessie Kronkosky State Natural Area will provide recreational opportunities and is estimated to include 25 campsites and a few cabins for overnight visitors. A 2018 study analyzing the economic impact of Texas State Parks estimated that a nearby State Natural Area provided \$1.7 million in labor income and supported 15.2 local jobs, with non-local visitors spending \$291,302 in the county. By allowing the site to open several years earlier than it otherwise would have, the Bipartisan Infrastructure Law funding will provide economic contributions to the county that may have otherwise been spent elsewhere.

**Improving Recreation:** Following removal of the dam, the new State Natural Area will provide residents of San Antonio with recreational opportunities for hiking, camping, and bird watching, all while increasing safety in the area. It will allow visitors to experience the benefits from these restored natural areas close to home.

**Restoring Habitat:** The dam removal will restore habitat for a unique species of salamander found in the spring system, allowing visitors to experience the new State Natural Area and the restored spring system as nature intended. If left in place, the dam would not only take away from the natural characteristics of the area but would also concentrate use to a single area of the park, potentially creating issues for land managers such as trash and public safety concerns.



Albert and Bessie Kronkosky State Natural Area. Photo credit: USFWS

# Reconnecting Communities

## Landscape-scale Maple River Reconnection Project

### PROJECT DESCRIPTION:

The Maple River, a channel of the Muskegon River located ten miles northeast of Muskegon, Michigan, has been fully disconnected from the mainstem since the late 1800s. The Landscape-scale Maple River Reconnection Project will remove two road-crossing culverts at Bayne and Maple Island Roads that constrict flow and prevent the river from reconnecting. The National Fish Passage Program provided \$1.9 million in funding through the Bipartisan Infrastructure Law to remove these problematic culverts and reconnect the upper and lower Maple and the surrounding community. The project restores fish habitat, protects people and property, and helps the community connect to each other and to their histories and waterways.

### BENEFITS:

**Reducing Flooding:** The frequent flood-induced road closures on Bayne and Maple Island Roads impact residents' ability to obtain basic essential services. The removal of the problematic culverts and reconnecting the upper and lower Maple River will reduce flooding and road closures, allowing residents to access necessities without having to drive an additional twelve miles one-way to the next closest grocery store. The project will also improve school access and emergency response, reducing detours for residents and first responders.

**Restoring Cultural Connections:** The Maple River has a rich human history dating back thousands of years, and the restoration project will improve the livelihoods, sense of community, and connections to the river for the local community. The reconnection project will benefit a stand of wild rice, or Manoomin, a culturally important resource for the Little Band of Ottawa Indians. The wild rice stand will be monitored during and after construction, and community engagement will feature the recording of oral histories to preserve the importance of this river and resource to the Tribal community. Community members are optimistic about the future of the Maple River once the project is completed.

**Improving Recreation:** The Maple Island Road provides direct access to two sites popular with outdoor enthusiasts, the Muskegon State Game Area and the Mosquito Creek Trails. The restoration project enhances and preserves access to these sites by reducing the risk of road flooding and washout at the Maple Island Road culvert. The project also has good potential to improve habitat for fish and game species, provide access for kayaking, and improve the visitor experience due to a likely reduction in mosquito activity after the river reconnection.

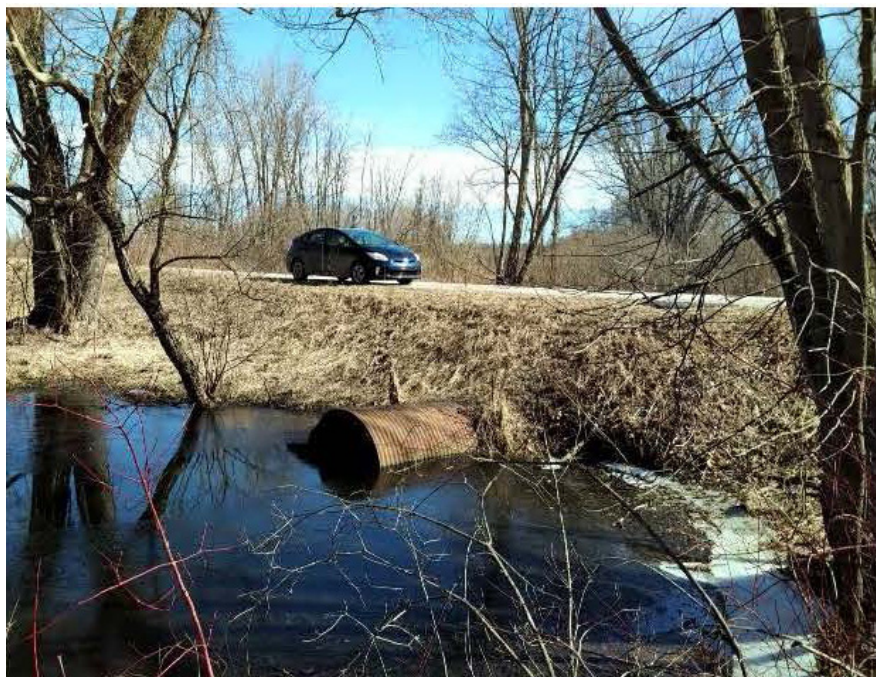
### QUICK FACTS

Location: Muskegon, Michigan

NFPP project funding: \$1,900,000

Type of barrier: Culverts

Species benefited: Manoomin (wild rice), brook trout



One of two problematic culverts along the Maple River that has led to flood-induced road closures. Photo credit: USFWS

# Protecting Property

## Upper Town Dam Removal

### PROJECT DESCRIPTION:

The Upper Town Dam in Lisbon, Maine, was partially breached during heavy rains in 2012, causing an erosion event that damaged a public park downstream of the site. The failing dam also created a fall and injury hazard at the structure itself and a danger downstream. The National Fish Passage Program provided \$350,000 in Bipartisan Infrastructure Law funding to remove the Upper Town Dam and the nearby Mill Remnant Dam, part of a years long effort to restore the Sabattus River watershed. The Upper Town Dam removal was one of the quickest funded projects to break ground and was fully removed by the end of 2022.

### QUICK FACTS

Location: Lisbon, Maine

NFPP project funding: \$350,000

Type of barrier: Dam

Species benefited: Alewives

### BENEFITS:

**Protecting Property:** The removal of the Upper Town Dam has significantly lowered the flood risk for nearby properties, especially businesses along the right bank of the river. The project has also provided an opportunity to revise flood maps for the town of Lisbon, which could save property owners tens of thousands of dollars annually in flood insurance if the process results in removing or rezoning properties from the regulated flood zone.

**Improving Safety:** The removal of the Upper Town Dam and the nearby Mill Remnant Dam improves public safety by removing the fall and injury hazard at both dam structures and by protecting the downstream road crossing near Mill Remnant Dam with a reinforced retaining wall. The Upper Town dam also created a danger downstream, as it could have suffered a complete failure at any moment, washing away tons of debris.

**Restoring Habitat:** With both dams fully removed, conditions are ideal for fish passage, allowing for potential recolonization of commercially and ecologically important alewife to river reaches above the dams. These dam removals will also restore alewife access to Sabattus Pond, potentially allowing the return of more than a million adult alewives to the watershed each year. Commercial harvest of alewives could provide up to \$20,000 annually in revenue for the towns where they are harvested.



*A view of the Sabattus River flowing freely after the removal of Upper Town Dam. Photo credit: W. Duncan*

# Building Partnerships

## Trispot Darter Culvert Replacements

### PROJECT DESCRIPTION:

The trispot darter, a federally-threatened fish, was thought to be extinct in Alabama for over 50 years before being rediscovered in Little Canoe Creek in Springville, Alabama, in 2008. Since its rediscovery, the U.S. Fish and Wildlife Service has worked in partnership with private landowners, local cities, and the county to identify key projects that support both species' recovery and stronger road infrastructure in the area. Bipartisan Infrastructure Law funding provided their county an opportunity to get several projects from concept to reality in record time, benefiting both the trispot darter and local communities. As part of this initiative, several additional projects will be completed in the coming years.

### BENEFITS:

**Improving Infrastructure:** One of the first projects completed was the replacement of an undersized culvert on private land owned by Manulife Investment Management that also provided access to a private residence. The culvert, positioned along one of the tributaries to Little Canoe Creek, was in such poor condition that landowners constantly addressed issues with erosion and often cleared clogged debris by hand to prevent the road from flooding. A new bottomless arch structure improves the water flow, prevents future road flooding, and reduces the need for manually clearing debris from the site.

**Supporting Communities:** Little Canoe Creek also winds itself through a local sports field complex where thousands of families gather throughout the year to play and watch baseball and soccer games. A dilapidated culvert along the creek, however, contributed to flooding of the fields during rain events, leading to cancelled games and disappointed kids. Bipartisan Infrastructure Law funding proved valuable in pushing the project forward, saving the city thousands of dollars in flood cleanup costs. Partnerships such as these illustrate what can be accomplished when the Service and local stakeholders identify shared priorities that benefit both fish and the local community.

### QUICK FACTS

Location: St. Clair County, Alabama

NFPP project funding: \$1,125,000

Type of barrier: Culverts

Species benefited: Trispot darter



This bottomless arch structure replaced an undersized culvert on a tributary to Little Canoe Creek. Photo credit: USFWS

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“As our first joint project, I was a little apprehensive to work with the federal government, because things can take a while and be very cumbersome, but they made it very easy for us,” said Robert Colville of Manulife Investment Management. “There was a lot of behind the scenes work to streamline the process, but it went smoothly, and the project turned out great.”

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# Restoring a Cultural Icon

## Numana Dam Removal

### PROJECT DESCRIPTION:

Numana Dam is an important irrigation diversion structure that provides water to Tribal farmers and ranchers along the Truckee River in Washoe, Nevada. Unfortunately, the dam also blocks Lahontan cutthroat trout and Cui-ui, a sucker fish that is culturally significant to the local Pyramid Lake Paiute Tribe, from accessing the Truckee River outside of the reservation boundary. The National Fish Passage Program provided over \$8 million in Bipartisan Infrastructure Law funding for major improvements to the irrigation diversion structure, making it the largest fish passage project to date in terms of overall funding provided by the Service. Once completed, the old fish ladder will be replaced with a roughened ramp that will span the width of the river, making passage possible for Lahontan cutthroat trout and Cui-ui, while preserving irrigation for Tribal members. The Numana Dam Fish Passage Project will provide significant benefits to human communities, including economic benefits, cultural significance, and an improved fishery.

### QUICK FACTS

Location: Washoe, Nevada

NFPP project funding: \$8,000,000

Type of barrier: Dam

Species benefited: Lahontan cutthroat trout, Cui-ui

### BENEFITS:

**Restoring a Cultural Icon:** The Cui-ui is culturally significant to the Pyramid Lake Paiute Tribe, who relied on annual spawning runs for sustenance prior to the species decline in 1979. The Tribe has dedicated substantial resources to restore the species, raising and stocking Cui-ui in Pyramid Lake and working with partners to address habitat issues for the fish, including supporting the removal of Numana Dam. Following removal, up to 600,000 Cui-ui may be able to pass the diversion dam each year, bringing this important fish one step closer to recovery and restoring a cultural icon for the Tribe.

**Supporting Fisheries:** Once work on the dam is completed, Cui-ui and Lahontan cutthroat trout will be able to access the Truckee River and additional habitat upstream of the dam. The improved river access will lead to an increase in fish spawning in that section of the river and greater numbers during spawning runs in coming years. Fishing for Lahontans is likely to improve substantially in the coming years in sections of the river upstream of Numana Dam, leading to new fishing spots for locals that will be closer to home, and better fishing spots downstream as fish populations continue to improve.

**Boosting Economics:** The Nevada Department of Wildlife estimates that the Truckee River supports between 60,000 and 100,000 angler days per year, or days spent fishing by recreational anglers. In 2022, recreational anglers spent an average of \$47 per angler day on trip related expenses. If the improved fishing opportunities in the Truckee increase fishing by even 5%, it would result in nearly \$250,000 added to the economy around Reno and the Pyramid Lake Paiute Reservation annually.



Numana Dam along the Truckee River. Photo credit: USFWS

# Improving Community Access

## Little Tonsina River Bridge

### PROJECT DESCRIPTION:

During a 2006 flood event along the Little Tonsina River, undersized culverts on a gravel access road leading to one of Alaska's major highways failed, completely washing out and closing the road. In addition to providing access to local residents, this route also served as an important access point for oil spill response supplies, road maintenance supplies, and power facilities. Temporary undersized replacement culverts were quickly installed to provide access to the area, but frequently flooded and became plugged with debris, necessitating further maintenance. The National Fish Passage Program provided \$1.3 million in Bipartisan Infrastructure Law funding, complementing funds provided by other partners, to replace the undersized culverts with a full span bridge to reconnect local communities and prevent further washout and flooding. Removing these barriers also opened up 70 miles of high-quality spawning and rearing habitat for Coho and Chinook salmon that had previously been blocked.

### BENEFITS:

**Improving Access:** The Little Tonsina River Bridge Installation project provides improved access for the Alaska Department of Transportation to perform maintenance and road improvements along that section of highway, preserving the only roadway connecting the coast to interior Alaska. Additionally, the new bridge improves access to the Trans-Alaska Pipeline, allowing for timely monitoring and incident response. The access road also connects rural, remote homes to the highway, which is a vital artery to nearby cities that have grocery stores, medical care facilities, and gas stations for fuel.

**Boosting Economics:** The Little Tonsina River feeds into the Copper River, which has some of the highest densities of known salmon populations. The value of the Copper River salmon fishery extends to all Alaskans, who harvest about 165 pounds of fish for food on average per year. The Tonsina River drainage, in particular, is a high value fishing area for Chinook salmon. Subsistence resources provide Alaskans with healthy and affordable food on the table year-round, and the value of wild salmon fisheries like those found in the Copper and Tonsina river drainages are a priceless resource for all Alaskans.

**Restoring Cultural Significance:** Salmon are central to the way of life of most Alaska Native communities, including the Eyak people of the Copper River Delta and the Ahtna Athabascan people of the interior of the watershed. The salmon's spirit is highly respected through many cultural practices that focus on the health and return of salmon each year. The first salmon of the season marks an important moment, and no part of the salmon is wasted during harvest- every piece of the salmon is consumed or used, unless customary to return parts back to nature as a sign of respect or to ensure future salmon runs.

### QUICK FACTS

Location: Valdez-Cordova Borough, Alaska

NFPP project funding: \$1,300,000

Type of barrier: Culverts

Species benefited: Coho and Chinook salmon



*The new bridge over the Little Tonsina River provides important access for communities. Photo credit: Jess Straub*