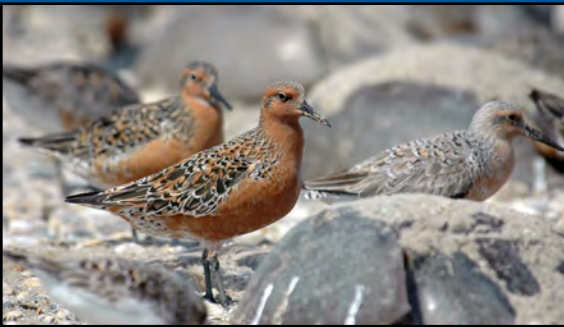




U.S. Fish and Wildlife Service



DELAWARE RIVER BASIN RESTORATION PROGRAM

Report to Congress

FISCAL
YEAR | 2022



Delaware River Basin Restoration Program

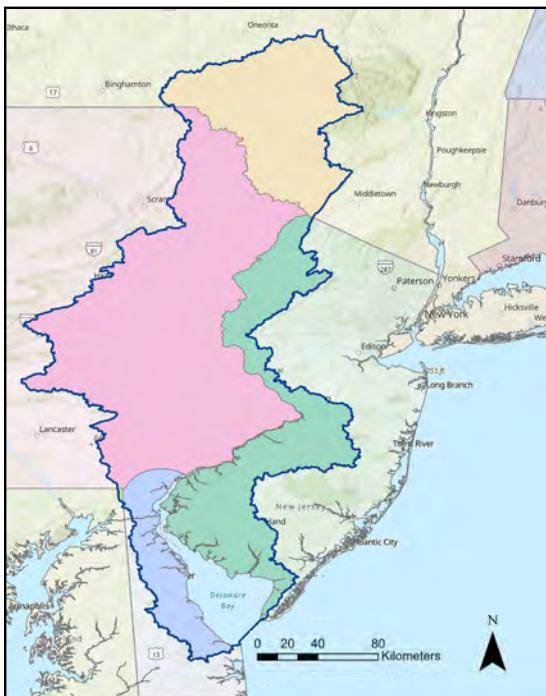
PURPOSE

This report fulfills the U.S. Fish and Wildlife Service's requirement to provide an annual update on implementation of the Delaware River Basin Conservation Act, as directed by Subtitle E – Delaware River Basin Conservation, Sec. 3505 of the Water Infrastructure Improvements for the Nation Act (P.L. 114-322).

DELAWARE RIVER BASIN RESTORATION PROGRAM

With strong bipartisan support, Congress authorized the [Delaware River Basin Conservation Act](#) (DRBCA) in 2016, directing the U.S. Fish and Wildlife Service (Service) to establish the Delaware River Basin Restoration Program (DRBRP). The DRBRP takes a non-regulatory approach to landscape-scale conservation—voluntary, incentive-driven, and collaborative across its four-state watershed. Congress had the foresight to recognize that conservation action was needed for four conservation priorities: 1) conserving fish and wildlife habitat, 2) improving water quality, 3) sustaining and enhancing water management, and 4) improving opportunities for public access. The Service coordinates actions to address these priorities through the DRBRP's three primary components:

1. A partnership, Delaware Watershed Conservation Collaborative
2. A grant, Delaware Watershed Conservation Fund, and technical assistance program
3. A basin-wide strategy, Conservation Design



WHY THE WATERSHED?

Flowing from the Catskill Mountains to the Atlantic Ocean, the Delaware River journeys through New York, Pennsylvania, New Jersey, and Delaware. Cities, towns, farms, forests, mountains, marshes, beaches, and many other habitats and land uses are connected by the longest undammed river east of the Mississippi and its 2,000 tributaries.

The Delaware River Watershed (watershed) covers 13,539 square miles of land and water and is home to numerous species of fish and wildlife that are economically, ecologically, and culturally important to the region. The watershed has long been overlooked, despite providing drinking water to more than 13 million people and supporting a water-based economy of over \$20 billion¹. By directing federal funds straight to the watershed, conservation and restoration efforts can be better aligned, farther reaching, and more impactful.

¹DRBC, state.nj.us/drbc/basin/

Delaware River Basin Restoration Program



Using BIL funds awarded in 2022, The Nature Conservancy will fully remove the No Name (pictured) and Cedar Grove Dams along the Pequest River in New Jersey. These efforts will reconnect 57.8 miles of instream habitat for fish, mussel and other species, improve water quality, and increase recreational opportunities in the area / TNC.

A TRANSFORMATIVE INVESTMENT FROM THE BIPARTISAN INFRASTRUCTURE LAW

The DRBRP received a historic investment of \$26 million through the Bipartisan Infrastructure Law (BIL), enacted in November 2021. Allocated over the next five years, these funds will accelerate conservation and restoration efforts across the watershed by expanding support for innovative green-infrastructure projects that contribute to the health and economic vitality of communities in the watershed. Simultaneously, these funds will support projects that sustain ecological functions, improve fish and wildlife habitat, and build community capacity to address urgent conservation needs over the next five years. See [page 12](#) for more.

TECHNICAL ASSISTANCE AND CONSERVATION EQUITY

Since 2018, the Service has worked to grow the diversity and number of organizations, as well as the types of communities that can benefit from and access resources under the DRBRP. By making a concerted effort to prioritize community engagement and expand technical assistance opportunities, DRBRP has increased the number of projects that benefit and engage urban and rural communities, expanding the positive impacts to more Americans.

2022 HIGHLIGHTS

In 2022, 61% of projects awarded funding will directly engage communities either through project design, community workshops, and/or job creation. This means that communities will feel empowered through the engagement process and that projects will better address the needs and challenges faced by communities in the watershed.

The DRBRP provided grant writing support to the three federally recognized Lenape Tribes for the highly anticipated America the Beautiful Challenge Grant awarded through the National Fish and Wildlife Foundation (NFWF). The application was successful, receiving a \$723,200 award aimed at bringing Lenape Tribal youth back to ancestral lands, the Lënapehòkink, within the Delaware River watershed to cultivate Tribal identity, cultural resilience, and provide career-orienting experiences and pathways for Tribal youth.

61% of projects directly engage communities



More than **70** partner organizations served

120+ partners tuned into informational webinars and **20** organizations received one-on-one coaching

Partnerships

By employing a model of visionary collaboration, the Service has engaged with a diverse set of stakeholders, including agencies, landowners, hunting groups, conservation organizations, municipalities, businesses, foundations, and many others to identify shared conservation goals, develop solutions, and support sound conservation investments. Through ongoing partner engagement, the Service's DRBRP has achieved more than \$100 million in conservation impacts, substantially amplifying the \$40 million federal investment Congress has made in the watershed. Partnerships have helped to leverage more conservation gains than the Service could achieve on its own.

The DRBRP has been successful in advancing partner-driven conservation initiatives by aligning the mutual conservation needs of partners. Due to its success, this landscape-scale conservation model is being emulated by partners in other priority geographies—namely the Chesapeake Bay watershed, the Connecticut River watershed, and the New York-New Jersey harbors watersheds.



Grantees, Service staff, and Senator Coons pose with the “Big Check” at the Delaware Watershed Conservation Fund award announcement press event in August 2022 / Delaware Department of Natural Resources and Environmental Control.

STEERING COMMITTEE

The Delaware River Watershed Conservation Collaborative Steering Committee, composed of watershed-based stakeholders, continues to inform conservation and restoration investments and actions in the watershed. In fiscal year (FY) 2022, the committee provided critical advice and direction needed to prioritize highly competitive projects for funding in FY22. In FY23, the steering committee will focus on setting program goals and measurable indicators to create a clear and mutual path toward improving the watershed's overall health.

Conservation Design



A view of the Neversink Mountain Preserve in Bucks County, PA / Michael Stokes, Flickr.

The Service is coordinating the development of a watershed conservation design in accordance with a provision of the DRBCA. This conservation design, guided by science, will provide a shared vision for conservation and restoration efforts within the Delaware River Basin. The Service, in collaboration and consultation with the Academy of Natural Sciences of Drexel University and the National Wildlife Federation, is developing an interactive tool that will support project planning by stakeholders throughout the watershed and project selection for funding under the Delaware Watershed Conservation Fund. In 2023 we will be soliciting input from stakeholders across the watershed to ensure that the conservation design is reflective of the most up-to-date science and social data. In November 2022, more than 100 conservation practitioners participated in a stakeholder workshop on the conservation design at the annual Delaware River Watershed Forum.

Delaware Watershed Conservation Fund

Administered in partnership with NFWF, the Delaware Watershed Conservation Fund (DWCF) provides competitive matching grants and technical assistance to eligible entities working on a range of conservation, restoration, and community engagement projects. The DWCF supports organizations that restore and protect habitats on public and private land, across rural, urban, and Tribal areas, which contribute to the overall health of the Delaware River watershed—as well as benefit the quality of life and economic vitality of the communities in this region.

STRATEGIC PROGRAM AREAS



Sustain and enhance fish and wildlife habitat restoration and conservation activities



Improve and maintain water quality to support fish and wildlife, as well as habitats of fish and wildlife, and drinking water for people



Sustain and enhance water management for volume and flood damage mitigation improvements to benefit fish and wildlife habitat



Improve recreational opportunities for public access in the basin consistent with the ecological needs of fish and wildlife habitat

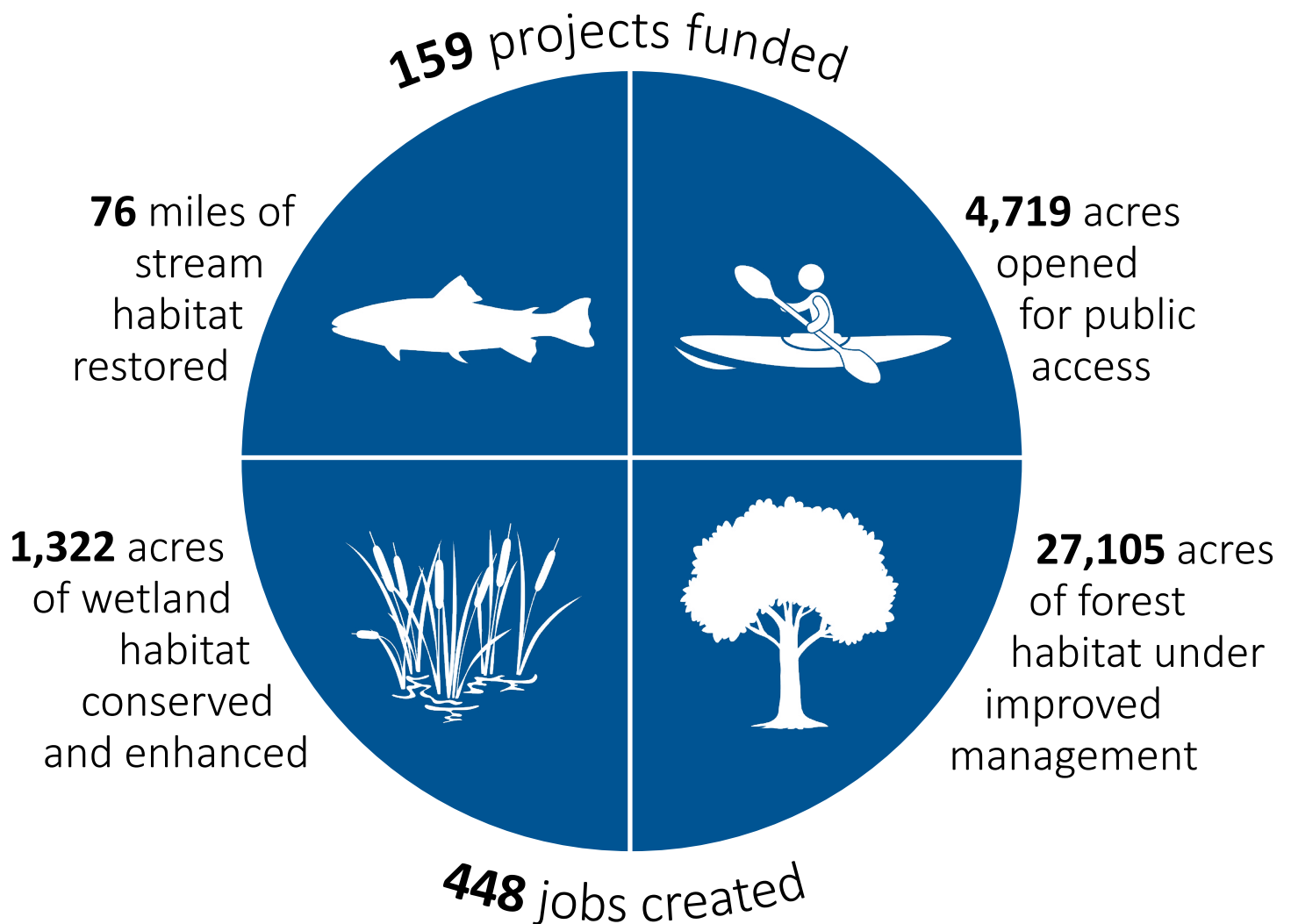
To learn more, see the Delaware River Basin Restoration Program Framework:
www.fws.gov/media/delaware-river-basin-restoration-program-framework

Since 2018, the DWCF has

\$40.4 million
awarded in federal funds

\$59.7 million
partner contributions

\$100.1 million
total conservation impact



See all DWCF grant awards on our interactive mapper:
www.fws.maps.arcgis.com/apps/Minimalist/index.html?appid=18258caf6a9944b3a74d1ee5755f14a5

FY22 Overview and Highlights

The DWCF has supported a significant demand for restoration throughout the watershed. In FY22, the DWCF was competitive with just 58% of proposals being funded, 36 projects in total. The FY22 increase in appropriations and the added infusion of Bipartisan Infrastructure Law funds allowed our partners to advance conservation efforts even more in the region. The FY22 DWCF grant slate is projected to open 65.5 miles of stream, improve 2,416 acres of forest habitat, and restores 439 acres of wetlands, more than averaged in the last five years.

**\$13.8
million**

in conservation
investments

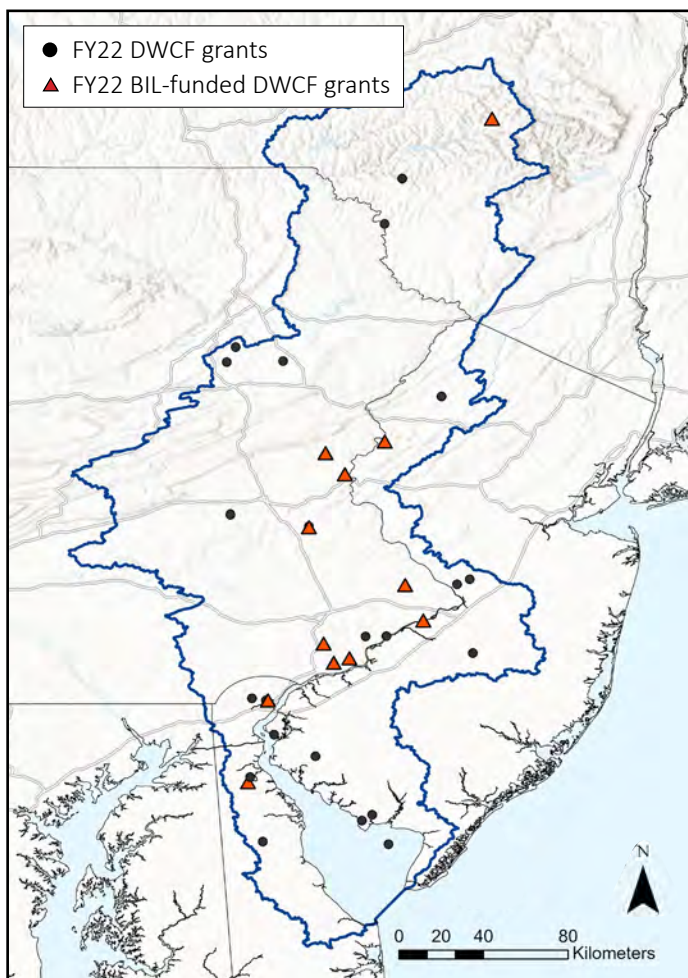
**\$14.2
million**

leveraged in
matching funds

\$28

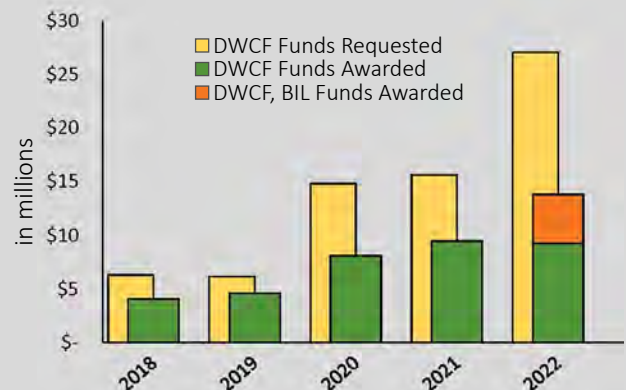
million

total conservation
impact



DEMAND FOR THE PROGRAM

In FY22, the DWCF received 61 proposals requesting more than \$26 million in funding—far more than the available \$13.8 million. The high number of proposals received effectively demonstrates the importance of and demand for the DRBRP to the Service and its partners and the value it holds for the Delaware River watershed.



Full project descriptions for FY22 DWCF grant awards are available at: www.nfwf.org/sites/default/files/2022-08/nfwf-dwcf-20220822-gs.pdf

*Note, all statistics and figures on this page include BIL funds

Advancing Conservation in Rural Communities

NEW YORK, PRIMARILY DELAWARE AND SULLIVAN COUNTIES

The DWCF is building capacity for restoration and improvement projects in the rural northern reaches of the watershed.

Friends of the Upper Delaware River (FUDR), in partnership with Trout Unlimited, received more than \$463,000 in 2022 to fund additional full-time staff and establish the Upper Delaware River Climate Corps (UDRCC). The UDRCC, a seasonal employment program, will supply the conservation workforce needed in the region to conduct Eastern brook trout assessments, recovery and protection projects, and increase the permanent conservation workforce.



Members of the UDRCC remove highly invasive knotweed from the banks of the Main Stem of the Upper Delaware River, improving habitat and food supplies for native animals / Molly Oliver, FUDR.

DELAWARE, NEW CASTLE, KENT, AND SUSSEX COUNTIES

Implementing water-quality best-management practices on agricultural fields in the Delaware River watershed will improve water quality and habitat availability. With 21% of watershed's lands dedicated to agriculture², the DWCF is investing in projects that reduce agricultural runoff at the source, increase habitat for pollinators and wildlife, and support agricultural landowners.

The Delaware Department of Agriculture (DDA) in partnership with the Kent County Conservation District successfully allocated \$250,000 in DWCF funds to local conservation districts to offset the costs of cover crops to improve water and soil quality. The infusion of additional state resources expanded conservation efforts to more than 30,497 acres of farmlands across Delaware. The grant funding also provided technical assistance and rental equipment to Delaware farmers to maximize the desired conservation benefits.

² [Technical Report for the Delaware Estuary and Basin, 2022](#)



Hayfield in Georgetown, Delaware / Michele Dorsey Walfred, Flickr.

STATES ARE AMPLIFYING FEDERAL INVESTMENTS

Match requirements for the DWCF have been challenging for many conservation organizations trying to gain access to funding. In spring 2022, the state of New York approved a historic \$300,000 investment in the New York State Environmental Protection Fund, making matching funds available for conservation organizations working the upper reaches of the watershed. This new funding priority in the New York budget will help FUDR and other organizations advance a variety of conservation and restoration projects across Delaware River headwaters.

In Delaware, the State Legislature is amplifying DWCF investments. An infusion of additional funds to the DDA cover crop improvement project in 2021 significantly increased DWCF conservation impacts in the state. Originally projected to reach 22 landowners and plant cover crops on 9,000 acres, the added funds allowed the DDA to reach 160 landowners across Delaware and plant over 30,000 acres of cover crops.

Improving Recreational Experiences

PENNSYLVANIA, WAYNE AND CHESTER COUNTIES

Thousands of people visit the Delaware River watershed annually to fish and boat along the river and its tributaries. The DWCF is investing in public access projects that support recreation and its economic benefits, valued at \$1.2 billion³ across the watershed.

The Pennsylvania Fish and Boat Commission (PFBC) received a \$200,000 DWCF grant to fund fishing and boating access along waterways in the Pennsylvania portion of the watershed. This small grant program is providing townships, boroughs, municipal and county governments as well as nonprofit groups access to federal dollars to attract recreational tourists and to ensure that boaters and anglers have safe, clean, and updated facilities.

To date, three boating facility projects have been approved for funding by the PFBC. Two new ADA accessible canoe/kayak launches will be constructed along the Lackawaxen River in Wayne County, Pennsylvania, expanding fishing and boating access to more than 10 miles of river. In addition, along the Brandywine River in Chester County, Pennsylvania, DWCF funding will allow for the rehabilitation of an aging boat launch worn out from excessive use. Currently in the design phase, all three projects are expected to begin construction in spring 2023.

³Kauffman, 2016. doi.org/10.1111/j.1936-704X.2016.03222.x



With more paddlers and anglers on the water than ever before, investing in public-access infrastructure is important to meeting the demand and ensuring public safety. It is estimated that the three PFBC projects will result in an additional 4,455 launches and retrievals annually. Child fishing / USFWS.

Conserving and Protecting Wildlife

NEW JERSEY, SALEM AND GLOUCESTER COUNTIES

The DWCF encourages collaborative partnerships that implement comprehensive approaches to restoration and conservation across multiple sites and use diverse strategies. New Jersey Audubon Society was awarded a DWCF grant to do exactly that. In partnership with the Service, the U.S. Department of Agriculture's Natural Resources Conservation Service, and the New Jersey Division of Fish and Wildlife, New Jersey Audubon will restore, create, and connect bog turtle habitat across southwestern New Jersey.

Suitable bog turtle habitats—pristine marshy freshwater meadows with abundant sunshine—are declining due to fragmentation and development. By working with private landowners who have suitable habitats on their property, New Jersey Audubon is restoring bog turtle habitat, increasing habitat connectivity, and applying agricultural best-management practices across 60 acres of land and 0.5 miles of stream.



Bog turtles are the official state reptile of New Jersey and are federally threatened and state endangered / Gary Peeples, USFWS.



Rufa red knots have one of the longest migration routes in the animal kingdom, migrating more than 9,300 miles annually / Gregory Breese, USFWS.

NEW JERSEY, CAPE MAY, CUMBERLAND, AND SALEM COUNTIES

Coastal areas across the lower portions of the Delaware River watershed support economically important fish species, wildlife, and a range of recreational activities. The DWCF is supporting numerous efforts to address coastal resilience, enhance habitats for coastal species, and improve water quality.

Using multiple DWCF awards, the American Littoral Society is advancing shoreline restoration and resilient coasts along New Jersey's shoreline. Efforts focused on improving degraded horseshoe crab and shorebird habitats along the Delaware Bayshore are critical as it is one of the most important stopovers for migratory birds. It provides opportunities for birds, like the federally listed rufa red knot, to refuel for the long migration south.

Engaging Our Communities



Student intern in the Denkyem River Guardians program conducts water quality monitoring along the tidal portion of the Schuylkill River / Troi Hicks, Bartram's Garden.

PENNSYLVANIA, PHILADELPHIA COUNTY

Bartram's Garden, a natural sanctuary adjacent to the Schuylkill River, provides a space for learning and exploring in one of the watershed's most urbanized communities—Southwest Philadelphia. This community has limited access to nature and outdoor recreation.

A \$258,000 DWCF award to the John Bartram Association will help implement a year-round high school youth development program at Bartram's Garden called Denkyem River Guardians. Local youth are employed as riverfront ambassadors—participating in water quality monitoring efforts and leading educational and recreational programming rooted in watershed ecosystems. Funding from the DWCF allows the Denkyem River Guardians to learn and expand their skill sets related to watershed stewardship, community engagement, and river recreation.

DELAWARE, KENT COUNTY

The DWCF is investing in the next generation of conservationists by transforming unused green spaces on school campuses into eco-classrooms with wildlife and pollinator habitat—providing opportunities to teach environmental stewardship and advance conservation efforts. Through two DWCF grant awards totaling \$375,000, the Caesar Rodney School District in Delaware has installed several new outdoor learning spaces related to water quality, habitat restoration, and community education, and several more remain to be finished. These learning spaces benefit water quality and wildlife habitats. In addition, they provide meaningful outdoor learning opportunities for teachers and students from preschool through 12th grade, including students with special needs.



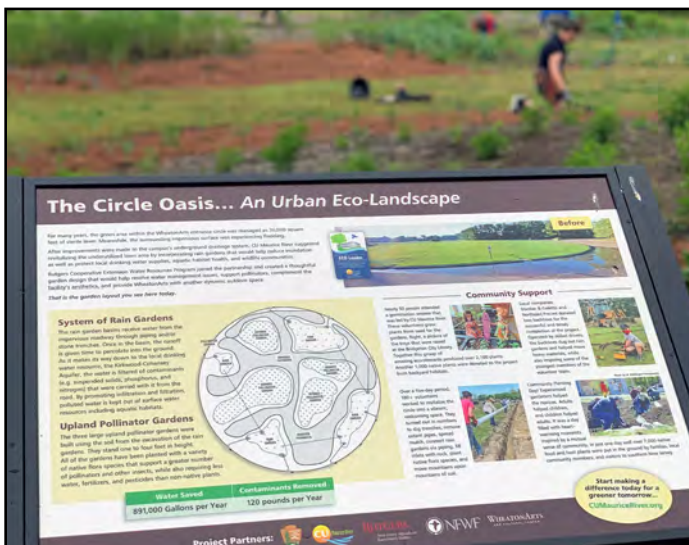
Members from the EcoTeam Volunteer Corps install native plants that will eventually be trained to form a unique living-fence as both pollinator habitat and a perimeter for the greenhouse nursery / Mike Williams, Caesar Rodney School District.

Demonstrating Clean Water Practices

NEW JERSEY, CUMBERLAND COUNTY

The DWCF is investing in projects that use techniques applicable to other parts of the watershed and provide opportunities for public engagement and education. The Citizens United to Protect the Maurice River and Its Tributaries (CUMR), in collaboration with Rutgers University's Water Resources Program, has done just that using a \$70,000 DWCF award.

Between 2019 and 2021, four green stormwater infrastructure (GSI) practices were installed in Millville, New Jersey, to improve water quality, support wildlife and pollinators, and protect drinking water resources. Since completion, hundreds of community members have engaged with interpretative signs and attended presentations—expanding public and practitioner knowledge in the region. These GSI installations capture more than 1.2 million gallons of runoff (enough to fill 1.8 Olympic-sized swimming pools), improving the integrity of the Wild and Scenic Maurice River.



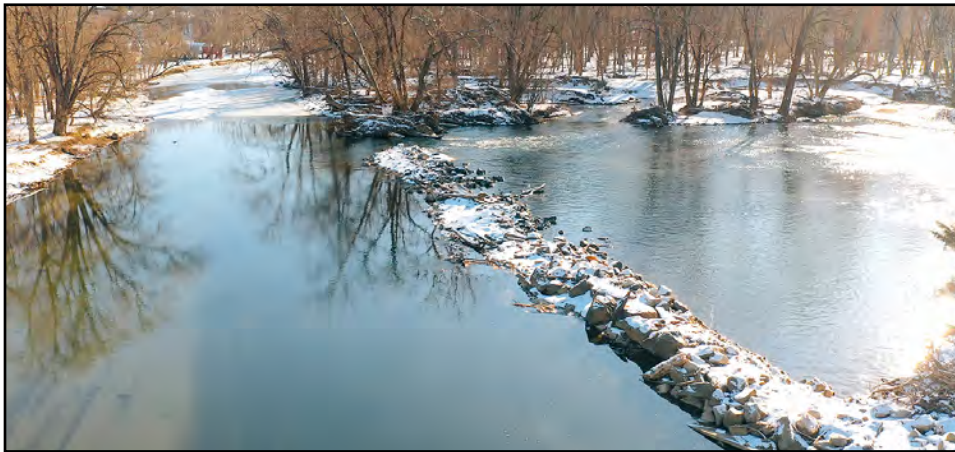
A once open grassy field at the WheatonArts & Cultural Center now supports a network of rain gardens (top), recharging 891,000 gallons of water per year into the aquifer, improving water quality, and providing habitat for native plants, pollinators, and wildlife. Educational signage (bottom left) informs visitors of these key benefits. Volunteers plant native species at the First United Methodist Church to support native pollinators and improve water filtration (bottom right), in total 735 volunteers participated in the four GSI installation projects / Karla Rossini, CUMR.

Reconnecting the Brandywine River

DELAWARE, NEW CASTLE COUNTY, AND PENNSYLVANIA, CHESTER COUNTY

The DWCF supports projects at various stages—research, design, construction, and monitoring—allowing multi-phase, multi-year projects to be successful within the program. While the DWCF has funded numerous efforts by different organizations along the Brandywine River aiming to reopen 320 miles to migratory fish, the Brandywine River Restoration Trust (BRRT) is among the first to receive Bipartisan Infrastructure Law funds through the DWCF.

BRRT received \$750,000 in BIL funds to complete the engineering, hydrological, and archaeological studies needed to either remove or modify the Brandywine Falls Dam along the Brandywine River. These efforts will set the stage for future on-the-ground actions aimed at expanding aquatic organism habitat, mainly for American shad, in the Brandywine River.



Lenape Dam (left) obstructed migratory fish passage and posed a safety risk to anglers and boaters / Kevin Erdvig. Large machinery (right) was used to remove the dam / Brian Winslow, Brandywine Red Clay Alliance.

In February 2021, the failing, 280-foot long Lenape Dam (pictured) along the Brandywine River in Pocopson Township, Pennsylvania, was removed by the Brandywine Red Clay Alliance using a \$57,000 DWCF award. This project reopened a portion of the Brandywine River to fish passage, enhanced aquatic habitat, and improved boater, paddler, and angler safety.

BIPARTISAN INFRASTRUCTURE LAW

In 2022, the Service funded 12 projects with BIL monies. These projects will advance ecosystem resilience, aquatic organism passage, flood mitigation, and improve community access and engagement. It is projected that these 12 projects will:

Improve management of more than **5** acres of stormwater and **22** acres of forest



Create **8** new jobs

Open **65** miles of stream by removing **9** barriers to aquatic organism passage



Engage more than **200** volunteers

Prevent **84,000** lbs. of sediment from entering the tributaries of the Delaware River

Restoring Urban Tidal Marshes

PENNSYLVANIA, PHILADELPHIA COUNTY

The John Heinz National Wildlife Refuge at Tinicum, nestled between the Philadelphia International Airport and Philadelphia's dense urban neighborhoods., is teeming with a rich diversity of fish, wildlife, and plants native to the Delaware River watershed. Increased development along Darby Creek, the river winding through the refuge's marsh habitat, has reduced the area's ability to soak up stormwater runoff during large storm events, causing decades of heavy flooding in the refuge and nearby communities.

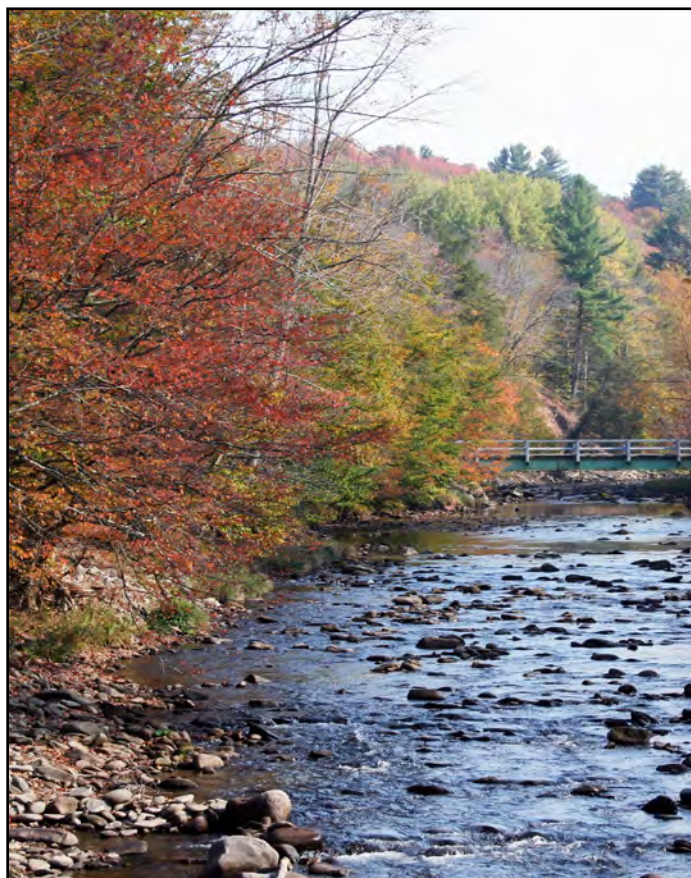
To better manage water levels and reduce upstream flooding, the DWCF is funding Ducks Unlimited (DU) to restore the tidal connectivity and hydrology of 330 acres of tidal marsh habitat and 16 acres of early successional forest. Using two grant awards, DU will improve habitat function. The benefits are myriad: reducing flooding in local communities; enhancing and expanding recreational opportunities for kayaking and fishing; and increasing public access for environmental education to Philadelphia's urban community and beyond.



Flooding in August 2020 from Hurricane Isais wreaked havoc in nearby communities and John Heinz National Wildlife Refuge (top left) — extreme flooding severely damaged infrastructure adjacent to Darby Creek / Lamar Gore, USFWS; Bald eagle (top right) / Ron Holmes, USFWS; John Heinz National Wildlife Refuge at Tinicum (bottom) is home to variety of native turtles, wading birds, shorebirds, and fish species / Ron Holmes, USFWS.

Encouraging Multi-State Conservation

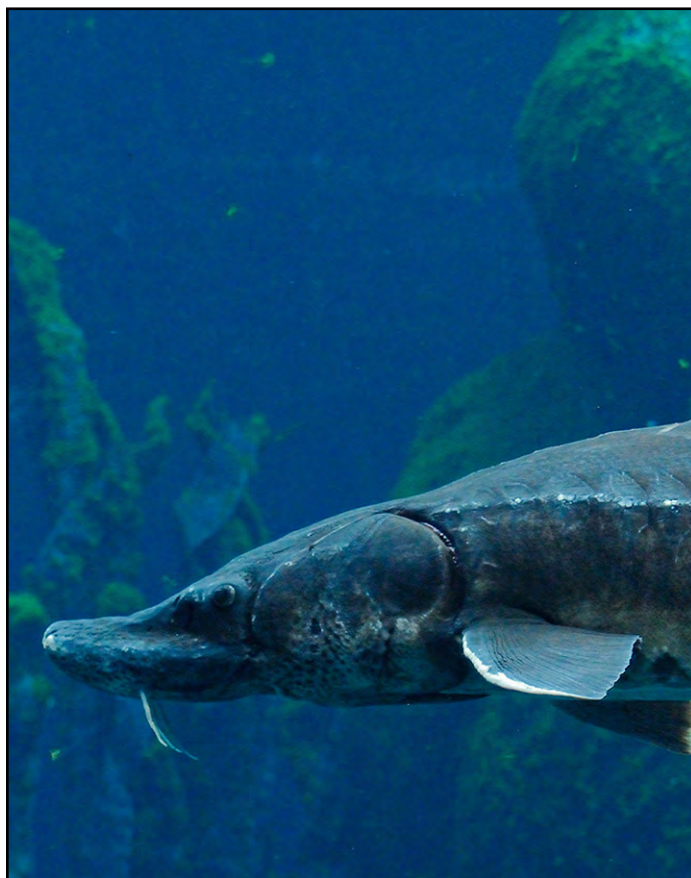
Every year the DWCF awards grants to projects that address interstate or basin-wide issues related to water quality and management, priority species, climate adaptation, education, and more. These larger scale projects have encouraged collaboration across state boundaries and have been instrumental to advancing the DWCF strategic program areas.



A view of Beaverkill Stream near Roscoe, NY, known for plentiful fly fishing opportunities / Peter Bond, Flickr.

PENNSYLVANIA AND NEW YORK

The climate resilience of the Delaware River watershed is expected to be highly influenced by headwater conditions. To better understand how to protect the Delaware River as a whole, the DWCF is investing more than \$325,000 to study the diversity and function, potential resilience, and species in its headwaters. The Academy of Natural Sciences of Drexel University will be completing this study to enhance our understanding and inform partner-led recreation and conservation in relation to climate resilience in the northern reaches of the watershed.



Atlantic sturgeon can reach 14 feet in length and weigh over 800 pounds. The species is anadromous, meaning they migrate from the sea to freshwater to spawn / Mauro Orlando, Flickr.

PENNSYLVANIA, NEW JERSEY, AND DELAWARE

Atlantic sturgeon have survived since the time of the dinosaurs. Heavy fishing, habitat alterations, and vessel strikes have reduced their populations, landing the species on the endangered species list in 2012. Using DWCF funds, the University of Delaware is analyzing portions of the Delaware River riverbed for ideal sturgeon spawning habitat using side-scan sonar technology. This investment will increase scientific capacity, ultimately advancing the future planning, monitoring, and research activities necessary to carry out restoration efforts.

