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On the cover:
Pronghorn on National Elk Refuge.

(CREDIT: KARI CIESZKIEWICZ/USFWS)

departments



Martha Williams,
Principal Deputy Director

Infrastructure Is Crucial to Our Mission

When the Bipartisan Infrastructure Law (BIL) was signed, road and bridge repair and buildings probably popped into many people’s minds.

But I thought of restored wetlands, dam removals to improve wildlife habitat and public safety, endangered fish and national fish hatcheries, and tackling the threats of invasive species and climate change.

Are projects in these areas considered “infrastructure”?

For the U.S. Fish and Wildlife Service, the answer is an emphatic “yes.”

I like to think of the Service’s mission—*working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people*—as having three interrelated parts.

The \$91 million we’ll receive in direct appropriations each of the next five years will help us accomplish each part of our mission:

- “Working with others”: Our infrastructure projects will enhance our ability to work collaboratively with nongovernmental organizations, state and local agencies, Tribes, private landowners, industry, and perhaps other partners we have not yet engaged.

We already met with Tribes in Northern California about the anticipated funding opportunity in the Klamath Basin. We expect \$162 million over the next five years for Klamath restoration activities. And our meetings with partners and others will continue as we embark on BIL-related projects.

- “To conserve, protect, and enhance fish, wildlife, and plants, and their habitats”: You will read in this issue of *Fish & Wildlife News* about a few projects we consider “infrastructure” that support our conservation work. They’re green infrastructure and dam removals, fish passage projects and habitat restoration. These are the types of amazing conservation projects the BIL will support.

As our North Atlantic-Appalachian Regional Director, Wendi Weber, explains (p. 24), these efforts will help the country adapt to the changing climate. This benefits wildlife, for sure, but also us, which leads us to the last part of our mission:

- “For the continuing benefit of the American people”: Beyond climate change, the projects in this issue promote road safety, local economies, accessibility, and outdoor recreation. Projects funded by the BIL will also advance Environmental Justice. All while helping wildlife.

The BIL will also fund efforts to address intensifying drought, wildfires, flooding, and legacy pollution. It is the largest investment in the resilience of physical and natural systems in American history. And we are ready to put those resources to work: one culvert, one wetland, one partnership at a time. □

Martha Williams is Principal Deputy Director of the U.S. Fish and Wildlife Service. She was confirmed by the Senate in late February as Director. She will be sworn in soon.

Underserved Communities Join in Conservation in Urban Bird Treaty Cities

Our Urban Bird Treaty Program supports local partners in efforts to conserve birds and their habitats in cities. That work also provides opportunities for people in diverse, underserved communities to engage in bird-related recreation, education, science, and conservation activities in urban areas. Let's take a look at some of the latest work.

Baltimore BioBlitz and More

Through October, Lights Out Baltimore and partners, including the Service, hosted a yearlong series of free events and workshops to celebrate Baltimore's birds. Grants from the Urban Bird Treaty Program and the National Fish and Wildlife Foundation's Five Star and Urban Waters Restoration Grant Program supported the Bee-More Birding series.

Lights Out Baltimore led the first project in the series, a virtual workshop for 27 downtown facility managers of buildings. Lights Out volunteers monitor for bird-glass collisions, which kill up to 1 billion birds annually in the United States. After the workshop, 11 building owners signed the Lights Out pledge to reduce light pollution during fall and spring migration, recognizing Baltimore's commitment as an Urban Bird Treaty city to reduce hazards to migratory birds.



Partners and local volunteers restored six acres of Gwynn Falls Leakin Park's Winans Meadow over the summer — removing invasive plants, mulching, and cleaning up trash from the stream. Leakin Park, created in 1908 to preserve natural habitats and prevent overdevelopment in Baltimore's watersheds, is the largest woodland park in any East Coast city.

Leakin Park's 1,216 acres provide an urban wilderness area for diverse and underserved communities to access restorative places to hike in the woods, bike on paved trails, enjoy playgrounds, create art, and more. Thirty densely populated neighborhoods are within walking distance of the park. Four public schools — with a total student population of over 2,000 — are

within a half-mile of the park, with 87% of the total school population being African American and 5% Hispanic.

In October, Urban Bird Treaty partners hosted the 2021 Leakin Park BioBlitz. The "blitz" engaged more than 70 people as community scientists and set up stations for identifying plants, amphibian, reptiles, mammals, insects, and birds that live in Leakin Park. Participants had 41 observations of 27 species. Live bird-banding opportunities gave participants an up-close opportunity to learn about bird banding research. In the evening, BioBlitz partners hosted Meet a Live Owl and a Bat Talk and Walk led by Dr. Ela Carpenter, bat biologist and urban wildlife biologist of our Chesapeake Bay Field Office and Masonville Cove Urban Wildlife Refuge Partnership.

Some of the Bee-More Birding events took place at Gwynn Falls.

(CREDIT: PATTERSON PARK AUDUBON CENTER)

Finally, Patterson Park Audubon Center collaborated with Gwynn Falls Community Association to host the virtual workshop, Introduction to Wildlife Gardening, followed by an in-person installation of a pollinator garden in a community-owned garden. About 20 neighbors installed nearly 500 plants, including flowering perennials, shrubs, and five native trees. Each community member left with a black-eyed susan for their own garden. »

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University of New Orleans Kicks off Bird Habitat Initiative

In November, with support from the Urban Bird Treaty Program and a Five Star and Urban Waters Restoration Grant, the University of New Orleans and partners began to restore migratory bird habitat on university grounds. The forest restoration kickoff event engaged more than 20 volunteers from a variety of organizations. For three hours, they removed invasive plant species under the watchful eye of a resident great blue heron and were treated to flyovers by “stands” of tree swallows. These volunteers were readying the area for the planting of more than 50 bird-friendly native trees.

The University of New Orleans is on Lake Pontchartrain—the Mississippi Flyway’s southern gateway. It provides a vital jumping-off point for birds migrating south each winter and habitat when they return each spring. Along the southern shore of Lake Pontchartrain, however, birds find precious little refuge. Particularly since the devastation of Hurricane Katrina (and Rita, Gustav, Zeta, and Ida), New Orleans stands as one of America’s most deforested cities. In a city with a 23.7% poverty rate and numerous struggling schools, many young people grow up without meaningful opportunities to connect with the natural world. The University of New Orleans is the most racially diverse college in Louisiana: 46% percent of students are Black, Indigenous, and People of Color (BIPOC). With

its 195-acre lakefront campus and rich connections to diverse and underserved students on and off campus, the university is helping to foster a more just and inclusive environmental ethic.

The university’s campus, where over 130 species of birds have already been reported, offers a way to provide habitat for birds and stir that environmental ethic. University faculty, staff, and students, as well as partners and volunteers from the local community will restore four acres of habitat and designate a one-mile university birding trail that will be a community asset for environmental appreciation and recreation.

Local volunteers, partner organizations, and students from TRIO Upward Bound and the university will plant trees along the route of the birding trail.

High school students served by Upward Bound are primarily economically disadvantaged first-generation, college-bound, BIPOC youth. The Orleans Audubon Society will help monitor campus bird populations and provide educational programming for Upward Bound students, including live bird banding and raptor demonstrations as well as workshops on beginning birding and native plants for birds. Through these activities, students in the university community can deepen their connection with nature while learning skills to support future careers in conservation. □

Future for Humpback Chub Brightens

Thanks to the hard work of state, regional, Tribal, and federal agencies, as well as private partners, significant progress has been made conserving and recovering the humpback chub. Following a review of the best available science, we are reclassifying the species from endangered to threatened under the Endangered Species Act.

“Today’s action is the result of the collaborative conservation that is needed to ensure the recovery of listed species,” says Matt Hogan, acting Regional Director for the Service’s Missouri Basin and Upper Colorado Basin Regions. “Reclassifying this distinctive fish from endangered to threatened is the result of many years of cooperative work by conservation partners in the Upper Colorado River Endangered Fish Recovery Program and the Glen Canyon Dam Adaptive Management Program. We thank everyone involved for their efforts as we look toward addressing »

Humpback chub swim in the Little Colorado River. (CREDIT: FRESHWATERS ILLUSTRATED/USFWS)



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the remaining challenges in the Colorado River Basin.”

The humpback chub was first documented in the Lower Colorado River Basin in the Grand Canyon in the 1940s and the upper Colorado River Basin in the 1970s. It was placed on the list of endangered species in 1967 due to impacts from the alteration of river habitats by large dams.

This fish lives in the swift and turbulent whitewater found in the river’s canyon-bound areas. The fleshy hump behind its head, which gives the fish its name, makes it harder for predators to eat the humpback chub. Its large, curved fins allow the fish to maintain its position in the swiftly moving current.

The Upper Basin Recovery Program’s conservation and management actions have resulted in improved habitat and river flow conditions for the humpback chub over the past 15 years. These efforts have increased the Westwater Canyon population to more than 3,000 adults and stabilized populations in Black Rocks, Desolation and Gray, and Cataract canyons. All populations in the Upper Basin have stabilized or increased. Flow conditions have also improved during this period, as partners have refined flow management.

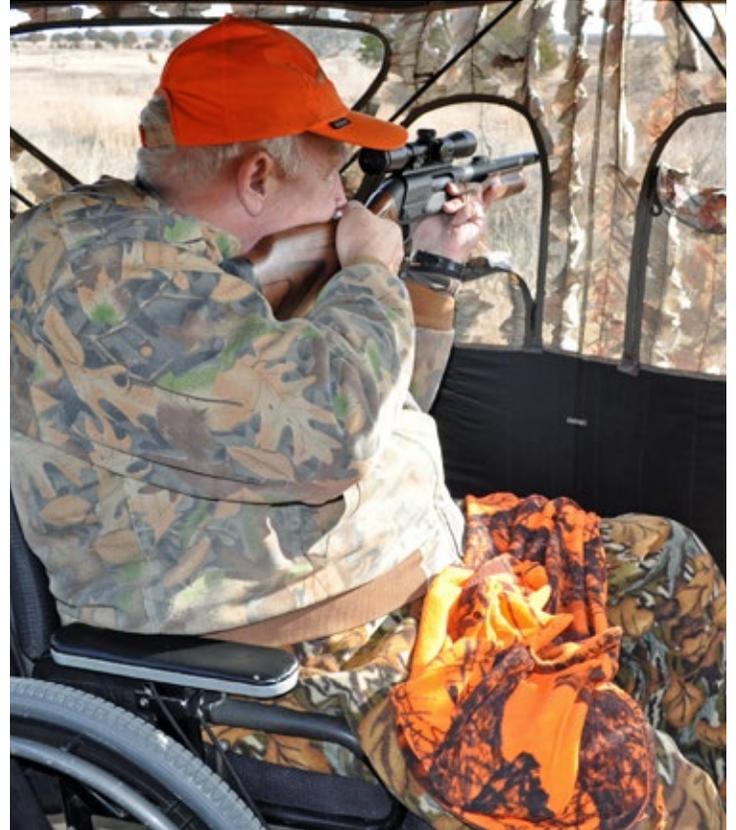
Water releases along the river continue to support this and other at-risk species in the basin.

In the Lower Basin population, more than 12,000 humpback chub live in the Little Colorado River and in the Colorado River at their confluence in increasing densities in the Grand Canyon’s western end as the receding Lake Mead exposes river habitat. Additionally, successful efforts to reintroduce humpback chub into Havasu Creek and upstream portions of the Little Colorado River have expanded their range.

Ongoing multi-stakeholder partnerships are managing flows to improve habitat conditions for protected and sensitive riparian species in the Colorado River Basin, even as storage in the lakes declines. Drought conditions in 2021 highlight the continued importance of such partnership programs in managing river conditions for these species and human needs.

Humpback chub conservation partners include the states of Utah, Colorado, Arizona, and New Mexico, as well as Tribal agencies, water users, power customers, recreational interests, and environmental organizations. Federal partners include the Bureau of Reclamation, National Park Service, and the Western Area Power Administration. □

Snow Doesn’t Deter Deer Hunters



A hunter takes aim.
(CREDIT: TINA SHAW/USFWS)

The first snowfall of the season greeted hunters with mobility challenges at the 15th annual Lost Mound Deer Hunt in Illinois. This special lottery hunt on Upper Mississippi River National Wildlife and Fish Refuge in November welcomed folks from all over the country to participate.

November deer hunting in the Midwest isn’t for the faint of heart, and folks were reminded of that when snow, freezing rain, and 30-mile-per-hour winds hit them head on. Added to that challenge was that most bucks were being cautious about their movements with the deer rut in the early stages.

During this year’s hunt, staff welcomed 32 hunters and their attendants who harvested 17 deer—12 bucks and five does. Mike Lenz Jr., from Loves Park, Illinois, harvested the largest buck, a nine-pointer with a field dressed weight of 178 pounds.

Hunters with disabilities often carry more than a quest for an excellent hunt—they carry stories that are often miracles. Camron Tribolet, from Indiana, was shot multiple times during a robbery attempt while sitting at a spotlight one early morning. »

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His injuries resulted in both legs being amputated at the knees, and he published his story in a book titled, *Dead 13 Times*. Tribolet harvested a 10-point buck during this year's hunt.

Upper Mississippi River National Wildlife and Fish Refuge staff partner with outdoors and sporting organizations to make this hunt a success. The nonprofit organization Ultimate Experience Outdoors Inc., which sponsored Jerry Cowing from Florida, marked five years of sponsoring a disabled veteran for this year's hunt. This is especially important because many of these folks are often new to deer hunting or have been brought back to hunting after several years.

This annual hunt has gained national attention with hunters representing 10 states this year. The benefits of managed hunts like these extend beyond the individual hunters. They help the local economy, too. Given that most hunters are nonresidents, or residents who have traveled from central and southern Illinois, many bring dollars from out of town. Other states represented were Alabama, Florida, Iowa, Indiana, Minnesota, Mississippi, North Carolina, Tennessee, and Wisconsin.

Down Deer Recovery, a certified United Blood Trackers provider, assisted hunters in recovering their wounded deer. Canine handler Teddy Robbins took and German shepherd Maverick successfully tracked several wounded deer.

Maverick follows the scent of a stress pheromone released from the deer's hooves and is spread along the escape path of an injured deer. Maverick tracked a 10-point buck shot by Lee Smith from St. Charles, Minnesota, for more than half a mile.

This special hunt is conducted in areas that are closed to public access due to ongoing environmental clean-up at this former military installation, the Savanna Army Depot. More than 1,000 youth and adult hunters have participated in this hunt since its beginning in 2007.

Refuge Ranger Jacquelynn Albrecht was excited about the continued success of this program: "It is a unique hunting experience by a special group of hunters. Their daily challenges of life were dwarfed by the enthusiasm and determination for deer hunting. They provided both inspiration and encouragement to the refuge staff that administered the hunt." □

At 70, Wisdom Returns to Midway Atoll



Entering her eighth known decade at Midway Atoll, Wisdom, a moli (Laysan albatross) and the oldest known banded wild bird, returned to her winter home at Midway Atoll National Wildlife Refuge and Battle of Midway National Memorial. This year, the first observation of Wisdom at her nest site took place on November 26—a day earlier than her arrival date last year.

Each year millions of albatrosses return to Midway Atoll to nest and raise their young. Culturally, albatross species are kinolau (the body form) of the Hawaiian deity Lono. The birds' return to land for mating coincides with the beginning of the makahiki season, between October and November. The birds are an important aspect to some practitioners' ceremonies and practices during that time.

A few days after her return to Midway Atoll National Wildlife Refuge and Battle of Midway National Memorial in late November, Wisdom was found at her typical nesting spot showing off her tag. (CREDIT: DRAGANA CONNAUGHTON/SCHOOLYARD FILMS)

Wisdom and her mate, Akeakamai, like most pairs of albatrosses, return nearly every year to the same nest site—a behavior known as nest site fidelity.

"There have been no observations of Akeakamai this year and no evidence of a nest cup, so it is unlikely that they will nest this year," says Jon Plissner, wildlife biologist at Midway Atoll.

The last sighting of Wisdom around her nest site was December 5. It is most likely that she has returned to sea. »

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Raising the next generation of albatrosses is no easy job and requires two parents. They take turns incubating the egg or caring for the chick while the other forages for food at sea. Albatross parents will spend time on Midway Atoll incubating and raising their chick over seven to eight months.

It is normal for albatrosses take a year off from parenting between chicks. Wisdom and her mate, however, have met on Midway Atoll to lay and hatch an egg almost every year since 2006. It is estimated that Wisdom has laid between 30 and 36 eggs in her lifetime. In 2018, her chick that fledged in 2001 was observed just a few feet away from her current nest, marking the first time a returning chick of hers has been documented. The chick returned to the same area each year since then but this December was found 200 yards away on a nest of its own.

Around age 5, juvenile albatrosses begin the process of finding a mate. During nesting

season, they are all over Midway Atoll practicing elaborate courtship dances containing dozens of ritualized movements. These young birds are looking for that special bird to dip, bow, and preen with, and once a pair bond forms they stay bonded for life.

Biologists first identified and banded Wisdom in 1956 after she had laid an egg, perhaps her first egg. Female Laysan albatrosses aren't known to breed before age 5, indicating that Wisdom would have hatched as late as 1951, which would make her at least 70. December 10, 2021 marked the 65th anniversary of her discovery when she was first banded.

"Wisdom continues to help us better understand how long these birds live and how often they breed," says Pam Repp, refuge manager for Midway Atoll National Wildlife Refuge and Battle of Midway National Memorial. "It is incredible to know that Wisdom is surrounded by generations of her family at Midway Atoll." □

IVAN VICENTE, External Affairs, Pacific Islands Region

INFRASTRUCTURE

Shooting Ranges for All: ADA-Compliant Shooting Ranges in Idaho

Brenda Beckley builds community.

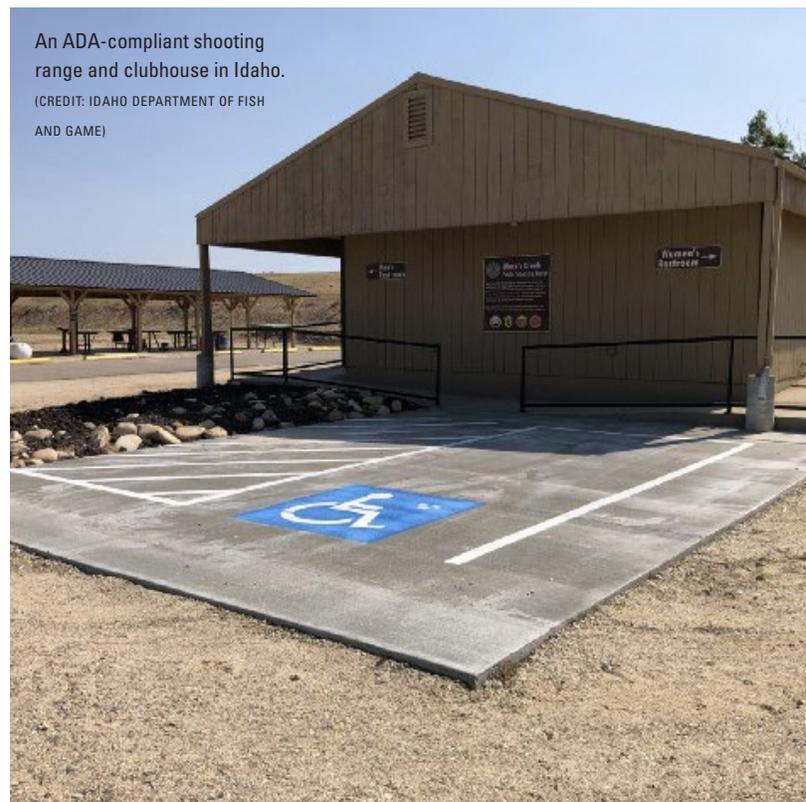
Beckley, the hunter and angler recruitment manager for the Idaho Department of Fish and Game, organizes bow hunter and trapper education programs and outdoors skill courses, and manages the Idaho Shooting Range grant program. But these classes and programs are more than just skill-building. They're opportunities for people to meet each other and connect over common interests. It's important

to Beckley, Fish and Game, and its partners that these initiatives are available to every member of the public, regardless of ability.

Fish and Game receives funding through the Service's Wildlife and Sport Fish Restoration (WSFR) Program to build and improve shooting ranges in order to provide a safe place to learn and practice marksmanship.

This is one of the types of projects states use WSFR funds for. State wildlife agencies dedicate the money to fish and wildlife management, scientific research, habitat restoration and protection, land and water rights acquisition, and hunting and boating access.

The WSFR money comes from excise taxes that hunters, »



An ADA-compliant shooting range and clubhouse in Idaho. (CREDIT: IDAHO DEPARTMENT OF FISH AND GAME)

'Still and Quiet While in the Woods'



"Hunting allows me the opportunity to relax from everyday stress," says outdoorsman Gary Monroe. "I enjoy the scenery— watching wildlife undisturbed, plants and the natural patterns of nature. For me it's not the harvest that is most important, but the calm and peace that I have. It's almost like meditation, in my solitary moments, sitting still and quiet while in the woods." [We](#)

[talked to Gary and son Javier about their connection to the outdoors.](#) (CREDIT: COURTESY THE MONROES)

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Brenda Beckley, the hunter and angler recruitment manager for the Idaho Department of Fish and Game. (CREDIT: COURTESY OF BRENDA BECKLEY)

anglers, boaters, and those industries pay on equipment and boating fuel. These improvements then are not infrastructure projects we helped finance. They are ones we strongly support.

Idaho Fish and Game is focusing on is to make shooting ranges compliant with the Americans with Disabilities Act (ADA). These projects ensure that shooting ranges include features such as wheelchair-accessible shooting lanes, parking lots with designated accessible parking spots, and bathroom facilities accessible to everyone.

“We’ve done various projects for ADA accessibility,” Beckley says. “Some of our projects are smaller where we make sure that there is a parking lane for our customers to park close to the range and... a flat surface where they can use a wheelchair or perhaps crutches to get to their shooting lane. We also have walkways that we put

in to help disabled marksmen move between the different range areas, such as moving from a pistol range to a shotgun range when in a wheelchair.”

Beckley adds that Fish and Game has also built smaller buildings at public ranges that can be used as clubhouses or classrooms. The combination of upgrades to existing shooting ranges and new construction projects helps make these spaces feel welcoming and safe.

One of the goals of Idaho’s Citizen Shooting Range Advisory Committee is to recruit people to recreational shooting sports with all different kinds of abilities. Safety signs along the roads, improving berms and backstops, and even installing cellphone towers and repeaters in case of an emergency are just a few of the projects Fish and Game has taken on. All these projects help make shooting sports and skill-building at shooting ranges accessible in Idaho.

But accessible shooting ranges do more than just expand the reach of people who can recreate and grow their skills. They also grow the community. And growing community is what Beckley does.

“Public shooting ranges are an important place for the community to go and shoot,” Beckley says. “This is where we see people practicing their skills, learning how to shoot new firearms, and learning safety techniques from the range officers. When you provide additional benefits to the range like overhead protection from weather to ADA-accessibility

parking lanes, walkways, and bathrooms with running water, you’re going to attract a lot more people, and it builds that community. We have people that come to our public ranges in Idaho on a regular basis. It really is a community.” □

LEV LEVY, External Affairs, Columbia-Pacific Northwest Region

Getting Hooked



Sure, it’s cold out now, but it’s never too early to make plans to connect people to nature through fishing...if ice-fishing isn’t an option. Masonville Cove Urban Wildlife Refuge Partnership held a kid’s fishing day event July 31. Participants filled both one-hour catch-and-release sessions, and everyone caught at least one fish—spot, perch, croaker, catfish, and even a striped bass. One top angler was too afraid to walk on the pier at first, but by the end of the fishing session had caught eight fish. That’s Baltimore, Maryland, in the background. (CREDIT: NATIONAL AQUARIUM)

Infrastructure & the Service

*New law will improve our ability to help
wildlife and people.*





Removal of the White Rock Dam in Westerly, Rhode Island, and Stonington, Connecticut, opened up close to 25 miles of the Pawcatuck River and associated wetlands for migrating American shad, alewife, blueback herring, American eel, and sea-run trout.

(CREDIT: USFWS)

Infrastructure may not be the first thing you think of when you hear “U.S. Fish and Wildlife Service.” But we’re restoring habitat in ways that help wildlife and people, making trails and blinds accessible to all, removing dams and outdated culverts to improve fish passage, building up our natural defenses to fight sea level rise and our changing climate, and more. Always with amazing partners. // The Bipartisan Infrastructure Law will enable us to do much more. // This once-in-a-generation investment provides us \$91 million annually over the next five years. We’ll use this funding to tackle climate change, create good-paying jobs, boost local economies, and advance Environmental Justice. // The following infrastructure projects took place before the Bipartisan Infrastructure Law passed, but they offer a modest example of work we, with local, state, and Tribal partners, can leverage and expand. »

Nature Returns

When dams come down, fish come back.

By LAURI MUNROE-HULTMAN



The nature-like fishway that replaced Bradford Dam allows fish and paddlers to pass. (CREDIT: SUZANNE PATON/USFWS)

“What did the fish say when it hit the wall? Dam!”

Whether you laughed or groaned, this joke captures the conundrum faced by migratory fish ever since European settlers harnessed the power of the nation’s rivers to make everything from flour to textiles to paper. »

In the Northeast, fish like alewife and blueback herring (collectively called river herring), American shad, and American eel split their time between freshwater and saltwater habitats. They've been shut out of their spawning and nursery grounds in many waterways for centuries, whether by dams or other barriers. Bad news not only for them—river herring are under review for potential Endangered Species Act protection—but for big ocean species like cod and tuna who prey on them.

Following Hurricane Sandy in 2012, the Service received more than \$100 million to improve the health of coastal habitats to benefit wildlife and people. Since then, we've worked with partners to remove 12 dams and improve passage at two other sites, re-opening more than 100 miles of river to migratory fish.

With obstacles gone, the fish are returning to their old ways across the Northeast, often at the first opportunity.

Massachusetts

In 2005, the rain-swollen Mill River threatened to breach Whittenton Pond Dam and flood downtown Taunton, a half-mile away. The incident made national headlines and spurred an effort to remove the river's aging and unsafe dams, which kept migratory fish from reaching spawning grounds in Lake Sabbatia and its tributaries.

We worked with others to remove the dam in 2013—and the river's final barrier, West Britannia Dam, in January 2018.

Last spring, an underwater camera monitored by the Massachusetts Division of Marine Fisheries captured a river herring using the fish ladder at Lake Sabbatia—the first to enter the lake in 200 years. Before spawning season was done, at least 1,200 herring swam through to the lake.

A few sea lampreys also passed through the ladder, probably the first to do so since the dams were built. Although lampreys are a problem in the Great Lakes watershed, where they are an invasive species that out-competes native fish, they are a boon to rivers and streams along the East Coast.

More than 1,300 young-of-the-year American eels made the journey to Lake Sabbatia, as well—more than any previous year. Eels reproduce in the ocean and mature in rivers and streams—the opposite of river herring, shad, and sea lampreys.

Connecticut/Rhode Island

The Pawcatuck River runs from Worden Pond in Rhode Island, west to the Connecticut border, and south into Little Narragansett Bay. Since 2010, we've worked with partners to remove four dams and update two fish ladders on the river. >>



Migratory fish like alewife travel up rivers and streams to spawn. (CREDIT: WILL PARSON/CHESAPEAKE BAY PROGRAM)

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White Rock Dam was taken down in 2015 and improvements were made to the fish ladder at Potter Hill Dam in 2016. Surveys in 2017 found river herring and shad above the White Rock site, which was once all but impassable. The fish count at Potter Hill was the highest in 15 years.

Last winter, Bradford Dam was replaced with a nature-like fishway, clearing nearly all of the river's 34 miles to migratory fish.

Hyde Pond Dam held back Whitford Brook, a tributary of the Mystic River, for some 350 years before its removal in 2015. This year, more than 1,200 alewives were trapped upstream of the former dam.

In 2016, the dam blocking the West River on the Pond Lily Nature Preserve in New Haven, Connecticut, was taken down. The next spring, several alewives were seen above the former dam site. This year, 33 alewives were collected above the restored area.

Removal of Norton Mill Pond Dam in 2016 opened 17 miles of the Jeremy River to migratory fish. The following year, 127 sea lamprey nests were found above the former dam site; in 2018, there were 165.

New Jersey

In 2016, Hughesville Dam on the Musconetcong River was removed. A tributary of the Delaware River, "the Musky" is a National Wild and Scenic River.

The next spring, the New Jersey Division of Fish and Wildlife confirmed an American shad upstream of the former dam site—possibly the first to make it that far since the dam was built in 1889.

Wreck Pond was once connected to the ocean by a natural inlet that allowed fish to pass between the water bodies. After the inlet was replaced with a narrow

Service biologist Katie Conrad holds an alewife during fish monitoring at Wreck Pond. (CREDIT: USFWS)



pipe in the 1930s, the health of the pond deteriorated, and river herring struggled to enter the pond, the gateway to spawning grounds upstream.

Hurricane Sandy overwhelmed the existing entry to the pond, cutting a new inlet and flooding nearby homes. In 2016, partners installed a large box culvert next to the existing pipe to improve fish passage and reduce flooding.

In fall 2017, young-of-the-year alewife on their way to the Atlantic were netted near the culvert—a clear sign that adults were making it to the spawning grounds upstream. This year, more than 150 were found—a 30-fold increase over any other recent year.

Perks for People

Removing barriers to fish benefits people, as well. A 2011 Service study found that every mile of river opened can contribute more than \$500,000 annually in social and economic benefits once fish populations are at their full productivity.

Free-flowing rivers also make the coast stronger in the face of future storms. They carry sediment downstream, where it nourishes coastal marshes and beaches that provide a natural defense to rising seas and storm surge. During Hurricane Sandy, coastal wetlands prevented \$625 million in flood damages. In many cases, the risk of local flooding above a former dam is also reduced. >>

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And then there's the fun part—more opportunities for recreation like fishing and paddling. The American shad already returning to the Musky and Pawcatuck are prized by anglers for their feistiness. Experienced paddlers are able to “run” the nature-like fishways on the Pawcatuck instead of portaging around the old dams, making their passage almost as easy as that of migrating fish.

Stay Tuned....

This is just the beginning. Three Sandy-funded dam removals happened last summer, and two new projects were funded last fall.

In the coming years, the National Fish and Wildlife Foundation will oversee nearly \$3 million of ecological monitoring at nine sites where dams were removed. The work includes tracking fish with radio-telemetry as they move through waters once off-limits. The U.S. Geological Survey will assess socioeconomic effects of the removals, focusing on the value of flood reduction.

And the Bipartisan Infrastructure Law puts an emphasis on projects that help restore fish and wildlife passage and improve the resilience of natural systems.

One thing is already clear, though — given a chance, rivers will rebound, fish will return, and people will benefit. That's what we call a stronger coast. □

LAURI MUNROE-HULTMAN, External Affairs,
North Atlantic-Appalachian Region



Canoeists enjoy the free-flowing Pawcatuck River. (CREDIT: WOOD-PAWCATUCK WATERSHED ASSOCIATION)

Building Back a Better Wetland

Service uses the best science to restore the Dusky Marsh. | *By* DANA BIVENS



Teams put large woody debris near the new bends and turns of the channel, so fish and other aquatic life have areas to forage for food and hide from predators. (CREDIT: GRAHAM EVANS-PETERS/USFWS)

Robert Little has always been passionate about the outdoors. Raised on a farm in southern Washington, he learned the importance of protecting natural resources and the joy of appreciating their basic value from a young age. It was only natural then for Robert to join the Service, which he did in 1984 as a heavy equipment operator. He spent the next 36 years working to manage habitats and protect wildlife at national fish hatcheries and national wildlife refuges. »

Robert's love for the outdoors led him to Baskett Slough National Wildlife Refuge. Established in 1965, the 2,500-acre refuge is an oasis for waterfowl in Oregon's Willamette Valley. Refuge staff cultivates habitat for the many species of birds that travel along the Pacific Flyway, stopping at the refuge to feed and rest.

Previously used for agriculture, the refuge lands had been drained to grow crops, causing the loss of natural wetlands. To convert wetlands to dry fields, past landowners had straightened and channelized the Baskett Slough Creek, which travels through the refuge. These channels helped siphon water from the landscape to create land for agricultural production.

In 1997, Robert joined a team of maintenance workers and heavy equipment operators to restore the Dusky Marsh at Baskett Slough. The goal of the Dusky Marsh restoration project was to provide seasonal wetland habitat for migrating birds such as dusky Canada geese. Creating more habitat would give these birds room to feed and encourage them to stay on protected refuge lands rather than on neighboring farms where they can damage crops.

To build a wetland, the refuge needed to be able to collect water. This is where Robert and his team came in. They installed two water control structures within the channelized waterway and built a 3,000-foot earthen dam to hold water. As rainfall runoff traveled down the stream, the structures would allow the refuge staff to dam certain areas and create the desired wetland habitat. The project was a success and soon the restored Dusky Marsh was attracting wintering waterfowl and supporting thousands of Canada geese, cackling geese, and dabbling ducks.

When they were built, the dam and water control structures were standard for wetland restoration. Over time, however, biologists started to think more holistically about habitat restoration projects and



Many species of birds rely on the habitat at Baskett Slough National Wildlife Refuge including red-tailed hawks. (CREDIT: GEORGE GENTRY/USFWS)

consider fish passage barriers in flood plains and their effects on an ecosystem.

Native fish require unobstructed waterways to travel upstream and spawn each year, and a lack of navigable streams is a major reason for fish declines in the Pacific Northwest. After surveying the Baskett Slough Creek, biologists found that same water control structures that helped to create the Dusky Marsh did not allow fish to easily travel up or downstream. This information prompted a rethinking of how to manage the wetland while also improving fish passage.

In 2017, the refuge began working with the Oregon Department of Fish and Wildlife to fix the problem. The easiest

and least expensive solution would have been to add fish ladders to the water control structures. These ladders allow fish traveling upstream to "climb" above barriers and continue their way. While these ladders are effective, they do not solve the problem of unobstructed fish movement and some fish still can't reach their desired locations.

The refuge decided to remove the structures entirely with the goal of returning the creek to its original condition. The unnaturally high straight sides of the Dusky Marsh agricultural channels not only prevented seasonal wetland flooding but also made poor wildlife habitat for aquatic species. >>

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Fish need undulating banks and structures such as fallen trees to hide from predators and forage for food. The plan was to re-establish a curving stream and add natural debris to protect migrating wildlife.

Removing the water control structures would, however, limit the refuge's ability to collect water and maintain the restored wetlands. To solve this problem, the team decided to create a new setback earthen dam that would run parallel to the creek, behind which water could pool for wildlife habitat. The stream in its newly designed stream channel would also provide seasonal wetlands as water would be able to flood its low banks during heavy rain events before eventually traveling downstream and emptying into the Willamette River.

In the Willamette Valley of Oregon, heavy winter and spring rainfall means that this kind of large-scale project must be completed during the short, sunny summer months. Construction would take eight weeks and would require over a dozen skilled maintenance specialists and heavy equipment operators to move over 30,000 cubic yards of earth and remove two water control structures. To obtain the necessary permits, the refuge would need to collaborate with environmental engineers and map out how to make this restoration a reality without compromising waterfowl habitat or jeopardizing neighboring farmers' lands. These investments can be costly.

Thanks to the passage of the Great American Outdoors Act in 2020, we have access to funding to invest in habitat improvement projects that also expand recreational access for the American public.

With the newly available funds, the Service formed Maintenance Action Teams (MAT) of veteran workers and newer employees. These teams travel to



Staff restore and upgrade the Dusky Marsh. (CREDIT: GRAHAM EVANS-PETERS/USFWS)

refuges across the country and tackle deferred maintenance projects and challenging habitat restoration, such as the Dusky Marsh one.

Workers from all over the country make up the teams, and they bring a diverse set of skills with them. These projects are not only essential for habitat restoration but allow the seasoned workers to mentor newer employees, helping them to learn new skills and obtain necessary certifications on different types of machinery so they can continue to restore habitats for years to come.

MAT projects also save the Service over 30% in costs on each project over traditional contracting costs.

When Robert Little, who had left Baskett Slough in 2001 and continued working at refuges and hatcheries across the West,

heard about the Dusky Marsh restoration plans, he eagerly agreed to join the MAT. Then he headed back to one of his first projects to participate in the upgrade.

In August 2021, the first team broke ground with Robert and engineering equipment operator Jeremy DePiero leading the charge. After 36 years with the agency, the Dusky Marsh renovation project would be one of Robert's last before retirement.

"One thing I love about the U.S. Fish and Wildlife Service," Robert says, "is that when we have new scientific information or when we learn a better way of doing something, we work to upgrade our best management practices. When we installed the water control structures in 1999, that was the best way to create a wetland on the refuge. With new information, we are now upgrading the design to allow for >>

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better fish passage and to improve habitat for native fish while still helping waterfowl.”

Throughout August and September, the teams worked long hours and endured record heat to ensure the project was completed before the fall rains began. To meet their schedule, teams of seven labored over 70 hours a week to get all the work done.

By late September, they had restored nearly a mile of Basket Slough Creek, removed an old dam on the eastern boundary of the property that blocked water flow, and created a new setback dam parallel to the creek to ensure the wetlands persisted. The 98-acre restoration project not only improves

fish passage and provides habitat for waterfowl, but it also supports federally protected species such as Nelson’s checkermallow, the Willamette daisy, and the streaked horned lark that will use the restored wet prairie habitat within the project’s footprint.

These kinds of projects need talented and hard-working staff who battle the elements, overcome equipment challenges, and move mountains to get the job done.

“Coming back here to work on this project at the end of my career feels like I’ve come full circle,” Robert says. “This is the best way to celebrate my retirement, and I will head into the next chapter knowing that I helped make this habitat better for the plants and animals that I love.” □

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DANA BIVENS, External Affairs, Columbia-Pacific Northwest Region



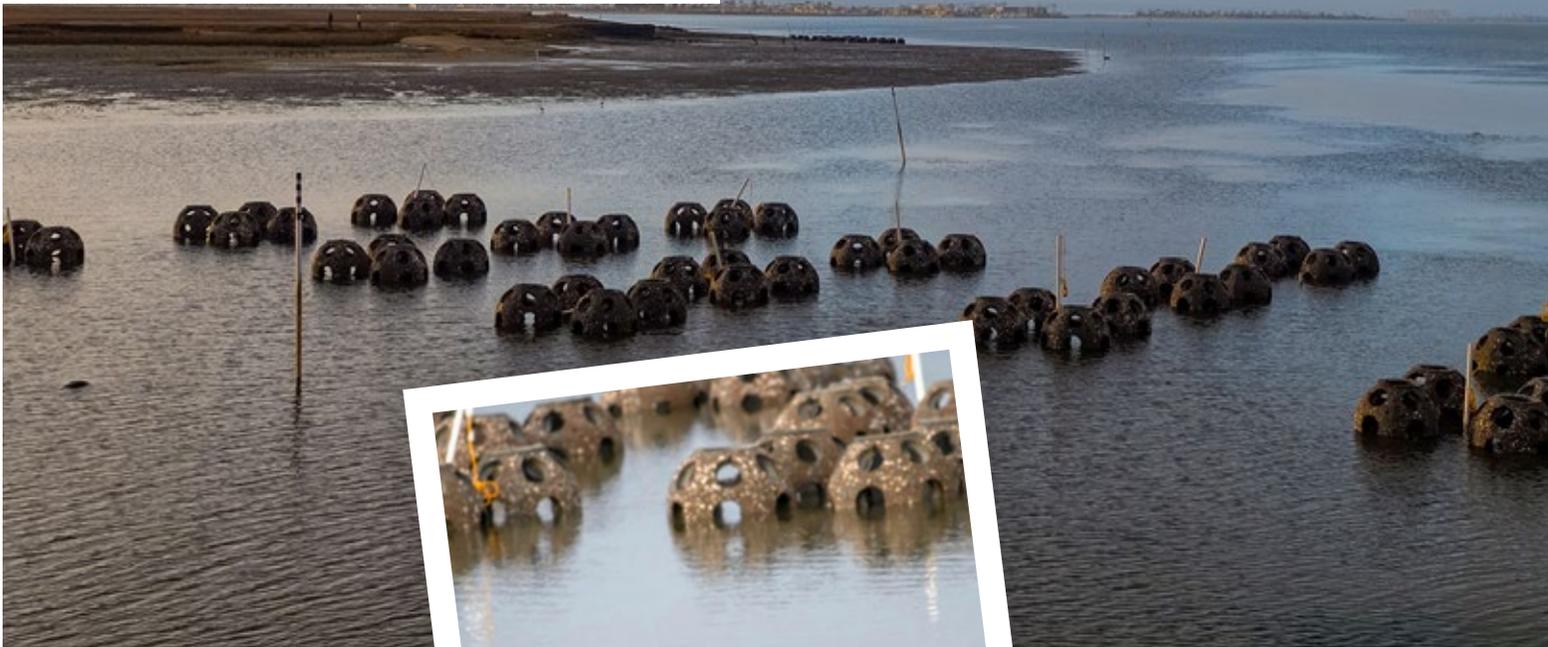
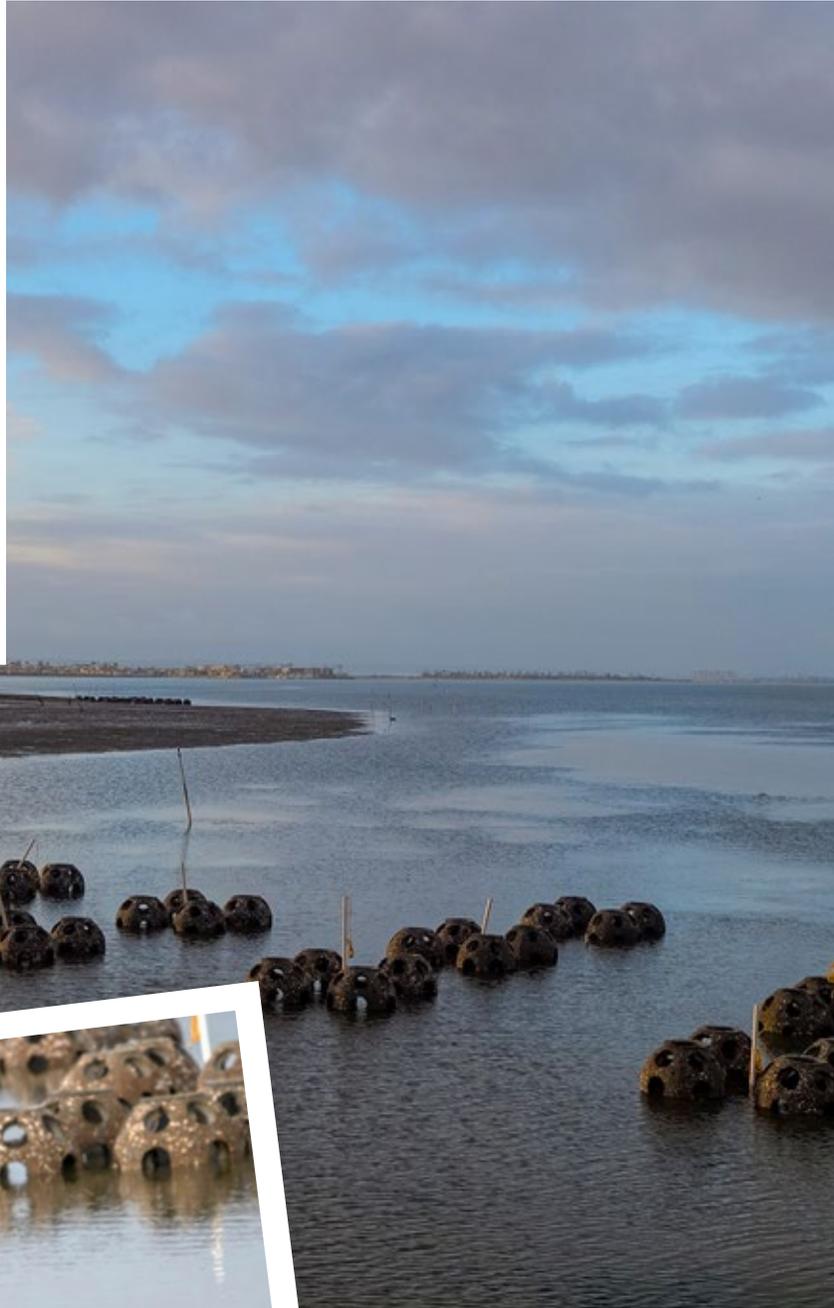
(Above) Robert Little hard at work. (CREDIT: USFWS) (Below) Waterfowl fly above the wetland at Basket Slough National Wildlife Refuge. (CREDIT: GEORGE GENTRY/USFWS)



Vacancy for Oysters

Service and Port of San Diego work with partners to install more than 300 'reef balls' to help protect South Bay from rising sea levels.

By MATT TROTT



“Reef balls,” which will form the base of the new reef, sit in San Diego Bay.

(CREDIT: PORT OF SAN DIEGO)

Taking advantage of one of our 2021 National Coastal Wetlands Conservation Grants, the Port of San Diego, in partnership with the California State Coastal Conservancy and the Service, is building a native oyster reef in San Diego Bay next to Chula Vista Wildlife Reserve, which is managed by the Port of San Diego.

Workers are putting in the bay more than 300 “reef balls,” round objects made of baycrete, concrete mixed with local sand and oyster shell aggregate. This new reef habitat should attract native Olympia oysters. They would then reproduce, and their offspring would find a spot on the reef.

In this way, oyster reefs provide an excellent resiliency defense to sea level rise because they adapt and grow over time. Traditional hard armoring, such as riprap and sea walls, often fall short and are environmentally damaging.

“The Port of San Diego is proactively and continuously planning for and implementing various strategies to reduce the impacts of future sea level rise,” says Michael Zucchet, chairman of the Port of San Diego Board of Port Commissioners.

This reef is known as a living shoreline, which relies on natural elements to stabilize shorelines. Other benefits to this approach can include:

- Buffering the area from strong waves and flooding
- Limiting erosion
- Providing habitat and food not just for oysters but also for other marine wildlife and birds
- Increasing wetland connectivity

Oysters also improve local water quality via water filtration. “A single adult oyster can filter more than 50 gallons of water a day,” according to the National Oceanic and Atmospheric Administration.

“This project demonstrates the potential of nature-based solutions to help one of California’s most iconic and vibrant waterfronts keep pace with rising seas,” says Amy Hutzel, executive officer of the California State Coastal Conservancy.

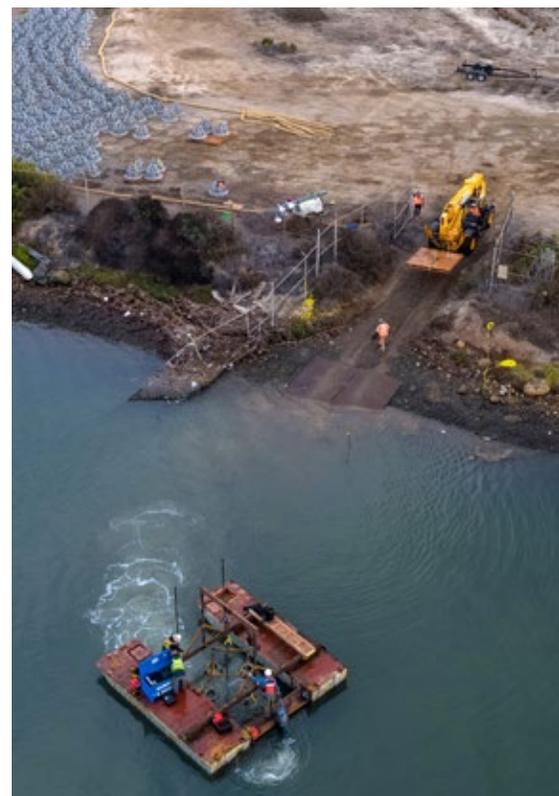
“National Coastal Wetlands Conservation grants issued by the U.S. Fish and Wildlife Service’s Sport Fish Restoration Fund are made available through recreational fishing taxes,” says Scott Sobiech, field supervisor of our Carlsbad Fish and Wildlife Office. “We in turn want to thank our angling and boating partners for their contributions to wetlands conservation.”

Zucchet calls this an important project “that will strengthen coastal resiliency along our waterfront while also helping to protect and enhance the diverse ecosystems in and around San Diego Bay.”

Federally protected species this project should help include California least terns and green sea turtles found in neighboring habitats.

We are glad to help. As Sobiech says, “The Carlsbad Fish and Wildlife Office’s Coastal Program is excited to be partnering with the Port of San Diego and California State Coastal Conservancy to protect and enhance San Diego Bay’s shoreline, which is critical to wildlife and the coastal community.” □

MATT TROTT, External Affairs, Headquarters



Workers begin installation of “reef balls.”
(CREDIT: PORT OF SAN DIEGO)

Smoother Passage

New culvert to benefit future generations of fish, Southeast Alaskans.

By KATRINA LIEBICH AND LIONE CLARE



Peterson Creek flows through a temporary channel (left) while the new fish-friendly arch culvert was installed.

(CREDIT: LIONE CLARE/SITKA CONSERVATION SOCIETY)

Peterson Creek is a classic Alaska creek: It's where new generations of salmon, char, and other fishes start life. Specifically, coho salmon, pink salmon, and Dolly Varden char call Peterson Creek home. »

Workers completed a fish passage project in Sitka, Alaska, in 2021 just in time for salmon returning to spawn and Sitka's youth returning to school.

Bad for Fish and People

Culverts where roads cross streams can pose barriers to fish if not designed with fish behavior and water flow in mind. They can be undersized in relation to the creek's width or placed atop (instead of embedded in) the streambed. This makes it difficult for fish—especially juveniles that aren't strong swimmers yet—to move through the crossing.

Undersized round culverts can also cause problems for people. They are more likely to “blow out” under the force of a flood.

Peterson Creek had two such culverts.

The creek also had something going for it.

“If there's one thing that Alaskans can rally around, it's salmon,” says Andy Stevens, one of our fish biologists. “These projects are a win-win for both salmon and infrastructure stability in communities.”

With support from the Sitka Economic Development Association, Sitka Chamber of Commerce, the Sitka Conservation Society, and the Alaska Sustainable Salmon Fund, the Service, the City and Borough of Sitka, and Marble Construction came together to restore fish passage where Peterson Avenue crosses Peterson Creek.

“Fully community-supported projects are the right way to do infrastructure projects when living in a salmon landscape,” says Andrew Thoms, executive director of the Sitka Conservation Society.

The new culvert is designed to accommodate not just the variable swimming abilities of fish but also the creek's full range of high and low flows. This kind of design also promotes the normal movement of logs, rocks, leaves, and other natural materials found in and along the creek. In turn, this movement



Example of undersized, perched culverts constricting a stream's flow and presenting jump and velocity barriers for juvenile fish and other weak swimmers. (CREDIT: KATRINA LIEBICH/ USFWS) (Below) Pink Salmon move up Peterson Creek through the new culvert. (CREDIT: LIONE CLARE/SITKA CONSERVATION SOCIETY)



creates habitat and feeding opportunities for fish and their prey.

“Salmon need uninterrupted routes from the ocean to their spawning grounds,” says Dan Kirsch, project manager of Professional and Technical Services Inc., which was contracted for the work by the City and Borough of Sitka. “Roads and dams are inevitable but have made this difficult. Incorporating affordable infrastructure like this makes it much easier for salmon to retain a greater portion of their habitat, even in developed areas.”

Culverts sized and placed with intention also benefit people. Fish-friendly arch culverts and bridges that span beyond the channel to accommodate high flows can handle flood conditions better.

That means safer routes to and from home and school, and fewer (if any) delays during a storm/flood events.

Balance

Fish are a key part of people's ways of life in Sitka and all of Alaska, feeding families

and forests, and sustaining communities, economies, and the entire environment.

“Finding a balance between protecting salmon habitat and supporting development in communities is important so both can continue to coexist,” says Jesse Lindgren, habitat biologist for the Alaska Department of Fish and Game. “Salmon habitat is important to protect to maintain healthy salmon populations that support communities through food resources, jobs, and tourism.”

For Peterson Creek, one barrier remains just a few hundred feet upstream at the intersection of Wachussetts Street. To continue improving and making Sitka's streams healthier and roads more resilient for the future, partners plan to remove this barrier, too, and reconnect downstream habitat to important upstream habitat in the headwaters of Peterson Creek. □

KATRINA LIEBICH, External Affairs, Alaska Region, and LIONE CLARE, Storytelling & Outreach Specialist, Sitka Conservation Society and Sustainable Southeast Partnership, with ANDY STEVENS, Anchorage Fish and Wildlife Conservation Office, Alaska Region.



The visitor center, built in 1995, is a popular stop at Pea Island National Wildlife Refuge. (CREDIT: SARAH TONER/USFWS)

Visitor Center at Pea Island Refuge Gets a Lift

Five feet worth of forethought should save a mile of misery for Pea Island National Wildlife Refuge.

That's the height from the ground that the North Carolina refuge's visitor center has been raised. By lifting the building, the Service raised the odds that the center will survive flooding and related extreme-weather events that have become all too commonplace with climate change.

"Climate change poses historic challenges and this kind of innovative thinking and planning for the future is emblematic of the work of the Service and its partners," Shannon Estenoz, the Department of the Interior's Assistant Secretary for Fish and Wildlife and Parks, said at the ribbon-cutting. "Projects like this illustrate the benefits we can anticipate from the Bipartisan Infrastructure Law, a once-in-a-generation investment in the resilience of physical and natural systems in American history."

The Coastal Wildlife Refuge Society, a nonprofit whose mission is to support coastal refuges in North Carolina, headed the fund-

raising campaign to raise the visitor center. The society collected \$25,000 for the project, which involved a house-moving and pile-driving starting in early 2020.

The product of all that work is tangible proof that the Service and its partners are following the Biden-Harris administration's lead in preparing for climate change, says Brett Hunter, Deputy Regional Chief of Refuges for the Service's South Atlantic-Gulf and Mississippi Basin Regions.

"We in the Service recognize the importance of collaboration and partnerships," he says. "Look at what this strong partnership has accomplished at the visitor center – it has bought us more time to meet our visitors at this beloved refuge."

The center, built in 1995, is a popular stop at the refuge, which sees more than 2 million visitors a year. The refuge, 13 miles long and comprising 5,834 acres, is located on the north end of Hatteras Island on the Outer Banks. □

MARK DAVIS, External Affairs, South Atlantic-Gulf and Mississippi Basin Regions



Tribal Wildlife Grants Support Infrastructure

Our Tribal Wildlife Grants provide money for federally recognized Tribal governments to develop and implement programs to benefit wildlife and their habitat.

Including the 2021 Tribal Wildlife Grants, we have awarded more than \$105.6 million to Native American and Alaska Native Tribes, providing support for 593 conservation projects, since 2003.

Some of these grants support what is known as natural infrastructure — using natural solutions to problems including stormwater runoff, flooding, and erosion in ways that help people and wildlife.

These include a grant to the Confederated Tribes of Grand Ronde in the Willamette Valley of Oregon. They will use a 2021 grant to help restore 40 acres of floodplain forest of the North Santiam River by planting native trees and shrubs and controlling non-native species. As they note, “Conversion of floodplain forest to agricultural production and the construction of two major dams led to devastating impacts on natural river processes.”

Sometimes, grants fund more traditional infrastructure projects.

Little Traverse Bay Bands of Odawa Indians in Michigan will use its 2021 grant to help build an aviary and rehabilitation center for eagles, a culturally significant species to many Tribes, including the Little Traverse Bay Bands.

The aviary and rehabilitation center will care for injured eagles and release them back to the wild. It will also provide housing for eagles that can't survive in the wild. Staff will use the aviary to teach the community about the significance of eagles. Finally, as with other aviaries built with Tribal Wildlife Grants, it will provide eagle feathers and parts for cultural use by Tribal members.

The grants do much more, too. They have enabled Tribes to develop increased management capacity, improve and enhance relationships with state conservation partners, address cultural and environmental priorities, and help train the next generation of conservationists by engaging Tribal students interested in fisheries, wildlife and related fields of study. □

Bipartisan Infrastructure Law Advances Environment Justice



With the passage of the Bipartisan Infrastructure Law, federal agencies are set to launch robust investments that will deliver relief to communities most in need.

For decades, Environmental Justice communities, including low-income, Tribal, and Indigenous communities, and suffered under legacy environmental injustices that made them vulnerable to illness, death, and a myriad of disadvantages. Members are more likely to reside in areas with a higher incidence of contaminants or live near industry and transportation corridors. They bear injustices not often experienced in a higher income area. Environmental Justice communities have also experienced economic collapse caused by the pandemic, triggering high rates of unemployment and slow recovery further compounding their lives.

The Bipartisan Infrastructure Law will provide financial assistance for addressing environmental issues facing inner city communities across the nation, helping fulfill a national need for environment improvement in urban areas. While environmental infrastructure improvements cannot solve all the ills of American society, they do offer opportunities to aid economic revitalization in underserved communities. These infrastructure investments can help build local economies, which attracts private investments and job opportunities and generally improves the quality of life.

Underserved communities have unfortunately become accustomed to lack of funding and services for their communities. As the federal government works to implement the Bipartisan Infrastructure Law, we must make certain that infrastructure funding will reach these needy and often ignored communities, enabling them to thrive. It is critical to make infrastructure investments in a way that will ensure equity, justice, and healthier outcomes for all. □

KIM LAMBERT, Environmental Justice Specialist,
Headquarters

Facing Our Climate's 'New Normals'

By WENDI WEBER

Solutions for people and wildlife



In times of crisis, our actions need to be informed by our past and guided by our vision for the future. When life-altering circumstances like the pandemic and climate change test our resilience, we must follow the science and choose adaptable solutions.

The Atlantic hurricane season runs from June 1 to November 30, and 2021 was the third most active year in terms of named storms. The year saw 21 named storms, four of which were major hurricanes, according to the National Oceanic and Atmospheric Administration.

It marked the sixth consecutive year of above-normal Atlantic hurricane activity, which researchers had predicted using an upgraded yardstick for comparing year-to-year hurricane activity. The prediction in May came after updating the climate normals to reflect data from the previous 30 years.

In the face of rising seas and more-formidable weather, we need a resilient coast that can absorb storm surge and wave energy and recover quickly, with little need for repair. Using natural infrastructure, we can create such a coast.

What does natural infrastructure look like? It looks like healthy salt marshes that soak up rising water like sponges and provide habitat for species such as the saltmarsh sparrow, whose numbers are declining rapidly. It looks like free-flowing rivers that reduce flooding of nearby communities and let fish swim from the ocean to historical spawning grounds. And it looks like oyster reefs and other

living shorelines that buffer coastal zones from wave erosion and create habitat for marine life.

In short, natural infrastructure provides solutions that benefit people and wildlife, improve with time, and have a high return on investment.

The Service and partners are well on the way to making natural infrastructure the new normal across the Atlantic Coast. Nearly a decade after Hurricane Sandy devastated communities and wildlife habitat from Florida to Maine, incredible work has been done—beaches, dunes, and marshes restored; dams removed; and living shorelines built.

This is what success looks like:

In Maryland, the removal in 2018 of Bloede Dam on the Patapsco River—a collaboration of American Rivers, >>



(Previous page) Aerial view of dredge work draining flooded coastal marshes of Prime Hook National Wildlife Refuge, Delaware. (CREDIT: RICHARD WEINER)

Continued from previous page

the state, the National Oceanic and Atmospheric Administration, the Service, and others—restored access to more than 65 miles of river habitat for migratory fish, including alewives and blueback herring, collectively known as river herring.

Last spring, the Maryland Department of Natural Resources, which owned the dam, found both species of river herring above the dam's former site. It marks the first time the species has been known to make it that far upriver since Bloede was built more than a century ago.

These economically and ecologically important fish experienced significant population declines throughout the region, in part due to limited access to spawning habitat. Findings like this spring's herring confirm what we've seen in so many locations: Dam removals can help migratory fish populations recover.

They also provide multiple benefits to people and communities. Removing Bloede eliminated a serious public safety hazard—there had been at least nine dam-related deaths since the 1980s. It also put an end to the environmental risks associated with a sewer pipe that carried millions of gallons of sewage through part of the structure.



(Upper left) A piping plover walks on the sand. (CREDIT: USFWS) (Left) Saltmarsh sparrow behind cordgrass. (CREDIT: BRIAN HARRIS/USFWS)



Additionally, studies have shown that each mile of river opened so fish can move freely can contribute more than \$500,000 in social and economic benefits, such as recreational fishing and tourism.

In Delaware, with partners including the U.S. Army Corps of Engineers and the state, we've completed a \$38 million project to restore 4,000 acres of tidal marsh at Prime Hook National Wildlife Refuge.

By stabilizing marshes and beaches, restoring wetlands, and improving the resilience of coastal areas, the Prime Hook restoration exemplifies how strengthening natural defenses can help protect area communities during intense storms.

Residents of the local residential and agricultural communities have benefited from reduced flooding. In fact, there's been no flood-related closure of Prime Hook Road, which passes through the refuge to Prime Hook beach, since the

project's completion. The road previously had been subject to flooding from storms and high tides.

The work has also improved habitat for vulnerable species.

In 2020, 16 nesting pairs of federally threatened piping plovers were counted at Prime Hook's restored Fowler Beach. These pairs were part of a record number for Delaware. Fowler Beach is also providing breeding habit for least terns, protected as endangered by Delaware.

Additionally, with water flow restored, many areas of open water have also returned to marsh with grasses and other vegetation. These plants absorb and retain carbon and provide habitat for wildlife, including the at-risk saltmarsh sparrow.

These projects are among more than 70 supported by \$167 million in federal funding the Service received for Hurricane Sandy recovery and resilience. Each is making a difference in its own way to create more resilient and healthy natural environments that help wildlife and people thrive.

Increasing climate challenges call for smart, adaptive, and innovative solutions. In warmer, wetter, stormier parts of the world, strengthening natural infrastructure to rise to these challenges is the new normal we need.

Thanks to President Biden's Bipartisan Infrastructure Law, meeting the new normal has become a lot easier. The law will improve traditional infrastructure, such as roads and bridges, of course. It also will invest in resilience and natural infrastructure to better position us to face the new climate normal. □

WENDI WEBER, North Atlantic-Appalachian Regional Director for the U.S. Fish and Wildlife Service

The Birds are All Right

*A relocated rookery thrives
in Florida's Big Bend.*

BY KATRINA ROSSOS

One of the later breeders of the rookery, brown pelicans nest on the branches of the red and black mangrove trees that pepper the edges of Snake Key.

(CREDIT: KATRINA ROSSOS/
USFWS)



“It sounds like a big murder scene out there,” Larry Woodward said with a laugh. Was the deputy manager of Cedar Keys National Wildlife Refuge speaking about a predation massacre by large carnivores? Nope. Woodward was talking about the birds at the small refuge on Florida’s northwestern Gulf Coast.



Boating slowly around the periphery of 30-acre Snake Key in late June, the clamorous squawks from about 8,000 birds and their young rolled over us in waves. The beaches were crowded with wading birds and seabirds—resting on the sand, perched on driftwood, or drying their wet wings atop a snag. As we boated by the island, fluffy, white pelican hatchlings watched us from their mangrove nests, mouths open begging their parents for a meal.

Six years after the Gulf Coast’s largest rookery vanished without a trace off Seahorse Key, another colony is thriving. Just three miles from the original rookery, the much-smaller Snake Key is brimming with white ibis, double-crested cormorants, brown pelicans, tricolored herons, great egrets, and many other wading bird species.

‘They’re Gone’

A few minutes later, we boated over to Seahorse Key, where it was jarringly quiet. Only the buzz of cicadas greeted us as Woodward tied the boat to the dock. No

An aerial view of the abandoned Seahorse Key shows the 110-acre island. (CREDIT: LARRY WOODWARD/USFWS) (Right) A tropical bird species, roseate spoonbills began breeding within Cedar Keys National Wildlife Refuge in 2013. As climates warm year after year, the breeding range of this species has expanded northward and the refuge remains the highest latitude on the Gulf of Mexico where roseate spoonbills breed.

(CREDIT: KATRINA ROSSOS/USFWS)

birds have nested on this 110-acre island since the thousands of birds that made up that rookery abruptly abandoned their colony. On April 19, 2015, Seahorse Key was bursting. Nearly 10,000 screeching nesting pairs were incubating, but just two days later those same nests were empty, eggs picked clean by fish crows.

Kenny McCain, a retired employee of the Service, phoned Woodward on that April day: “You need to come out here because the birds have left.”

“What do you mean?” Woodward asked.

“They’re gone,” McCain replied.

“I shot out there that day. And he was right. There was nothing. Not even a squawk or anything. It was just ghostly,” Woodward said. “To go from a rookery of 20,000 birds to nothing. It’s like, ‘What in the world happened?’ And they all had their nests.”



A Sign?

The refuge staff received one warning sign in early spring, when only several hundred white ibis arrived. Typically, the majority of the rookery, thousands of white ibis have migrated to Cedar Keys Refuge to breed every year, appearing like clockwork.

“So, that right there showed us that something weird was going on in the rookery,” said Vic Doig, a wildlife biologist and fire management specialist at the refuge.

While the ibis did not show up in large numbers, all other 11 bird species that made up the rookery returned to Seahorse Key. But within a few months the island was desolate.

“It was very weird, almost as if the ibis sensed something was amiss,” Doig said. “And then maybe the other birds were a little jumpy because the most numerous occupants weren’t even there.” >>

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Bird Mystery

Six years later, it remains unknown why the birds suddenly left. Lack of food or chemical poisoning in the air were rejected theories when one-third of the rookery simply flew to neighboring Snake Key for late-season breeding—and were successful. Strong weather and aviation are a few prevailing speculations behind the departure. Predation, physical trauma, and presence of parasites or disease have all been ruled out as sole causes. However, it's possible the birds suffered from a cumulative stress produced by several negative sources, triggering them to surrender their nests.

“We may never know, and it's not like anybody has been collecting evidence or sifting through clue—there's nothing more to glean that we're aware of. There's no threads to chase,” Doig said. “They're just gone and maybe they'll come back.”

Faith in a New Rookery

All 12 bird species from the Seahorse Key colony moved to Snake Key right after the abandonment and re-nested successfully. Several years before the mysterious desertion, a few dozen tricolored herons had formed a colony on Snake Key. That signaled the island was safe for settlement.

The birds of Snake Key are colonial nesters—birds that gather to nest in large groups—and most colonial nesters have site fidelity. That means they return to the same site each year to nest, and chicks return to where they were reared. Successful nesting helped the rookery grow.

By 2021, the rookery hit a plateau, with an estimated 4,000 nests on Snake Key in both 2020 and 2021. Teeming with birds, Snake Key could probably not accommodate any new nests due to a lack of space. In 2021, brown pelicans formed a small 40-nest colony on the mangroves of Deadman's Key—a tiny islet about two



miles away. This is the first time birds have assembled a rookery on this island. The brown pelicans may have been displaced from Snake Key because the island hit its nesting capacity. If so, this is the first time the rookery has expanded to an island nearby, and a positive sign that the rookery is adaptable.

“For them to nest on Deadman's, that's significant for us, probably because they're overflowing,” Woodward said.

Thousands of Birds Affect Other Animals

A thriving rookery impacts other wildlife. The most significant relationship at this rookery is between the colonial nesting birds and cottonmouth snakes. The strength of this mutually beneficial bond became evident once the rookery relocated from Seahorse Key to Snake Key.

When the rookery was thriving on Seahorse Key, the island had the densest population of cottonmouths ever recorded. The cottonmouths fed on the fish scraps that dropped from the nests as adults fed their young. The snakes' proximity to bird nests deterred mammalian predators, such as raccoons, that would otherwise prey on chicks and eggs.

When the birds fled Seahorse Key, the cottonmouth snakes began to starve, and the population crashed almost immediately. Without the excess food provided by the rookery, the size of the snake population was not sustainable. They resorted to eating skinks and small rodents, sifting through wrack lines for dead animals, and even eating each other.

Conversely, the insignificant population of cottonmouths on Snake Key blossomed after the arrival of the rookery and has grown in tandem with the birds. Within the first year of the rookery moving from Seahorse Key to Snake Key, the island was covered with infant snakes. The population

Biologists found evidence of fish crow depredation on Seahorse Key after the birds abandoned their nests. Fish crows pick open vulnerable eggs with their beaks and consume the contents. (CREDIT: LARRY WOODWARD/USFWS)

numbers swelled, and the snakes themselves grew larger and fatter with the influx of new, easily accessible food from the nesting birds. As a result of their surge in resources, the behavior of these venomous snakes shifted from aggressive to docile.

“Out there on the island, you step over them like you would an electrical cord. You don't think anything of it because they don't show any aggression. They're just fat and lazy,” Doig said.

Thousands of Birds Attract Other Birds

Conserving a rookery does not just support the birds in it. It also attracts other birds. The Snake Key rookery has welcomed several new bird species,



Infamous for stealing many of their meals from other birds, magnificent frigatebirds are drawn to the thousands of birds at Snake Key rookery to do just that.

(CREDIT: KATRINA ROSSOS/USFWS)

Continued from previous page

including reddish egrets and a few green herons. Reddish egrets are a chiefly non-migratory tropical bird species that joined the Snake Key breeding colony in 2017. Cedar Keys Refuge is the farthest north this species has been observed nesting.

Roseate spoonbills are common visitors to the refuge but had never reproduced in the area until eight years ago. Chicks in three nests successfully fledged at the Seahorse Key rookery in 2013, the first time the species has successfully nested north of Tampa Bay. To date, the refuge is still the highest latitude on the Gulf of Mexico that the species breeds. Roseate spoonbills were one of the 12 species from Seahorse Key that shifted to Snake Key after the mass abandonment.

Both roseate spoonbills and reddish egrets are now found on the refuge year-round. Their northward range expansion and successful breeding is indicative of global climate change.

Snake Key also became attractive to birds that like to steal and scavenge. Both bald eagles and magnificent frigatebirds have been consistently attracted to the rookery at Cedar Keys Refuge—wherever it's located.

While magnificent frigatebirds are colonial nesters, they are not a part of the Cedar Keys rookery. After breeding in Dry Tortugas National Park, hundreds of magnificent frigatebirds travel up the coast of Florida and arrive at the refuge in early May. These birds often roost near active rookeries because there are thousands of nests to prey upon and even more adults they can chase and steal fish from.

The frigatebird population in Cedar Keys Refuge has remained consistent, and when the mass abandonment occurred at Seahorse Key in 2015, the frigatebirds simply shifted their roosting area to Snake Key.

Scavenging bald eagles, which are also known to pursue birds for their captured prey, are attracted to the high-density rookery as well. Despite the drop in the size of the refuge's rookery as well, bald eagles have increased within the refuge over the past 20 years.

Raccoon-free at Snake Key

With the breeding colony serving as the refuge's main conservation priority, managers have continuously eradicated bird and nest predators from islands that are current or historical breeding grounds. Raccoons raid nests for eggs and chicks, and their removal is an essential part of the refuge's conservation management. As a result of these painstaking efforts, Snake Key has remained raccoon-free for over a decade, which has contributed to the island colony's swift growth.

Despite actively removing raccoons on Seahorse Key for years, the opportunistic mammals remained on the island and have increased recently. The refuge has boosted its efforts to eradicate raccoons from Seahorse Key, so the birds will want to return to the island to nest.

Now that the rookery has hopped islands, staff has shifted management protocols to Snake Key to protect the rookery. For instance, we leased the seafloor extending 300 feet off the edge of Snake Key from Florida. This enables the refuge to close the perimeter around Snake Key during breeding season from March 1 through June 30 to protect the rookery from human disturbance.

Return to Seahorse Key?

While the refuge staff is excited about the quick proliferation of Snake Key's rookery, they remain hopeful that birds will return to Seahorse Key. Because most of these bird species live less than two decades on average, staff hopes that over time the next generation of birds will be unaware of the disturbance that triggered the abandonment of Seahorse Key and may attempt nesting on that island again if the environment is suitable.

Refuge managers plan to display newly painted, realistic bird decoys on Seahorse Key early in the breeding season this year to entice the birds to nest there. Now that the rookery on Snake Key has reached a saturation point, likely prompting the pelicans to spill over onto Deadman's Key, the staff is optimistic that Seahorse Key may attract additional overflow. The refuge staff plans to put the decoys atop trees so they're visible to flying birds. Speakers will also project audio recordings of wading-bird calls. The hope is that the colonial nesting birds will take the decoys and familiar calls as signs the island is safe and has resources.

Having a Backup

While the loss of the Seahorse Key rookery was unprecedented, unexpected, and puzzling, it has shed light on the value of conservation across an area.

“One thing we learned from the [mass abandonment] is the value of protecting more than one spot—having a series of islands, back-up islands, that the birds can go to,” Woodward said. “If Snake Key wasn't protected, it could have had houses on it and a new rookery would not have started. So, it's valuable to protect the resources.”

Continued management and preservation of all the islands that make up this special archipelago in Florida's Big Bend region will ensure these birds always have a safe place to nest. □

KATRINA ROSSOS, South Atlantic-Gulf and Mississippi Basin Regions



Hunters & Target Shooters

Making Conservation Happen



Building firearms is arguably a first step in securing wildlife conservation. Since 1937, firearms and ammunition manufacturers have paid an 11% excise tax imposed by the Federal Aid in Wildlife Restoration Act (known in conservation circles as the Pittman-Robertson Act) that taken together returned more than \$14 billion through 2021 to on-the-ground conservation.

That's why I'm standing inside the Smith & Wesson factory in Springfield, Massachusetts, learning about firearms manufacturing and later sharing a bit about conservation. A headset protects my hearing from the rumble of industry, while the voice of my tour guide bleeds through via radio.

He explains that much of the factory builds the famous handguns and Thompson/Center long guns through automation. I anticipated a factory with workers at a lathe and mill and grinder. Instead, we amble through a clade of taupe-colored pods nearly the size of a VW bus, each a self-contained machine.

Waterfowl hunters take aim at Swanquarter National Wildlife Refuge in North Carolina.

(CREDIT: DR. F. EUGENE HESTER)

Through window glass, you see water as both lubricant and coolant jet over milled steel rendered into firearm parts.

The factory is not devoid of skilled workers. A woman moves among the pods checking readouts that show the life left on diamond-tipped tools. Others are spread through the factory. Save for maintenance or repairs, the mills, presses, and forges never stop. Smith & Wesson has been in business since 1852.

After we view the tools used to bore the spiraling grooves inside rifle barrels, we move by a display of a Smith & Wesson Model 10 revolver. I have to pause. The dust-covered 4x8-foot board shows the progression from raw steel to the formation of a finished firearm. The model has been in continuous production for more than 120 years.

It is there that I feel a celestial spark—a stirring that does not quite have a name.

A decade ago, I inherited my father's Model 10. I learned how to handle a firearm as a boy with that revolver under his tutelage. Dad bought it at the crescendo of America's bicentennial, I am sure partly out of patriotic sentiments. He was no stranger to firearms dating to his childhood. As a young soldier, he defended liberty on the brutal front lines in North Korea in 1951.

In any one of the Smith & Wesson workers, I could see my late brother, a machinist. He was an inventive man who concerned himself with precision and fineness in fabrication. He could speak about the vagaries of tool and die in a parlance that only comes with familiarity.

Through the tour, I hear mallet on metal, squeaky rubber wheels, a rhythmic tick, the spray of fluids, and the pounding of a pneumatic forge on red-hot steel.

These sounds evoke thoughts far removed from the moment: My brother whispers through the patter of rain on the forest floor as we lie in the squirrel woods on a bed of leaves burnished the color of autumn. We look into a silver fog overhead, waiting for a bushytail to bound over a branch. I feel in my forearm the firm, crisp action of my dad's .22 semi-auto cycle as we plink peach cans. My daughter shouts, "There they go!" with the baritone whirr of dusky grouse rising from hummocks of last summer's exhausted high-country grasses. The thump of my 20-gauge O/U grouse gun on my shoulder comports with the thick pounding of a factory forge. >>



Continued from previous page

Our Wildlife and Sport Fish Restoration Program administers the excise-tax dollars paid by the hunting and shooting community, which go to your state fish and wildlife agencies. Those agencies contribute science-based wildlife management for the American public. The taxes pay for a radio-tracking collar around a mule deer's neck in the West; bobwhite traps in Oklahoma; gas in a biologist's truck in Alabama, not to mention salary; hunter education classes at a community center in New York; a new target shooting range in the Midwest; habitats restored benefiting multitudes of organisms. The tax on firearms buys more land—more wildlife management areas—for a hunter to sit in the squirrel

woods on a damp morning in the first breath of autumn. Nationwide, these wildlife management areas exceed 46 million acres of woods, wetlands, glades, ponds, prairies, and potholes—all told, nearly the size of South Dakota.

Beneath the busy pods on the Smith & Wesson floor, steel takes shape into enduring products that in short order will contribute to conservation. Conservation is an investment in the future, made possible by an enduring law that after eight decades stands as testament to a partnership between American manufacturers, state and federal governments — and the people who hunt and target shoot. □

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CRAIG SPRINGER, Wildlife and Sport Fish Restoration, Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions

—————
Smith & Wesson has been in business since 1852.

MUSEUM
OBJECTS
COME TO
LIFE

In this series we highlight the “Treasures of the Service” from the museum collections of both the U.S. Fish & Wildlife Service Museum and Archives and the Service’s National Fish and Aquatic Conservation Archives. We feature submissions from Steve Floray, curator of the U.S. Fish & Wildlife Service Museum and Archives, and April Gregory, curator of the National Fish and Aquatic Conservation Archives.

Museum Takes Charge of Indigenous Artwork

In 2021, the U.S. Fish and Wildlife Service Museum and Archives at the National Conservation Training Center (NCTC) acquired four spectacular works of American Indian art. // In the spring, the museum commissioned from three Indigenous artists three pieces of contemporary art for its museum collection. The works, which will be highlighted in the 2022 exhibition *American Indian Environmental Stewardship*, celebrate the recovery of three North American species central to Tribal Nations and the Service:



Ferrets, by Dustin Twiss, a member of the Oglala Sioux Tribe. Twiss’ award-winning art “is based on the natural pattern found within the fairburn agate, South Dakota’s state gemstone.” Each is a “modern blend of traditional Lakota culture and the classic beauty of nature ... [and] a tribute to the history and spirit of the plains.” To learn more about his work, [read Twiss’ post on our Medium blog](#). (CREDIT: STEVE FLORAY/USFWS)



Atlantic Salmon, by James Francis, a member of the Penobscot Nation. Francis’ painting celebrates the “welcoming home” of Atlantic salmon to Tribal waters following a multiyear recovery project. The spear in the painting represents “the cultural connection between Penobscot and the salmon. Each dot ... represents one salmon that was able to go into the Penobscot watershed.” To learn more about the painting, [read Francis’ post on our Medium blog](#). (CREDIT: STEVE FLORAY/USFWS)



(COURTESY OF AND COPYRIGHT BY KEVIN POURIER)

White Buffalo Horn Spoon, by Kevin Pourier, a member of the Oglala Sioux Tribe. Pourier’s work celebrates one of America’s premier species — our national mammal, the American bison. Pourier, who has won numerous awards, including “Best of Show” at the 2018 Santa Fe Indian Market, is one of the only artists who works with incised bison horn. To learn more about his work, [read Pourier’s post on our Medium blog](#).



Totem Pole. In the summer, a totem pole created by the House of Tears Carvers of the Lummi Nation and given to President Biden traveled to its permanent home at NCTC. Before its arrival at NCTC in July, the totem pole “...traveled from Washington state to Washington, DC, visiting Indigenous communities and sacred sites, to raise awareness of and amplify Indigenous voices in promoting the stewardship and conservation of our natural resources, and sacred lands and waters.” The totem pole was carved from a single old-growth cedar log, estimated to be at least 400 years old.

(CREDIT: STEVE FLORAY/USFWS)

transitions

Makah Hatchery's Marsha McGee Retires After 33 Years of Helping People, Salmon



Marsha McGee (right) has been connected to salmon for her entire life.

A Makah Tribal member living in the extreme northwest corner of Washington's Olympic Peninsula, Marsha, and husband Mitchell, used salmon to feed themselves and their family. "We were young and poor, and we would fish on the river," Marsha says. "It gave us an opportunity for fresh food a lot of times."

She didn't realize how salmon were about to become an even more important part of her life ... and how she'd become a huge part of the lives of many salmon.

In early 1988, Marsha lost her job. She had to apply for the few available local jobs to qualify for unemployment benefits. The Service's Makah National Fish Hatchery had an opening.

The sticking point for Marsha: Mitchell worked there as a fish culturist, and that would mean a lot of together time. But she had few other options, so Marsha applied ... and got the job.

"I tried to get a waiver because my husband worked at the hatchery, and I didn't want to work with him," Marsha says. "They denied the waiver and, well ... the rest is history. I was able to work with him for 27 years, which turned out really great. We had a blast. He has been retired for two years now after working there for 38 years. Now in the mornings he's like, 'Oh, you really have to go to work today?'"

More than 33 years after she started, Marsha has joined her husband again, in retirement. But Marsha doesn't expect to slow down.

"Honestly, I don't know when I find time to work now," Marsha says. "I have four children and 12 grandchildren who live within three minutes of the house and they're here almost every day, and my four great-grandchildren are here at least a couple times a week. Plus, I help my mother who is 87 years old. I'll be busy. I love to quilt and will be doing a lot of sewing."

Marsha's career, all at Makah Hatchery, has taken her down a long path after starting as a typist. When office work was slow, she would help with the fish. That earned her a promotion to the unusual position of animal caretaker/typist.

"That just meant I did everything," Marsha says.

Marsha handled payroll, contracts, purchasing, and travel arrangements. And, you guessed it, she still helped with the fish.

"Anytime we did something with the fish, I was outside taking down numbers and helping. I did that for 27 years," Marsha says.

In 2016, Marsha was promoted to the administrative officer for Puget Sound/Olympic Peninsula Complex, made up of the Olympic Peninsula's three national fish hatcheries — Makah, Quilcene, and Quinault — and the Western Washington Fish and Wildlife Conservation Office. When hatchery managers or staff left, Marsha helped carry the load in their absence and then helped new staff get acclimated to the hatchery.

"The staff kind of looked up to me. I'm just a naturally born bossy person, and the staff just looked to me for guidance and I was willing to give it," Marsha says with a laugh.

Denise Hawkins, the Puget Sound/Olympic Peninsula Complex manager, describes Marsha a little differently.

"She knows the people, she knows the process and the hatchery," Denise says. "She just takes care of everything. I know she's got it all under control. It's her longevity of relationship building and technical knowledge that has made her indispensable. She has taught many new project leaders and staff. Marsha just brings everyone up to speed and patiently works with people. If you need to know something about the water temperature at Makah, she's got that, too."

While staff came and went during Marsha's 33 years at Makah Hatchery, there was one constant — the salmon. Marsha was always there for them, too.

The hatchery raises about 2.6 million Chinook, coho, and winter-run steelhead annually, releasing them into the Tsoo-Yess River. The hatchery's primary role and responsibility lies in maintaining

the Tribal trust responsibilities between the United States and federally recognized Pacific Northwest Native American Tribes.

The fish produced by the hatchery provide important commercial and subsistence fisheries to Tribal members and offer quality sport fishing opportunities available to the general public in saltwater and on the Tsoo-Yess River. Some of the salmon released provide food for the southern resident killer whale population, which is protected under the Endangered Species Act.

The importance of salmon really hits home for Marsha and the Makah Tribe.

"My husband would always fish after work, and we have one son who is a commercial fisherman. So the resource is extremely important," Marsha says. "We are a very small Tribal community; very remote. Fishing — both commercial and sport — is huge. It seems like our whole life has been involved in raising the fish and making sure they have a good return, not only on the ocean but the rivers, too."

The spawning season at Makah Hatchery ended in December, and so did Marsha's career with the Service. She says she'll miss the challenges, the people, and the fish.

"Over the last 33 years, I've had some wonderful, wonderful supervisors and the crew was outstanding," Marsha says. "We both enjoyed our time with the Fish and Wildlife Service. It was an experience to watch the fish from spawning them, to rearing them, to releasing them, and then seeing them come back.

The cycle of it all was rewarding. I've really wrestled with retiring because I really enjoy my job. But it's time ... it's time to retire." □

BRENT LAWRENCE, External Affairs,
Columbia Pacific Northwest Region

Headquarters



Printing expert **Mark Newcastle** retired in October after over 42 years of exceptional leadership and support of our

printing and communications efforts, supporting all Headquarters programs, regional offices, and many field stations.

Most recently, he served as our printing management officer, Branch Chief for printing and publishing in Headquarters External Affairs, and Chair for the Service's board of survey.

Mark is considered an authority on printing and publishing, and because of that, he was also elected and, until his retirement, served as Chair of the Department of the Interior Publishing Council.

Mark was always known as someone who got results and was frequently credited with helping personnel with last-minute, often complex, publication requests.

Among the standout work in his career, which culminated in a Department of the Interior Distinguished Service Award, Mark:

- Along with Service retiree Tom Nebel, worked with famed graphic designer Massimo Vignelli to create the Service's Design Standards

- Developed and updated the Service's Printing and Publishing Handbook and parts of the Service Manual

- Created and led a team of publication coordinators to share resources and capacity nationwide, minimize costs associated with projects, and ensure consistency regarding the Service's branding and design standards

- Managed the call center

- Developed the intra-agency agreement with the Bureau of Land Management that allowed it to house and disburse our publications

- Arranged for the Service to pilot the Simplified Purchase Agreement program with the Government Printing Office □

California-Great Basin Region



After more than a decade with the Service, **Pam Bierce**, a public affairs specialist with External Affairs in the California-Great Basin Regional Office, retired December 31. She previously was

a public affairs officer on San Bernardino National Forest with the U.S. Forest Service. Pam managed Endangered Species communications, was the media liaison for the region, and volunteered to assist with several committees including the New Employee Support Team, the Regional Office Celebration Team, and as an FWS representative on the inter-agency Special Emphasis Program Committee. She also assisted as a public information officer on several fires in California, something she will likely do in retirement. Pam will be greatly missed by many, and we wish her well in her retirement. □

Columbia-Pacific Northwest Region

Steve Berendzen has been named project leader for Central Washington National Wildlife Refuge Complex.

"We are so excited to have Steve as the new project leader for these important public lands," says Regional Director Robyn Thorson. "He brings with him unparalleled leadership experience and natural resource knowledge, and his ability to work with partners and the community makes him the right fit for this position. I look forward to the work he will do in Washington."

A 37-year veteran of the Service, Steve has led conservation efforts in a diverse array of habitats from the Hawaiian Islands to northern Alaska. His previous post was as project leader for Arctic National Wildlife Refuge.

As the project leader for the complex, Steve will lead a team of biologists and refuge specialists in the management of Columbia, Toppenish, Conboy Lake National Wildlife Refuges, and the Hanford Reach National Monument.

"My wife and I are looking forward moving back to the Columbia-Pacific Northwest Region after all these years," Steve says. "Each landscape presents unique conservation challenges and opportunities, and I am excited to tackle these challenges, build new partnerships in the community, and reinforce our commitments to Tribal governments." □

honors

North Atlantic-Appalachian Region



Lamar Gore, refuge manager at John Heinz National Wildlife Refuge at Tinicum in Philadelphia, Pennsylvania,

has received this year's Ira Gabrielson Award for his leadership at the country's first urban refuge.

The award marks outstanding leadership and commitment to conservation and is presented at the close of the Advanced Leadership Development Program. Each year, the ALDP class recognizes a member of Service in honor of Dr. Ira Gabrielson, the first Director of the Service.

The class recognized Lamar because his commitment to conservation echoes that of Gabrielson. People say Gabrielson had a “straightforward manner, sense of fairness, [and] remarkable communications skills.” The same can be said of Lamar.

“It’s easy to see Gore’s heart, not only in his love for nature but in his devotion to building relationships outside and within the Service. His arms-wide-open approach inspires both new and existing conservation stewards to create change through compassion,” reads an internal profile.

For a manager of a refuge nestled in Philadelphia’s dense urban environment, that act of relationship-building beyond the Service is crucial, especially when the surrounding community is primarily people of color who have been historically marginalized and excluded by traditional conservation efforts.

“There’s already a tension there from years of being abused,” Lamar says in the profile. He emphasizes building trust through patience and open conversation — genuine listening to local priorities and needs. “When you have these conversations, then they [the community] become a true partner.”

In 2008, Gore and his colleague Rick Jorgensen, known to friends as “RickyJ,” developed and implemented the Career Discovery Internship Program (CDIP), which continues to run today. The summer program is designed to introduce culturally and ethnically diverse college students to conservation work and the Service. It illustrates this priority on building a stronger relationship between the refuge system and marginalized groups.

When he started at Heinz, Lamar joined the newly developing Alliance for Watershed Education on the Delaware River to work with like-minded conservationists on watershed level projects. This is where he influenced the creation of the Watershed Fellowship Program, modeled after the CDIP.

In June 2020, as racial injustice became more visible across the nation, Heinz’s community and staff were feeling the strain. Lamar hosted a Facebook Live forum to stimulate an open conversation about racism and “the outdoor world” and beyond. He detailed his passion to break down barriers for marginalized groups, saying, “We are doing everything we can to engage an audience that hasn’t been engaged directly in the conservation world.... We take very seriously how we can engage that audience at all levels. To us, that’s K-through employment. I believe that it really has to be that.”

The internship program, and his work beyond it, embody the motto among the staff at Heinz Refuge: to do “conservation from the community out.” It’s clear that Lamar builds community within his team at the refuge, and the compassion emanates out into the surrounding city.

After 27 years in the Service — eight at Heinz—Lamar and his heart-driven conservation are worthy recipients of such a leadership recognition. □

North Atlantic-Appalachian Region



Four-star general Norman Schwarzkopf said: “Leadership is a potent combination of strategy and

character. But if you must be without one, be without strategy.”

Christine Eustis, who until last summer was deputy assistant regional director for External Affairs in the North Atlantic-Appalachian Region, is lacking in neither. Her Department of the Interior Meritorious Service Award is proof.

Principal Deputy Director Martha Williams bestowed the honor in a virtual ceremony attended by more than 40 of Christine’s current and former colleagues. After 24 years with the Service, Eustis became deputy associate director for communications with the U.S. Geological Survey in September 2021.

The Meritorious Service Award is one of the highest recognitions a career DOI employee can receive. It is given to someone who makes an important contribution to management, takes initiative in devising new and improved work methods and procedures, displays superior service in administration of duties, and has a notable career.

Christine was lauded for her contributions to the Neotropical Migratory Bird Conservation Act, the Delaware River Basin Conservation Act Program, efforts to control white-nose syndrome in bats, and our work with Tribes.

Principal Deputy Director Williams highlighted her “remarkable leadership, resilience, and stability in guiding teams through loss and change,” as well as her commitment to public service in off-duty hours, as a volunteer for Meals on Wheels, the Amherst Survival Center, and Girls on the Run.

Though the award was a surprise for Christine, through sheer serendipity, daughter Camille was home to see the presentation, a revelation that warmed the hearts of all on hand. □

Fish & Wildlife *News*

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parting shot



50 Years of Protecting Marine Mammals

In October 1972, Congress passed the Marine Mammal Protection Act, so we and federal partner the National Oceanic and Atmospheric Administration are celebrating. The act seeks to ensure that marine mammals, such as polar bears, can help maintain the health and stability of the marine ecosystem. [Join the celebration!](#)

(CREDIT: GARY KRAMER/USFWS)

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