



Fish & Wildlife *News*

SPOTLIGHT

Refuge program making hunting more inclusive / **12**

Burns Paiute Tribe conserves the rarest grass in Oregon / **16**

Employee groups help staffers be authentic selves / **22**

features

SPOTLIGHT: Diversity, Equity, Inclusion, & Accessibility / 10

Hunting, Redefined / 12

We're taking action to create safe, inclusive, and equitable access to outdoor recreation for all Americans—regardless of what they look like.

By MASON WHEATLEY

'Be the Biologist' / 16

Children get their hands dirty during Junior Ranger Program at Trinity River National Wildlife Refuge.

By AUBRY BUZEK

The Rarest Grass in Oregon / 18

Burns Paiute Tribe, partners work to conserve Oregon semaphore grass; one of our Tribal wildlife grants is helping.

By LEV LEVY

Authentic Selves / 22

Grassroots employee groups benefit conservation through inclusion.

By TERRI EDWARDS and NICK ASFAHA

Nature That Nurtures / 24

OTHER FEATURES

Weathering the Pandemic / 28

Makah National Fish Hatchery staff comes together during extreme isolation.

By BRENT LAWRENCE

Defying the Odds / 32

Critically endangered pupfish numbers are on the rise on the 50th anniversary of official monitoring effort.

By JOHN HEIL

Director's Message / 1

News / 2

Curator's Corner / 36

Field Journal / 37

Our People / 39

departments

On the cover:
Porcupine
at Necedah
National Wildlife
Refuge.

(PHOTO BY CRISTINA
STAHL/USFWS)



10



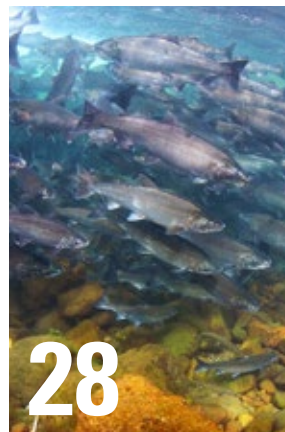
16



18



24



28



32



Martha Williams,
Director

Embracing Diversity, Equity, Inclusion, and Accessibility

Over the past couple of years, we've talked a lot about embracing diversity, equity, inclusion, and accessibility within the U.S. Fish and Wildlife Service. We have made progress, but still have work to do.

Our success in meeting the Service's mission rests on a foundation of shared values and underlying beliefs that we can be our true selves at work, that dignity and respect are paramount, and that our individual and collective accomplishments are valued. The breadth and diversity of our backgrounds, identities, and experiences are our greatest organizational strength. When we can thrive as our authentic and best selves without barriers to success in our workplaces, we will achieve the Service's mission with excellence, innovation, and relevancy far into the future.

Nature, and all that we in the Service do, must be for everyone.

We need to do better addressing diversity, equity, inclusion, and accessibility not just within our own workforce, but also in how we serve the American public. We need to make sure that our collective public lands and programs offer access to nature for everyone—regardless of their race or background.

Too often, we have fallen short of our mission. Certain people have been made to feel unwelcome on their public lands or feel excluded from our programs because of their race, ethnicity, gender, sexual orientation, disability, or any of the traits that make them unique.

I believe wholeheartedly that for the Service to succeed in delivering our conservation mission, we need to reflect the diversity and the values of all people that we serve.

We also need to do better welcoming the millions of Americans that have historically been left out of wildlife conservation. We have tremendous conservation challenges, but our future will be bright if we can welcome, recruit, and empower professionals from diverse backgrounds to join us.

We will not overlook or excuse inequalities of the past and those that persist in our present. We owe it to anyone who has felt unseen and disrespected or been treated unfairly. But, we will move forward, together.

In this issue of *Fish & Wildlife News*, you'll read about some of the work we're doing internally and externally to support the principles of Diversity, Equity, Inclusion, and Accessibility (DEIA).

We are embracing DEIA because it makes us better at what we do and, above all, because it's the right thing to do.

It isn't easy, painless, or fast—nor should it be to transform our work culture. It will be worth it because we owe it to all Americans. □

Using Dragonfly Larvae as Biosentinels of Mercury Pollution on Wildlife Refuges

Even on the protected lands and waters of the National Wildlife Refuge System, environmental contaminants such as mercury pose a threat. But dragonfly larvae are excellent mercury biosentinels, so we implemented the Dragonfly Mercury Project on multiple national wildlife refuges in 2021.

The Problems With Mercury

High mercury levels impair neurological and physiological systems of numerous wildlife with adverse effects such as reduced growth, survival, breeding, and reproductive output. Humans are susceptible as well. People are primarily exposed via the consumption of contaminated fish, and you may have seen fish advisories at water bodies throughout the United States.

Mercury contamination reduces the economic viability of the \$15 billion fishing and hunting industries, and costs related to the cumulative health effects of global mercury pollution are projected to reach \$19 trillion by 2050.

Long-distance Traveler

Mercury is a naturally occurring element that has historically been released into the atmosphere from processes such as forest fires and volcanoes. But human activities like the burning of fossil fuels and cement production have substantially increased the amount of atmospheric mercury.

Once in the atmosphere, mercury can travel long distances,



A researcher sifts through his net at Okefenokee National Wildlife Refuge in Georgia. (PHOTO BY USFWS)

ultimately landing in even the most remote and seemingly pristine areas far from emissions sources. It can also move among land, water, and air, sometimes for decades or centuries before ultimately being sequestered in soils and deep ocean sediments.

That makes tracking the distribution of released mercury particularly difficult.

Methylmercury

Most atmospheric mercury is in an inorganic form, which is less likely to accumulate in the tissues of living organisms. But natural processes can convert mercury in aquatic environments into the more toxic methylmercury, which readily accumulates in organisms and shows up in food webs.

Methylmercury formation varies considerably even within small

geographic areas, and some aquatic ecosystems may be sensitive to even relatively small mercury inputs. The best way then to accurately predict risk from mercury contamination is with biosentinels.

Biosentinels

Assessing risk using a biosentinel approach means a taxonomic group serves as an indicator of environmental conditions.

We're using dragonfly larvae as mercury biosentinels for several reasons:

- Mercury concentration in dragonfly larvae correlates well with levels in fish, frogs, and salamanders.

- Dragonfly species are widespread throughout freshwater environments globally.

- Larvae are easy to find, capture, and identify.

- Dragonflies spend most of their lives in the larval stage, and larvae are often abundant in water bodies.

- These invertebrates serve as both predator and prey in aquatic food webs. In that way, dragonfly larvae link the entry of methylmercury at the base of the food web with its accumulation in top predators.

Dragonfly Mercury Project

The Dragonfly Mercury Project is a collaborative effort started by several federal agencies and partner organizations to assess mercury risk on protected lands. Using dragonfly larvae as biosentinels, the project provides site-specific information about mercury concentration to advance the scientific understanding of mercury risk and inform policy and management decisions aimed at minimizing that risk. The project also engages community scientists and volunteers in data collection efforts, providing opportunities for learning about a critical conservation threat to natural resources.

To date, 13 refuges have been sampled as part of the project. Up to 15 dragonfly larvae were collected at up to three sites within each refuge. From those, scientists will estimate overall mercury concentrations » in dragonfly larvae from each refuge. These baseline measurements can serve as a surveillance tool to detect »

Continued from previous page.

any changes in mercury levels measured in samples collected in the future. Data from refuges will also contribute to large-scale examinations of regional patterns in mercury concentration found in protected lands.

We know that land and water management activities, by altering biogeochemical conditions, can inadvertently increase risk of mercury contamination. And refuges can have relatively intensive management actions. That provides many opportunities to examine the influence of various management work on creating methylmercury and its accumulation in wildlife. For example, many refuges have complex water management systems where water is continuously moved across the landscape to maintain or enhance

habitat. This project may identify water management techniques that reduce methylmercury production while examining the influence of these reductions on fish and wildlife.

We plan to sample more refuges, which will contribute to the understanding of mercury concentrations in protected and managed places throughout the nation, improving the ability to forecast risk to fish, wildlife, and human health. These large-scale data sets provide a landscape-scale perspective and can aid in the development of solutions for mitigating mercury contamination on protected lands. □

JENNIFER WILKENING, JARON MING, TARA GRACER, TIM ALLEN, and CATHERINE COLLINS, Branch of Air and Water Resources, Natural Resource Program Center, Headquarters



A white-belted ringtail dragonfly hangs on a stalk at Ash Meadows National Wildlife Refuge in Nevada. (PHOTO BY JEANNE R. TINSMAN)

\$9 Million from Bipartisan Infrastructure Law Awarded to Sagebrush Projects in the West



Sunbeams shine on Colorado sagebrush country. (PHOTO BY BOB TIMBERMAN/USFWS)

Projects to restore and conserve strategic areas within the sagebrush ecosystem are among the latest to benefit from the Biden-Harris administration's Bipartisan Infrastructure Law.

The Service was directly appropriated \$455 million over five years under the law. This will allow the Service to invest more than \$9 million in fiscal year 2022 funds to support over 40 projects in Idaho and seven other Western states. These sagebrush projects will combat invasive grasses and wildfire, reduce encroaching conifers, safeguard precious water resources for neighboring communities and wildlife, and promote community and economic sustainability.

Spanning over 175 million acres, sagebrush country contains biological, cultural, and

economic resources of national significance. It is home to more than 350 species across the West, including pronghorn, elk, mule deer, and greater sage grouse. America's sagebrush ecosystem is the largest contiguous ecotype in the United States, comprising one-third of the land mass of the lower 48 states.

"This is a historic opportunity to put resources into the health and natural infrastructure of America's sagebrush ecosystem, which serves as the lifeblood of rural communities and Tribal lands in the West," Secretary of the Interior Deb Haaland says. "President Biden's Bipartisan Infrastructure Law is the largest »

Continued from previous page.

investment in the resilience of physical and natural systems in American history and will meaningfully advance on-the-ground efforts to promote healthy sagebrush landscapes and communities that have been threatened by the climate crisis.”

Through the Bipartisan Infrastructure Law, the Service was appropriated \$10 million per year for the next five years to expand work with partners to conserve the sagebrush ecosystem. Projects will help create good-paying jobs that strengthen local economies, invest in disadvantaged communities consistent with the President’s Justice 40 initiative, and further the strong working relationship between the Department, states, and Tribes in these landscapes.

“Sagebrush country is a national treasure that supports hundreds of species that live nowhere else on the planet,” says Service Director Martha Williams. “The Service is a partner in a larger constellation of public and private entities pulling together toward a common vision for a healthy sagebrush ecosystem. Our work in this landscape is reflective of agency priorities, including supporting rangeland health, growing private landowner partnerships and public access, and reducing the need to list species as federally threatened or endangered.”

Many of the projects in the first round of sagebrush funding will increase resilience to drought and rangeland fire by restoring wetlands and combating non-native grasses that increase the threat of wildfire and reduce habitats for wildlife and forage for livestock.

Besides sagebrush, we have four other focus areas for significant projects funded under the law:

Klamath Basin Restoration Program—This includes enhancing captive rearing of Endangered Species Act-listed sucker species at Klamath Falls National Fish Hatchery, addressing water quality and water quantity issues throughout the basin, and supporting projects that will help improve conditions for waterfowl and salmon and other native fish species throughout the basin.


Delaware River Basin Restoration Program—Funding will provide competitive matching grants for habitat conservation to state and local governments, nonprofit organizations, institutions of higher education, and other eligible entities in the Delaware River Basin in partnership with the National Fish and Wildlife Foundation.

Lake Tahoe restoration—Funding will provide important capacity to control aquatic invasive species for the benefit of Lahontan cutthroat trout and other native species.

National Fish Passage Program—The program works to restore degraded and fragmented aquatic habitats, decrease public safety hazards, and improve infrastructure resilience by reducing flood risks, removing obsolete dams, and improving water delivery for local agriculture irrigation districts. In turn, this work creates construction, engineering and other jobs, stimulating the local economy. □

? MORE INFORMATION

On the Web

 [More on the Bipartisan Infrastructure Law](#)

Lake Tahoe to Receive 100,000 Lahontan Cutthroat Trout This Summer

Tahoe’s native fish are making a return this summer.

Lahontan National Fish Hatchery Complex in Gardnerville, Nevada, began stocking 100,000 catchable, Lahontan cutthroat trout into Lake Tahoe on June 1 and will continue stocking throughout the summer as conditions allow.

The stocking is part of a multiagency and Tribal cooperative effort to reintroduce the Tahoe Basin’s native trout species and expand recreational fishing opportunities to anglers.

The Tahoe Basin is one of our focus areas for significant projects funded under the Bipartisan Infrastructure Law. Projects will combat aquatic invasive species in the Lake Tahoe Basin. They’re designed to benefit Lahontan cutthroat trout and other native species.

The reintroduction of Lahontan cutthroat trout has biological and recreational importance as well as significant cultural value to the Washoe Tribe of Nevada and California.

As the original stewards of Lahontan cutthroat trout, the Washoe Tribe has been an important stakeholder and partner since the beginning of reintroduction in the Tahoe Basin. The Tribe has always been supportive of the restoration projects within Washoe ancestral lands. »



Continued from previous page.

The fish will be stocked at various, publicly accessible locations in both the California and Nevada portions of the lake. Approximately 20% of the trout will be tagged to help biologists evaluate the success of the stocking effort along with the growth, survival, and distribution of the fish.

The stocking will provide information for conservation and recreation strategies in the reintroduction of this native strain of the fish into its historic habitat.

Lahontan cutthroat trout have been stocked intermittently in Lake Tahoe since 2011, although in smaller numbers. They are the only trout native to the Tahoe Basin and the largest cutthroat trout species in the world. The partners are stocking the Pilot Peak strain of the species, which is known for its fast growth rate and ability to reach exceptional size. The Pilot Peak strain is also found in Nevada’s Pyramid Lake, which attracts anglers from

Crowds gather to watch Lahontan cutthroat trout stocking on Oct. 5, 2019, along Kiva Beach on Lake Tahoe.

(PHOTO BY JOANNA GILKESON/USFWS)

around the world hoping to catch one of the lake’s giant Lahontan cutthroat trout.

Lahontan cutthroat trout are protected as threatened under the federal Endangered Species Act. The trout disappeared from Lake Tahoe due to overfishing, damage to spawning tributaries caused by pollution, logging, water diversions, and the introduction of non-native species. Federal and state efforts are underway throughout the fish’s native range in California and Nevada to restore the species and its habitat.

While this summer’s stocking may help future restoration efforts, it is an initiative to expand recreational trout fishing opportunities for the public, enhance the near-shore fishery, and foster an appreciation for this famed native species. □

Record Number of Whooping Cranes Wintered in Texas in 2021–2022

Last winter, it’s estimated that 543 whooping cranes arrived on their Texas wintering grounds after migrating 2,500 miles from their breeding grounds in Wood Buffalo National Park in Canada. Each fall the birds make their way back to Aransas National Wildlife Refuge and surrounding habitats, where they spend the winter. Once they have arrived, Service wildlife biologists survey the birds by air and analyze population trends.

“It is exciting to see another record year as whooping cranes continue to increase in number and expand their winter range,” says Wade Harrell, the Service’s whooping crane recovery coordinator. “Next year, we will

be adding the South San Jose Island and Heron Flats secondary survey areas to our primary survey area given we detected enough whooping crane groups there to meet our protocol for inclusion. Conserving additional winter habitat for the species will be a key component of future recovery efforts.”

Preliminary data analysis of aerial surveys of the Aransas-Wood Buffalo whooping crane population conducted last winter indicated 543 whooping cranes, including 31 juveniles, in the primary survey area (approximately 160,125 acres) centered on Aransas National Wildlife Refuge near Austwell, Texas. This is an increase from »



Whooping cranes at their wintering grounds at Aransas National Wildlife Refuge in Texas. (PHOTO BY KLAUS NIGGE/USFWS)

Continued from previous page.

the last survey from winter 2019–2020, which estimated 506 whooping cranes.

An additional 38 birds were recorded outside the primary survey area, also a record high. This marks the fifth year that the population has topped the 500 mark, although a survey was not conducted during winter 2020–2021 due to COVID-19 concerns.

Biologists plan to conduct the next survey in January 2023.

Whooping cranes are one of the rarest birds in North America and are highly endangered. Cranes have been documented to live more than 30 years in the wild. Adults generally reach reproductive age at 4 or 5 years and then lay two eggs, usually rearing only one chick. □

AUBRY BUZEK, External Affairs, Southwest Region

Tiger Stamps Are Here to Stay!*

**Until They're All Sold Out.*

On May 16, 2022, President Biden signed the Multinational Species Conservation Funds Semipostal Stamp Reauthorization Act into law. This paved the way for the U.S. Postal Service (USPS) to continue selling Save Vanishing Species Stamps, also known as “Tiger Stamps” for their depiction of an Amur tiger cub.

Tiger Stamps are the first and only USPS stamps to raise funds for international wildlife conservation. Sixty million Tiger Stamps have been sold so far, raising nearly \$7 million for wildlife.

Tiger Stamps are sold at a rate slightly higher than normal first-class stamps. USPS transfers

the extra to the Service on a quarterly basis. From there, our International Affairs Program divides the funds among the congressionally mandated Multinational Species Conservation Funds to support elephants, rhinos, tigers, great apes and lesser apes, marine turtles, and freshwater turtles and tortoises.

The law ensures that the USPS will continue selling the Tiger Stamp until the last one is sold: Forty million more stamps. This translates into direct support — at no additional cost to the U.S. taxpayer — for some of the most celebrated species on Earth.

Every stamp sold is also a confirmation of how important these international species are to the American people. And for that, we are immensely grateful. □



More Than Just Fish: Iron River National Fish Hatchery Lends Out Tracked Wheelchair

When you think of hatcheries, the first thing that comes to mind is obviously fish. Iron River National Fish Hatchery in Wisconsin, for instance, produces approximately 1.4 million yearling fish for restoration purposes in the upper Great Lakes every year. But Iron River offers more for visitors than touring the facilities to view the main mission of the hatchery.

Iron River encompasses 1,200 acres of land to protect the water supply. One of the hatchery’s goals is to provide rewarding experiences that lead to repeat visitation and usage of public land. The hatchery offers a beautiful pavilion and picnic area with a playground, a 3.5-mile maintained hiking trail that is groomed for cross-country skiing, a snowshoe lending program, and a three-quarter mile-long 3-D archery range. It also offers various youth and mentored hunts. All these amenities are wonderful and heavily used but are not readily accessible to people with mobility issues.

That is until the tracked wheelchair lending program. A tracked wheelchair is an all-terrain chair that runs on tracks to allow the user to explore areas a standard wheelchair can’t reach. »



Continued from previous page.

Iron River and the Friends of the Iron River National Fish Hatchery partnered to purchase a tracked wheelchair for use on hatchery grounds for anyone with mobility issues. The Friends group received an outpouring of generous donations from the community to reach their fundraising goals.

The chair is adjustable to a wide range of sizes making it a versatile machine for both youth and adults. The tracks are rugged and perfect for winter and summer use. (The only two seasons in northern Wisconsin.) It has a rechargeable battery, comes with adjustable four-point harnesses, multiple cup holders and pouches, and a gun holder for users interested in hunting during open seasons.

Three generations pose by the hatchery trailhead before heading out on a three-mile hike. At the end of the hike, grandma reported that the ride was a little bumpy but that she could never have hiked three miles with her grandchildren without the chair.

(PHOTO BY USFWS)

Visitors can pop in during normal work hours and use the chair as needed or call to make a reservation for after-hours and weekend use. The hatchery is excited to provide this service to the community. □

CAREY EDWARDS, Iron River National Fish Hatchery Midwest Region

The Camden Water Trail: Connecting a City to its Rivers

We believe strongly in the need for access to natural areas—particularly in densely populated areas where urban sprawl limits residents' access to green spaces to gather and recreate in nature.

In Camden, New Jersey, where an urban community beset by poverty and pollution has little chance to connect to nature, a new recreational water trail is doing just that.

Industrial Lifeline

Coursing through Camden are the Cooper and Delaware rivers. For centuries, the waterways were the industrial lifeline for the area. Manufacturers such as New York Shipbuilding Corporation and household name Campbell Soup Company brought thousands to Camden, seeking out the new and plentiful job opportunities.

In the mid-1900s, numerous industries decentralized and moved operations from Camden. As they shut the doors, thousands were left without opportunities to support their livelihoods.

Many left the city and took up residence in the nearby suburb of Cherry Hill and surrounding communities. This mass exodus

has been characterized as White flight, as most people who remained were People of Color. Camden's population is approximately 92% People of Color today, and the city holds a reputation of high rates of poverty and crime, and significant pollution of the once beautiful natural spaces and waterways.

'Green Renaissance'

Today, however, the city is undergoing what is being called the Camden Green Renaissance. Parks, waterfront access, and green spaces that have fallen into disrepair and have historically been unavailable to many of Camden's low-income residents are being restored.

The Upstream Alliance is playing a major part in the revitalization of the city. The group recognized the need of Camden's underserved communities to have access to natural spaces and the waterfront for both recreational and educational use. Alliance members include the Camden County Parks Department, the Center for Aquatic Sciences at Adventure Aquarium, Cooper's Ferry Partnership, New Jersey Conservation Foundation, and the Academy of Natural Sciences of Drexel University. »



Continued from previous page.

The Upstream Alliance plans to open the Camden Water Trail to provide river access to the underserved communities in the heart of Camden. The 13-mile trail will run along the Delaware River Back Channel and down the Cooper River. The project is partially supported by the Delaware Watershed Conservation Fund.

The Delaware Watershed Conservation Fund was launched by the Service and National Fish and Wildlife Foundation in 2018. It supports efforts to conserve and restore natural areas, corridors, and waterways on public and private lands that support native fish, wildlife, and plants. It also backs work to contribute to the vitality of the communities in the Delaware River watershed. The grant program strives to fund projects like the Camden Water Trail that improve access for historically underserved communities.

“The Service’s Delaware Watershed Conservation Fund grant program prioritizes projects that authentically engage communities in meaningful conservation work. We are making an intentional effort to invest in projects that promote diversity, equity, inclusion, and justice (DEIJ) in conservation in geographies that have been historically under-resourced and lack in public access to green space,” says Christina Ryder, the Delaware River Watershed Program manager for Science Applications at the Service. “The Camden Water Trail Development Project is exemplary of the Service’s DEIJ funding priorities, connecting an urban community with better access to nature, all while involving the community from the inception and design phases of the project.”

Ivana Quinones, an environmental educator for Camden County Schools and a Camden native, recounts growing up in Camden

An aerial view of Camden, New Jersey.
(PHOTO BY PETER MILLER/CREATIVE COMMONS)

unaware that the Cooper River was practically in her backyard. In her current position, Quinones formulates curriculum and programming to educate students and adults about the wealth in the waterway so close to their neighborhoods.

“Having access to natural spaces is such a vital educational and social resource,” Quinones explains. “However, in Camden, the river has such a terrible reputation of being polluted and unsafe. That’s why it is crucial that this programming and information gets out there and explains the awesome restoration that has brought the rivers back to us. It is safe for kayaking and paddling trips, and is an amazing learning tool.”

Along with providing prime waterfront access for human populations, the project strives to improve conditions for key wildlife species living in the Cooper River. Migratory American shad and river herring are facing challenges in reaching their spawning grounds due to dams along the Cooper River. A key to opening the 13-mile, continuous water trail is constructing fish and boat passageways along the Kaighn Avenue Dam, allowing paddlers to continue nearly four miles and fish to reach five miles of spawning habitat.

The Camden Water Trail made its public debut on December 6, 2021, with the grand opening of the Cramer Hill Waterfront Park. The park stands on the former site of the Harrison Avenue Municipal Landfill, which has been closed for 50 years yet was still a common site for illegal dumping. The opening of the park signals the onset of Phase II of the project, as well as the revitalization of the connection between the people of Camden and their waterways. The 13-mile water trail is proposed to be fully installed by 2023.

A century ago, Camden’s rivers served the city’s residents by powering factories that provided jobs. Times have changed, and so has the city’s connection to the rivers. When the Camden Water Trail is complete, the city’s rivers will be a much-needed source of respite for this century’s urban dwellers. □

Teamwork Makes Fishing Accessible

North central Washington's only wheelchair-accessible fishing platform, on Icicle Creek at Leavenworth National Fish Hatchery, needed some upkeep. So Trout Unlimited's Icicle Valley Chapter teamed up with the hatchery once more to make sure all anglers can still reach the river in 2022.

The platform was installed in the 1990s by the Icicle Valley Chapter, funded by the Service, and supported by a wide array of community partners. Two thousand hours of volunteer labor by members of Trout Unlimited went into the project, and it was the only one of its kind in the state when built. Current Chapter President Bob Stroup is proud of the accomplishment and of the long-term success of the partnership between the Icicle Valley Chapter and the hatchery. "It is important to know that the federal government and private nonprofit organizations such as ours are working together to provide the public with recreational experiences."

Dan Davies, who retired in 2005 as hatchery manager at Leavenworth and is a current member of Trout Unlimited, remembers when the platform opened. "Paul Berger, who lives in East Wenatchee, was the first person to catch a spring Chinook from the platform. I was lucky enough to be there." Davies, who helped build the original, was actively involved in rehabilitating the platform this year.

Over the years, the trail to the platform had been damaged by tree roots, erosion, and floods. Davies recalls a "destructive ice flow in the winter of 1995-96 when four feet of snow was on top of the river ice."

The platform is built atop one of several barbs on the riverbank, constructed to slow erosion. These rocky projections jut into the river, deflecting water from the bank and swirling eddies into deeper pools. Additional boulders help to anchor the platform.

This spring's work focused on cleaning up debris, just in time for spring Chinook salmon fishing, which opened that same week. In June, workers added asphalt to the trail, smoothing the heaves and ripples caused by tree roots. All this added up to another 2,000 hours of volunteer labor.

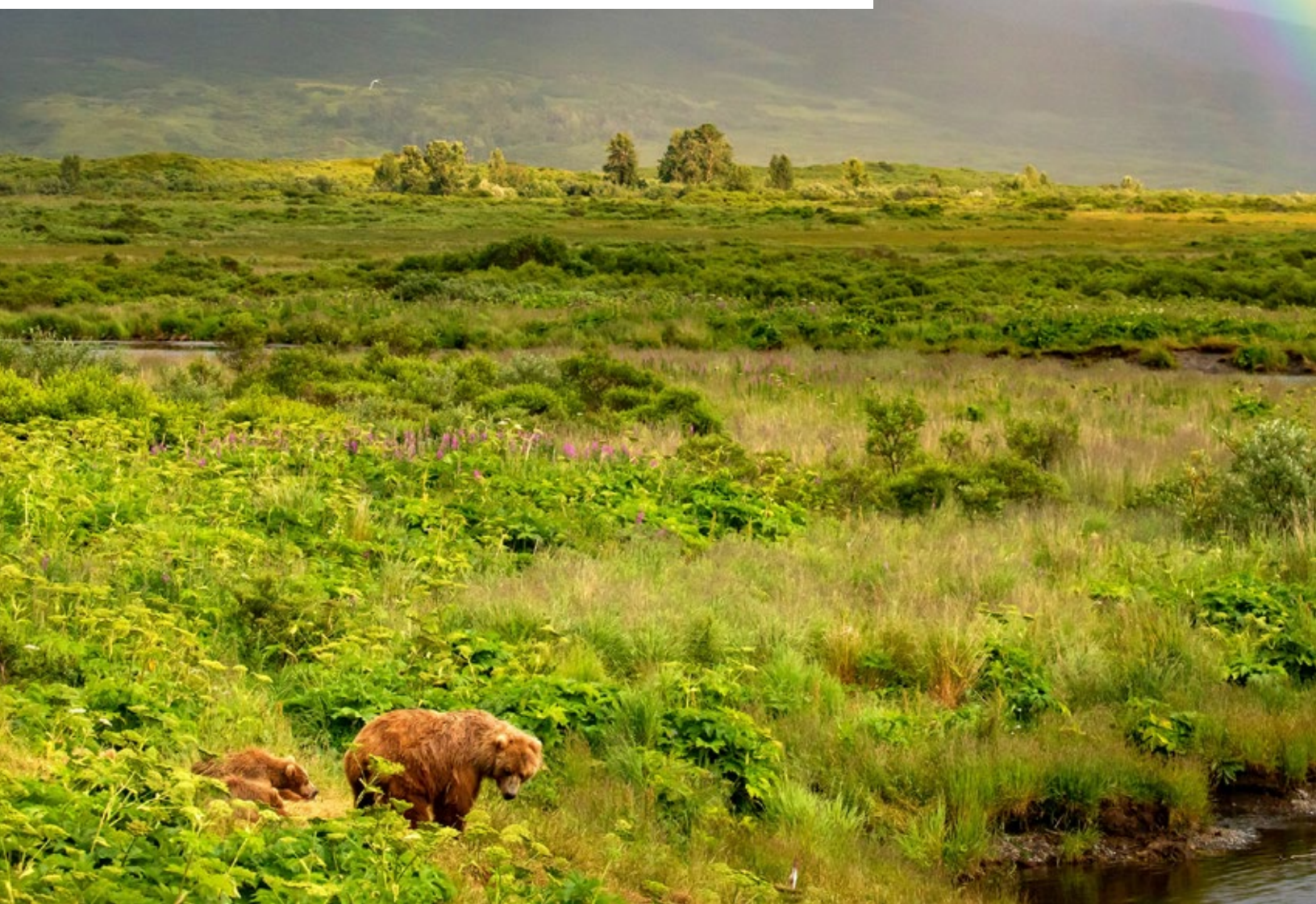
While the platform is designed to be wheelchair accessible, anyone can fish from it during open seasons. □

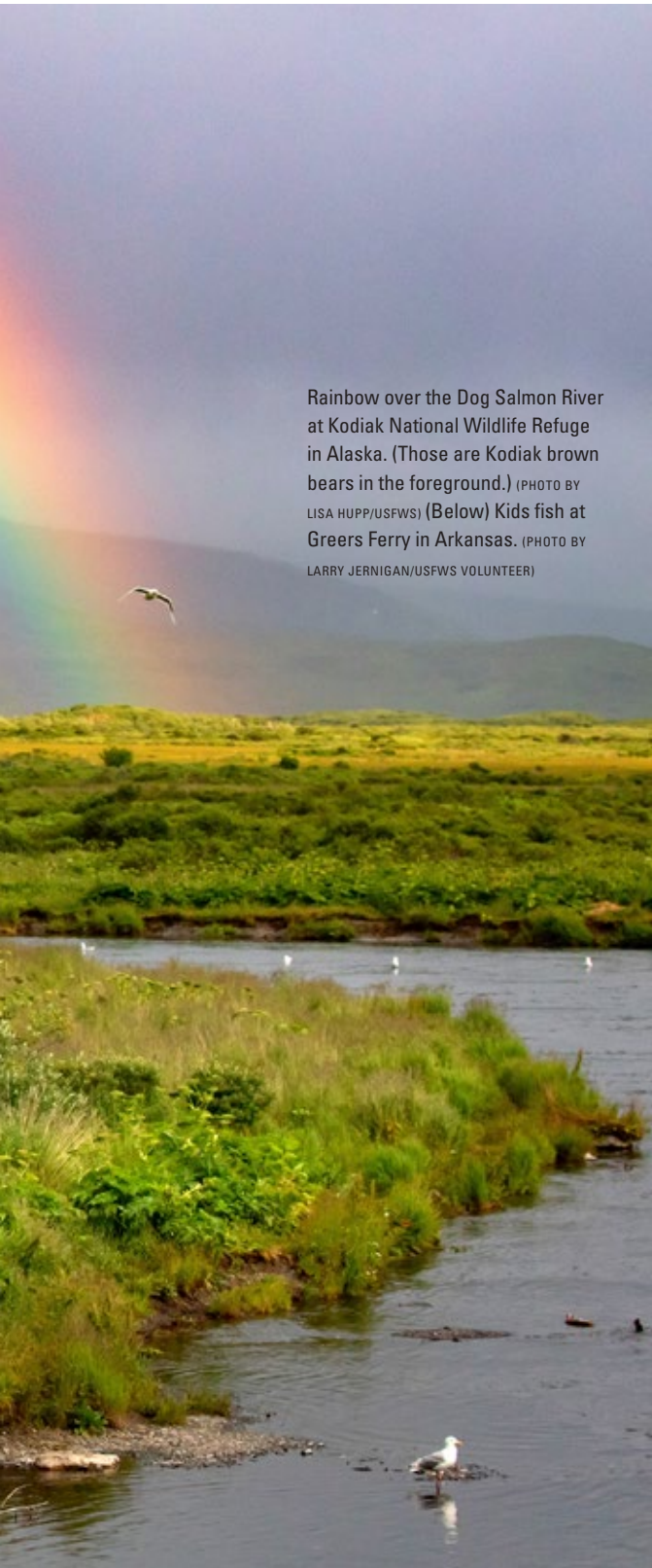
JULIA PINNIX, Fish and Aquatic Conservation, Pacific Region

Wayne Hatcher fishes from the accessible fishing platform on Icicle Creek at Leavenworth National Fish Hatchery. (PHOTO BY USFWS)



DIVERSITY, EQUITY, INCLUSION, & ACCESSIBILITY





Rainbow over the Dog Salmon River at Kodiak National Wildlife Refuge in Alaska. (Those are Kodiak brown bears in the foreground.) (PHOTO BY LISA HUPP/USFWS) (Below) Kids fish at Greers Ferry in Arkansas. (PHOTO BY LARRY JERNIGAN/USFWS VOLUNTEER)

The Service is working on conservation for ALL Americans. = Meeting the conservation challenges of today demands new approaches and innovative, inclusive thinking. We are at our best when our decisions are informed by a diversity of thought, our perspectives reflect the public we serve, and our employees reach their full potential. = We must recruit, welcome, and empower bright, driven professionals from diverse backgrounds who can help us find effective solutions and connect with a rapidly changing America. = Read about a few of the ways we're working toward Diversity, Equity, Inclusion, and Accessibility (DEIA). »



HUNTING, REDEFINED

We're taking action to create safe, inclusive, and equitable access to outdoor recreation for all Americans—regardless of what they look like. | BY MASON WHEATLEY



Who is a hunter? Or, more specifically, what does a hunter look like?

In the United States, the answers to those questions have been the same for centuries. But it's time they changed. The Service and the Department of the Interior are taking action to create safe, inclusive, and equitable access to outdoor recreation and nature's benefits for all Americans—regardless of what they look like, or where they come from.

The mentored archery hunt program at John Heinz National Wildlife Refuge at Tinicum is working to break down barriers and engage and inspire a new generation of Black and Brown hunters.

Keeping the Tradition Alive

A Google search of “American hunter” yields images with a common thread: White and male. The covers of outdoor-themed magazines show something similar—camouflage-adorned, perhaps bearded, White men.

Statistics back these observations. According to our 2016 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, 97% of all U.S. hunters are White.

The sport, though a cornerstone of American culture and integral to conservation, faces a crisis of relevancy as the U.S. populations grows more diverse. To keep the tradition alive, the message that hunting is open to Black, Indigenous, and People of Color (BIPOC) communities needs to reach those audiences.

That's exactly what the team at John Heinz has set out to do.



More Than Conservation

When the Philadelphia refuge first opened its doors to the mentored archery deer-hunt program in 2019, the conservation need was evident.

Over the years, the number of white-tailed deer at the refuge has increased. Too many deer, without the predators needed to counterbalance, has resulted in a population beyond what the land and its resources can support. For instance, deer overbrowsing on native plants has created space for harmful, non-native invasive species to establish and become a predominant vegetation.

That's where the hunt comes in. Working with the Pennsylvania Game Commission, National Deer Association, and Friends of John Heinz National Wildlife Refuge, the refuge program provides those with little to no experience an opportunity to participate in a managed deer hunt under the training and guidance of experienced mentors.

Hunters head down the trail. (PHOTO BY USFWS)

From an ecological standpoint, it's a cost-effective way of managing wildlife populations and maintaining healthy habitat.

But the team at John Heinz sees it as something even more valuable: a way of introducing underserved urban communities to an activity they've never had the chance to try—or perhaps never felt welcome to.

Creating Space

“It's my belief that, in the conservation world at large, one reason we've seen this decline in interest in hunting... is that the hunting community has only marketed hunting to White America,” Lamar Gore, the refuge manager at John Heinz, says.

That's not to say that People of Color don't hunt, he stresses. The problem is that a lack of representation, whether it be on the magazine rack or the first page of an internet search, has resulted in a hunting culture that fails to be truly inclusive. >>

(Previous page) Archery training to prepare for the mentored hunt in 2019. (PHOTO BY USFWS)

Continued from previous page.

There are, of course, other factors at play, including economic disparity, lack of access to rural areas, and fear or unease in outdoor spaces. Many of these apply to the neighborhoods the refuge targets for its archery program.

“What we’re trying to do is create a relationship with the community,” Gore says. “The community we’ve identified is historically excluded and majority Black and Brown. We’ve targeted that group to engage with.”

Hunting 101

Beginning with a well-rounded orientation, participants — selected by lottery — are taken through the conservation history of hunting, deer biology and habitat, crossbow instruction, hunting safety and ethics, and meat processing.

According to Garrett White, a biological technician at the refuge who helps lead the program, this educational component addresses any barriers that the would-be hunters face.

“We help identify what licenses are out there, what kind of clothing and tools they need, the ‘how-to’ on hunting,” White says.

The added support of trained mentors — volunteers with prior hunting experience who want to pay it forward — not only creates a safe hunt for all but also instills confidence and camaraderie in the new hunters.

When they’re properly trained and ready, the mentees and their mentors gear up in the early morning, head into the forest to settle into their hunting blinds, and wait patiently for the perfect shot to line up.



(Top) A deer spotted near a hunting blind. (PHOTO BY USFWS)

(Above) Mentors and mentees make their way away across the refuge. (PHOTO BY USFWS)

Continued from previous page.

Making Connections

As to be expected, the results of the hunt vary from person to person. Some mentees take one deer—occasionally two—while others are a little less lucky. However, the program partners ensure that no one leaves empty-handed. Following the hunt, the Pennsylvania Game Commission donates venison—confiscated from poachers—to those mentees who don't harvest a deer.

The staff has enjoyed plenty of rewarding moments over the last few years: mentees returning to serve as mentors; individuals venturing out on hunts beyond the refuge; and, above all else, the simple joy people experience when taking in the sights and sounds of nature.

Everybody comes to the program for a different reason, White explains—whether it's the hunting, time spent with family, access to fresh and locally sourced meat, or just being outside. His favorite moments are when he can help new hunters achieve their goals.

The refuge closes out the season with a big community potluck. Gathering all the mentees and their families, mentors, and partners, the group cooks their game, shares stories from the hunt, and continues building that sense of camaraderie and trust that the refuge aims for.

The Biden-Harris administration's "America the Beautiful" initiative, a national effort to conserve and restore American lands and waters, includes a commitment to address the inequities communities of color face in connecting to the outdoors. Secretary of the Interior Deb Haaland and Service Director Martha Williams visited the refuge in January to discuss the important role urban wildlife refuges play in advancing this goal.



"As we work to address inequitable access to the outdoors for communities of color and underserved communities, places like the John Heinz National Wildlife Refuge serve as a model of what it looks like to create inclusive spaces that all people, regardless of their background, can access," Secretary Haaland said then.

Looking to the years ahead, Gore and the team at John Heinz are eager to continue using programs like the mentored hunt to build trust with the community just beyond their gates—and they've got their work cut out for them.

"We will keep working at making sure our hunters feel safe and welcome, and my hopes are that we will have a larger crowd of Black and Brown people knocking at the door to hunt, fish, take a kayak tour, or just come to walk and take in the sounds of all natural lands." □

MASON WHEATLEY, External Affairs,
Northeast Region

Deer and egrets at John Heinz National Wildlife Refuge at Tinicum. (PHOTO BY RON HOLMES/USFWS)

THE RAREST GRASS IN OREGON

Burns Paiute Tribe, partners work to conserve Oregon semaphore grass; one of our Tribal wildlife grants is helping.

By LEV LEVY



(Left) Oregon semaphore grass at one of the natural population sites. (PHOTO BY CARTER CROUCH/BURNS PAIUTE TRIBE) (Above) Oregon semaphore grass is grown in the greenhouse in tubs all year and then split into smaller clumps before planting. (PHOTO BY CARTER CROUCH/BURNS PAIUTE TRIBE)



On an October morning in 2021, three members of the Burns Paiute Tribe wildlife program, one ecologist with the U.S. Department of Agriculture's Agricultural Research Service, eight volunteers organized by Portland Audubon, and one U.S. Fish and Wildlife Service archaeologist arrived at the mountain meadows of Logan Valley with shovels, buckets, and two coolers full of the rarest grass in Oregon.

This was the third year in a row that Tribal wildlife staff and volunteers met to expand the introduced population of Oregon semaphore grass on the Tribe's Logan Valley property.

Logan Valley sits below the Strawberry Mountain Wilderness and includes wet meadows, wetlands, sagebrush steppe, forest, and aspen stands. Logan Valley was an area of great importance to the Wadatika people, the ancestors of the Burns Paiute, and it remains important to the Tribe. In 2000, the Burns Paiute Tribe purchased 1,760 acres in Logan Valley as a wildlife mitigation site.

As such, the property is dedicated to wildlife habitat management and protection. In more than 20 years of managing the property, the Tribe's wildlife program has conducted many habitat and monitoring projects, including forest thinning, riparian plantings, bird surveys, amphibian surveys, and an American kestrel and mountain bluebird nest box monitoring program. One of the longest projects involves Oregon semaphore grass.

Oregon semaphore grass exists naturally in just two population clusters, in Union and Lake counties, separated by approximately 230 miles. The species was once thought to be extinct in the wild until it was rediscovered in 1982. Because of the small area where this species was originally found and the large distances between populations, the grass is at risk of extinction.

(Previous page) Burns Paiute Tribe staff, partners, and volunteers meet in Logan Valley to plant Oregon semaphore grass. (PHOTO BY THOMAS GILG)

The Oregon Department of Agriculture started collecting Oregon semaphore grass seeds and plants in 2000 to develop propagation protocols for the species. The species was easy to propagate under controlled conditions, but getting it established at introduced sites proved challenging. While the department has attempted many introductions, only one showed long-term success and continued viability—a site in Logan Valley.

In the early 2000s, the department couldn't find suitable habitat for Oregon semaphore grass on public land near the northern population of the species, but they did find Logan Valley. The area has similar elevation, vegetation community, and saturated soils as the two natural population clusters. The Tribal land is also protected as a wildlife mitigation site. The department worked with Tribal wildlife program staff to pick planting locations and introduce Oregon semaphore grass to the property in October 2002. The department worked with Tribal wildlife program staff on additional plantings in 2009, 2010, 2011, 2012, and 2017 to continue building the population and conduct plantings on adjacent Forest Service land.

In 2018, the Tribal wildlife program obtained permits from the department to start propagating Oregon semaphore grass and continue expanding the population at Logan Valley. This pilot project was successful and led to planting 19 new plots with Portland Audubon volunteers in October 2019.

After this success, the Tribal wildlife program successfully applied for one of our Tribal wildlife grants in 2020. This grant has allowed the Tribal wildlife program to scale up their work with Oregon semaphore grass. It funds three additional years of propagation, three years of planting with Portland Audubon, and four years of monitoring the plantings.

In addition, it has allowed the Tribal wildlife program to partner with Stella Copeland and Erik Hamerlynck, scientists from the Agricultural Research Service, to help study the environmental factors affecting Oregon semaphore grass establishment. This research should help explain why the plantings have been successful at Logan Valley but not in other places. It will also provide ideas for future planting locations, both at Logan Valley and at other properties.

The grant also allowed the Tribal wildlife program to partner with Rob Massatti, a scientist at the U.S. Geological Survey's Genetics for Western Restoration and Conservation group. Massatti will help investigate patterns of genetic diversity in both the natural and introduced populations. Most people who have worked with this species assume that the two natural populations are different, given the large geographical distance between them and slight differences in appearance. However, no one has looked at the genetics to determine if the two populations are genetically different and by how much. The results from this research will have implications for future restoration work and conservation of this species.

This grant has been crucial to expanding the Tribal wildlife program's work with Oregon semaphore grass. Because of that work, we should learn a great deal about this species over the next few years, and the Tribal wildlife program will hopefully be doubling the size of the most successful introduced population of the rarest grass in Oregon. □

LEV LEVY, External Affairs, Pacific Region

BE THE BIOLOGIST

Children get their hands dirty during Junior Ranger Program at Trinity River National Wildlife Refuge.

By AUBRY BUZEK



The introduction letter to parents of children enrolled in the “Be the Biologist” Junior Ranger Program at [Trinity River National Wildlife Refuge](#) makes one thing very clear: Don’t be surprised if your child comes home looking like a “piglet that has been rolling in mud.”

“If your kid does not come home with a dirty face, well, they haven’t been proper field biologists,” says Service refuge biologist Laurie Lomas Gonzales.

True to her word, the hands-on field biology and park ranger program that she and her team created is producing a cadre of muddy, conservation-minded third-through fifth-graders in Liberty County, Texas, some of whom have limited opportunities to access and engage with nature.

The idea for the program came to Gonzales when Liberty Independent School District moved to a four-day school week in fall 2021. A certified Texas Master Naturalist and fish and wildlife biologist, Gonzales saw the open day in the school schedule as an opportunity to help get the next generation involved in insect and pollinator conservation.

“I thought as a biologist I can share what I know and start spreading the word in a way that kids can understand and get excited about,” Gonzales says.

During the 10-week program, which meets every Friday during the fall and spring semesters of the school year, children learn to perform the career of a biologist. That includes public speaking and creating and exploring wildlife habitat, all while following a curriculum centered around conservation and advocacy for insects and pollinators.

But the learning doesn’t take place in a classroom. Gonzales encourages the children to learn about the environment

by climbing trees, smelling flowers, hiking in the woods, and of course, rolling in the mud.

“When do kids actually have permission to jump into a puddle of mud?” Gonzales asks. “Because usually someone is going to be there saying, ‘Don’t get too close to that.’ I’m saying, ‘That’s why you’re here—go for it.’ A muddy kid is a happy kid.”

Field trips to the refuge and other locations in their community help the children learn about insects, their interdependence on plants, and how that connection influences the food web and themselves. Puppets and games help keep the kids engaged, along with unique hands-on activities like collecting aquatic invertebrates to feed to Gonzales’ pet ducks, wearing “bug vision glasses” during night hikes to see how insects are affected by light pollution, and even pulling live grubs out of rotting acorns and learning how to cook and eat them.

But the program isn’t just about learning, it’s about taking action.

“We guide them in seeing what is lacking in the urban environment and ask them, ‘Now what are we going to do about it?’” Gonzales says.

On October 12, 2021 the children attended a Liberty City Council meeting to speak about what measures could be taken to improve insect, pollinator, and monarch butterfly habitat. The biologists-in-training voiced simple solutions that could be implemented at no cost to the city. It made such an impact that Mayor Carl Pickett signed the National Wildlife Federation’s Mayor’s Monarch Pledge and proclaimed Feb. 8, 2022, as “Mayor’s Monarch Pledge Day” in the City of Liberty.

And they didn’t stop there.

The children also visited the Liberty Independent School District (ISD) board meeting to tell members what they had been learning, thank them for an outdoor learning classroom that was created for the program, and ask for permission to create insect habitat on school grounds.

“Recently I’ve noticed the[re] [aren’t] many native plants and animals in Liberty ISD,” wrote fourth-grader Hutton to the board. “We ask you to please set aside land for native plants and animals.”

It worked. After speaking to the board, the children received permission to plant a half-acre of wildflower habitat in a retention pond on school grounds and plant native trees on the property.

While the goal of the program is to teach students about insects and habitat, and to take action to improve insect habitat in their community, school, and backyards, the experience also helps bring more awareness of the refuge to the community and the family members of the children who attend the program.

“We encourage the parents to come, and we go kayaking, bird watching, hiking, and we tell the parents to bring the whole family,” Gonzales says. “This is one more way of encouraging families to visit the refuge.”

Long term, Gonzales says she hopes the program will help train future volunteers for the refuge and eventually inspire the next generation of leaders who can help take action to conserve nature in their communities.

“This starts the pipeline of getting these kids involved with the refuge and natural resources, and just getting involved and seeing what’s out there,” Gonzales says. “I think it opens a lot of eyes.” >>

(Previous page) Children hunt for aquatic invertebrates during the “Be the Biologist” Junior Ranger Program at Trinity River National Wildlife Refuge in fall 2021.

(PHOTO BY LAURIE LOMAS GONZALES/USFWS)

Continued from previous page.

Gonzales says she's already seeing the results. Since the program began, parents have told her stories about how their children are now identifying native butterflies during camping trips and encouraging their families to spend more time in the natural spaces that they learned to love.

"One parent told me that their child took the family back to a place we explored during the program," Gonzales said. "It was the kid's birthday and that is where they wanted to go celebrate. Isn't that something?"

Partners who support the program by providing financial assistance and volunteers include Trinity River National Wildlife Refuge, the Service's Houston Community Partnerships & Engagement Program, Trinity River Refuge Friends Group, Lower Trinity Basin Master Naturalists, the Lower Trinity Valley Bird Club, City of Liberty, and Liberty ISD High School.

Though there is a \$50 registration fee to sign up for the "Be the Biologist" Junior Ranger Program, scholarships are available for children who need financial assistance. □

AUBRY BUZEK, External Affairs, Southwest Region



(Top) Naomi uses a microscope to inspect a butterfly during the "Be the Biologist" Junior Ranger Program in fall 2021. (PHOTO BY LAURIE LOMAS GONZALES/USFWS) (Bottom) Third-through fifth-graders in Liberty County, Texas, can take part in the "Be the Biologist" Junior Ranger Program. (PHOTO BY NICK DENNIS)





A group of children climb a tree during the “Be the Biologist” Junior Ranger Program in spring 2022.

(PHOTO BY LAURIE LOMAS GONZALES/USFWS)



Third-grade student Nolan speaks to the Liberty City Council about insect and pollinator conservation as part of the “Be the Biologist” Junior Ranger Program in fall 2021. (PHOTO BY JENNIFER GRAY RICHARDSON/USFWS)

AUTHENTIC SELVES

Grassroots employee groups benefit conservation through inclusion.

By TERRI EDWARDS and NICK ASFAHA



The LGBTQIA+ pride flag (also known as the “progress pride flag”) flies over the Bird and Butterfly Garden at Rocky Mountain Arsenal National Wildlife Refuge during Pride Month. (PHOTO BY SARAH METZER/USFWS)

“Because we will only change our future when we recognize what needs to be changed and when we say the words out loud.”

— SECRETARY OF THE INTERIOR DEB HAALAND

The Service’s strategy to advance diversity, equity, inclusion, and accessibility rests on the belief that when employees can flourish as their authentic selves without barriers to acceptance and success, they will achieve our conservation mission with excellence and innovation. Grassroots employee groups are drivers of inclusion and positive change in the Service.

Employee resource groups (ERGs) provide welcoming and influential communities, and over the last two years several have been established in the Service for LGBTQ+; Black, Indigenous, and People of Color; and employees with disabilities, as well as allies. Numerous other groups within the Department of the Interior and broader federal community provide supportive forums for Asian Americans, Native Hawaiians, and Pacific Islanders; military veterans; and other communities of employees. Additionally, communities of practice among employees with shared interests and experiences are transforming the culture of the Service.

We hear below from the leaders of some ERGs and communities of practice within the Service about the important roles these groups serve for both employees and fish and wildlife conservation.

FWS Pride ERG

Since its inception two years ago, the FWS Pride ERG has grown to nearly 300 members working to foster and cultivate a safe, welcoming, open, and inclusive environment for not just LGBTQ+ employees but also visitors to public lands we manage, volunteers, interns, contractors, retirees, partners, and allies.

“The FWS Pride ERG has worked hard to collaborate within the agency to address discriminatory and non-inclusive policies, but our biggest feat is existing as a safe place for LGBTQIA+ co-workers. We represent a banner that community members and allies can stand behind to defend themselves and others against poor treatment based on gender or >>

sexual orientation. We strive to bring down barriers for not only our employees but also our contractors, volunteers, retirees, and visitors. We know that by thoughtfully including people of all genders and orientations, we can more fully engage employees and the American people we serve.”

Black, Indigenous, and People of Color ERG

This ERG promotes solidarity and support among BIPOC employees and allies to remove barriers to success, harness strengths, and create positive and lasting change to advance justice, diversity, equity, inclusion, and accessibility.

“BIPOC communities have been historically excluded from conservation, and the echoes of this history still reverberate today. Conservation does not exist within a vacuum; it is not immune to the racism, discrimination, and violence that BIPOC communities face every day. The deaths of George Floyd, Breonna Taylor, and countless others necessitated the need for a place not only where BIPOC employees can process the range of emotions brought forth by these events but where we can bring our whole selves to the workplace. FWS BIPOC ERG’s vision is for everyone to have a seat at the table, tackling today’s conservation challenges and rectifying past injustices.”

Federal Asian Pacific American Council

FAPAC’s Department of the Interior chapter furthers the interests of Asian Americans, Native Hawaiians, and Pacific Islanders (AANHPI) and fosters professional development and networking among its members within the federal network.

“From a small, passionate team, we have grown as a vibrant chapter to engage members of the AANHPI community and allies across the DOI, supporting and amplifying each other as we build awareness and community both nationally and locally. We lift up emerging leaders and share and

celebrate our stories. We create a safe space to share our fears, pains, joys, and triumphs. We bring awareness to the rise in hate, violence, and discrimination toward the AANHPI community, acknowledging these issues are not new, supporting a renewed commitment to advocate for ourselves and others.”

People with Disabilities ERG

As the Service’s newest official employee resource group, the FWS People with Disabilities ERG will be a powerful voice for employees who identify as having seen or unseen disabilities and their allies.

“Answers to conservation’s biggest issues must come from everyone. Sustainable solutions that work globally for all types of people need to be gathered from all types of people. ERGs act to give a voice and community to all employees and to uplift marginalized groups. Our group gives community strength to the ideas and innovations furthering conservation action from employees with disabilities.”

Institutional Change Community of Practice

The ICCoP formed from the passion and desire of Urban Wildlife Conservation Program practitioners to create lasting change in the Service. Its goals are adopting a community-focused approach to conservation, and increasing justice, equity, diversity, and inclusion in conservation. Since its launch in June 2020, the community has grown from 30 members connected by the Urban Program to over 170 members from across programs, regions, and jobs. The community attributes this growth to the relevance of the ICCoP goals to everything the Service does to meet its mission.

“Community members come together to share experiences, build knowledge, collaborate, and problem solve. Members have chartered a Service Mentoring Advisory Workgroup, developed a widely shared Inclusive Language Guide, catalyzed efforts to improve the use of special hiring authorities, and have

helped the Service make progress toward its justice, equity, diversity, inclusion, and accessibility goals.”

Women Working in Wildlife

This group actively empowers and inspires women in the Service, providing a venue to share and learn from all genders, helping women aspire to and succeed in leadership positions, and welcoming all women into the conservation field.

“Women Working in Wildlife was established in 2018 with the goal of inspiring and empowering women in the Service. The team accomplishes this through creating and maintaining a network that advocates for women by highlighting achievements, promoting development, and providing support. Prior to, and then through the pandemic, we have facilitated a series of workshops, panel discussions, and events for all employees that focus on emotional, mental, and physical wellness and lifting each other up. In the same way biodiversity supports resilience in an ecosystem, the WWW believes that by championing women we can promote a more diverse, inclusive, and resilient Service that better reflects the public we serve.”

These employee groups are a sample of the dozens focused on improving inclusion and creating welcoming workplaces in the Service and throughout the federal community. Participation is open to all employees, and feedback has shown that their availability has been crucial to employees’ acceptance, well-being, and even retention on the workforce. These employee-driven efforts are essential to the Service’s strategy to advance diversity, equity, inclusion, and accessibility (DEIA) and with secretarial and White House orders to embed DEIA principles and actions into everything the Interior Department and its bureaus do to fulfill our mission. □

TERRI EDWARDS, Diversity and Inclusive Workforce Management, Headquarters, and NICK ASFAHA, External Affairs, Mountain-Prairie Region

NATURE THAT NURTURES

The U.S. Fish and Wildlife Service is partnering with the National Park Service to share the experiences of members of the Civil Rights Movement and African American and Black leaders enjoying and finding well-being in the outdoors. The **Nature That Nurtures** project was introduced on social media during Black and African American History Month in February 2022.

Through photographs and historical accounts, the emerging project reveals a more personal side to Medgar Evers, Holt Collier, Fannie Lou Hamer, and others. The series will connect their experiences to opportunities that everyone can enjoy on public lands.



PHOTO BY USFWS

James Carroll

James Carroll's love of wildlife and the outdoors was first inspired when he was a Boy Scout. During college, he worked for the National Park Service and the U.S. Fish and Wildlife Service and in 1962 landed a job with the Fish and Wildlife Service.

Public lands became a backdrop for the most important events in Carroll's life with his family. They moved to many national wildlife refuges like Bosque Del Apache in New Mexico, Wichita Mountains and Tishomingo in Oklahoma, Ottawa in Ohio, and Necedah in Wisconsin, where Carroll served as the refuge manager for 10 years.

In 1972, Carroll became the first employee at John Heinz National Wildlife Refuge at Tinicum in Philadelphia, celebrated as the first urban national wildlife refuge. After a long and adventurous career, Carroll retired in 1994 as a refuge operations specialist in the Service's Midwest Regional Office.

James Carroll (right) was an avid bird watcher.



Learn more about [Carroll's life and conservation career](#) through an oral history.

Holt Collier

Holt Collier, born into slavery, was a Confederate sharpshooter, calvaryman, and spy during the Civil War. He returned home to Mississippi and became a respected outdoorsman and expert in tracking game. In 1902, Collier was called upon to guide a bear hunt for President Theodore Roosevelt.

During the hunt, Collier skillfully drove a bear to Roosevelt's hunting blind to offer a clear shot. The timing was off, however, and Collier restrained the bear to protect others on his team. Roosevelt, like any hunter with honor, refused to shoot the tied-up bear. Word spread about the story, captured in national editorial cartoons, and an enterprising New York store owner created "Teddy's Bear," the first stuffed toy bear.

The 1902 bear hunt was the start of a lifelong association between Holt Collier and President Roosevelt.

Collier died in 1936 at the age of 90 and is buried in Mississippi near where he killed his first bear and a short drive from [Holt Collier National Wildlife Refuge](#), named in his honor.



Medgar Evers

Medgar Evers is a well-known Civil Rights Movement leader who had a passion for fishing.

Evers, the first Mississippi field secretary for the National Association for the Advancement of Colored People (NAACP), grew up angling in local ponds and streams.

He and his family were no different than millions of people who visit public lands to reflect and recreate.

Evers was shot to death in the driveway of his carport in June 1963. In 2020, their Mississippi home became the Medgar and Myrlie Evers Home National Monument.



PHOTO COURTESY EBONY MAGAZINE



PHOTO COURTESY OF BRUCE DAVIDSON/MAGNUM

Fannie Lou Hamer

Fannie Lou Hamer rose from humble beginnings in the Mississippi Delta to become one of the most powerful voices of the civil and voting rights movements. She had a passion for digging in the dirt.

After one of Hamer's adopted daughters died from anemia and malnutrition at the young age of 22, she created the Freedom Farm Cooperative in 1967. The farms produced kale, green beans, peas, butter beans, collards, and turnips. Even though the federal government had begun the Food Stamps program, it was Hamer's belief that it's everyone's duty to feed the hungry. She was among the first to advocate for food security as a civil right.

Hamer found great joy in taking walks outside with her husband and friends. If you'd like to take a healing hike near her Mississippi Delta home, visit the trails at the Northern Mississippi Refuges Complex.



PHOTO COURTESY OF THE BOOKER T. WASHINGTON PAPERS

Booker T. Washington

Booker T. Washington (left), a prominent African American educator and orator, came to fishing later in life.

Fishing and healthy living restored Washington's health with medical care from William P. Crayton. There are opportunities to enjoy the outdoors near his home in Alabama at Eufaula and Cahaba River National Wildlife Refuges.

Refuges

African American history is embedded in the fabric of national wildlife refuges. Among the many on a refuge-based African American history tour:

- The site of a historic settlement at Great Dismal Swamp National Wildlife Refuge (right: cypress trees at Great Dismal Swamp) in Virginia where, for generations, people who escaped from slavery defied bounty hunters
- The birthplace of Harriet Tubman at what is now Blackwater National Wildlife Refuge in Maryland
- One of the best-protected Gullah communities at Waccamaw National Wildlife Refuge in South Carolina
- Bombay Hook National Wildlife Refuge in Delaware, where an all-African American Civilian Conservation Corps—or CCC—crew worked



PHOTO BY R. WINN/USFWS

For more information about Nature That Nurtures and the Service, contact Terri Edwards, writer/editor, or Mark Madison, historian. Former Service employee Keena Graham is the lead for this project with the National Park Service, where she now serves as the superintendent of the [Medgar and Myrlie Evers Home National Monument](#).

WEATHERING THE PANDEMIC

Makah National Fish Hatchery staff comes together during extreme isolation.

By BRENT LAWRENCE



When the rain returns to western Washington, so do these Coho salmon. Adult salmon require clean and oxygen-rich cold water for their freshwater migration and spawning, and often remain in salt water until the river conditions are adequate. (PHOTO BY ROGER TABOR/USFWS)

Kristin Bates thought she knew what the future would bring when she started working at Makah National Fish Hatchery in December 2019.

As the hatchery's new project leader, Bates expected they would do what they've always done—rear salmon and steelhead, collaborate with the Makah Tribe, engage with visitors, and continue to work as a dynamic team at a remote facility on the Olympic Peninsula in Washington.

All pretty normal stuff for a hatchery.

But normal was soon shattered as the COVID-19 pandemic enveloped the hatchery, Makah Reservation, and whole world in March 2020. It led Bates and her team down a two-year path of isolation, extreme challenges, self-reliance, and ... kindness.

"It wasn't easy being blindsided by COVID, but I do know how we made it through," Bates says. "Instead of picking each other apart, acting selfishly, and staying stagnant in what was going wrong, we as a staff decided to rise above. Who we were during the pandemic was probably not who we would be in normal times. So we gave each other a little extra space, patience, and kindness."

Making the Move

Bates, a native of Seward, Alaska, is no stranger to challenging work. She spent nine years working in the nonprofit hatchery industry in Alaska, managing three hatcheries and working with all species of Pacific salmon. Sometimes she would travel in small bush planes to drop off fish in high mountain lakes.

"I've known since my first day on the job that fish were my passion and I haven't looked back," Bates says.

That piscine passion led her to Makah National Fish Hatchery in Neah Bay, Washington, for her first job with us. Bates and her family—husband Joe; two children, now 6-year-old Maleah

and 9-year-old Caisen; and a pair of Australian shepherd dogs—were accustomed to sequestered locations and ready for a new adventure.

They eagerly welcomed the commonalities to southeast Alaska. There's the rain and clouds for much of the year, along with stunning rocky beaches, vast wilderness, gorgeous snow-capped mountains, old-growth rainforests, and, of course, the magnificent salmon.

The part that became all too evident shortly after her arrival was the remoteness of it all. Makah National Fish Hatchery is on the Makah Reservation on the extreme northwest tip of the Olympic Peninsula. The reservation is the end of the line for traffic, with only one paved road connecting the reservation with the rest of North America.

Keep driving westbound through the reservation and you'll end up at Cape Flattery or Cape Alava, the westernmost points in the Lower 48. Beyond that, there's only the Pacific Ocean.

Bates embraces that seclusion.

"I've always lived on station and found it very rewarding to live in semi-remote areas where you really get to know the people you work with. My extended family includes my co-workers," Bates says.

What she and the staff at the hatchery couldn't prepare for was the coming pandemic.

At Home on the Reservation

Makah National Fish Hatchery is a Tribal Trust facility that raises 2.3 million Chinook salmon, 400,000 coho salmon, and 180,000 steelhead for release into the local watershed. The hatchery has six full-time Service employees and two contract employees provided by the Makah Tribe.

Due to a dearth of available housing in the area, all staff either live in hatchery housing or on the reservation. Neah Bay is 80 miles and nearly two hours away from Port Angeles, Washington, which is the closest sizable town.

When the COVID outbreak turned into a full-fledged pandemic in March 2020, the Makah Tribe closed the reservation to the public and installed a roadblock to keep non-residents out of Neah Bay.

Overnight, her already difficult job became a whole lot harder, and the isolated fish hatchery became much, much more isolated.

"For two years we could not have family or friends visit," Bates says. "Our newly hired deputy project leader had to wait close to six months before he could move to Neah Bay in 2020 due to safety protocols. Carolyn Erb, one of our fish culturists, couldn't get her husband moved up because of restrictions getting onto the reservation. That all made Neah Bay even smaller and more closed off from the outside world.

"It increased the stress and sadness many were feeling."

Thomas Johnson, a Makah Tribe member and fish culturist at the hatchery, felt that stress on a daily basis in both his work and personal life. He says work schedule changes weren't drastic, but sometimes they didn't mesh with his needed home life schedule.

"The pandemic was tough having three kids, and a wife who works as a Tribal employee. We both had to work around shifting schedules to deal with the pandemic," Johnson says. "The safety requirements were tough, too, having to wear masks inside while working with water and fish, and keep social distancing. People don't notice how often we interact with each other in really close quarters, let alone keeping six feet separation." >>

Continued from previous page.

As schools went remote and businesses expanded telework to enhance safety nationwide, federal hatchery employees still had to be at the hatchery daily. Growing salmon have to eat and need regular monitoring.

The routine of caring for fish—even when nothing else in the world was routine—helped Bates and the staff endure the pandemic.

“One of the best parts about being at a hatchery is the fish need us every day,” Bates says. “I couldn’t control everyone’s needs 100% of the time during these challenges, but I could control the health, growth, and success of our fish programs.”

In addition to the day-to-day stress during COVID, circumstances sometimes made everything even more difficult.

All the hatchery staff were in COVID quarantine at the same time due to potential exposure, except for one person. Steve Baum, one of the hatchery maintenance mechanics, handled all the daily operations while his co-workers were unavailable.

Leaving the reservation was difficult because it was shut down to the outside population. Staff and Tribal members could only leave for essential reasons such as food shopping and doctor appointments. “At our checkpoint, we would have to show proof of what we did, where we went, and provide grocery receipts in order to leave and come back without any repercussions,” Johnson says.

Due to record-setting winter rainstorms, access to the outside world was further cut off when the highway leading to Neah Bay was closed due to flooding and blocked by a landslide.



In that same flood event, the Tsoo-Yess River overflowed its banks and swept into hatchery buildings and threatened homes.

Bates found herself having to tell staff—and herself—that they were still doing great work, even though some projects seemed to just creep along due to pandemic limitations.

“We learned how to do more things at the hatchery and how to be more self-sufficient,” Bates says. “Together, we fixed problems, cured fish, and two years later we’re ready to get back to normal. Instead of shouldering the burden of being alone, we all leaned on each other. We’re a team.”

Judy Gordon, Assistant Regional Director for the Service’s Fish and Aquatic Conservation Program in the Pacific Northwest, understands the challenges staff faced at Makah National Fish Hatchery and at other facilities across the region.

Flood waters reached offices at Makah National Fish Hatchery. (PHOTO BY USFWS)

She started her career with the Service at the Fairbanks Fishery Resource Office in Alaska, conducting fisheries work in the near-shore waters of Arctic National Wildlife Refuge, and later as center director of Abernathy Fish Technology Center.

“Our field staff have my deepest respect,” Gordon says. “They worked so hard during the pandemic—day in and day out. They put themselves at greater risk of contracting COVID. Field staff at all our locations worked hard to find ways to keep staff as safe as possible, while still making sure we met our obligations to the Tribes and everyone in the Pacific Northwest. The Pacific Region Fish and Aquatic Conservation staff were absolutely amazing during the pandemic, and we owe them a huge debt of gratitude.” >>

Continued from previous page.

Back to the New Normal

The Makah Reservation reopened to visitors on March 15, 2022, though the checkpoint stayed in place until April 2 to make sure visitors had their COVID vaccination cards. Bates has started seeing out-of-state license plates making their way to Olympic National Park's Shi Shi Beach, the Makah Museum, or Flattery Rocks National Wildlife Refuge.

Finally, family members are planning visits, and staff members are taking much-deserved vacations.

"We're anxious, excited, and so very happy to have made it through what seems to be the worst part of the pandemic," Bates says, her fingers crossed for good luck. "I find peace in knowing we have brighter times ahead."

Bates looks forward to a more normal future—a "new normal" as some people say. She hopes to build upon what the Makah National Fish Hatchery team learned during the pandemic.

"It's important to note we made it through with an even stronger relationship with the community around us. Being closed for two years brought us closer with those who call Neah Bay home," Bates says.

"We were able to build relationships, strengthen our Tribal Trust, and work together during these hard times. Living and working in a closed community meant everyone who was here, lived here together. This changed the way we all looked at each other, and I feel it is a bond that will last a very long time." □

BRENT LAWRENCE, External Affairs, Pacific Region



(Top) A staff member feeds fish at Makah National Fish Hatchery. (PHOTO BY USFWS)

(Above) Thomas Johnson with a salmon during spawning at Makah National Fish Hatchery.

(PHOTO BY THOMAS JOHNSON/USFWS)



Kristin Bates and her family at Tsoo-Yess Beach near Makah National Fish Hatchery. (PHOTO COURTESY OF KRISTIN BATES)



Steve Baum checks out a water pump at Makah National Fish Hatchery. (PHOTO BY STEVE BAUM/USFWS)

DEFYING THE ODDS

Critically endangered pupfish numbers are on the rise on the 50th anniversary of official monitoring effort.

By JOHN HEIL



Biologists count fish on the shallow shelf in Devils Hole.
(PHOTO BY OLIN FEUERBACHER/USFWS)

For more than 50 years, the U.S. Fish and Wildlife Service, National Park Service, Nevada Department of Wildlife, and their partners have used scuba and surface monitoring for Devils Hole pupfish, and it appears conservation and recovery efforts are paying off.

In April 2022, scientists counted 175 critically endangered pupfish—the most observed in a spring count in 22 years. Fall counts are typically higher because more sunlight throughout the summer months means more food resources.

Brandon Senger, supervisory fisheries biologist for the Nevada department, scuba-counted the “surprising” number of young fish below the surface with other biologists noting that the fish appeared to be in “both remarkable condition and very active.”

Devils Hole pupfish live in the upper 80 feet of a deep water-filled cavern and a sunlit shallow pool at the cavern’s entrance, making this the smallest range of any vertebrate species on the planet. Devils Hole is a detached unit of Death Valley National Park surrounded by Ash Meadows National Wildlife Refuge in Nye County, Nevada.

“Devils Hole is still under the impacts of groundwater pumping in the ‘60s,” says Kevin Wilson, aquatic ecologist for Death Valley National Park, who manages the resources of Devils Hole. “So I feel that we have a duty as a society that if we’ve impacted the habitat for this pupfish, then we should do something to try to save it.”

The importance of the pupfish is more than just biodiversity and a Supreme Court decision in 1976 to protect the species, says senior Service fish biologist Michael Schwemm.

“The protections that this iconic fish has, and the decisions made to support it in light of human development in the region caused an increased awareness in general throughout the desert southwest to protect other species of desert fishes,” Schwemm says of the Supreme Court

A curious captive-raised Devils Hole pupfish at Ash Meadows Fish Conservation Facility. (PHOTO BY OLIN FEUERBACHER/USFWS)



decision. “This created an awareness of water issues in the desert southwest and an inspiration to do more.

“It’s just such a different species and it is remarkable that it has managed to survive. It lacks pelvic fins due to the extreme conditions such as low food resources and high temperature, adapting to habitat conditions which have evolved over time.”

Those conditions have been mirrored in a 100,000-gallon tank at Ash Meadows Fish Conservation Facility. This captive population—around 300 fish—guards against extinction, according to fish biologist and facility manager Jennifer Gumm.

Population size in the wild is estimated by counting fish throughout the habitat, with standard counting protocols. Scientists scuba dive to count fish in the cavern, starting at depths below 100 feet. Simultaneously, other scientists count fish on the shallow shelf at the waters’ surface. The final count includes both surface and underwater fish.

“It’s not the way that you would think of to count most species of fishes,” says Gumm. “The unique cave habitat of Devils Hole and the population being so small for so long—those different components contribute to this being the best way to get a population size estimate.” >>



Continued from previous page.

Before the 1990s, the population was around 200 pupfish in the spring. However, pupfish numbers have been especially low during the last two decades, averaging only 90 fish. This spring count continues an overall increase during the past nine years from the all-time low of 35 fish in spring 2013.

A return to higher numbers of pupfish this time of year could signal important changes in the ecosystem. “Such shifts highlight the importance of maintaining long-term data as we work to find out what’s changed,” Wilson says.

After the population crash in 2013, which followed one in 2006, Schwemm says, something needed to be done.

“In 2017, the managing agencies met to discuss how to react more efficiently next time,” Schwemm says. “We knew this

was something we’d need to deal with—be able to respond quickly, so we developed a strategic plan with baseline information in case anyone on the team ever left, so we wouldn’t have to reinvent the wheel and start from ground zero.” The agencies are now working collaboratively to implement the strategic plan and be proactive in management of the species.

“It was exciting to see this shift [both in collaboration and pupfish numbers] because it allows more opportunities to study and explore new management options.”

Other research questions include studying genomic work to understand the genetic variation in both the wild and captive populations. “There is a really high potential that this will transform what we know and how we manage the species,” says Gumm.

“This interagency efforts shows that it’s better to play well together in the sandbox and check your egos at the door. We’re really working well together now as a group. The pupfish and the habitat are the important part, and we as scientists and managers are just trying to do what is best for them. It takes a team,” says Michael Schwemm. Devils Hole Dive Team and surface support personnel pose after a successful count. Pictured left to right: Michael Schwemm and Mike Bower (USFWS), Brandon Senger (Nevada Department of Wildlife), Ambre Chaudoin (NPS), Peter Garcia (Volunteer in Park), Jeffrey Goldstein and Kevin Wilson (NPS), Mal Malone (Volunteer in Park), Jenny Gumm (USFWS), Steve Cane and Robert Novak (Volunteer in Park). (PHOTO BY OLIN FEUERBACHER/USFWS)

Scientists are also looking at the fish in captivity to understand impacts of environmental variables including climate change.

“Being able to understand how temperature influences development, >>



Jeffrey Goldstein, National Park Service fish biologist, conducts a stereovideo survey of Devils Hole, allowing precise size measurements of the fish encountered during the dive. (PHOTO BY OLIN FEUERBACHER/USFWS)

Continued from previous page.

growth rates, and morphology is something else we are looking at,” says Gumm. “So having success in captive breeding and high fish numbers, both in the wild and in captivity, is allowing us to do a lot more research, to understand the species and inform management and recovery.”

Finally, according to Gumm, they have recently started understanding more about the physiology (how the body functions) of the fish by looking at waterborne hormones—where scientists can get the hormone levels just from the water the fish are in—as a tool for understanding reproduction and stress.

All of this has come together as a result of a strong effort at collaboration between agencies and other partners, Gumm, Wilson, and Schwemm say.

“This isn’t just one agency that is working on the recovery and conservation of this critically endangered fish,” says Wilson. “This interagency effort shows that it’s better to play well together in the sandbox and check your egos at the door. We’re really working well together now as a group. The pupfish and the habitat are the important part, and we as scientists and managers are just trying to do what is best for them. It takes a team.”

Gumm agrees. “We are likely seeing some of these positive trends in population size because of the coordinated efforts that we have between the National Park Service, U.S. Fish and Wildlife Service, Nevada Department of Fish and Wildlife, as well as outside partners.”

Thanks to the recent population increases in the wild and captivity, scientists are hopeful as they look toward the next 50 years of Devils Hole pupfish conservation.

□

JOHN HEIL, External Affairs, Pacific Southwest Region

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 Flory, curator of the U.S. Fish & Wildlife Service Museum and Archives, and April Gregory, curator of the National Fish and Aquatic Conservation Archives.

From Pelican Island: The First National Wildlife Refuge

By the turn of the 20th century, Pelican Island, on central Florida’s Atlantic Coast, sustained the last colony of brown pelicans in the southeastern United States. On this small islet of five and a half acres, 10,000 pelicans and other bird species sought protection from the hordes of greedy hunters and egg collectors, all of whom were threatening the birds with extinction. In response to this dire situation, President Theodore Roosevelt set aside Pelican Island as a Federal bird sanctuary on March 14, 1903—the nation’s first national wildlife refuge. The U.S. Fish and Wildlife Service Museum and Archives at the National Conservation Training Center is home to a number of Pelican Island artifacts, including:

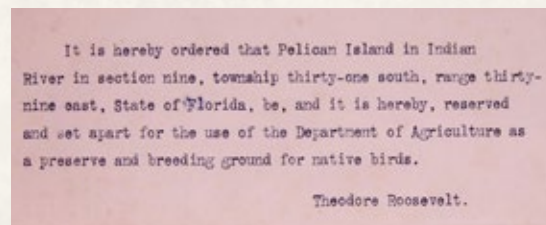
Sign

When the Pelican Island bird reservation was established, Paul Kroegel was appointed its warden (refuge manager). Since Kroegel was the refuge’s sole employee, he carried out all required duties, including sign-maker. He supplemented his meager wage of \$1.00 per month by rowing visitors to the island. (STEVE FLORAY)



Executive Order

Roosevelt’s Executive Order, of March 14, 1903, which established Pelican Island as a federal bird reservation. (STEVE FLORAY)



Picture Tells the Story

We recently added scads of historical photos from Leavenworth National Fish Hatchery in Washington to the National Fish and Aquatic Conservation Archives. While going through them, I was particularly intrigued by a photo of three men and a pack horse struggling to move a huge metal valve up a steep mountain trail. I reached out to Julia Pinnax, the Service employee from Leavenworth who had organized and donated the photos, to see if she knew anything about the photo. Turns out she had written a history of the salmon hatchery that included the photo:



“It was already known when Leavenworth National Fish Hatchery was planned that summer water would be in short supply....salmon must have cool water to survive (below 60 degrees F). Engineers came up with an audacious plan: build a trail up to the nearby alpine lakes, blast a tunnel through 2,250 feet of solid granite, and install plumbing and a valve to control water release into Icicle Creek.”

Forty men lived at a camp in the high country for nearly a year. “Every piece of equipment, every bite of food, every last thing needed...had to come up the narrow trail with the help of horses and mules.” That included “the valve that would hold back the water. The gate valve weighed 2,800 pounds! It took a month to maneuver its two halves up the six-mile trail....Every year since 1939, someone from the hatchery climbs up the trail to Snow Lake and turns the valve gate open by hand to let alpine water out.” This is one example of many that illustrates the great lengths people go to for conservation. (APRIL GREGORY)



Commerce and Conservation Run in the American Grain

By PAUL RAUCH

The 87th North American Wildlife and Natural Resources Conference sponsored by the Wildlife Management Institute convened in March in Spokane, Washington. The annual event draws wildlife professionals from all corners — biologists and administrators employed in state fish and wildlife agencies and representatives from federal natural resources agencies, including my colleagues from our Wildlife and Sport Fish Restoration Program.



Business interests are well-represented at the conference through the attendance of trade organizations. The National Shooting Sports Foundation represents the firearms and ammunitions manufacturers. The Archery Trade Association speaks for the bow manufacturers. The American Sportfishing Association concerns itself with those who make fishing tackle.

These organizations speak for businesses large and small, many of whom pay excise taxes on their manufactured goods that fund fish and wildlife conservation. They have been at it since 1937, paying a 10 to 11% tax on select products since the passage of the Federal Aid in Wildlife Restoration Act, known to some as Pittman-Robertson. Fishing tackle was added to the mix in 1950 with the passage of the Federal Aid in Sport Fish Restoration, or Dingell-Johnson. The two laws, coupled with fishing, hunting, and trapping license sales, make up the foundation of the American system of conservation funding, an arrangement that stands beyond compare.

I have the published proceedings of the first conference that occurred over a cold, snowy four days in February 1936, in Washington, DC. The 675-page tome is wrapped in beige hardbound cloth without ornamentation. The U.S. Senate's Special Committee on Conservation of Wildlife Resources chaired by Key Pittman of Nevada published the book, overseen by the committee's secretary, Carl Shoemaker. The contents between the covers are hardly plain.

The book's third leaf portends today's triad of industry, state fish and wildlife agencies, and the U.S. Fish and Wildlife Service that make things go — for fishing, hunting, and boating. There, you read an order from President Franklin Roosevelt that by calling the conference, he wanted to see “new cooperation between public >>

Elliott Barker stands with his namesake Wildlife Area.
(PHOTO COURTESY THE NEW MEXICO DEPARTMENT OF GAME AND FISH)



Continued from previous page.

and private interests...and constructive proposals for concrete action” for conservation.

That third page lists the names and affiliations of the 22-member conference committee that convened representatives from a multitude of interests. J.K. Kinnear represented the angling industry as president of the Association of Fishing Tackle Manufacturers, and David Martin, the National Association of the Fur Industry. Others are remembered in sculpture and place names.

Roberta Lawson, national president of the General Federation of Women’s Clubs, is memorialized in bronze in the American Indian Hall of Fame. Lawson was a member of the Delaware Tribe. Women’s organizations had ardent interests in conservation, and clubs in Illinois under the federation proved pivotal in passing Pittman-Robertson. Lawson spoke at the conference on the need to educate the young in conservation and of the spiritual and economic values of hunting and fishing.

J.N. “Ding” Darling National Wildlife Refuge honors the work of political satirist Jay Darling who worked with a nascent Wildlife Management Institute and conceived the 40 cooperative fish and wildlife research units that exist today at colleges in 38 states. They are training grounds for future biologists — many of whom conduct research funded by the taxes paid under Pittman-Robertson or Dingell-Johnson.

Industrialist Powel Crosley, inventor, car manufacturer, and pioneer radio broadcaster, owner of the Cincinnati Reds — and ardent outdoorsman — teamed with Walter Chrysler to incorporate the American Wildlife Institute in 1935, the antecedent of the Wildlife Management Institute. His former Indiana farm is today’s Crosley Fish & Wildlife Area, managed by the Indiana Department of Natural Resources via Pittman-Robertson and Dingell Johnson funding where one can fish and hunt and train bird dogs.

Elliott Barker came of age on a ranch at the turn of the 20th century in New Mexico’s Sangre de Cristo Mountains where mule deer, mountain lions, and Rio Grande cutthroat trout captured his mind. He labored as a U.S. Forest Service ranger under Aldo Leopold. Barker became the director of the New Mexico Department of Game and Fish in 1931 — a position he held for 22 years. He had a hand in saving a badly burned bear we came to know as Smokey and published eight books on conservation and the outdoors. Barker embraced fish culture in his tenure. Lisboa State Fish Hatchery on the Pecos River near his natal forest is presently under renovation through funds acquired from Dingell-Johnson. Its staff will wade chest-deep into Rio Grande cutthroat conservation. The New Mexico Department of Game and Fish named the 5,400-acre Elliott S. Barker Wildlife Area in his honor in 1966, acquired and managed for elk and mule deer with Pittman-Robertson dollars.

Wildlife and Sport Fish Restoration dollars today are quite substantial. In 2022, the territory and state fish and wildlife management agencies received \$1.1 billion for Wildlife Restoration and \$399 million Sport Fish Restoration. These are more than just numbers — these funds derived from commerce pay for scientific fish and wildlife management, research, land purchases, fishing and hunting and boating access, and hunter and angler education.



A wild turkey hunter is ready for his hunt. (PHOTO BY JOAN HOWE/USFWS)

I have to think that Lawson and Darling, Crosley and Barker, and all of their contemporaries would be pleased with the outcomes of their 1936 meeting. FDR’s desire for cooperation between public and private interests and proposals for concrete action has been achieved. Pittman-Robertson and Dingell-Johnson run in the American grain. The past is only prologue. There is more to be done as spelled out in state wildlife action plans. The future is ours to make. □

PAUL RAUCH, Assistant Director, Wildlife and Sport Fish Restoration Program

transitions

Service-wide



Wendi Weber, formerly the Service's Northeast Regional Director, has been named

Deputy Director of Operations for the Service. She began working in that capacity in July.

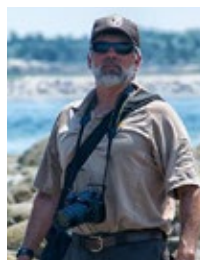
Wendi has spent over 24 years working for the Service in various roles since beginning her career as a biologist in our International Affairs Program. She has extensive experience working on Ecological Services issues in both Headquarters and the regions, including as Assistant Regional Director of Ecological Services in the Midwest Region from 2004 to 2007. Wendi remains a leader on these issues, particularly in her collaborative work with the states and other partners to conserve at-risk species. Since 2007, Wendi has worked in the Northeast Region, first as Deputy Regional Director before being named Regional Director in 2011. Wendi has extensive experience working on regional and national level operations, policies, and issues for all Service programs. As Regional Director, Wendi prioritized collaborating with Tribes, states, NGOs, industry, private landowners, and other federal agencies to advance conservation.

In her new capacity, Wendi oversees the day-to-day operations of the Service, including providing executive direction through the Regional Directors, Native American programs, Diversity and Inclusion, and the National Conservation Training Center. Throughout her career, Wendi has been an outspoken advocate for increasing the Service's diversity. She will bring that energy to the Director's office in support of our efforts to build a more inclusive work environment supporting a diverse, engaged workforce and providing equitable access to all our programs, facilities and lands.

Wendi is originally from Rochester, New York. She has a bachelor's degree in zoology from the University of Rhode Island and a master's degree in fisheries from the University of Georgia. Before joining the Service, Wendi worked for the states of Florida and Georgia as a field biologist. In 2018, she was awarded the Robert McDowell Award for Conservation Management Excellence, which is the Northeast Association of Fish and Wildlife Agencies' highest honor. She also received the Theodore Roosevelt Government Leadership Award in 2019 recognizing her excellence in management of programs and policy implementation.

Deputy Northeast Regional Director Kyla Hastie is serving as acting Regional Director until a permanent selection is made. □

Northeast Region



Matt Poole has been spending a great deal of time looking back on his career, and understandably

so. After 35 accomplished years serving the public, he's only got one professional milestone left this year: retirement.

Best known today as the visitor services manager and supervisory ranger at Parker River National Wildlife Refuge Complex, Matt has always had a proclivity for public service. He began his career as a paramedic before moving on to become a law enforcement ranger for the National Park Service. Over the last 30 years since joining the Service, Matt has served in a variety of visitor services positions at fisheries and refuge field stations. He even worked at the National Conservation Training Center for nearly a decade, serving as Director of the Refuge Management Academy and co-leading programs like Stepping Up to Leadership.

Matt is particularly proud of his eight years in fisheries, where he led the development and implementation of Adopt-A-Salmon Family, an interdisciplinary, watershed-based environmental education program that was conducted in more than 100 schools across New England. Matt has many fond memories of leading live salmon spawning demonstrations at schoolyards, delivering

fertilized salmon eggs to schools in the winter, and helping kids to release salmon fry into streams in the spring. "Those were days of pure magic," Matt says.

Matt, a highly accomplished nature photographer, has shaped up to be quite the social media influencer for the Service. He's contributed an astounding volume of images that has significantly bolstered our online presence.

On any given day, he's outdoors capturing photos, editing, and livestreaming on social media to provide online "edu-tainment" on happenings around the refuge. In fact, his online followers know him as Ranger Poole, a title he's worn with pride since his early days with the National Park Service.

"Poole's creative content and images have reached thousands of viewers online and inspired countless others to become environmental stewards and conservationists," the External Affairs team says. "Through photography alone, Poole has helped promote online storytelling and safe ways to view wildlife, and his work will be connecting people to the wonders of nature for years to come."

Adds Matthew Hillman, project leader at Parker River National Wildlife Refuge: "Matt has worked tirelessly to spread the message and mission of the Fish and Wildlife Service to the public he serves. "Whether creating original on-site programs, adapting well to »

Continued from previous page.

pandemic-related challenges of remote programming, or engaging underserved communities, Matt has engaged, educated, and inspired a growing base of support for the refuge system.”

Matt has no plans of slowing down. Settling down with his wife in Maine, he'll spend his free time outside hiking, biking, and continuing to master the art of photography. On other days when he gets the conservation itch, Matt may put his wisdom to good use by volunteering on public lands.

Most importantly, he intends to do zero paperwork. Matt's passion for conservation and photography is matched only by the light-heartedness, humor, and dedication he's brought to colleagues and visitors alike. Looking back on his long and prosperous career, Matt hopes to be remembered for the role he played to inspire others to learn about and love wildlife conservation as much as he does. Hats off to you, Ranger Poole! □

MASON WHEATLEY, External Affairs,
Northeast Region

honors

Southeast Region



Michael Johnson (above, with granddaughter), a 30-year veteran with the Service, has been named the 2022 Paul Kroegel National Wildlife Refuge Manager of the Year. He serves as the manager of Clarks River National Wildlife Refuge and the Green River National Wildlife Refuge that Michael and his team established. He is known throughout western Kentucky as the face of the National Wildlife Refuge System.

Presented annually by the National Wildlife Refuge Association, the Paul Kroegel award recognizes outstanding accomplishments by a refuge manager in the protection and management of national wildlife refuges. The award is given in honor of Paul Kroegel, the first manager of the first refuge, established in 1903 at Pelican Island, Florida.

“Michael's ability to form relationships and work with diverse groups of people was essential in establishing and garnering public support for the Green River Refuge,” says Leopoldo Miranda-Castro, the Service's Southeast Regional Director. “He listened and worked with the communities to gather their support for the new refuge. As a result, the community understood that lands for this refuge would complement local and state efforts to conserve the area's natural heritage and to provide increased public access for recreational opportunities, such as hunting and fishing. Local supporters also recognize that refuge lands will keep working for both people and wildlife, including agricultural use and other land management techniques.”

Founded in 2019, Green River Refuge in Henderson, Kentucky, became the nation's 568th refuge. It was born with a 10-acre donation from the Southern Conservation Corporation (SCC), a nonprofit Conservation Land Trust started in 2003. The donation resulted from Michael's prior work with SCC to conserve habitats in and around Clarks River Refuge in Benton, Kentucky. Michael leads a staff of six who oversee Green River and the 9,500-acre Clarks River, which was established in 1998 and where he has managed for 18 years.

In 2010, the governor of Kentucky commissioned Michael as a Kentucky colonel, the state's highest honor, for helping to provide people with opportunities to enjoy its natural resources.

In 2019, the staff of Clarks River Refuge, including Michael, received the Tennessee River Ripple Effect Award for the Government Department category. The Government Department award annually recognizes one local, state, or federal department that works to protect and improve Tennessee River Valley waterways. Most recently, Michael received the Service's Southeast Regional Director Honors Award for outstanding performance in 2021 for his efforts and commitment to establishing Green River Refuge.

A father of two children and grandfather of four, Michael feels one of his greatest accomplishments is mentoring and growing the careers of others. As manager of Clarks River, he assisted more than 22 student volunteers with employment in federal, state, and nonprofit wildlife conservation agencies.

“I was always told the greatest contribution to conservation one can make lies within those they hire. Most people do not have the opportunity to hire numerous new employees throughout a career,” says Michael. “However, one does have the opportunity to interact with the next generation of conservationists in many ways. This can be through seasonal hires and volunteers, but it can also be through so many other avenues. I pride myself in taking a genuine interest in those I interact with, and I am always willing to help guide them, as appropriate, to the next step of their personal and professional journey.” □

ELSIE DAVIS, External Affairs,
Southeast Region

Service-wide

2021 Recovery Champions

Recovery Champions are U.S. Fish and Wildlife Service staff and their partners whose work is advancing the recovery of endangered and threatened species of plants and animals.

Pacific Region

Deanna Williams, U.S. Forest Service



Deanna Williams is recognized as a 2021 Recovery Champion for her leadership in the

recovery of the federally threatened Oregon silverspot butterfly. She spearheaded intensive mapping of host plant “hotspots” and associated studies of female ovipositioning behavior, supported mark-recapture studies to gather data on butterfly movements and survivorship, tested new techniques to restore coastal prairies, and led the development of site-specific bloom calendars to customize localized management approaches. Most importantly, her innovative thinking pioneered the use of trained detection dogs to successfully locate Oregon silverspot butterfly larvae in the field. Her pilot studies demonstrated that the dogs could locate larvae in situ, a triumph unequalled in over 40 years of research on this species. □

Southwest Region



Endangered Springsnail Team

Top row, left to right: Jeff Sanchez, Jeff Beauchamp, Floyd Truetken, Lindsey Landowski, Vance Wolf. Bottom row, left to right: Matthew Butler, Frank Weaver, Bill Johnson, Debra Hill, and Paul Tashjian. All with U.S. Fish and Wildlife Service except Tashjian (Audubon New Mexico) and Daniel Trujillo (not shown, New Mexico Department of Game and Fish).

Over the past eight years, the Bitter Lake National Wildlife Refuge Endangered Springsnail Team has worked tirelessly to create new, self-sustaining populations of the endangered Roswell’s and Koster’s springsnails in southeastern New Mexico. Beginning in 2013, through a Cooperative Recovery Initiative Grant, the team undertook a project to restore

snail habitat by rerouting the degraded Rio Hondo to allow for restoration of viable desert springs suitable for springsnails. Springsnails were subsequently reintroduced into the restoration area and their populations flourished, soon becoming self-sustaining. Following the river reroute, the team used robust, innovative science to track snail establishment and population growth. This required the development of procedures and protocols to ensure data quality and continuity over time, all of which informed a peer reviewed monitoring scheme published in the *Natural Areas Journal*. During this time, the team also provided critical scientific information to the species’ recovery plan. □

Midwest Region

Running Buffalo Clover Collaborative Team

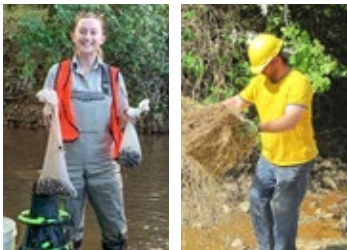
Jenny Finfera (right), U.S. Fish and Wildlife Service, and Marjie Becus, private citizen.



This past year, the running buffalo clover was successfully delisted due to recovery thanks largely to the tireless efforts and conservation advocacy of Marjie Becus and Jenny Finfera over the years. When the plant was protected as federally endangered in 1987, we knew of a single remaining population. Because of their championship of the species and dedication to its recovery, today there are more than 170 clover populations across five Midwest states. The team has successfully built trusted and lasting relationships with property managers, provided valuable input into the best management actions; conducted monitoring, data collection, and habitat restoration; coordinated volunteers; collaborated with a diverse array of partners; developed numerous management agreements; and communicated the essential value of this species. »

Southeast Region

Carolina Heelsplitter Intra-Service Recovery Initiative



Tony Brady (left to right), Morgan Wolf, Jonathan Wardell, Somerley Swarm (bottom left), and Walter “Tripp” Boltin. All with U.S. Fish and Wildlife Service

The Carolina Heelsplitter Intra-Service Recovery Initiative has been instrumental in key efforts to conserve the endangered freshwater mussel, including propagation, habitat restoration, and reconnection of designated critical habitat. In 2014, this team oversaw the establishment of the Orangeburg Mussel Conservation Center to propagate Carolina heelsplitters within Orangeburg National Fish Hatchery. Additionally, the team built strong partnerships with

private landowners to enhance mussel habitat and reintroduce the propagated mussels onto private lands. Between 2016 and 2021, more than 5,000 Carolina heelsplitters were produced at the center—2,000 of which the team released into the Savannah, Catawba, and Pee Dee River basins. The center’s success now extends beyond the heelsplitter, supporting propagation efforts for other species like the brook floater and gopher frog. □

Northeast Region

Susi von Oettingen, U.S. Fish and Wildlife Service



Susi von Oettingen is recognized as a 2021 Recovery Champion for her leadership in recovery of the north-

eastern North American population of the roseate tern. Over the past decade, her dedication to communication and sound science has expanded our protection, monitoring, and outreach for this species across the globe, contributing to an estimated 75% increase in North American breeding pairs between 2011 and 2021. During her time with the Service, Susi has built new partnerships and improved collaboration with roseate tern colony managers in Canada, Europe, and the Caribbean. Her success in building collaborative, grassroots conservation initiatives with power companies, nongovernmental organizations, and academic institutions serves as a model for conservation partnerships across the Service. □

Mountain Prairie Region

Tonie Rocke, Ph.D., U.S. Geological Survey



Over the past two decades, Dr. Tonie Rocke has made significant contributions to the black-footed ferret recovery effort. Most notable is work to combat sylvatic plague—the most significant obstacle to black-footed ferret recovery in the wild. She created an injectable vaccine for ferrets and wrote vaccine guidance and administration protocols, collectively ensuring that plague vaccination is now standard management practice for the conservation of both captive and wild ferrets. In addition, the method she developed to incorporate plague vaccine into prairie dog bait is an innovative approach toward protecting the ferret’s prey species. Furthermore, her coordination with numerous state, Tribal, federal, and private partners to assess the effectiveness of the vaccine in the field was instrumental in its success and acceptance. □

Alaska Region

Mary Colligan, U.S. Fish and Wildlife Service (Retired)



Mary Colligan is recognized as a recovery champion for her leadership in the

conservation and recovery of polar bears. Over the years, her tireless efforts and commitment to partnership building and sound science have significantly improved the conservation frameworks for polar bears globally. As U.S. head of delegation for the Polar Bear Range States, Mary oversaw the development of the Circumpolar Action Plan, and with her guidance, the Service completed its Polar Bear Conservation Management Plan. These critical documents established conservation priorities for polar bears at both domestic and international scales. As Assistant Regional Director for the Service’s Alaska Region, her unwavering support also enabled the development and implementation of a novel analytical framework to estimate impacts of human activities on polar bears. Throughout all these efforts, Mary ensured that her teams employed the highest scientific standards to inform the Service’s regulatory and management actions for polar bear. □

Pacific Southwest Region

Kathryn McEachern, Ph.D., U.S. Geological Survey



Dr. Kathryn McEachern is recognized as a recovery champion for her leadership in the

recovery of threatened and endangered plants on California's Channel Islands. For three decades, she has worked under challenging and inhospitable conditions to monitor, survey, and map rare Channel Island plants. Her research directly informed the Service's determination to protect 13 plant species under the Endangered Species Act in 1997. Following development of the Service's recovery plan for those species, she helped implement numerous on-the-ground actions, from survival experiments to comparative mapping to support their recovery. Due in part to her efforts, the Service's recent Species Status Assessments indicate strides toward recovery for several species, including the island bedstraw and Santa Cruz Island dudleya. □

in memoriam

Pacific Southwest Region



Dr. Gary Wallace, retired botanist for our Carlsbad Fish and Wildlife Office, died in

June 2022. Gary worked for the Carlsbad office from 1996 until his retirement in 2014. Born in Pasadena, California, Gary received his bachelor's and master's degrees from California State University, Los Angeles. He went on to earn his doctorate of philosophy from Claremont Graduate University. Gary honorably served in the U.S. Army, including a tour of duty in Vietnam (1969–1970) and received the Bronze Star.

Before working for us, Gary served as a taxonomist for the Los Angeles County Arboretum, 1975–1981, and as an associate curator for botany at the Los Angeles Natural History Museum.

Throughout his career, Gary diligently strove to elevate the importance of plant taxonomy, noting that systematics and nomenclature is foundational to species conservation. He worked toward conservation of numerous plants in Southern California, including the Coachella Valley milk-vetch, Peirson's milk-vetch, ash-gray paintbrush, southern mountains wild buckwheat, willow monardella, San Clemente Island lotus, and San

Clemente Island paintbrush. For his efforts to further our mission, Gary was selected as a Recovery Champion in 2014.

Outside his work at the Carlsbad office, Gary was involved with numerous botanical organizations; he was on the Board of Trustees for the California Botanic Garden and was a regular contributor to research on plants. Gary provided the treatment of *Ericaceae* (heath family) for the second edition of the Jepson Manual (2012), the most comprehensive treatment of California flora. He was a longtime contributor to the Flora of North America project and served as a reviewer/editor to the southwest section for several years.

As testament to the international recognition of his expertise and contributions to plant knowledge and conservation, in 2008 Gary was inducted into the Linnean Society of London for his lifelong dedication, expertise, and commitment to excellence in botany and taxonomical classification. Founded in 1788, the Linnean Society is the world's oldest active society devoted to natural history.

Gary also enjoyed people. He gave his undivided attention to helping staff. He was serious about our work. He had a wry sense of humor and enjoyed a good laugh, and was always inclusive to the folks around him. Those of us who knew and worked with Gary will miss him. The Service was lucky to benefit from his expertise and contributions to our conservation mission. □

Fish & Wildlife News

Division of Marketing
Communications
U.S. Fish and Wildlife Service
5275 Leesburg Pike
Falls Church, VA 22041-3803

parting shot



Sentinels of the Sea

Because tufted puffins take a little bit of this and a little bit of that from the seafood buffet in their breeding areas, their diet information can tell us about the health of the marine ecosystem.

(PHOTO BY LISA HUPP/USFWS)

Fish & Wildlife News

Editor: Matthew Trott

Assistant Editor: Jennifer Deschanel

Art director: Jane Pellicciotto, Allegro Design

Submit articles and photographs to:

U.S. Fish and Wildlife Service
EA-Division of Marketing Communications
MS: EA
5275 Leesburg Pike
Falls Church, VA 22041-3803
703/358-2512
Fax: 703/358-1930
E-mail: matthew_trott@fws.gov

Submission deadline:

Fall 2022: by October 7