U.S. Fish & Wildlife Service Spring 2020

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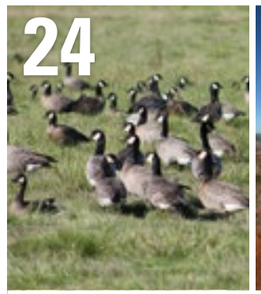
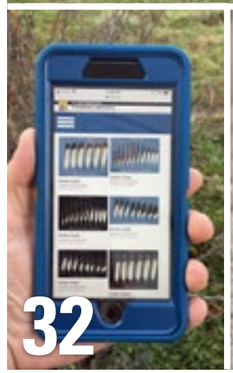




Spiritual and cultural leaders representing the Oglala Lakota and southern Ute tribes coordinate honoring the cremated eagle remains.

Tribes Bless New Eagle Burial Site

Between two trees on a section of restored prairie on Rocky Mountain Arsenal National Wildlife Refuge in Colorado is a new final resting place for eagle remains from the National Eagle Repository.

On November 1, Service staff and representatives from the Cheyenne and Arapaho tribes of Oklahoma, Oglala Lakota and Southern Ute participated in a blessing ceremony of the new eagle burial site on the refuge.

Originally, eagle bones and ash that remained after cremation went through the mainstream waste collection. But in 2017, the Service invited federally recognized tribes to schedule a visit to the Service's National Eagle Repository.

One tribe requested the Service provide a more respectful and culturally appropriate alternative to dispose of remains of the eagles, a bird that tribes refer to as "brother eagle."

Service staff members from the refuge, the repository and the Service's regional office collaborated with the tribes to develop a new process and identify an appropriate burial site on the refuge.

Away from public access, the site is tranquil, where an occasional deer or bison may stop to forage nearby. In the distance, the Rocky Mountains provide an impressive backdrop where the blue sky stretches the length of the Denver Front Range.

The prayer songs that were sung at the blessing brought what can only be described as a spiritual, emotional and magical moment for all present.

The songs seemed to attract a pair of bald eagles to fly over and circle the site. The pair briefly participated in the ceremony themselves before leaving as swiftly as they came. At the end of the ceremony, five bald eagles were seen flying in the near distance, circling higher and higher, delivering the blessings up to the Holy People and the Creator. □

MELISSA CASTIANO, Native American Liaison, and SARAH METZER, National Eagle Repository, Upper Colorado Basin Region

National Fish Hatchery Shares the Rainbows

You don't see too many rainbows in southwest Wisconsin in the middle of winter. And if you were looking for a rainbow this winter, you would find 8,000 fewer of them.

That rainbow, of course, is the rainbow trout, raised in the Coulee region of southwest Wisconsin at Genoa National Fish Hatchery.

Because of some good quality eggs from Ennis National Fish Hatchery in Montana and good survival, the hatchery had a surplus. It was fortuitous because sister hatchery Neosho National Fish Hatchery in Missouri was limited in rearing space due to a construction project.

Neosho Hatchery sent two drivers in December to pick up its new charges—8,000 8-inch trout weighing a total of nearly 1,800 pounds. They were loaded onto the two trucks for the 12-hour trek back to the Ozark Plateau of southern Missouri.

They will be raised for roughly another two months and stocked as 11-inch fish in Lake Taneycomo to mitigate for a federal water project that eliminated a local smallmouth bass fishery. Rainbows like the cooler waters of the downstream Lake Taneycomo and create a very popular fishery there.

Plenty of rainbows still remain in southwest Wisconsin—enough to brighten many anglers' dispositions this spring for the trout season opener. More than 30,000 still await the spring trout season, when they should be 12-inch sticks of dynamite, just waiting to fight their way into a lucky creel. The trout will be used to create recreational fisheries on Midwestern tribal waters and in Fort McCoy Wisconsin base ponds. They'll also be used at Genoa's kids and limited accessibility fishing events. □

DOUG ALOISI, Fish and Aquatic Conservation, Great Lakes Region

USFWS

A biologist holds a rainbow trout.

Service Achieves Key Goals at CITES Conference of Parties 18

Last year in Geneva, Switzerland, the Service led the U.S. delegation to the 18th meeting of the Conference of the Parties (CoP18) to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Held approximately every three years, the conference is the culmination of years of work for countries that develop science-driven species and policy proposals that impact how CITES is implemented. The key goal is to ensure the sustainable trade of wildlife and the survival of species that are most heavily impacted by both legal and illegal trade.

More than 180 countries participate in CITES, and they come to the meeting with their own perspectives, based on their own countries' wildlife, politics, economies and ability to implement CITES as intended. Since it entered into force in 1975, more than 35,000 species of plants and animals have received some degree of protection under CITES. The two-week CoP18 agenda was the largest to date, with more than 160 documents and species proposals up for discussion and votes.

As usual, the United States had a long list of goals. Pam Scruggs, Chief of the Service's CITES Management Authority, says: "The experience was both exhausting and exhilarating. I wish that every Service employee had the chance to feel the electricity in the room when the world debates and makes consequential decisions about wildlife trade and conservation governance. It is incredible."

THOMAS LEUTZ/USFWS

LESLEY CLEMENTS/CREATIVE COMMONS

(Top) Pancake tortoises are highly desired in the international pet trade, and overexploitation for commercial trade is considered the single most important threat to the species. (Bottom) One of the species of sea cucumber that got CITES protection.

The United States sponsored and co-sponsored several proposals for species that were adopted, granting stronger protections under CITES for saiga antelope, sea cucumbers, tokay geckos, parachute spiders and pancake tortoises. The United States also got wins on policy and research-related proposals related to the impact of trade on songbirds and on a tree used to make aromatic resins and products called frankincense. A proposal also passed on a model to help other countries build their capacity to more successfully implement CITES.

One key change was an amendment to a requirement that maintains protections for rosewood trees while reducing the regulatory burden placed upon businesses and groups, including the musical instrument industry and musicians. Three years ago at CITES CoP17, a CITES listing for a wide-ranging genus of trees known as rosewoods was adopted. It was too broad as written and created a massive new permitting requirement that did not help conservation of threatened rosewood species. It also resulted in a huge workload for CITES permit applicants and U.S. CITES staff. The amendment to the listing allows a more practical implementation of the listing so it achieves its conservation objectives.

Some of the higher-profile and more controversial topics at CoP18 were perennial issues related to African megafauna, including rhinos and elephants. One successful proposal gave giraffes protections under CITES to ensure that levels of trade do not threaten the long-term survival of this charismatic group of animals.

CoP19 is slated to take place in Costa Rica in 2022. □

Documentary About Scarlet Macaw Conservation Effort Wins Film Festival

In 2017, the Service supported several partners in Honduras with a grant to continue their work patrolling one of the last strongholds for wild scarlet macaws in Central America. Our support helped expand the conservation effort, and it is now the largest community-patrolled parrot conservation area in Latin America.

Fewer than 1,500 scarlet macaws are left throughout Central America, and 500 are estimated to live in the remote region known as La Moskitia. In 2010, the organizations INCEBIO and One Earth Conservation joined forces with the communities of Mabita and Rus Rus after recognizing that almost all scarlet macaw nests on their lands were being poached for the illegal wildlife trade. With assistance from the conservation groups, the communities launched paid patrols to monitor and protect the nests, as well as establish a rescue center for confiscated birds. The patrols have been effective, with an estimated 80 percent reduction in the number of eggs and chicks poached since the project began.

To promote the incredible story of this project and its success, the Service produced an eight-minute documentary about it called *Poachers and Protectors: The Story of Scarlet Macaws in Honduras*. Thanks to a robust outreach effort upon the film's release in March last year, many of the Service's social media accounts and more than 20 partners shared the film online in its first week. It reached a potential audience of 4.5 million people.

The film was also shown on Capitol Hill to congressional committee staff, helping inspire the introduction of legislation that would enhance parrot conservation opportunities through reauthorization of the Wild Bird Conservation Act. Since premiering at the 2019 Environmental Film Festival in the Nation's Capital, the film so far has been officially selected by four additional festivals and was named the Best Wildlife Conservation Film at the 2019 Reedy Reels Film Festival in Greenville, South Carolina. The documentary can be watched online in English, Spanish, or with Audio Descriptions on the Service's YouTube channel (click picture, above left). □

Secretary Bernhardt Unveils New National Wildlife Refuge in Kentucky

On November 22, Secretary of the Interior David Bernhardt, along with Senate Majority Leader Mitch McConnell, and Service officials and their counterparts from the Kentucky Department of Fish and Wildlife Resources, announced the establishment of Green River National Wildlife Refuge near the confluence of the Ohio and Green rivers in Henderson, Kentucky.

"This is not just great news for our outdoor recreationists," Secretary Bernhardt says, "but also for the wildlife that will benefit from this conservation effort. Thanks to Senate Majority Leader Mitch McConnell's dedication that led to establishing this spectacular refuge in western Kentucky."

"Kentucky has been blessed with many gorgeous lands and pristine waters. The establishment of the Green River National Wildlife Refuge will preserve our natural resources for future generations of sportsmen and tourists to enjoy," McConnell says.

McConnell personally discussed the importance of Green River Refuge with Secretary Bernhardt and secured a legislative measure directing the Department of the Interior to establish the refuge in Henderson. As a senior member of the Senate Appropriations Committee, McConnell shepherded his measure to passage and into law.

STEVE HILLEBRAND/USFWS

(Top) Service staff gather around the new Green River National Wildlife Refuge welcome sign. (Right) Forested wetlands could become part of Green River National Wildlife Refuge. (Left) Yellow-crowned night herons are found in the area of Green River National Wildlife Refuge.

LEE ANDREWS/USFWS

The refuge was established with the acquisition of the first tract, a 10-acre parcel donated by the Southern Conservation Corp. The establishment makes it the 568th refuge in the National Wildlife Refuge System. The 10 acres are the first of what the Service plans eventually to be a 24,000-acre refuge, the additional acreage being acquired over time from willing sellers.

"Providing the 10-acre land donation is a unique opportunity for us," says Southern Conservation Corp. Executive Director Jeff Jones. "We have helped a variety of partners in Kentucky secure important conservation lands for fish and wildlife, environmental education, and public use, but establishing a new national wildlife refuge doesn't happen every day. This donation is special to us for that reason. Hopefully, the refuge will build quickly and provide important conservation and public use benefits."

Over the past 15 years, Southern Conservation Corp. has partnered with the Service on numerous land protection and species conservation efforts in Kentucky.

The refuge has enjoyed widespread support. At an informational meeting earlier this year, the public turned out to give the then-proposed Green River National Wildlife Refuge an enthusiastic thumbs-up. Local landowners, conservation groups, and state and federal agencies have advocated for its creation. □

MARA KOENIGUSFWS

Minnesotans Discover Their Neighborhood Pollinators

Designed in the shape of a colorful giant flower, against the stark white frozen Minnesota shoreline, the Pollinator Shanty attracted people just as pollinators are drawn to nectar. The Service again partnered with local artists to provide an interactive art exhibit for the 2020 Art Shanty Village in January and early February.

"The shanty is a celebration of our native Minnesota pollinators and a place for the community to connect to the outdoors," says Suzanne Trapp, the Service's Urban Wildlife Conservation Program coordinator.

The village is located on Bde Unma/Lake Harriet in Minneapolis. Once on the ice, you could navigate through the village, riding a pollinator bicycle "puppet" and wearing a pollinator-decorated helmet. Then you could take a rest on the pollinator bench or hunt for the Minnesota pollinators that were painted on the shanty.

THIA KONG/USFWS

(Top) Visitors could ride a pollinator puppet bicycle on the ice at the Pollinator Shanty. (Bottom) Communities discovered their local pollinators by visiting the Pollinator Shanty on Bde Unma/Lake Harriet.

Entering the shanty, you were transported to the Mexican State of Michoacán where the monarch butterfly overwinters. Oyamel fir tree forest sculptures rose up the circular walls, covered with paper monarchs clipped to the branches. You could "tag" a paper monarch with your city and state to represent your migration to the shanty, like the monarch's migration to Mexico.

"We want visitors to discover their neighborhood pollinators and the easy actions they can do at home to help them," says Trapp.

Pollinator populations across North America are changing. Many are in decline. The Service is working to recover pollinator populations by creating pollinator habitat—from a potted plant to a community garden. This can bring us food and help our ecosystems.

The frozen Bde Unma/Lake Harriet was the backdrop to more than 20 structures and interactive exhibits from more than 100 artists. □

Northeast Fishery Center Discovers Brook Trout Genetics Vary Widely In New York

Before we knew how to measure it, few could imagine how widely diverse genetic information is within a species—which is essentially the secret to its survival.

Take native brook trout. Historically, they occurred from the Hudson Bay to the Great Lakes and the upper Mississippi, in the Appalachians from Georgia to Maine and down the Atlantic Coast to New Jersey. They have since vanished from most of their range, surviving almost exclusively in headwater streams. Decades of poor logging practices eliminated cold water habitats and scoured stream bottoms, destroying areas for trout and their food. These still impact streams today.

Because brook trout are representative of high-quality streams, preserving and restoring their habitat benefits not just the species but the ecosystem as a whole.

Studies have found that brook trout populations show high degrees of genetic variability across their range and differentiation (individual populations having different pieces of genetic information), which may be important to the survival of the species.

In New York, only 5 percent of watersheds that historically contained brook trout remain intact. These small, fragmented populations are at risk of losing genetic diversity, inbreeding »

and becoming less fit, all of which could lead to greater extirpations.

Meredith Bartron, Ph.D., regional geneticist at the Service's Northeast Fishery Center (NEFC) in Pennsylvania, and her team are applying some cool science techniques to help us better understand and manage species, such as brook trout, that we are working to restore. Recently, the team collaborated with the Service's Lower Great Lakes Fish and Wildlife Conservation Office and the New York State Department of Environmental Conservation to evaluate the genetics of brook trout in western New York. The results will help state and federal agencies, and organizations such as Trout Unlimited and the Eastern Brook Trout Joint Venture target populations that would benefit from habitat restoration to increase aquatic connectivity, gene flow and population size.

They characterized the genetics of 75 brook trout populations from four major watersheds in western New York—the Allegheny, Erie/Niagara, Genesee and Susquehanna watersheds. They also characterized three brook trout hatchery strains to see if historic stocking in the region had had any effect on the wild populations.

Overall, the NEFC found that genetic diversity varied widely and that most of the populations were genetically unique from each other. They also found little evidence of hatchery influence on the wild populations, despite concerns that widespread brook trout stocking in New York State could have diminished native brook trout genetic diversity.

SCOTT CORNETT/NYSDEC

SCOTT CORNETT/NYSDEC

(Top) Brook trout are representative of high-quality streams. (Bottom) A healthy headwater stream in New York supports brook trout.

The Susquehanna brook trout populations had the highest levels of genetic diversity as well as the largest effective population size (number of breeding individuals). The Allegheny brook trout populations also had high levels of genetic diversity, especially in the middle and lower Allegheny. In the upper Allegheny, however, brook trout had the lowest genetic diversity and the lowest effective population sizes.

Brook trout populations in the Genesee and Erie/Niagara watersheds had high levels of genetic differentiation, meaning individual populations carried different genetic material and were unique, even within their own watersheds. In both the Erie and Niagara watersheds, brook trout are separated by large river distances and regions without brook trout.

The NEFC results show that while the amount of genetic diversity is high, it varies among brook trout populations. Brook trout apparently need neighbors. Watersheds containing greater numbers of brook trout populations in close proximity displayed higher levels of gene flow and genetic diversity than watersheds with few sites isolated by far distances.

Additionally, the likelihood of systemwide extirpation increases when there are fewer neighboring tributaries to function as population sources. However, isolated populations may hold genetic characteristics that also increase survival for the species.

These genetic assessments can be used to prioritize habitat management actions for restoring brook trout, such as where to improve habitat of existing brook trout populations, where to increase the amount of available habitat and where to prioritize the elimination of barriers to fish movement to improve gene flow among isolated populations. The results also provide a baseline from which to measure and monitor future population trends and track the progress of conservation, while helping mangers prioritize restoration actions for brook trout in New York. □

CATHERINE GATENBY, STEPHANIE DOWELL BEER and MEREDITH BARTRON, Fish and Aquatic Conservation, North Atlantic-Appalachian Region

CONSERVATION IN CITIES

Fifth-Graders Plant Pollinator Garden on Grounds of South Florida Ecological Services Office in Downtown Vero Beach

A late afternoon rainstorm that hit Vero Beach, Florida, on October 24 soaked the 12 youngsters planting a pollinator garden on the grounds of the Service's South Florida Ecological Services Office (SFESO), but it didn't dampen their spirits or enthusiasm for the project.

The kids were participating in a program called Audubon Advocates, a 14-week after-school program for fifth-grade students from Indian River County elementary schools in partnership with the Pelican Island Audubon Society (PIAS).

The program is grant-funded and free to students. Teachers select participants based on their interest in science and the environment—particularly female and minority students. Audubon Advocates gives students from an urban environment the opportunity to get outdoors to learn about the Indian River Lagoon and local habitats through hands-on activities and guest speakers.

Examples of topics covered are ethical wildlife viewing, the importance of mangroves for our coastline, kayaking, the role of snakes and mosquitoes in our ecosystem, the relationship of pollinators and native plants, and more. The Service partnered with PIAS to plant a pollinator garden on the grounds of the Service's building in downtown Vero Beach.

"We saw this as a great opportunity to work with a diverse group of children who could be the conservationists of the future," says SFESO Supervisory Biologist Miles Meyer. "It fits right in with what we're trying to accomplish with our Diversity Outreach Program."

Fifty students participated and worked in teams to prepare the area, dig, plant and water the plants. They chose 22 varieties of Florida native plants including Simpson stopper, senna, sunshine mimosa, porterweed, ironweed, beauty berry, Aster stokes, ground sage, Scarlett sage, blue mist, wild coffee and coontie.

Mark Blacknell, the SFESO's administrative officer, volunteered to coordinate the pollinator garden project with the PIAS. "Working with these kids to establish our garden is one of the most rewarding things I've done. The garden is looking great," he says. "You could see their pride and senses of accomplishment as they put those plants in the ground. Hopefully, we planted some seeds within these students that will inspire their interest in wildlife conservation."

The intent of the garden is to provide habitat for native pollinators in an urban setting and give workers at SFESO a beautiful and peaceful place to relax, work and collaborate.

"The students loved planting and for many of them it was the first time they had ever planted," says Katheryne Nix, PIAS environmental educator. "It was one of the students' favorite lessons."

KATHERYNE NIX/PELICAN ISLAND AUDUBON SOCIETY

In addition to the pollinator garden project, SFESO Biologist Michelle Wilcox led the students on a hike through the nearby Indrio Savannahs Preserve, educating them on the unique habitat of scrubby flatwoods and the flora and fauna that reside there, including the threatened Florida Scrub jay.

"Michelle greatly enriched the students' hike, pointing out the birds and plants and how they are adapted to the xeric habitat of the scrubby flatwoods," Nix says. "Students used both binoculars and cameras to get a closer look at what they were seeing and to record the animals present."

(Top) Fifth-grade students with their cameras at the ready looking for Florida scrub jays. (Bottom) Two fifth-grade students having a blast planting a native plant for the first time.

Meyer says he hopes these collaborations are just the beginning. "We're hoping to establish a long-term relationship with the Audubon Advocates program. It's a great way to reach youngsters in an urban setting who are interested in the environment." □

Katheryne Nix of the Pelican Island Audubon Society contributed to this article.

KEN WARREN, External Affairs, South Atlantic-Gulf Region

CONSERVATION IN CITIES

Connecting Klamath Falls to Nature One Vacant Lot and School Spot at a Time

Scattered in and around Klamath Falls, Oregon–population about 22,000–is a patchwork of nearly 40 natural areas that effectively maintain a valuable connection between residents and the natural world. They range in size from a four-foot square box made of pallets to a city lot. Each has provided conservation learning opportunities for students, scouts and neighbors.

Akimi King, fish and wildlife biologist in the Service's Klamath Falls Fish and Wildlife Office, has been an important player in creating these sites with the help of many dedicated partners, including city and county governments, youth and garden clubs, schools, museums and private landowners. King has collaborated with these external community partners to turn empty, neglected and under-utilized spaces into productive landscapes that provide rest-stops for native species and, in many cases, grow food for people.

"More than half the planted spaces are on public- and private-school grounds where students can learn about pollinator habitats while growing native plants," King says. "These sites are created for and managed by students to learn about natural ecosystems since they collect and share valuable data as citizen scientists."

While large-scale urban growth may result in obvious effects on fish and wildlife habitat, its effects on people and their communities may be less conspicuous. When properties are abandoned or fall into disrepair in a residential area, they become an eyesore when consumed by invasive plants and even pose a health hazard if they are covered in trash.

For the past several years, the Service has supported efforts to create urban-based habitats through a community-centered model in and near cities, where 80 percent of Americans reside. In Klamath Falls, King has been converting empty lots and school spots for much longer.

"I began coordinating the Schoolyard Habitat Program here about 10 years ago, and as the student project sites were taking shape, people noticed. I started getting calls about helping with other spaces around town," says King. "It didn't take long before we had projects going on empty lots at a dog park, the women's shelter, in road medians, around libraries and in community parks. Word of mouth is an amazing force."

While the school sites had a built-in workforce, it was more of a challenge to ensure continued interest and maintenance of the residential spaces. So, many of these sites were established as community gardens, where neighbors rent a raised planting bed to grow just about anything they like. Most raise seasonal produce, but many include native plants in their garden design because King stresses the importance of providing for pollinators at each location.

Rent collected from these neighborhood gardens is used to purchase compost, deliver water, maintain irrigation systems and install equipment storage sheds or small greenhouses for year-round production. In return for King's help in creating these sites, she is given space in each to grow native plants for pollinators, including milkweed for monarch butterflies. In fact, the only site where King and her volunteers found monarch eggs in 2019 was on milkweed planted in one of these community gardens.

King says the nature areas succeed because of volunteers such as scout groups and students, and the many mentors who help guide them in learning about stewardship and conservation while cleaning up these small town spaces and creating functional habitats.

"There was a need in our local community for these spaces," says King. "They provide an opportunity for residents and students to get outdoors and work together to create something positive for their neighborhoods and nature." □

SUSAN SAWYER, External Affairs, California-Great Basin Region

SUSAN SAWYER/USFWS

Many of the Klamath Falls sites have been certified as Monarch Waystations. "You can never have too many nature-scapes within a community," says King.

(Above) Then-Deputy Assistant Secretary Skipwith celebrates National Public Lands Day and Urban National Wildlife Refuge Day with the Groundwork-Wallkill Connection Urban Wildlife Refuge Partnership in Yonkers, New York.

New Director Emphasizes Urban Conservation

Aurelia Skipwith, confirmed by the Senate on December 12, began her stint as the 22nd Director of the U.S. Fish and Wildlife Service on January 6, 2020. She is the first African American appointed and confirmed to be the Service's Director.

Director Skipwith spent her summers in Mississippi on her grandfather's hog farm and learned early on the importance of nature. "If we didn't grow it or kill it, we didn't eat it," she says.

The importance of nature is seen in the country's national wildlife refuges. She told the Senate Committee on Environment and Public Works: "I view the … refuges within the U.S. Fish and Wildlife Service as our nation's crown jewels. These jewels are stopovers in flyway zones; they are home to endangered species; they are places where people can hunt, fish and recreate. They are truly living classrooms."

One of her priorities is to make sure all the seats in those "living classrooms" are filled. It isn't easy with nearly 80 percent of the country's population living in cities and urban areas.

"I believe remaining relevant to the public is one of the biggest wildlife conservation challenges facing us today," Director Skipwith told Headquarters staff, "and we need to continue our current partnerships, and we need to be more aggressive in engaging new communities. We must do that to be successful over the long-term."

Before she became Director, she served as Deputy Assistant Secretary for Fish and Wildlife and Parks at the Department of the Interior for nearly three years, where her team was responsible for ensuring the protection and stewardship of wildlife, fish, plants, lands and waters within the national park and wildlife refuge systems. As Deputy Assistant Secretary, Skipwith supported the Assistant Secretary in overseeing policy, planning and regulatory actions for the U.S. Fish and Wildlife Service and the National Park Service.

From 2014 to 2017, Director Skipwith co-founded and worked as general counsel for AVC Global, a block-chain enabled logistics and financing platform for farmers. She also was an Assistant Corporate Counsel at Alltech Inc. and was the Sustainability Agriculture Partnership Manager at Monsanto, which is now Bayer.

She earned a B.S. degree in biology and research from Howard University, M.S. degree in molecular biology and genetics in animal sciences from Purdue University and J.D. from the University of Kentucky College of Law. She is licensed to practice law in Kentucky and Washington, DC.

Her studies at Howard, she told the Senate Committee on Environment and Public Works, "spurred my intrigue in discovering and testing new theories, to challenge the status quo and to bring forth new innovative technologies to better our world." □

Conservation in Cities

IAN SHIVE

With 80 percent of Americans now living in urban areas, one of the Service's key challenges is to meet people where they live and become relevant in their daily lives. Without public awareness and support, our conservation mission will not succeed. To do this, we work with national and community partners to make opportunities accessible to as many people as possible, and create quality wildlife habitat, even if it's in a city.

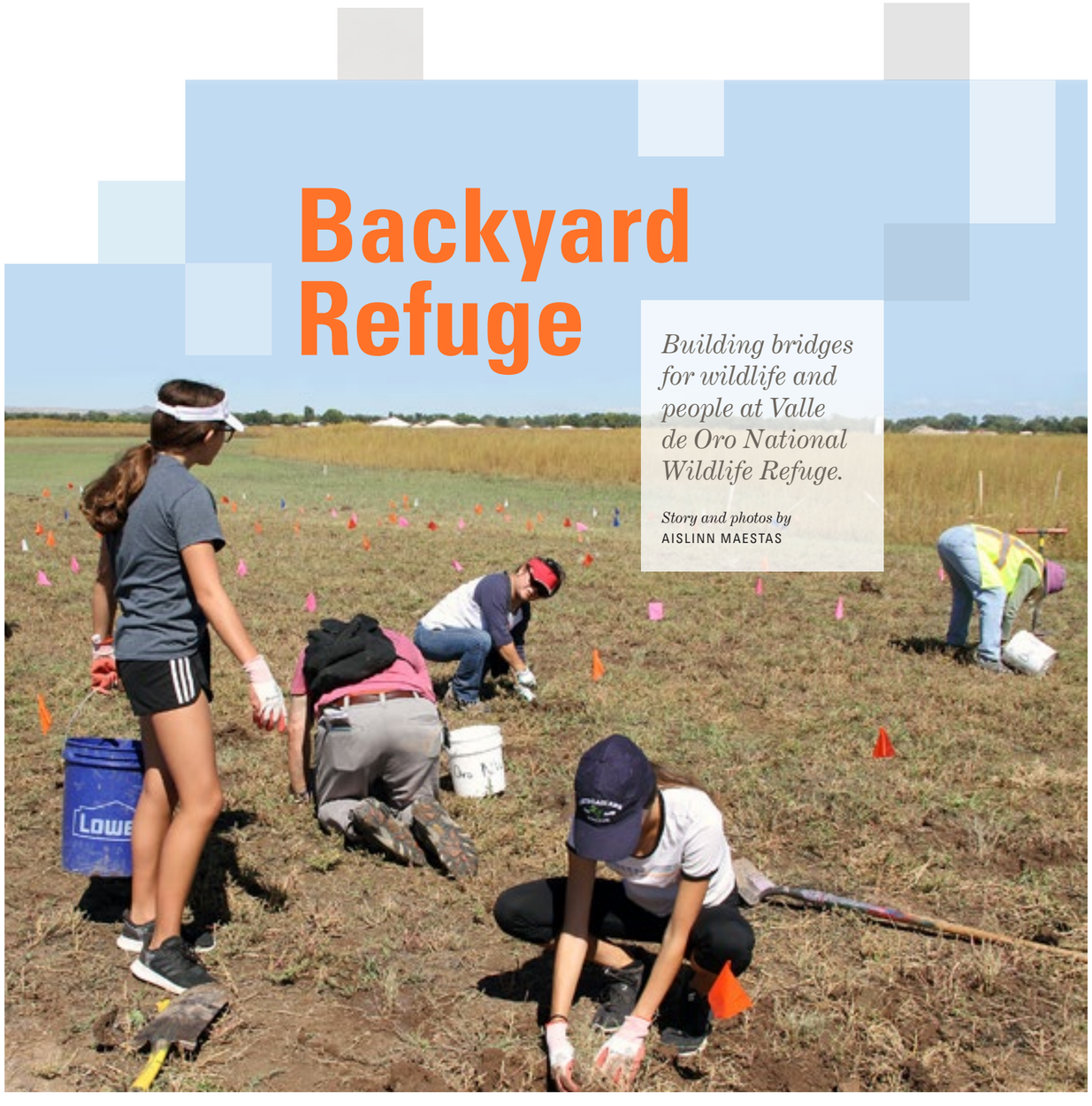
The future success of conservation ultimately lies in our ability to maintain our relevancy. This means we need to provide opportunities for Americans to connect with the outdoors and nature where they are to become stewards of the environment. Here is just a glimpse at some of the work we're doing.

A group of youth and employees at Valle de Oro National Wildlife Refuge.

Backyard Refuge

Building bridges for wildlife and people at Valle de Oro National Wildlife Refuge.

Story and photos by
AISLINN MAESTAS



Volunteers at Valle de Oro National Wildlife Refuge help restore a wetland at the Build Your Refuge Day event in September

If one word embodies the spirit of Valle de Oro National Wildlife Refuge, just south of downtown Albuquerque, New Mexico, it is "connection."

"From the beginning, we envisioned Valle de Oro as a partnership that brings together the best of what this city has to offer," says Jennifer Owen-White, refuge manager at Valle de Oro Refuge. "The people who live here are as vibrant and diverse as the plants, insects, birds and other wildlife that call this place home. We want to reflect that in every way possible."

Community-Based Conservation

Before it was a national wildlife refuge, Valle de Oro was a dairy farm wedged between the Rio Grande and the city's industrial sector. For residents in the area, opportunities to connect with nature are becoming more difficult to come by as this once agricultural community is transformed by urban growth and industrialization. This is particularly true for those reliant on public transportation as their only means of access to the area's number of public lands.

"We are surrounded by some of the best outdoor recreation opportunities in the country," says Owen-White. "But for many, there are barriers that prevent them for taking advantage of these opportunities. Being located in an urban area, we see ourselves as a door that opens up new possibilities to people who have been cut off for so long. We want to be that bridge for our community to help them deepen their connection to nature and to find their place in our public lands."

Being a bridge means work does not stop at Valle de Oro Refuge's boundaries. As the refuge and its partners developed a restoration plan to turn a dairy farm into a haven for wildlife, they also looked at what needed to be done in the surrounding community.

An answer presented itself when The Nature Conservancy (TNC) published a report on Albuquerque's heat island effects. Heat islands describe how urban areas absorb more heat than rural areas and are hotter.

According to Sarah Hurteau, a lead researcher on the report and urban conservation director for TNC in New Mexico, heat island impacts are not distributed equally across the city. Rather "the hottest areas in Albuquerque are neighborhoods with the highest poverty, highest population density and the lowest canopy cover."

During the summer, when temperatures can soar above 100 degrees in the city, extreme heat events can cause illness and even death for those at higher risk, particularly for low-income communities where people often do not have access to air-conditioning or adequate health care facilities.

Using the data from the report, which included heat maps of the city, Valle de Oro staff saw an opportunity to help their community by working to reduce the number and intensity of hot spots in their surrounding neighborhoods. This goal, it turns out, aligned with another strategic goal identified by partners—creating additional habitat for wildlife beyond the boundaries of the refuge.

"This discussion had been part of our strategic planning since the beginning," says Aryn LaBrake, executive director of Friends of Valle de Oro National Wildlife Refuge. "We always envisioned having more habitat for wildlife in the region that radiates out from the refuge into local communities."

Partners set about developing a program that could create pockets of new habitat and address environmental justice issues such as the heat islands. ››

A Big Idea

In 2018, partners settled on the concept of creating a backyard habitat certification program. The idea was simple. Develop a program that would help members of the community—including residents and local businesses—create new habitat for wildlife where they live and work.

"The public often thinks of habitat as these large, protected spaces like parks, sanctuaries and refuges," says Owen-White. "But the reality is that even the smallest space can provide shelter, food or water for wildlife."

In addition to building a network of habitat stopover sites throughout the community, the program would also help mitigate some of the heat island effects felt in neighborhoods around Valle de Oro Refuge.

"We know that tree canopy is important in mitigating the effects of heat islands," says Hurteau. "But what we learned is that grasses, wildflowers and smaller non-tree plants are very valuable for mitigating heat in these hot spots as well. This is a very real and effective way for individuals to take action toward addressing the effects of climate change in our communities."

After looking into habitat certification programs created and run by other organizations, the partnership realized they needed their own program, tailored to the needs of Albuquerque.

"We wanted something that was specific to our region," says LaBrake. "In addition to being in an urban area, we also live in an arid landscape where water is a valuable and limited resource."

Equally important was developing a program that was accessible to the community. After identifying barriers to public participation, partners put together a set of criteria for the habitat certification program.

At the Build Your Refuge Day event in September, volunteers helped with saltgrass planting.

"First and foremost we wanted our program to be free," says LaBrake. "Second, we wanted a program that was inclusive, not exclusive. Not everyone has a big backyard where they can plant a garden. So if you only have a balcony, you can still participate and contribute. Finally, we wanted a program that focused on smart water usage."

Last fall, after months of planning, Valle de Oro Refuge and its partners launched the ABQ Backyard Refuge Program. After an initial launch event that introduced the concept to the community, partners are working through the next phase of the program: certification.

"Giving people the chance to go through a process that is flexible and customizable, and come out on the other side with recognition is important," says Owen-White. "We are excited to begin moving toward having a certification process completed in the next couple of months."

Planning for Success

Having a process, as well as measurable and achievable goals, has always been a priority for partners involved. Working with the Service's Human Dimensions Program, Owen-White and LaBrake made sure to set goals that were not only achievable and measurable, but also adaptable as feedback comes in.

For this program, partners will measure success not only by increased native habitat in the area but also by an increase in community advocates for native habitats and wildlife.

"This is not an 'if you build it they will come' program," says Owen-White. "We are using all the tools available to us, from the heat maps to the latest in social science, to create a program that we know will meet the needs of wildlife and the community."

So far, more than 250 people have downloaded the ABQ Backyard Refuge Program Introductory Guide. In addition, based off feedback from participants, partners are developing a series of how-to videos to support the "Backyard Refuge" education events held at the refuge.

With more partners joining every day, the program is also attracting attention from other refuges across the region.

"We are hopefully lighting the path for others to follow," says Owen-White. "Where others take this idea, and what iterations are in store for us, only time will tell." □

AISLINN MAESTAS, External Affairs, Lower Colorado Basin Region

? MORE INFORMATION

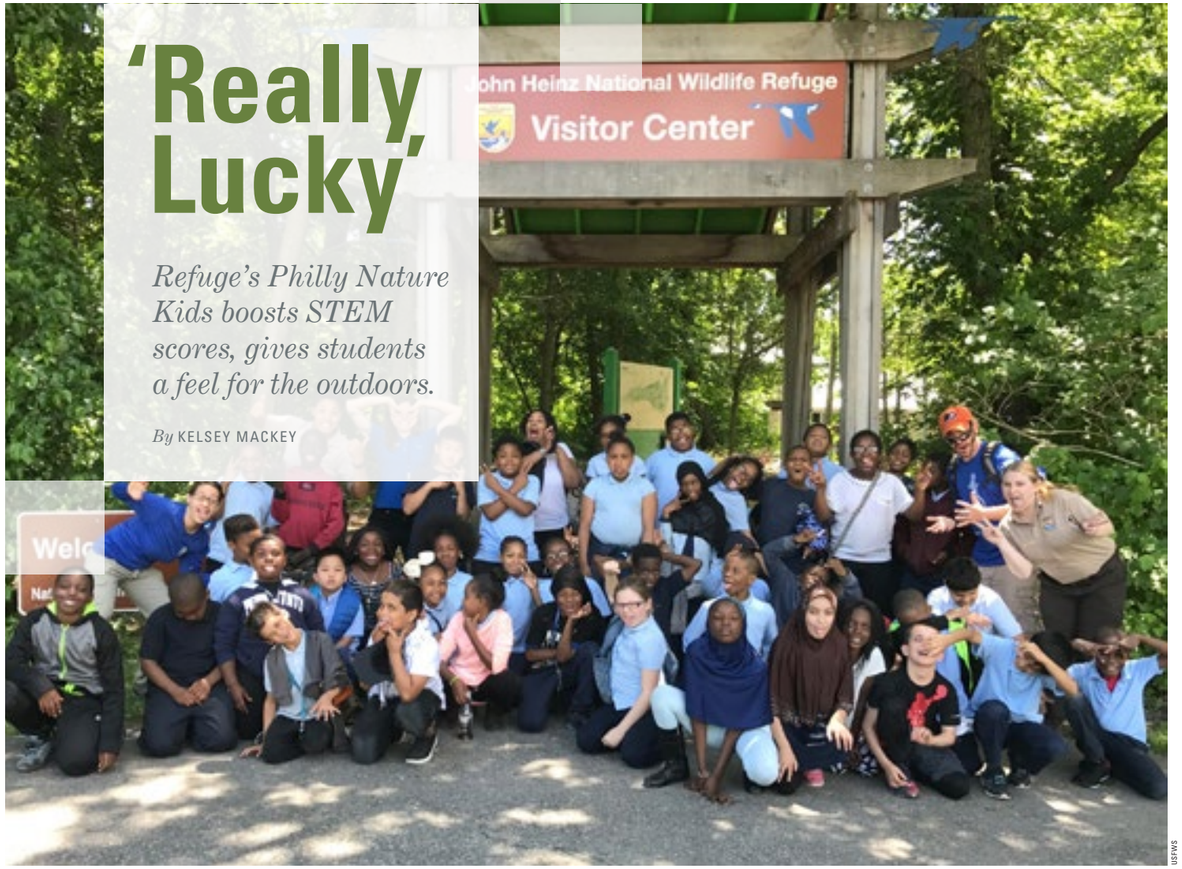
For more information, visit <ABQbackyardrefuge.org>.

(Top) At the Build Your Refuge Day event in September, a youngster gets some digging practice. (Bottom) Volunteers at Valle de Oro National Wildlife Refuge's Build Your Refuge Day event in September got watering cans.

'Really Lucky'

Refuge's Philly Nature Kids boosts STEM scores, gives students a feel for the outdoors.

By KELSEY MACKEY



USFWS

Ask fourth-grade students at southwest Philadelphia's John M. Patterson Elementary and Penrose schools, "Have you ever been to a national wildlife refuge?" and you'll get an enthusiastic "Yes!" from all 150 students who have participated in the Philly Nature Kids program—an environmental education partnership led by John Heinz National Wildlife Refuge at Tinicum that provides classroom lessons and on-site programs. ››

USFWS

(Top) Environmental Education Supervisor Brianna Amingwa and Environmental Education Specialist Kelly Kemmerle pose for a photo with Philly Nature Kids from Patterson Elementary. (Right) Brianna Amingwa helps Philly Nature Kids from Penrose Elementary plant native plant species.

Environmental Education Supervisor Brianna Amingwa and Environmental Education Specialist Kelly Kemmerle ensure that every activity in the yearlong program meets Pennsylvania's state education standards, with topics varying from habitats to the water cycle to adaptations to soils. In addition, each participating class receives $400 for students to design and facilitate an environmental stewardship project. Classes have chosen such projects as native plant giveaways, activity booklets to educate other students about nature, and marsh and community litter clean-ups.

Since 2014, staff have continuously evaluated the program and its progress. Results from survey responses by the students show a 56 percent increase in their ability to describe a national wildlife refuge at the end of the school year. The program also prompted more students—15 percent—to visit the refuge with family and friends independent of the Philly Nature Kids program and an 11 percent increase in students making positive word associations related to being in the woods.

For fourth-grade teacher Douglas Gardner, the positive effects of the Philly Nature Kids program are clear. "The students have an excitement for science and are thinking more deeply about their learning. There's an increased comfort level with science proficiency testing, proven by the increase in scores," he says. The Pennsylvania System of School Assessment scores evaluate students' working knowledge of science concepts.

Nine percent of Penrose Elementary's fourth-grade class moved from the lowest proficiency to the upper three tiers in last year's testing. Gardner believes the hands-on outdoor learning through Philly Nature Kids has contributed to their knowledge of science concepts.

To empower teachers to lead environmental lessons independently in their classrooms and outdoors, for the past three years, Amingwa and Kemmerle have been hosting an annual, full-day "Outside is IN!" teacher workshop. The 16 teachers who participate receive a ranger-led classroom lesson at their school and bus funding for a field trip to the refuge, where they co-teach with refuge staff throughout the day. At the conclusion of the workshop, teachers choose two sets of resources to take back to their classroom, such as owl pellets, hand lenses, bug boxes, thermometers, wind gauges or nature journaling kits.

During the workshop, Amingwa, Kemmerle and participating teachers break down both perceived and real challenges about teaching students outdoors in a city, discuss how to incorporate the new lessons into ongoing school curriculum, and review classroom management techniques and best practices for teaching outdoors.

Teachers can work through four example lesson plans designed for urban schools based on Pennsylvania's Academic Standards for Science and Technology led by Amingwa and Kemmerle. Lessons are flower dissection, bird investigation, a creative writing activity "sense of wonder" and a schoolyard habitat survey "what lives in my lot?" designed for city schools.

"Many of our teachers come back year after year with their students!" Kemmerle says—a testament to the success of the program.

To keep kids engaged in the summer months when school is out, students in the Philly Nature Kids program are invited to a free, transportation-provided summer camp in June. The 20–30 participating youth get to explore a variety of wildlife-dependent recreational activities during the week-long camp, including kayaking, fishing, archery, arts and crafts, orienteering, hikes and nature photography.

Fourth-grader Zarah sums up the urban refuge experience best, saying: "I think being a Philly Nature Kid is a really awesome opportunity…I feel like everybody that gets to be a Philly Nature Kid is really special, because not everybody gets that chance, and we are really lucky to get that chance." □

KELSEY MACKEY, National Wildlife Refuge System, North Atlantic-Appalachian Regio

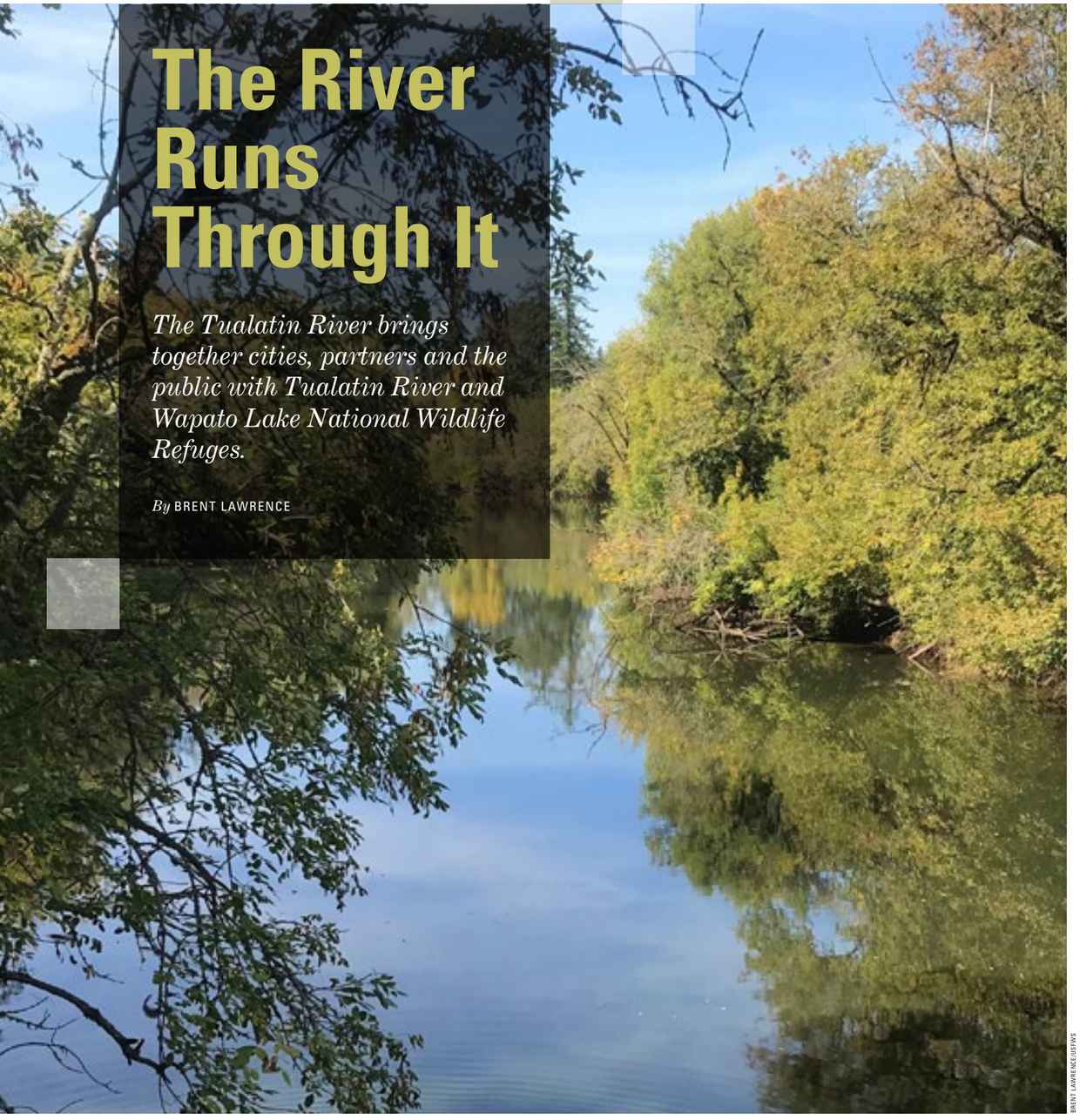
USFWS

Environmental Education Specialist Kelly Kemmerle leading activities with Philly Nature Kids.

The River Runs Through It

The Tualatin River brings together cities, partners and the public with Tualatin River and Wapato Lake National Wildlife Refuges.

By BRENT LAWRENCE



BRENT LAWRENCE/USFWS

(Previous page) The Tualatin River runs along Tualatin River National Wildlife Refuge.

The Tualatin River meanders east out of the Oregon Coast Range, flowing through mountains, farms and forests. It connects cities, forges partnerships and benefits people and wildlife as it rolls downstream.

The river also ties together two urban national wildlife refuges—Wapato Lake and Tualatin River—before it finally flows into the Willamette River just south of the Portland metro area.

"The Tualatin River is the life blood of this area coming through the Tualatin Valley. It connects everything," says Larry Klimek, project leader for both refuges. "It provides a lot of the drinking water, it provides areas for fish and aquatic species to move up and down the area, and the riparian areas provide corridors for wildlife to move."

The river is also bringing a flood of change to both refuges. Two extensive projects on the refuges will provide habitat for fish, wildlife and plants, and help provide quality drinking water for 400,000 people. The projects are also strengthening long-term relationships with local cities and partners.

"We're in this for the long haul. We don't do it for our kids. We're doing it for our kids' grandkids. The land is forever, so these types of projects are forever, too. This will be something folks will be able to look back on in 25 to 50 years and see what we've done here and the changes," Klimek says.

The Project at Tualatin River Refuge

The final leg of Chicken Creek was altered for farming purposes in the early 1900s from a two-mile long, meandering creek into a straight, half-mile long channel that increased the speed of the water, eliminated habitat for aquatic species and reduced water quality.

Over the years, the channel has deepened, completely cutting the creek off from the natural floodplain. The fast waters carry more than 700 tons of sediment a year into the Tualatin River channel, instead of depositing it on the floodplain at Tualatin River Refuge.

The Service and partners are re-creating the historic channel, resulting in a 280-acre naturally functioning wetland system connected to the floodplain and the Tualatin River.

The wetlands will act as a filter, which will reduce the amount of sediment and runoff that reaches the Tualatin River. The project, slated for completion this summer, will add a half mile of new walking trails, and current trails will be in a more natural setting as the vegetation matures.

"Native fish species like cutthroat trout and western brook lamprey really faced an impediment with this impaired reach of Chicken Creek. We're increasing available habitat in-stream and on the floodplain for these species, as well as opening up opportunities for them to move further up the system, at the same time improving habitat for a number of wetland dependent wildlife species. The big prize would be seeing steelhead use the restored creek at some point in the future," says Curt Mykut, wildlife biologist at Tualatin River Refuge Complex.

BRENT LAWRENCE/USFWS

Carol Murdock, water resource program manager for Clean Water Services, is working closely with Tualatin River Refuge Complex and project leader Larry Klimek on both projects. "(These projects are) important to Clean Water Services because they help us protect the health of the Tualatin River....Sometimes people don't understand why Clean Water Services works outside their service district, why we do things watershed wide. Whatever goes on in the upper watershed affects the lower watershed. It's all connected, right?" Murdock says.

The Project at Wapato Lake Refuge

Wapato Lake Refuge is restoring the 800-acre lakebed into year-round wetlands, replacing failing pumps and installing two access bridges.

It's a huge first step toward opening the refuge to the public for walking trails, wildlife observation, photography, environmental education and waterfowl hunting.

More than 100 years ago, the lakebed was cut off from the Tualatin River by a levee system with the water diverted through irrigation channels. Wapato Lake would fill in the winter with rain, and then be pumped out in the spring so the lakebed could be used for onion farming.

The Service began acquiring the Wapato Lake property in 2007 and has been working toward this restoration ever since. The replacement of the old, failing pumps is being facilitated by Clean Water Services, Intel and other partners. Even though onion farming no longer occurs, new pumps are needed to accomplish re-seeding and planting native vegetation and managing water levels.

"We'll make a dramatic shift from a degraded wetland basin that has been drained every spring for nearly a century, to a restored 800-acre marsh. Because few large, permanent marshes remain in the Willamette Valley, Wapato Lake is sure to be a boon for wildlife," Mykut says.

The project will also include the removal of invasive plant species, and turning the levee into walking trails, as well as creating potential opportunities for waterfowl hunting.

Wapato Lake has been identified by the Pacific Habitat Joint Venture and Oregon Conservation Strategy as a high priority for restoration, which helped the project secure a North American Wetlands Conservation Grant.

AMANDA SMITH/USFWS

(Above) The habitat and access improvements at the two urban refuges will allow the Service to connect more children with nature.

Partners for the Future

Just as the urban refuges are changing, so are their neighboring communities. Growth and development are putting an emphasis on the need for green spaces where an urban audience can go to enjoy nature.

Wapato Lake Refuge is in the middle of the quiet 700-person town of Gaston, abutting the city park, and it will connect to a planned rails-to-trails project from Yamhill County. But don't let the small-town feel fool you; growth is coming for the city with a newly approved 300-home subdivision.

"I think it will be important for recreational opportunities for our citizens here in Gaston. As the refuge comes in, we're hoping more people will come here to visit the refuge, and our stores and eating establishments will benefit from that," says Tony Hall, the former mayor of Gaston and a lifelong resident.

Tualatin River Refuge already has a financial impact on its local cities. The refuge draws more than 150,000 people annually.

The City of Sherwood has been an active supporter of Tualatin River Refuge since its early days, even touting the refuge on the city's tagline: "Home of Tualatin River National Wildlife Refuge."

Keith Mays, Sherwood mayor and a former president of the Friends of Tualatin River Refuge, understands the connection between the refuge and the city.

"The refuge is vitally important to Sherwood. We played a part of getting it established, and we want it to grow and thrive to be an important anchor to the life and breath of Sherwood….The best days are in front of us. These investments by our federal partners, our state, regional and local partners, nonprofits and volunteers are going to make our refuge an incredible asset to Oregon." □

BRENT LAWRENCE/USFWS

Wapato Lake National Wildlife Refuge is restoring the 800-acre lakebed into year-round wetlands, replacing failing pumps and installing two access bridges. It's a huge first step toward opening the refuge to the public for walking trails, wildlife observation, photography, environmental education and waterfowl hunting.

BRENT LAWRENCE, External Affairs, Columbia-Pacific Northwest Region

? MORE INFORMATION

Watch videos and read a storymap version of this article: <https://bit.ly/2S1hlJT>

Dots for the Birds

Portland is learning what it takes to develop a bird-safe city.

By SARAH LEVY

JANE PELLICCIOTTO

The Oregon Museum of Science and Industry (OMSI) sits on the east side of the Willamette River in Portland, Oregon, less than a mile away from the city's Oaks Bottom Wildlife Refuge. OMSI is one of the nation's leading science museums, with hands-on, experiential learning opportunities, including a motion simulator and planetarium. But there's something that most visitors don't notice: On the west side of the museum, which faces the river and downtown Portland, one bank of the museum's tall glass windows has been covered by a film stippled with barely visible dots.

What are the dots for? They're for the birds. The demonstration window at OMSI displays three types of window glazing meant to help reduce bird collisions.

A film on a window might not seem like a big deal, but it's an effective tool to help birds see windows and save their lives. There are hundreds of bird species that use the Willamette River as a permanent home, migratory corridor or temporary refuge.

Everywhere there is a window there is the risk of a bird colliding with it, but this risk increases when the building reflects vegetation, such as trees, or sits in close proximity to good habitat. With the Willamette River out its back doors and Oaks Bottom nearby, OMSI's large windows posed a hazard to hawks, ducks, woodpeckers, songbirds, hummingbirds, you name it. The new protective film will be even more important as OMSI's habitat enhancement along the river proceeds.

Humans have the ability to see windows by our ability to interpret a reflection as just that, a mirror of the world behind rather than a window to the world in front. Birds generally seem unable to make that logical leap, and often collide with a window reflecting an image of a tree, bush or sky. Birds also sometimes interpret a window as a tunnel they can fly through. And they can run into buildings at night after becoming confused by lights. Studies suggest that between 365 million and 988 million (up to a billion) birds die every year from collisions with glass in the United States lone, one of the biggest killers of migratory birds annually.

"Bird collisions with glass is one of the largest sources of mortality to birds, and one that we can do something about. As bird populations decline worldwide from multiple threats, it's important to take action at home, in our cities, and at our ››

(Previous page) A film on a window has dots that help birds see windows and save their lives. (Below) Great blue herons are common in the area of Portland's Oaks Bottom Wildlife Refuge.

BRENT LAWRENCE/USFWS

OREGON MUSEUM OF SCIENCE AND INDUSTRY

businesses, to reduce those threats. Adding bird-visible films to windows is one of those things," says the Service's Michael Green, Deputy Chief of the Columbia-Pacific Northwest Region's Migratory Birds and Habitat Program.

The Service, Audubon Society of Portland, American Bird Conservancy and other partners have teamed up to help cities become more "bird-safe."

"Research tells us that almost half of all window strikes happen at residential homes and over half happen at low-rise commercial buildings," says Mary Coolidge with Audubon of Portland. "That's because there are so many of them across the landscape. High rises don't get a pass on this, but we need to be addressing this hazard at all scales of development, not just at high rises."

In 2003, Portland was designated an Urban Bird Treaty City as part of the Service's Urban Bird Treaty Program. The program is a collaborative effort between the Service and participating U.S. cities and partners to create bird-friendly environments and help people connect with nature through birding and conservation. Coolidge and Portland Audubon, with support from the Service and other partners, work tirelessly to help Portland become a more bird-friendly city. In 2012, Portland, Portland Audubon and the Service developed a resource guide for bird-friendly building design for the city.

In 2018, the city adopted a Central City Plan that includes a regulation requiring builders in Portland's downtown core to follow procedures to glaze windows in such a way that will help birds see them if their building design includes more than 30 percent glass. According to Portland Audubon, a good bird-safe film on a window creates a pattern that interrupts reflectivity and alerts the bird to its presence. There are also special types of glass that builders can use that include built-in patterns to alert birds. Spacing is also important: Research has shown that patterns spaced two inches apart or less horizontally and four inches apart or less vertically have a higher chance of reducing collisions. Even more eye-catching to businesses? Because bird-safe window options can cost as little as 5 percent more than a standard window, installing them during building construction is a reasonable option.

The Service and other partners contributed to bird-safe glass at OMSI, as well as a sign that explains the importance of the glass for reducing bird mortality. Developers in the Portland area are getting the message, using bird-safe features on other buildings.

If you want to make your windows at home more bird-safe, there are a few inexpensive things you can do. One is to place thin strips of tape, following the 2x4 rule, on the outside surface of your windows so that birds can see the barrier. Another is to put a screen or net outside of your window. You can keep your shades drawn during the day, and move plants back from windows. Little steps can add up to big changes, and help save the lives of birds in an urban environment. □

SARAH LEVY, External Affairs, Columbia-Pacific Northwest Region

"Research tells us that almost half of all window strikes happen at residential homes and over half happen at low-rise commercial buildings..."

— MARY COOLIDGE, AUDUBON OF PORTLAND

? MORE INFORMATION

For more information on collision with building glass and how to incorporate bird-safe building design into your home or business, visit <go.usa.gov/xpJYn>.

(Left) Thin strips of tape on the outside surface of your windows help birds can see the barrier. (Below) With every window, birds, including Canada geese, are at risk of colliding with it.

BRENT LAWRENCE/USFWS

Building Trust on the Trail

LISA COX/USFWS

San Diego recreationists and the Service come together to heal a local mountain.

By LISA COX

Jose Galaz, board member for the San Diego Mountain Biking Association and Bonita Bikers, enjoys his backyard trail on Mother Miguel Mountain on a regular basis for a great workout and connection to nature. Galaz is behind much of the organization of volunteer trail work and advocacy for sustainable trails on public lands.

Jason Showalter stands across a canyon draw at the base of Mother Miguel Mountain, gazing at its newly constructed zigzag trail. Native wildflowers dance in the foothill breeze. ››

"This trail has had a profound effect on my life," says Showalter, a former board member of the San Diego Mountain Biking Association. "It's because of the people. The passion you all [Service employees] have is real. It's addicting."

He will never forget his "first date" as he calls it, on January 2, 2009, with the Service's San Diego National Wildlife Refuge Manager Jill Terp.

"We bickered like an old married couple," he chuckles.. "But like I said when I resigned from the board of the association, the greatest thing out of all of this was meeting Jill Terp."

Steeped in knowledge of the refuge's draft Comprehensive Conservation Plan and the San Diego Multiple Species Conservation Plan, Showalter came to Terp with his concerns about trails on the refuge.

"He had really done his homework to learn about why the refuge was established," she says.

Showalter looks at nature differently since their meetings about popular trails on the refuge. As they hiked many miles together and got to know what each other's goals were, their level of trust grew as an important friendship blossomed.

"Before, I used to see ground," he says. "Now I see habitat. Rocks equal homes for wildlife."

Over the years, Showalter became a conduit of communication between an overwhelmed refuge manager trying to balance conservation with recreation and a growing group of passionate trail users.

A Challenge for Design

Mother Miguel Trail, informally known to locals as the "Rockhouse Trail" because of the large pile of rocks atop the 1,529-foot peak, is a popular trail that had become badly eroded.

Hikers walking straight uphill in the slippery dirt and rocks had created a wide eyesore of a "scar" that clawed up the mountain at an unsafe 30 percent slope. Even new switchbacks wouldn't leave a desirable slope for preventing future erosion.

To add to that, Showalter and Terp encountered several sensitive species such as the endangered Quino checkerspot butterfly and its host plant, *Plantago erecta*.

JOSE GALAZ/SDMBA

Volunteer trail workers hike across the scar in January 2019, heading to work on a switchback turn up ahead.

"After four hours, we'd only gone about 40 yards," Showalter says. "We tried using the clinometer to pick a route, but then [Terp would] see a whole sea of *plantago* or a patch of cryptobiotic crust," he threw up his hands. "There were many days like that, but we kept pushing on."

Pushing on so much that Terp broke her ankle one day while working on the reroute with another refuge staff member and had to be airlifted to an awaiting ambulance. ››

JOSE GALAZ/SDMBA

A group of volunteers from Bonita Bikers and the San Diego Mountain Biking Association pose with refuge manager Jill Terp (on one knee) in April 2018.

Frustrated by the setback, Terp nursed her ankle while other refuge staff and partners from the San Diego Mountain Biking Association, Bonita Bikers, Bonita Valley Horsemen and Earth Discovery Institute stepped in to continue their mutual goal of redesigning Mother Miguel Trail.

Harnessing Outdoor Enthusiasm

Local volunteer Mark Kukuchek, a Bonita Biker and a committee chairperson of the Bonita Valley Horseman, believed in giving back to the trails he enjoyed and regularly patrolled other local trails via horseback.

"When we were working on the trail here, I pushed to keep it open," he says. "We need to let people in but without letting the trail get loved to death."

Terp agreed. To build support within the community and harness the incredible amount of interest, Terp decided to keep the trail open during the extensive reroute work.

"We have this great opportunity to connect our neighbors with nature," says Terp. "We're hoping that by us being out here to help them understand the 'why,' it will increase respect for wildlife overall and compliance for staying on the trail."

She organized outreach days with her trusted partners at the institute, as Showalter and others led volunteers in the backbreaking trail work, which could only occur after rains because of the rock hard ground. What's more, the nesting season for the federally threatened California gnatcatcher constrained their work during the spring and summer.

Using hand tools such as pick axes, pounding in fence posts and moving rocks to fortify new switchbacks, the volunteers led by certified trail bosses slowly but surely started to see their hard work come to fruition.

"That scar motivated me," says Showalter. "I wanted that thing gone."

Public Use Pressure Vs. a Legacy for Conservation

Showalter's curiosity in the refuge's management may have started back in 2009, but in 2015 it reached a new level of advocacy. San Diego National Wildlife Refuge was undergoing a major stage of their draft Comprehensive Conservation Plan: a final public meeting with more than 300 attendees.

"It was a media frenzy, and people yelled at the refuge staff," says Showalter. "It hurt me to see my friends get disrespected. I knew all that they were up against."

There were more challenges than just heavy trail use. The terrain, the endangered species and cultural resources, the public's safety and the fact that the refuge did not own the land where the public enters to reach the trailhead made access and orientation difficult.

There was additional public pressure because of the recent closure of an illegal trail on neighboring Mount San Miguel, which had formed over the years after the devastating Harris Fire.

"We saw Mother Miguel as a compromise to still give people that peak experience," says Terp.

Unfortunately, the "Rockhouse Trail" was exploding in popularity, and the minimal refuge staff who worked there could not get to redesigning it fast enough.

It sounded like a great opportunity for another local mountain biker.

Rallying the Community and Building Trust

Jose Galaz, who considers the wildlife refuge his backyard in suburban Chula Vista, is an Instagram-famous cyclist grandfather of two. Despite being a self-proclaimed introvert, he really has a knack for organizing groups.

LISA COX/USFWS

JOHN MARTINO/SFWS

KEVIN HAMM/USFWS VOLUNTEER

The endangered Quino checkerspot butterfly, endangered Otay tarplant and threatened coastal California gnatcatcher all use Mother Miguel Mountain.

LISA COX/USFWS

Deputy Project Leader Jill Terp (formerly the refuge manager for San Diego National Wildlife Refuge) poses by the new interpretive signage that now welcomes visitors at the entrance to Mother Miguel Trail.

"I started out just getting obsessed with riding and wanting to get in shape outdoors," says Galaz. "It turned into me joining SDMBA (San Diego Mountain Biking Association) and Bonita Bikers, then getting this passion for changing bikers' attitudes from just riding to actually caring about trails."

LISA COX/USFWS

Hello trail users! An orientation sign posted on the new fencing to direct hikers, bikers and equestrians to the new trail entrance and the closure of duplicative and eroding trails.

Galaz channeled his passion into rallying his community of mountain bikers to work on Mother Miguel Mountain and invited them to learn something new about trails and wildlife.

"I want everyone to have a sense of ownership, but also connect with nature in addition to a workout," he says. "And if we can build a trail on this crazy terrain—on a federal national wildlife refuge—we can do the same elsewhere."

Galaz also saw Showalter as the person who opened the lines of communication between land managers and mountain bikers.

"I wanted to build that trust, too," he says. "And we did. It's not a perfect trail, but it's way better than I anticipated. I am very thankful for Jill especially, for giving us a chance to do this."

She in return, is thankful for the nearly 1,300 hours given by the mountain bikers and others who've contributed to it over the past three years.

Mother Miguel Mountain's Healing Effect

As staff and volunteers continue their work in the future to heal the scars on Mother Miguel Mountain, another type of healing is taking place—in the relationships between trail users and land managers, and ultimately between humans and nature.

Because of the willingness of people like Showalter, Kukuchek, Galaz and many volunteers taking time to get to know land managers like Terp, they established a trusting relationship. Through their community networks, these leaders conveyed their understanding about the refuge to others, resulting in newfound respect and a deeper appreciation for nature.

"How the Service responded to all this showed me how much they were willing to listen," says Showalter. "From now on when I want to build a mountain biking trail, I ask permission, because now I understand the 'why' behind what they do. We all have to do our part to protect these places."

In addition to the volunteers' and partner contributions, the new Mother Miguel Mountain Trail is also supported by a generous grant from the San Diego Association of Governments. □

LISA COX, National Wildlife Refuge System, California-Great Basin Region

feather heavyweight

The Feather Atlas of North American Birds is the Internet's premier resource for feather identification, and has just received a major upgrade.

By PEPPER TRAIL *and* MATT TROTT

The Service's National Fish and Wildlife Forensics Laboratory in Ashland, Oregon is renowned as the nation's leading facility for the identification and analysis of evidence in wildlife crime investigations. It also hosts one of the Service's most successful public education and outreach projects: the Feather Atlas of North American Birds <www.fws.gov/lab/featheratlas>.

Since its 2006 debut, the Feather Atlas website has grown to illustrate the flight feathers of more than 400 species, more than half of the birds known to breed in the United States. Species represented range from the largest North American bird, the California condor, to one of the smallest, the ruby-throated hummingbird.

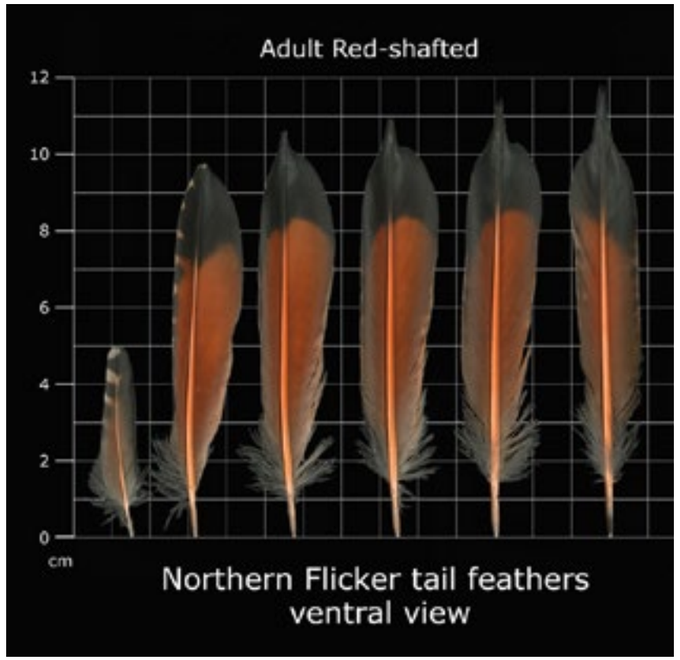
The Feather Atlas is the brainchild of the lab's senior forensic ornithologist, Pepper Trail. His primary job is to identify bird species that are part of investigations by the Service's Office of Law Enforcement (OLE). Over the course of more than two decades, Trail has identified tens of thousands of feathers representing hundreds of species of birds.

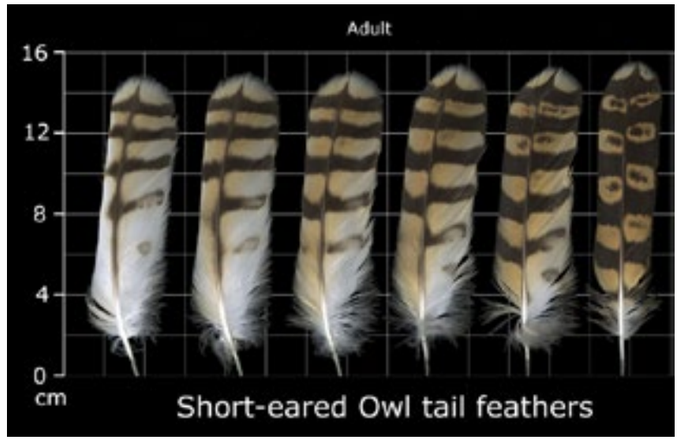
The website grew out of classes Trail teaches in feather identification to new OLE special agents and wildlife inspectors. "I realized it was unreasonable to expect field officers to retain the fine points of feather ID. They rarely have access to specimens, and bird field guides don't provide enough detail to allow the identification of individual feathers," says Trail. "What we needed was a way to make accurate, high-quality feather images available to everyone." The solution was the Feather Atlas: a curated online feather image database.

Feathers for the Atlas come from salvaged dead birds with plumage in good condition, which Trail obtains from an extensive network of contacts. No birds are killed to provide feathers for the Atlas.

To keep the project manageable—and because body feathers are rarely seen in the illegal feather trade—only the wing and tail feathers are included in the Atlas. Each feather is carefully scanned by volunteer extraordinaire Sue Polich. Without the thousands of hours she has devoted to scanning, the project would not exist. Typically, she prepares three scans for each bird: one including all the outer wing feathers (primaries), one for the inner wing feathers (secondaries) and one for right-side tail feathers. Left-side tail feathers aren't included because they are mirror images of the right side.

Polich places each digital image on a standard grid with either a blue or black background (depending on feather color) and records feather measurements and specimen information in a data table. For everyone involved, the Feather Atlas is a labor of love, worked on as their primary duties permit—a great example of Service employees going above and beyond. ››





The Feather Atlas has a total of 1,825 scans.

Legal Aspects—It's Complicated

The Migratory Bird Treaty Act (MBTA) protects almost all native U.S. bird species, making it illegal to possess such feathers without a permit. Consequently, the Feather Atlas homepage and feather identification pages display this statement in bright red letters: Important Reminder – Feathers are Protected. A link takes the viewer to a page titled "Feathers and the Law," which provides a summary of MBTA regulations, links to the list of MBTA-protected species, information on how to apply for a permit to possess feathers, and links to the Feather Atlas FAQ page.

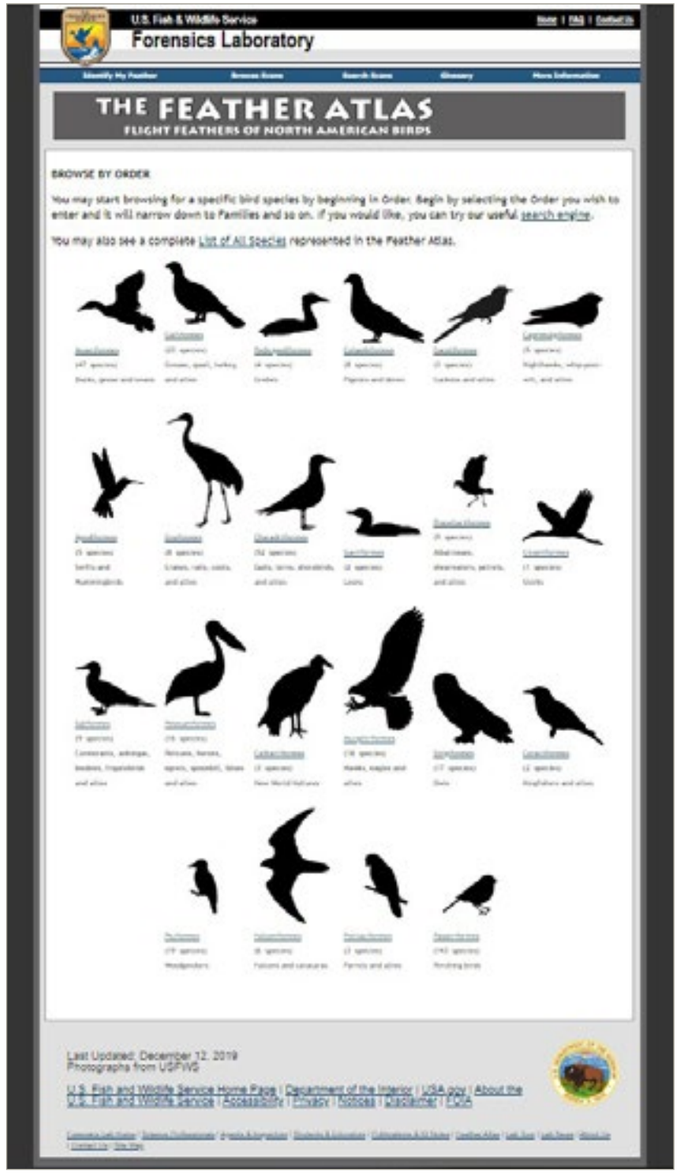
New 'Identify Feather' Features for 2020

In 2006, the Feather Atlas contained only six species, all raptors. By the end of 2019, the site featured 404 species and a total of 1,825 scans. The Atlas received more than 1.65 million page views in 2019, with a total of more than 13 million visits since 2006. To build on the website's success, Trail has just completed a major update, optimizing the site for mobile devices and expanding search capabilities to help users answer the question: "Whose feather is this?" The design and maintenance of the original Feather Atlas website was by Forensics Lab information technology specialist Brad Foster. Computer help desk specialist Toby Greenfield spearheaded the improvements, with input from Trail and the lab's other ornithologist, Ariel Gaffney. The recent upgrade included an improved search function to help users sift through the range of images. It allows users to choose up to five feather attributes: pattern, color, size, position (primary, secondary or tail) and type of bird, an increase from the previous two attributes.

A Universe of Users

Originally envisioned as a tool to help OLE agents and inspectors identify feathers, the Feather Atlas has been discovered by birders, artists, teachers, academic researchers and even video game designers. Since 2006, the site has been viewed by users from every country in the world except two (Western Sahara and Guinea-Bissau). Yes, someone in Vatican City has checked out the Feather Atlas!

What are the most commonly viewed species? In 2019, the feathers of six species were viewed more than 10,000 times: red-tailed hawk, bald eagle, Cooper's hawk, golden eagle, great horned owl and wild turkey, with red-tailed hawk topping the list at 37,783 views.



The Feather Atlas website illustrates the flight feathers of more than 400 species.

USFWS

USFWS

(Top) The Feather Atlas has been optimized for mobile use. (Above right) Volunteer Sue Polich scans in feathers. (Right) The Feather Atlas team, from left: Sue Polich (longtime volunteer), Brad Foster (creator and manager of the website), Ariel Gaffney (Lab ornithologist), Pepper Trail (Lab senior ornithologist; originator and curator of the Feather Atlas project), and Toby Greenfield (lead designer for the new website upgrades).

USFWS

The Feather Atlas is an ongoing project, continually adding species as suitable material becomes available. With half of all U.S. birds now represented, it is of course becoming more challenging to find specimens of new species. The Feather Atlas team continues its outreach to locate specimens of unrepresented birds, particularly focused on shorebirds and on species restricted to the southwestern and southeastern United States. Their next goals are to reach 500 species and 2 million annual page views. It may take another few years, but Trail is confident: "With feathers, the sky's the limit!" □

PEPPER TRAIL, Office of Law Enforcement, and MATT TROTT, External Affairs, Headquarters

CATCHING CACTUS CROOKS

The Service and partners target black market smuggling that serves unethical overseas collectors

By AL BARRUS

AL BARRUS/USFWS

Living rock cactus, found in the Chihuahuan Desert of the southwestern United States and northern Mexico, is prized by poachers.

When someone mentions smuggling and the Southwest, cacti probably don't pop to mind. However, the black market cactus trade is a problem, and the Service and partners are on it. After years of investigation, four cactus traffickers were sentenced last fall for their role in the illegal harvest, sale and/or transportation of living rock, a spineless cactus found only in the Big Bend region of southwestern Texas and northeastern Mexico.

The defendants were sentenced to a total of nine years of probation and one year of unsupervised probation. They also were ordered to pay $118,804 in fines and restitution, and forfeit 17 firearms. There are more defendants in the ongoing case.

Service special agents, Homeland Security Investigations, the U.S. Department of Justice Environmental Crimes Unit, the U.S. Postal Inspection Service, the National Park Service, Texas Parks and Wildlife Department, and Sul Ross State University are collaborating on the years-long effort to stop the illegal harvest of living rock cactus.

A Thornless, Peyote-Like Plant

Living rock cactus is a close cousin to peyote. It has no thorns, grows close to the ground and is soft to the touch. "During dry periods the stems shrink and become even less visible, merging with the ground, hence the common name of living rock cactus. The…species inhabits arid, rocky, low elevation regions of the Chihuahuan Desert and is slow growing, but eventually, after several decades, becomes around five inches in diameter," according to <AmericanSouthwest.net>. "Brightly colored flowers emerge from a woolly mass at the top of the plant in fall or early winter, the only time when the cactus is easy to locate. The stem is grey, green or brown in color, becoming partly yellow with age." Living rock cactus is protected under the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) but not under the Endangered Species Act.

Demand Comes From Abroad

While it is legal to acquire living rock from private land and sell it in the United States, CITES protection makes it a felony to export the wild plant outside United States.

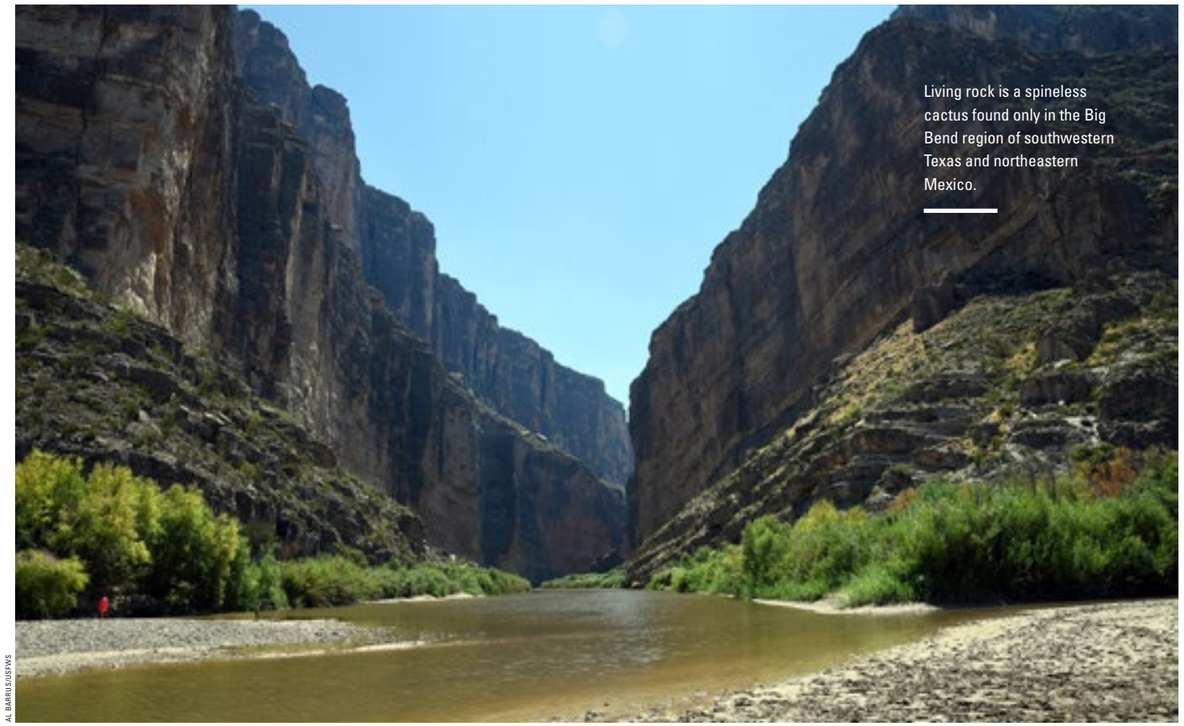
That's where the black market comes in: serving collectors, mostly in Europe and Asia, who want an exotic plant that has gone through decades of rain, dust and sun to give it a rugged, unique look. Among collectors, there's even a premium placed on endangered cactuses harvested from national parks, with some individual plants selling in the five figures.

"Never in a million years did I expect to investigate cactus smuggling as a federal officer," says Eric Jumper, lead Service special agent for the case. "Once I started working the case, though, I found it both very interesting and absolutely shocking: reading the correspondences between supplier and buyer, and learning how insatiable their desire is to get these plants. They will do ››

AL BARRUS/USFWS

My job is to find homes for [seized] living rock, since they can never be sold...

Karen Little, a Sul Ross State University botanist, helps law enforcement officers identify plants and cares for seized living rock cactus.



AL BARRUS/USFWS

Living rock is a spineless cactus found only in the Big Bend region of southwestern Texas and northeastern Mexico.

whatever they can and pay whatever they can. And they don't just want one cactus. They want as many as they can get," says Jumper, who is based in San Antonio, Texas.

This isn't the first case where federal agents have investigated cactus poachers. Years ago, Service Special Agent Albert Gonzales, stationed in El Paso, Texas, investigated collectors from Eastern Europe who illegally harvested cactuses from national parks. While previous cases typically dealt with European tourists collecting as a hobby, the living rock cactus case focuses more on opportunistic poachers who are essentially mining the small, plushy, slow-growing cactus from its natural habitat.

Partnerships and Education Are Vital

The Big Bend region of Texas is isolated, so partnerships between law enforcement officers and other experts are crucial.

Karen Little is a botanist and the environmental laboratory manager for specialty gardens and greenhouses at Sul Ross State University in Alpine, Texas. With a population of 6,000, Alpine is the largest town in the Big Bend area. Federal agencies requested support from Sul Ross State because it has the best facilities in the region to care for native plants. Little helps Jumper with plant identification and cares for the seized living rock.

"Sul Ross is happy to assist Fish and Wildlife, the National Park Service and Homeland Security," says Little. "Law enforcement is the front line in protecting our unique part of the world, while we attempt to educate the public about the long-term harm of poaching."

Sometimes, poachers take whole populations of living rock, which can wipe out genetic lines, leave the cacti vulnerable to disease and threaten entire ecosystems, Little says. If a whole population is poached, the living rock might never come back in the area, and these cacti take an incredibly long time to grow. Larger plants could be a century old.

"My job is to find homes for [seized] living rock, since they can never be sold," Little says. "I've been concentrating on getting them repatriated into their native area on private property. The reason most of them go to private property is because the national park and Big Bend Ranch State Park don't want to take plants if they don't know where they came from. One thread that runs through this: No poachers confess where they took cacti from, which means they either got them on the state park, national park or private property without permission. Public land managers don't want to mess with the genetics by reintroducing cacti from another area, so many of the plants probably can't go back to where they come from."

Little gets guarantees from the landowners that they won't sell these plants.

The good news is that a cultural shift is happening among cactus aficionados. Many succulent fanciers are aware of the toll that unethical harvesting takes on wild populations, and part of their passion is preserving native ecosystems. They perform outreach and education when presented with an opportunity.

"It's important to me because these are plants that are indigenous to North America and only North America. It's our job to preserve these plants, and if we don't preserve them here, they won't exist," Jumper says. "And I don't appreciate people who make money off our natural resources without any concern for the law." □

AL BARRUS, External Affairs, Arkansas-Rio Grande-Texas Gulf Region

Sul Ross State University has the best facilities in the Big Bend region to care for native plants, including seized living rock cacti.

Finding Refuge in Nature

National wildlife refuges see influx of new visitors.

By DARCI PALMQUIST

America's national wildlife refuges were established with wildlife in mind, but it would appear that a new wave of creatures is discovering refuges for the first time.

Bird watchers, walkers, nature lovers, respite-seekers—all members of the species *Homo sapiens*—have been flocking to wildlife refuges in the Northeast during the COVID-19 pandemic.

"We're seeing two to three times as many visitors as we might typically have this time of year," says Mike Horne, refuge manager at Lenape National Wildlife Refuge Complex, which covers three states (New York, New Jersey and Pennsylvania). "For many, this is the first time they've visited a national wildlife refuge."

This increase is partly because many refuges have stayed open to the public when other parks and recreational facilities were shut down. The Service has encouraged refuges and national fish hatcheries to keep areas open for public access wherever possible in order to provide healthy outdoor recreational opportunities for people, as long as conditions are safe. The health and safety of visitors, employees and volunteers is the top priority, and all refuge visitors are requested to follow social distancing and other CDC-recommended public health safety practices.

"We're trying to maintain public access whenever and wherever possible because we understand that outdoor recreation is an imperative need at this time," Horne says.

One of the units under Horne's management is Great Swamp National Wildlife Refuge, just 26 miles from New York City in Morris County, New Jersey. Like many wildlife refuges across the nation right now, the visitor center at Great Swamp Refuge is closed to ensure public health and safety, but most of the refuge's trails remain open to the public following proper social distancing guidelines. (Find an updated list of refuge closures at <www.fws.gov/home/state-by-state-closures.html>.)

Horne and his staff are working diligently to protect refuge infrastructure and ensure the safety of staff and visitors alike. So far, there have been some minor violations, but for the most part "people are following the rules and doing great," Horne says.

At Silvio O. Conte National Fish and Wildlife Refuge, which encompasses 22 units in four states (Massachusetts, Vermont, Connecticut and New Hampshire), Refuge Manager Andy French has also seen a significant jump in visitation—up nearly 3,000 visitors compared to March-April numbers in 2019. He says many of the visitors are experiencing the refuge for the first time.

Conte Refuge encompasses an entire watershed, the Connecticut River watershed. It is is part of a 1.8 million acre public and private conservation area. This public-private partnership is a critical component of its success in a watershed that spans some 7.2 million acres—and something French thinks could be an effective model for future conservation work. The refuge is strategically connected in a way to increase the resilience of the refuge and the larger conservation mosaic to sustainably accommodate wildlife and their habitat, along with outdoor experiences for people. ››

French says the value of conservation lands have become significantly more important to people during the pandemic. "This was evident in the increase in visitation this spring and the comments of people who said how thankful they were to have places where they could experience the sights, sounds and smells of the season," he says.

Practicing social distancing can be a challenge at some refuges—particularly those in urban settings or that are already popular destinations— but increased visitation provides opportunities to connect first-time visitors with nature and help spread the word about the value of refuges for people and wildlife.

"In the future, we know there will be more people who need and seek nature and open space for recreation, connection and to restore their sense of health and well-being," French says. "As the population grows, it is my hope that public and private entities will also continue to support and invest in conservation in a manner that is robust enough to provide healthy habitats for wildlife and quality experiences for people who are drawn to these treasured outdoor places."

More Than a Pandemic Trend?

The fact that more people are getting outside wherever and however they can right now might not be so surprising—nature has always been a source of comfort and joy for people, and recent studies show that spending time outside is good for our health and well-being.

But is spending more time in nature just another pandemic trend, like making sourdough bread or starting a garden? Can the lessons of this experience help us create a more positive future for conservation and people?

Sometimes in life, the most resilient bonds are forged during times of stress and it is these common experiences that form the foundation of more opportunities for shared experiences. For Horne and French, it's all about how to sustain and nurture these encounters with new visitors into lifelong relationships with wildlife and the outdoors.

"This has been an incredible opportunity to help educate visitors and connect them with nature," Horne says.

National wildlife refuges have been around for more than 100 years. But unlike their more famous older siblings—national parks—refuges have flown under the radar when it comes to outdoor recreation. America's more than 560 national wildlife refuge units receive some 60 million visitors a year, compared to the more than 300 million visitors to national parks.

Yet wildlife refuges offer a huge variety of outdoor activities, such as hiking, paddling, birding, hunting, fishing and more. And refuges are in every state and territory—nature-seekers can find a refuge within an hour's drive of most major U.S. cities. Refuges also help visitors to better understand the natural world around them.

For instance, a visitor to Great Swamp Refuge might learn about the rare species that live on the refuge, such as the threatened bog turtle or the blue spotted salamander—something visitors to a local park might not learn. Discovering that these special species live within driving distance can change a person's outlook on nature.

Managing the needs of wildlife while supporting the needs of people is not always easy. For example, during shorebird nesting season, some stretches of beach along East Coast refuges are closed or roped off to protect bird nesting areas. But even these situations provide better education and awareness of how people and wildlife can live—and thrive—together.

A 'Silver Linings Playbook'

At Conte Refuge, French sees a big opportunity in engaging more visitors and raising awareness about the value of having protected lands and waters that benefit wildlife and people.

"We have an opportunity now for public and private entities to better prepare for tomorrow," French says. "Future generations will benefit—on so many levels—if we can increase the availability and variety of open spaces for outdoor activities, for wildlife and for the health of our shared environment."

Horne agrees.

"This is really a chance to engage new visitors—following social distancing guidelines—and enlist their support for conservation," Horne says. "People are hungry for nature right now, and this discovery of wildlife refuges could be a silver lining during this time in history." □

DARCI PALMQUIST, External Affairs,
North Atlantic-Appalachian Region

MUSEUM OBJECTS COME TO LIFE

This is a series of curiosities of the Service's history from both the U.S. Fish and Wildlife Service Museum and Archives as well as the Service's National Fish and Aquatic Conservation Archives. As the first and only curator of the museum, Jeanne M. Harold says the history surrounding the archives give them life. Jeanne retired in November but provided articles to keep Curator's Corner going. We are also featuring submissions from April Gregory, curator of the National Fish and Aquatic Conservation Archives.

Eyes on Fish

Ever since its establishment in 1896, Spearfish National Fish Hatchery (now D.C. Booth Historic National Fish Hatchery) has been a magnet for visitors. This scene from the early 1900s is one still seen at the hatchery today. Although the raceways are now concrete and the fashion has changed, both children and adults are thrilled and enthralled by the simple act of feeding the fish and watching fish culture work. D.C. Booth Hatchery lies within city limits of the town of Spearfish. Today's population of the town is 10,000 and this urban hatchery is the number one tourist attraction for Spearfish, drawing in more than 160,000 visitors each year. The 124-year-old hatchery grounds haven't changed much, nor has the simple joy that people experience when engaging in nature and feeding the trout! (APRIL GREGORY)

Horsing Around in a Fishy Business

Stocking fish into bodies of water has been done various ways over the last 149 years, including by horse. In the earliest years, the U.S. Fisheries Commission, or the U.S. Commission of Fish and Fisheries, the predecessor of today's Service, often used milk cans because they were readily available. The milk cans were loaded onto horse-drawn wagons and brought to their stocking locations. We even have some milk cans in the collection that have a hatchery name painted onto them. Pictured is a canister that was used for stocking fish into remote, high mountain lakes via horse or mule. The rough-hewn canvas siding was necessary to cinch the container onto the pack saddle. It would have been a long, bumpy ride for the fish! Horse-packing is still used for stocking remote waters, though helicopter and plane drops are also used. Recent examples of horse stocking are Gila trout in New Mexico and greenback cutthroat trout in Colorado (APRIL GREGORY).

Leave the Tapes at Home, Hunters

While the use of electronic equipment, such as this 1961 Johnny Steward model tape recorder, is available to hikers, nature lovers and photographers, it is illegal under federal law for the specific purposes of hunting to use "recorded or electronically amplified bird calls or sounds" to lure waterfowl. Law enforcement officials confiscated this tape recorder as it was used to bait or lure waterfowl into the sights of waiting hunters. (JEANNE M. HAROLD)

Yippee Ki Yay

We have a very nice, intricately tooled leather western saddle from Charles M. Russell National Wildlife Refuge. It was made by Al Furstnow of Miles City, Montana. The Furstnow Saddle Shop was in business from 1884 until 1946. The refuge was first named the Fort Peck Game Range but was renamed in 1963 after the famous artist of the old American West Charles Marion Russell (1864–1926). The saddle was used on the refuge for many years, and was probably instrumental in the daily activities of riding the range and wrangling bison and who knows what other little doggies! (JEANNE M. HAROLD)

Finding Inspiration During an Extinction Crisis

By LEVI NOVEY

NICK HAWKINS / NAI CONSERVATION

Tapirs are a critical species for maintaining healthy forests.

The small bee had stung me on my cheek. But I was not very concerned. I walked inside the ecolodge, checked myself in a mirror and then more excitedly looked at the photos on my camera. Even though we were only taking short breaks, I was getting great photos of the colorful hummingbirds congregating around a feeder outside. They and the incredible view from the lodge were an awesome bonus to the task at hand.

I was at this inspirational location in a national park in Costa Rica for the second session of the Baird's Tapir Survival Alliance, an international effort to save the unique and charismatic Baird's tapir.

Back inside, my companions and I prepared to meet again. Everyone got coffee or tea before we settled back into another set of presentations, activities and discussions. This training was focused on communications, and I was there to listen and help lead discussions focused on how to help the Alliance accomplish its outreach and communications goals.

In many ways, this was the beginning of something that could turn out to be extraordinary. Previously, conservation efforts for Baird's tapirs had occurred in Central American countries in isolation. The Alliance represented the first time that experts throughout the region would work together to save the species.

Like the rest of the Alliance, I had quickly fallen in love with Baird's tapirs. With a short elephant-like trunk and large ears, they look distinctive and are also an animal that's easy and fun to draw. As the largest mammal in Central America, these giant herbivores are the only animal capable of eating, digesting and dispersing seeds for certain species of large rain forest trees. Known as "Gardeners of the Forest," tapirs are a critical species for maintaining healthy forests. As climate change and rapid deforestation continue to escalate and transform the region, tapirs will be a necessary ingredient for reforestation efforts. In addition to their ecological role, tapirs have been culturally important for centuries.

But as estimates indicate that only 4,000-5,000 tapirs remain, the stakes are high. It's thought that their population has declined more than 50 percent in the past 30 years. Habitat loss, poaching and deaths on roads are the key reasons why these important animals are endangered—and they could be gone sooner than we think.

This fear has become all too common for me and my colleagues in the Service. It seems like almost every week, I see another research or news article that estimates how many species of plants and animals will go extinct in the near future, and how unprecedented the intensity and speed of extinction has become. I'll admit it: There are days when this "Extinction Crisis" we face seems insurmountable. I get sad and frustrated. I think of the many species we work on in our International Affairs Program, both well-known and obscure. I wonder if we are spreading ourselves too thinly. There are species such as the charismatic vaquita, which in my opinion has a high likelihood of being declared extinct in the near future. In addition to mammals, so many other kinds of animals and plants are also at risk. ››

BAIRD'S TAPIR SURVIVAL ALLIANCE

LEVI NOVEY / USFWS

(Top) Members of the Baird's Tapir Survival Alliance take a rest during our hike through tapir habitat in Tapanti National Park, Costa Rica (Left to Right: Luis Herrera, Raquel Leonardo, Levi Novey, Ninon Meyer, Chris Jordan, Nicole Leroy-Beaulieu, Esteban Brenes-Mora and Armando Dans). (Bottom) A fiery-throated hummingbird.

on, and we hiked up and down many steep slopes. This was the first time I can remember being probably the oldest, slowest and most out-of-shape person on a hike—and I was only 39 at the time! It was a far cry from my younger park ranger days. It's just something I guess you have to accept once you are behind a desk in Washington, DC, most days of the week, trying to do big things to make a difference. I could not help but miss the field.

But despite feeling older and less fit, it was by this point that I was also at my happiest. The whole week had been terrific—not just because we were discussing and planning how to unite conservation and communications efforts, but because I felt so inspired by the young professionals I had gotten to know. They are entrepreneurial, professional, intelligent, obsessed with tapirs, curious about nature, passionate about making other people understand why tapirs are so cool, funny, fun, optimistic, caring, non-assuming, confident, the type of people you would want to call friends. I felt like if Baird's tapirs are going to be saved from extinction, these are the people that will do it.

I feel proud and honored to have been a part of the genesis of this professional alliance and new group of friends. This is the fuel that keeps me going. From what I often hear, it's the same for my colleagues. The people on the ground fighting for the conservation of species around the world inspire us and give us hope, despite the odds against wildlife and the habitats they depend on. Ultimately, it might not be enough to save every threatened species from extinction. But we can save some of them, and the best chance we have is each other. □

We might not ever know their names. Yes, there are some success stories, but I know fewer of them than I would like to. As I write this, the bushfires in Australia are wiping out wildlife on a scale I've never witnessed in my lifetime, and it's impossible to contemplate what this could mean. With doubt I wonder, "Certainly we can reintroduce species like kangaroos and koalas to the wild after the fires, right? Their habitat will slowly regenerate, right?" While many of us will optimistically bring our can-do positivity to this challenge and others, the truth is that I can't help but question whether it will be enough.

On one of the final days of the Alliance's meeting, we took a hike through tapir habitat together to check some camera traps for images of tapirs. It rained off and

LEVI NOVEY, International Affairs Program, Headquarters

transitions

Headquarters

Steve Chase has been named the latest Director of the Service's National Conservation Training Center (NCTC). He had been serving in an acting capacity since Jay Slack retired in 2018.

Chase has been with the Service since 1990 and has worked on National Wildlife Refuge System, Migratory Bird and Law Enforcement issues. In 1993, he joined the staff of NCTC where he worked on the design and development of the NCTC campus and its operations, later becoming Chief of Facility and Administrative Operations. Chase was instrumental in the establishment of the Service's national history/heritage programs, including development of the NCTC museum, exhibits and archives. In 2018, he received the Service's Heritage Award for that work. The program has become one of the premier centers of knowledge on American conservation history. He has also served as Chief Financial Officer and Special Assistant to the NCTC Director.

As NCTC's acting and deputy director, he has led all operational aspects of the center, including training and event delivery to approximately 12,000 annual students and guests from the Service, Department of the Interior (DOI) bureaus, other federal agencies, state agencies, conservation partners and the private sector. Chase has also had oversight of the center's creative, media and museum services; business and finance; technology operations; facility and resource management operations of the 500-acre, 400,000-square-foot campus; and oversight of a large guest services facility and related support contracts. He oversees a diverse workforce of more than 200 employees and contractors, both onsite and remote, and an annual budget of approximately $30 million.

Chase will advise Service leaders about training, leadership and employee development, and connecting the American people to nature through education and outreach efforts. He will recommend and develop Service-wide training and employee development policy, implement Service-wide training programs, and manage NCTC to foster and develop nationwide partnerships throughout the conservation community.

A native of Connecticut, Chase holds a bachelor of arts in mass communication with an earth science minor from the University of Hartford and a master of public administration from the Barney School of Business and Public Administration. He enjoys river running, fishing, live music and spending time with his family. □

Ron Kokel, a longtime employee with the Service's Migratory Bird Program, retired in September after 28 years of federal service. Ron started his federal career with the Federal Energy Regulatory Commission and began working for the Service's Office (now Division) of Migratory Bird Management in 1994 as a regulations specialist, a position he held until his retirement. During his tenure, Ron established himself as an expert in developing *Federal Register* documents and other materials in support of countless regulatory proposals and other policy initiatives for migratory birds. His extensive knowledge of the federal regulatory process and all of its complicated nuances allowed the division to put forward the biology and science of migratory bird management needed to accomplish its mission and fulfill its trust responsibilities.

Ron was considered a miracle-worker in navigating the complex, time-sensitive and always challenging approval process that culminated in final rules and regulations and other published documents. In particular, his ability to work with people in the corridors of the Main Interior Building and at the Office of Management and Budget contributed significantly to his success, and on more than one occasion helped to prevent delays in the signature process from having far-reaching consequences on the public's ability to enjoy the migratory bird resource.

Throughout the years, Ron was most closely associated with supporting the annual regulations development process that allows the hunting of migratory game birds, including the drafting of proposed and final rules, providing numerous briefing materials on important regulatory issues, coordinating travel of Service and flyway attendees, assuring that associated meetings and public hearings were conducted successfully, and assuming overall responsibility for shepherding regulatory documents through the maze of required approvals. Oftentimes he was the point person in the division for responding to congressional inquiries about various issues or just providing helpful assistance to the public in response to everyday questions and concerns about migratory birds. He was widely known throughout the flyways and was a respected source of information on regulations and other Migratory Bird Treaty matters at the state, national and international level.

In addition to annual hunting regulations development, his behind-the-scenes work throughout the years as a regulations specialist contributed to the development and successful implementation of many key migratory bird policies and programs, such as adaptive harvest management, regulated subsistence harvest in Alaska, cormorant management, light goose population control and nontoxic shot alternatives, among others. He was the lead author of the Service's Environmental Impact Statement (EIS) on the control of resident Canada geese that has guided management of those birds for the past »

15 years. His contributions helped significantly in the timely publication of the light goose EIS, the supplemental EIS on migratory bird hunting in 2013 that changed the annual regulations process overseeing the take of migratory birds that had been in place for decades, and numerous environmental assessments in support of migratory bird management actions.

Following retirement, Ron lives with wife Deidra in Beaufort, South Carolina. His "new career" will undoubtedly allow him more time to pursue his many passions, including dog training and migratory bird hunting. □

Former Service Chief of Staff **Charisa Morris** has accepted the position as Science Applications' Deputy Assistant Director and will help the program achieve its commitment to excellence in science and its application to decision-making and on-the-ground conservation.

A Service employee for more than 20 years, Charisa is an enthusiastic STEM supporter and diversity champion, and most of her work, both at the field level and later in Headquarters, has focused on building process efficiencies, creating more usable and accessible data and data tools, and making science-supported decision-making more consumable and achievable by the partners and publics the agency serves.

After earning a bachelor's degree in forestry and wildlife from Virginia Tech, she first worked as a recovery and consultation biologist at the Service's Chesapeake Bay Field Office before returning to Virginia Tech for a master's degree in fisheries and wildlife on the then-endangered (now recovered) Delmarva fox squirrel.

In 2006, Charisa joined Headquarters as an endangered species biologist and introduced the concept of stressor management to the Service, directly facilitating the agency's development and adoption of conservation frameworks, effects pathways and a (then new) system called IPaC. In this role, she provided national level coordination and consultation support to regions.

She joined the Migratory Bird Program as Chief of Migratory Bird Conservation in 2012 and worked to empower partners, the public and the federal family to make sound conservation decisions to protect and conserve landscapes and species.

In 2015, Charisa joined the Director's Office as the Chief of Staff. □

Paul Padding, the Service's representative to the Atlantic Flyway Council, retired last August after 28 years of service in the Division of Migratory Bird Management.

Paul began his career in 1991 with the Division's Harvest Surveys Section at the Patuxent Wildlife Research Center in Laurel, Maryland. He was hired as the Wingbee Coordinator and organized annual gatherings of waterfowl biologists across the country to identify the species, age and sex, by wing, of ducks harvested and submitted by waterfowl hunters. Wingbees enable the Service to estimate the harvest of the various duck species. In 1994, Paul became the Chief of the Harvest Surveys Section, and oversaw the operations and monitoring programs associated with all its surveys.

Paul was also the driving force in the development and implementation of the Harvest Information Program, or HIP, a collaborative effort with the states that allows managers to estimate the harvest of all migratory game birds harvested. Paul worked extensively with state agencies to cooperatively develop methods that were cost-effective and necessary to capture the needed information.

In 2007, Paul became the Atlantic Flyway representative, where he worked with technical staff and administrators of the 17 Atlantic Flyway states, Puerto Rico, the Virgin Islands, eastern Canadian provinces and the Canadian Wildlife Service to develop and implement migratory bird monitoring programs and regulations. Significant accomplishments include a review of captive-reared mallard programs; a review and assessment of sea duck harvest management that resulted in changes to regulations; a multi-stock adaptive harvest management framework for ducks in the Atlantic Flyway, the first such strategy ever attempted; an international black duck adaptive harvest management strategy with Canada; and a proposal for a general swan hunting season in the eastern three flyways. Paul also worked with the Atlantic Flyway to stand up their Non-game Technical Section, which was formed to address issues associated with all the migratory bird species that are not game birds—issues that historically had received little attention by the flyway. He also served as the U.S. co-chair of the Black Duck Joint Venture, a technical adviser to the North American Waterfowl Management Plan Committee and a co-chair for the Future of Waterfowl Two Summit.

During his career, Paul authored or co-authored 35 publications, including articles in peer-reviewed journals, book chapters, and reports and management plans, as well as numerous technical and policy documents critical for making management decisions by Service leadership. »

Paul lives with wife Khristi in Bowie, Maryland, and continues to periodically assist the division with various tasks. He also spends more time hunting across the country with friends he made throughout his career. □

Deb Rocque has been named Assistant Director for Science Applications. Over the course of her career, she has worked for nearly all of the Service's resource programs. She began her career in the » Contaminants Program in 2003 as part of the Student Career Experience Program (SCEP). She then worked in the Migratory Bird Program as the Avian Influenza coordinator for Alaska; in Ecological Services as a contaminants biologist and Field Office supervisor; and in Fisheries as a Fisheries Resource Office supervisor. During her time working in Alaska, Rocque worked extensively on issues related to climate change, subsistence hunting and fishing, endangered species (including Section 7 consultations for large oil and gas developments), and contaminant issues.

Just prior to her appointment, she served as the Deputy Regional Director of the North Atlantic and Appalachian Region where she oversaw regional operations in 14 states. Before joining the region, she worked nearly two years in headquarters filling various positions in the National Wildlife Refuge System. During that time, she played a key role in developing the Refuge System's vision: Conserving the Future: Wildlife Refuges and the Next Generation.

As the Assistant Director for Science Applications, Rocque will oversee the program and coordinate our science priorities by engaging groups and individuals internally and externally—across and beyond the bounds of programs, regions and jurisdictions—in order to broaden perspectives for informed decision-making and coordinated action.

Rocque has a Ph.D. from the University of Alaska Fairbanks, where she studied intrinsic markers in avian populations. Her master's and bachelor's degrees from the University of Connecticut both focused on population modeling of greater scaup. When not helping to transform the Service, she likes to be outside with her wife and dogs—hiking, gardening, biking, fishing, hunting (occasionally) and making maple syrup. □

Alaska Region

Alaska Region Refuges Law Enforcement Chief **Jim Hjelmgren** retired December 31. He spent 22 years with the Service in law enforcement and 10 years with the National Park Service before that. He was known for a proactive, friendly approach to law enforcement issues in Alaska. He says, "We'd go out to a village, we'd go out to the river and meet with folks, and they would be very tentative to talk to law enforcement. And, in fact there's many times, you know, we were asked to leave. But what we found is repetitive meetings with folks—even if it was completely unintentional with no focused law enforcement goals—and that familiarization, was the key to success. Keep coming. You know, keep meeting with the same folks. Keep giving them opportunity to ask any question they want. And doing that was the most productive way to form some sort of connection between law enforcement and Alaska natives, even though many times we were there to talk about real law enforcement/difficult issues."

People sometimes need help, he says, separating the person from the law, but when they do, "that little opening right there—once they start to see the law enforcement officer as a human—you can get through the difficult parts after that. You can get through the clunky parts of 'I'm sorry. I do have to issue you a citation.' Once you make that human connection that's not so difficult for either side."

In retirement, Jim plans to spend time "hunting, fishing, crabbing or researching more opportunities to do more of those things." □

South Atlantic-Gulf and Mississippi Basin Regions

After 36 years of working in a variety of Department of the Interior positions to preserve public lands and improve wildlife habitat all over the United States, **Mike Piccirilli**, avid lifelong trout fisherman and Chief of the Wildlife and Sport Fish Restoration Program (WSFR) in the Service's South Atlantic-Gulf and Mississippi Basin regions, retired March 27. He plans to spend more time with wife Sue and son Andy. And maybe cast a tightly tied fly or two into a clear, cold stream.

Mike has been WSFR Chief since 2004.

"It's the best job I've ever had," he says. "You can help state game and fish agencies enhance what they are doing and have an impact in a lot of different areas."

Mike is responsible for the Southeastern states, but his favorite trout fishing spots tend to be out West.

He so loves fishing out West that he's missed his annual fishing trip only twice in 35 years. That's 33 trips to stand in rushing, cold water.

He also heads over to North Carolina occasionally to fish for trout in the Nantahala River.

There are other fish, he knows, besides trout. And yes, in a pinch, he will fish for bass. With a lure, no less.

"I had never been much of a bass fisherman," he says. "I live in a subdivision with a pond behind my house and I would see this neighbor boy fishing with his dad and never thought much of it, but they showed me photos of bass they caught in that pond.

"The following day," he continues, "I'm at Walmart looking at their lures, and there's this young boy about 7 years old, kind of chubby and red-faced. He saw me trying to pick bass lures I know nothing about. I asked him if he could help me out and this little boy just came alive.

"He said, 'You need this and this and this.' He picked up a Hula Popper, which simulates a frog. He said, so sincerely, 'If you use one of these you will catch a big bucket mouth.'

"I took those lures and I caught three bass in that pond that day. Without meeting that boy and catching those bass, I wouldn't be a bass fisherman today." »

With few exceptions, Mike is a catch-and-release angler. "There's so many people who like to fish, and a good high quality trout stream is a limited resource," he explains. "You can't continue to take them out of the water and expect to have a good experience." □

Kendall Smith has been named refuge manager for Mattamuskeet, Swanquarter and Cedar Island National Wildlife Refuges in Eastern North Carolina. His selection is a homecoming of sorts, as he was introduced to Mattamuskeet Refuge as an intern leading a crew of Youth Conservation Corps participants during the summer of 1996. He began his official career with the Service in 1997 as a cooperative education student while attending North Carolina State University where he received his undergraduate degree in wildlife sciences.

After graduation, he worked at Lower Suwannee National Wildlife Refuge in Florida and Mackay Island National Wildlife Refuge in North Carolina. For the past 14 years, he has served as a biologist for the Service's Partners for Fish and Wildlife Program in eastern North Carolina working with private landowners.

While not at work, he enjoys spending time with his family, camping, biking and working with children at church and in his local community.

"We're so excited to have Kendall joining our staff of professionals in eastern North Carolina," says Rebekah Martin, project leader for Coastal North Carolina National Wildlife Refuges Complex, which includes Mattamuskeet Refuge. "He brings a wealth of knowledge and experience which will enable him to hit the ground running—just what we need!" □

Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions

Paul Corns, Realty Chief for Refuges in the Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions, has retired after 31 years of federal service. Paul continued to work hard right up to his retirement to ensure the National Wildlife Refuge System was able to acquire every acre of land possible. In the last quarter alone, Paul and his Realty team acquired more than 8,000 acres of land at nine national wildlife refuges.

Rob Jess, Complex Refuge Manager at South Texas Refuge Complex, has retired after 28 years. He had a great career working in Utah, Montana, South Carolina, Georgia, Florida, Alaska and finally South Texas. Rob embarks on his next journey in Utah with his children and grandchildren.

Greg Birkenfeld, supervisory wildlife refuge specialist at Aransas National Wildlife Refuge in Texas is retiring after 20 years. Greg has worked on refuges in California, Nevada, Alaska, Arizona, Oklahoma and Texas. □

Great Lakes Region

Suzanne Baird, who has almost three decades of on-the-ground experience in refuge management, has been named the Assistant Regional Director for National Wildlife Refuge System, or Chief, in the Great Lakes Region.

"I couldn't ask for a better leader for the refuge program. Suzanne's passion and tenacity are matched only by her deep knowledge of what it takes to manage public lands," says Regional Director Charlie Wooley.

Suzanne has a long history working for national wildlife refuges and other protected lands across the country. From the loblolly pine forests of east Texas to the coastal barrier islands of North Carolina, she knows the vital importance of unturned soil and free-flowing waters. Suzanne also sees the potential that restoration brings and knows first-hand that it doesn't happen without a whole host of partners. She holds Aldo Leopold, the father of wildlife management, as one of her conservation heroes for his work developing the standards and principles of wildlife management.

Joining the regional team in December of 2018 as the Deputy Chief of Refuges, Suzanne was ready to support the more than 400 women and men who administer this network of lands and waters across the Midwest. She also served as the acting Regional Hunt and Fish Chief during a pivotal realignment of hunting and fishing regulations nationwide.

Not more than eight months after she settled into her new deputy position, Suzanne assumed the role of acting Refuge Chief.

In addition to her time with the Service, Suzanne has also worked with the U.S. Air Force and U.S. Army Corps of Engineers, traveling far and wide to manage natural resources. She can tell you about Mojave Desert oases, freshwater and brackish marshes, coastal barrier islands, forested wetlands and the Prairie Pothole Region. Fun fact, she can even tell you all about lacustrine habitats, which is perfect for the Great Lakes Region.

Growing up in the big city of San Antonio, Texas, didn't stop Suzanne from developing a love for nature.

"As a Camp Fire Girl, I became very passionate about the outdoors, nature and wildlife. In high school, I volunteered at a wildlife rehab center where I learned a lot about local wildlife and their habitat needs," Suzanne says.

While she didn't have the opportunity to learn how to hunt and fish until college and graduate school, her first real opportunities to explore hunting and fishing began when she moved to Minnesota in 2002. That's where she met great friends and got involved with "Becoming an Outdoors Woman," a Minnesota Department of Natural Resources program that she teaches and mentors with today. »

Suzanne has a bachelor's degree in biology from Austin College and a master's degree in wildlife science from Texas A&M University.

She is looking forward to working with partners and local communities to stay relevant as the Service stays focused on conserving America's natural resources.

Suzanne and her yellow lab, Izzy, call Prior Lake, Minnesota, home. She enjoys hunting, fishing and getting outside for a game of tennis. Every year you can find her up in northwest Ontario where she goes adventuring for walleye with the girls. □

Chuck Traxler (left), a veteran of both the Service and the U.S. Army, has been selected as the Deputy Regional Director in the Midwest United States. He has been acting Deputy Regional Director since September 2019.

"I have worked with Chuck in many capacities throughout his 20-year career with the Service, and he has met every challenge with enthusiasm and creativity," says Charlie Wooley, the Service's Great Lakes Regional Director. "He continues to demonstrate his professionalism as we meet today's challenges, ensuring employee safety as we continue to carry out our mission during difficult times."

Before serving as acting Deputy Regional Director, Chuck was Assistant Regional Director for External Affairs, beginning in 2012. He was responsible for media relations, congressional and tribal relations, stakeholder outreach, and communications on behalf of the Service's programs in the Midwest. He began his career with the Service in 1998 as a writer-editor in External Affairs in the region and then worked as a public affairs specialist; he was named Deputy Assistant Regional Director for External Affairs in 2010.

"This is an exciting opportunity for me," Chuck says. "I love everything we do to fulfill our mission."

Chuck spent nearly 15 years in a combination of active and reserve duty with the U.S. Army, advancing to the rank of captain. He served overseas in the Gulf War and led a deployment of public affairs soldiers to Bosnia in support of the NATO Operation Joint Guard.

Born in St. Paul and raised in Richfield and Le Center, Minnesota, Chuck divided his time between the suburbs and the family farm. His parents inspired his interest in the outdoors and conservation. He grew up taking advantage of wherever he happened to be to get outside to hike, fish, hunt, trap or just play. When he couldn't get outside, he read about the outdoors, nature and animals, encouraged by his mother, a teacher.

Coming from a farm family also helped shape his interest in natural resources, especially fish and wildlife. As a kid, he spent a lot of time picking rocks, pulling weeds, baling hay, raising animals and all the other hard work associated with farming. In the 1990s, his family moved into more of a conservation mode of farming. "We converted our crop land to the Conservation Reserve Program. This helped me understand the reason and intent behind conservation programs, and I was able to see firsthand the need to balance conservation with production."

Chuck earned a bachelor's degree from the University of Minnesota, with a major in natural resources and environmental studies and a minor in issues and planning.

He, wife Tracy and son Nick live in Lakeville, where they enjoy spending time outdoors together with their dog, Roxy. He also has a passion for motorcycles and vintage farm tractors. □

Aaron Woldt was named the new Assistant Regional Director for Fish and Aquatic Conservation (FAC) in the Great Lakes Region. He has been acting in this capacity since Todd Turner's retirement on July 31, 2019.

"I am pleased to have Aaron aboard to lead our Fisheries program. His deep knowledge of fisheries and aquatic resources both in the Great Lakes and in the Upper Mississippi River, combined with his strong partnership skills, make him well-suited to lead this team of professionals," says Regional Director Charlie Wooley.

For more than seven years before his acting role started last summer, Aaron was the Deputy Assistant Regional Director for the Great Lakes Region FAC and focused his energy on providing administrative and budget support for 16 field stations and four substations, as well as supervising a regional office-based support staff.

Before serving as deputy, he spent four years as Regional FAC Office Program Supervisor and another seven years at the Alpena Fish and Wildlife Conservation Office as staff fishery biologist, treaty fishery unit coordinator, assistant project leader and vessel manager.

Not only does he know what it's like to work within the Service, Aaron understands what it's like to work as a state partner. From 1998 to 2002, he worked for the Michigan Department of Natural Resources as a field-based fisheries research biologist where he evaluated lake trout and lake whitefish stocks in Lake Huron and helped define safe harvest levels for fish stocks in inland lakes of northern Michigan.

Aaron spent much of his childhood along the banks of the Fox River and fishing for yellow perch, walleye, northern pike, sunfish and muskie on inland lakes of northern Wisconsin.

"Some of my earliest memories are fishing, swimming and water-skiing with my family on Pelican Lake in northern Wisconsin. I distinctly remember the respect my grandfather showed toward aquatic resources. I was taught that natural resources were to be shared and enjoyed by all, so only catch what you plan to use." »

Aaron has a bachelor's degree in marine science and biology from the University of Miami in Coral Gables, Florida.

He earned his master's degree from the University of Michigan in Ann Arbor, where he did research on the production of juvenile steelhead and salmon in northern Lake Michigan tributaries and the potential impacts of hydroelectric dams.

With their rescued Siberian husky, Winter, Aaron, wife Tammy and kids get outside as much as possible. In his spare time, Aaron enjoys biking, hiking, fishing, cooking and live music. He also enjoys coaching his son's youth football and baseball teams, as well as his daughter's softball team. Trying to keep up with all of his kids' activities keeps him busy, but he still makes time for his personal passion, the Green Bay Packers.

"By nature of my birth near Titletown, home of the 13 time NFL Champion Green Bay Packers, I am an avid football fan to say the least. GO, PACK GO!" he says enthusiastically. □

Missouri Basin and Upper Colorado Basin Regions

After 29 years of federal service and a lifetime of conservation work, Utah Ecological Service Field Office Supervisor **Larry Crist** has retired.

Larry graduated from the University of North Texas with a bachelor's degree in biology in 1976 and a master's degree in biology and aquatic ecology in 1978. Starting out, Larry worked in the private and public sectors conducting research on the West's endemic aquatic species. His career then progressed through several roles in the federal government, including work on the conservation of numerous sensitive and imperiled plant and wildlife species.

Throughout the 1980s, Larry's work in the private sector focused on researching the causes for the decline of endemic fish of the Pacific Northwest, Colorado River Basin and Great Basin. His efforts ranged from researching instream flows for spawning salmon in Washington's Yakima River Basin to investigating habitat needs of western Utah's least chub, especially as it related to potential impacts from the U.S. Air Force's proposed MX missile system. Some of his most important and exciting work at the time included his involvement in a multiyear research project into the life history and ecology of the Grand Canyon's population of humpback chub. This work fit well with his personal passion for river rafting and canoeing.

In 1991, Larry took his research and aquatics experience to the Bureau of Reclamation to help direct and manage recovery efforts for ESA-listed species in the Colorado River, San Juan River and Rio Grande systems. One of his unique assignments involved traveling to Brazil, at the request of their government, to provide advice for flow recommendations for altered streams in the São Francisco River Basin and to advise the government on how their hydropower related dams and facilities could be managed to benefit aquatic species. For his collaborative efforts, Larry received the honor of meeting the president of Brazil. At Reclamation, his work culminated in his involvement as one of several principal authors for Green River flow and temperature recommendations that, to this day, continue to support the recovery of endemic Colorado River fish species.

In 2001, Larry accepted the positon of assistant field office supervisor for the Utah Ecological Services Field Office for the Service. He moved into the field office supervisor position in 2006. Throughout his time at the Service, Larry maintained an active role on conservation and recovery teams for fish, plants and reptiles, and proactively built relationships with state, public and private partners across the state. Larry also worked to establish a Service field office that is well-respected for its conservation achievements, innovative solutions and collaborative spirit. Among field office staff, Larry is well-respected and known as leader who is fair, supports staff needs and sincerely cares about the well-being of every person in the office. His sense of humor and Friday doughnut treats will also be greatly missed! □

PAUL ABATE AND RITA REISOR,
Utah Ecological Services Field Office

Amelia Orton-Palmer (wearing pink), conservation plans and grants coordinator in the regional office, has retired after a long career with the Service.

She began her career with the Service in 1987 while pursuing her wildlife biology studies at University of Wisconsin, Madison. She worked at the National Wildlife Health Research Center (before it was separated from the Service) assisting with necropsies of malodorous critters, peering at parasites through a microscope and scooping up maggoty waterfowl carcasses during a botulism die-off in Long Lake National Wildlife Refuge. Far from deterring her, these experiences and the good people she worked with cemented her choice of the Service for her future. She earned her Master of Science degree at Northern Illinois University with a thesis on brown noddy nest-site selection in the Virgin Islands.

Some of Amelia's happiest days in the Service were participating in a diverse array of field work at the Don Edwards National Wildlife Refuge complex in the San Francisco Bay. She spent many hours tracking endangered California clapper rails 24/7, eradicating invasive vegetation on the Farallon Islands, mucking around Bay area mudflats gathering contaminant samples, erecting piping plover enclosures, restoring habitat for the endangered Lange's metalmark butterfly and much more.

She returned to the Chicago area to take the job that was the reason she had embarked on a wildlife career in the first place—endangered species coordinator in Ecological Services at the Chicago, Illinois, Field Office. She was initiated by fire as the lead for the Section 7 consultation with EPA on the establishment of water quality criteria for the Great Lakes Basin. She also helped with recovery actions for listed prairie plants, insects and reptiles in the Chicago metro area.

She headed back to California to take on endangered species issues in Monterey, Santa Cruz and San Benito counties, working to protect frogs, salamanders, and a number of endemic plants and invertebrates. She became chief of the branch covering that geographic area and was blessed with a wonderful staff of committed individuals.

When the din of Southern California became too much, she headed to Colorado to what is now called the division of Wildlife and Sport Fish Restoration in what used to be called the Mountain-Prairie Regional Office. She spent the first couple of years on the regional review team for the development of State Wildlife Action Plans.

She was lured back to Ecological Services in the Regional Office to work on 10j and delisting rules for the northern Rocky Mountains population of the gray wolf. The rest of her career turned out to be the most rewarding, as the regional coordinator for Section 10 conservation plans and Section 6 grants. She provided support to field offices for the development of conservation plans for black-footed ferret, lesser prairie chicken, greater sage grouse, Utah prairie dog, grizzly bear, American burying beetle, Mojave desert tortoise and more. She also led the process for awarding millions of grant dollars to state agencies over the years for conservation of listed and candidate species in the Mountain-Prairie Region. □

honors

California-Great Basin

Greg Austin, project leader at Klamath Basin National Wildlife Refuge Complex, has been selected as the 2020 Paul Kroegel-National Wildlife Refuge System Manager of the Year by the National Wildlife Refuge Association.

The complex consists of Bear Valley National Wildlife Refuge, Upper Klamath National Wildlife Refuge, Klamath Marsh National Wildlife Refuge, Tule Lake National Wildlife Refuge, Lower Klamath National Wildlife Refuge and Clear Lake National Wildlife Refuge.

Greg was recognized for his amazing job at empowering a team of Service professionals across the six-refuge complex spanning northeastern California and southern Oregon. He has led efforts to increase habitat for wildlife during challenging water years through collaboration and building lasting partnerships with local communities, landowners and NGOs within the basin. □

CREDIT JIM EARLEY/USFWS

For more than 25 years, **Matt Brown** has worked tirelessly and collaboratively in the Sacramento River Watershed to enhance, restore and re-populate winter, spring, fall and late-fall run Chinook salmon and Central Valley steelhead populations.

The deputy project leader for the Service's Red Bluff Fish and Wildlife Office, Matt has focused on tributaries of the Sacramento River where he has worked with numerous state and federal agencies and non-governmental organizations.

The American Fisheries Society California/Nevada Chapter honored Matt for his work by naming him the 2019 winner of its Conservation Achievement Award.

The Conservation Achievement Award recognizes non-member individuals or groups for outstanding contributions or service to fisheries conservation.

Matt has spearheaded efforts to increase instream flows in Battle Creek and provided fisheries expertise in the construction of the Battle Creek Salmon and Steelhead Restoration Project. This project will remove five dams and increase salmonid habitat by 42 miles.

He has also led the development and implementation of the Clear Creek Restoration Program, which opened up 12 miles of habitat for spring-run Chinook and steelhead through increased instream flows, a dam removal, stream channel restoration, floodplains, introduction of spawning gravels and erosion control.

"Restoration in the lower six miles has also greatly benefitted fall and late-fall-run Chinook through improved spawning habitat and flows management," says Jim Smith, project leader for the Red Bluff Fish and Wildlife Office.

"Partnering on Herculean scale projects like these requires a vast knowledge of the complex water delivery systems of the Central Valley Project and the entities and resources that depend on them," Smith says. "Matt exudes all that is required of a fisheries manager in today's ever-changing environment. His willingness to listen to partners and negotiate positive outcomes for fishery resources are just part of his resource management aptitude."

Matt also works with the Sacramento River Temperature Task Group and Flows Management Team to protect winter, fall and late-fall-run Chinook spawning and incubation conditions in the upper Sacramento River, and has participated and led projects in Butte Creek, Deer Creek and Mill Creek in an effort to recover and improve fish passage for spring and fall-run Chinook and Central Valley steelhead.

"Matt has mentored and supported numerous employees within his organization to continue to fight the good fight for recovering resources," says Jim Earley, a fish biologist in the Red Bluff office. "As his employee, I have respected and appreciated Matt's willingness to listen to his people and empower everyone working with him to »

understand the science, question why we do what we do, and be comfortable talking ideas with him."

Since 1994, Matt has worked in the Service's Red Bluff Fish and Wildlife Office with his primary focus on recovering salmonids and restoring their habitat under the authority of the Central Valley Project Improvement Act. □

Columbia-Pacific Northwest Region

Leah Schrodt (with Assistant Regional Director Will Meeks after receiving the award), Interpretive Lead with the Service's Oregon Zoo Partnership, won the Service's 2019 Sense of Wonder Award. The annual award recognizes a Service employee who has shown visionary leadership in environmental education programs that foster a sense of wonder and enhance public stewardship of our natural heritage. Based out of Oregon's State Ecological Services Office in Portland, Leah spends most of her time at the Oregon Zoo in Portland. She is recognized for her excellent work starting, building and maintaining a thriving interpretive program in partnership with the zoo.

Leah has been a part of the Service's team since 2016 and ever since she has been developing educational kits, outreach tools and creative ways to get the word out about our agency's conservation stories. Her work has grown with the development of special events and collaborations allowing this partnership to thrive and reach tens of thousands of visitors.

"Since being hired to guide the creation of this program, I've felt deeply honored and thrilled to serve in this capacity! The work is a labor of love. Having the opportunity to apply the lessons learned from my 20-plus-year career in the conservation education field, to the creative process of developing this program for this remarkable agency, has been a lot of work but also pure joy. It is one of the highlights of my wide-spanning career!"

Leah has a deep gratitude to all of the fantastic people within both the Service and the Oregon Zoo who have been instrumental in its creation. "I am consistently inspired by our regional leadership for being willing to step outside our traditional box of doing outreach and choosing to support this innovative approach. I believe that if we want the public to understand who we are as an agency and how they play an important role in helping us all achieve our conservation mission, we must find ways to reach people where they are. Additionally, the zoo's visionary leadership and staff support for this collaboration is paramount. Fundamentally, we are better when we work together, which is why collaboration is vital to both organization's successfully achieving our conservation work."

Engaging the zoo's 1.6 million annual visitors helps the Service continue to reach various audiences. □

Great Lakes Region

West Zone Budget Analyst **Durinda Hulett**, based in Illinois at Meredosia National Wildlife Refuge, was selected as this year's Torch Award recipient for her outstanding work behind the scenes. Since 2007, this award recognizes regional wildland fire management support and implementation personnel, regardless of position title or grade, who exemplify the best of the best.

Given each year by the Great Lakes Region fire management coordinator and decided through a peer nomination process, the Torch Award provides a platform for recognizing the professionals who demonstrate an outstanding commitment to our shared conservation mission through the regional fire program.

Durinda was selected from a number of quality nominations for exceeding all four criteria of this award, including a dedication to the Service's conservation delivery mission and a commitment to risk management before, during and after operations.

It was noted in one of Durinda's nominations that she does a tremendous job managing an allocated budget of almost $2 million, as well as hundreds of thousands in grant funding annually. As if her "day job" wasn't enough, Durinda also works to support the wildland fire community at large by continuing to develop her skills within the Finance Section of the Eastern Area Type 2 Incident Management Teams.

One nomination mentioned that Durinda takes the broad view when it comes to defining teamwork, demonstrating a strong willingness to contribute to the overall regional team by assisting the regional office, other zones and field-based administrative officers whenever needed. Durinda takes the time and makes the effort to build relationships with everyone. Because her duty station is located so far away from the areas that Durinda supports in Minnesota and parts of Wisconsin, she literally goes the extra mile to develop strong working relationships. Commonly traveling to field stations across this geography helps Durinda better serve folks, because she gets the chance to talk in person. All that and she does it with a smile! □

Federal Wildlife Canine Officer **Adam Rawlinson** has received this year's Ira Gabrielson Award. Each year the Service's Advanced Leadership Development Program recognizes an agency employee who exemplifies key leadership qualities with the award.

Named after the first Director of the Service, Ira Gabrielson, the award recognizes an individual currently within our agency who best exemplifies the leadership qualities demonstrated by Dr. Gabrielson during his 11-year tenure at the helm of the Bureau of Biological Survey, the precursor of the Service. The key leadership qualities used to evaluate nominees are vision, determination, commitment, integrity and strong management skills. Like Dr. Gabrielson, Adam is known for consistently demonstrating these qualities in his work.

"Our cohort selected Adam because he exemplifies leadership in everything that he does. From supporting the protection of wildlife and wild places at national wildlife refuges across the country, to mentoring new federal wildlife canine officers," says Deputy Assistant Regional Director for External Affairs Roya Mogadam.

A leader in the Service since he joining in 2002, Adam is the National Canine Program Coordinator for the Service. He is stationed at the Crab Orchard National Wildlife Refuge in Illinois, where in addition to his Headquarters leadership role, Adam maintains his federal wildlife canine officer handling skills and law enforcement qualifications by providing law enforcement support to local national wildlife refuges.

He also inspires the next generation of conservation leaders by being a part of his community and educating local school groups, supporting strategic outreach efforts to highlight our law enforcement program and our wider conservation mission. He does all of this while ensuring the safety of our visiting public and our nation's natural resources.

In 2011, Adam and canine partner Nate, a Belgian Malinois, became a team, and they have had many accomplishments that support wildlife conservation, including helping to shut down a poaching operation on Crab Orchard National Wildlife Refuge.

About a year later, Adam assisted in the rescue of four hunters whose boat had tipped over in freezing waters on the refuge. For these heroic actions, he was awarded the Department of the Interior Valor Award.

Adam is also quick to offer assistance nationally and has many accomplishments that extend outside the borders of the refuge, including helping to seize almost a half a million dollars in drugs that were smuggled onto a refuge in Arizona.

"Adam is a hard-working, determined officer who has dedicated his career to conserving our nation's wildlife and wild places," says Refuge Law Enforcement Chief Richard Johnston. "He is willing to stay out that extra hour to catch poachers, travel across the country to show the benefits of a Canine Program to leadership, meet with local school kids to inspire their conservation ethic and offer assistance to support law enforcement efforts nationwide." □

Headquarters

The International Association of Chiefs and Police (IACP) has recognized the **Office of Law Enforcement** (OLE) for outstanding work.

Specifically, the honor involved the investigation into the illegal trade of elvers (seen), or glass eels, in Operation Broken Glass. IACP recognized the impact of Operation Broken Glass and awarded OLE the IACP Chief David Cameron Leadership in Environmental Crimes Award for a Federal Agency. □

in memoriam

Alaska Region

Ralph Ayyatanaq Ramoth Sr., a former member of the Selawik National Wildlife Refuge staff and a teacher to many in the Alaska Region, has died.

He was born in Selawik in 1932 to Frank Algan and Topsy Atanaiyiq Ramoth. His father, who had moved to Selawik from Kobuk around 1920, died when Ralph Ayyatanaq Ramoth Sr. was 6. He continued to learn and became a highly respected traditional hunter and trapper. He was also a lifelong carpenter, electrician and maintenance man.

He devoted many years to Selawik as a tribal leader. His excellent skills in both English and Iñupiaq helped the village successfully communicate and coordinate with outside agencies.

In the words of Selawik National Wildlife Refuge Manager Susan Georgette: "Ralph knew the land and its stories in a way that few living people did. He not only carried this knowledge with him, but generously shared it with refuge staff and others. He shaped the refuge's early relationship with Selawik village, and provided good advice at every turn. His friendship has been one of the blessings in my life, and I will miss him." □

California-Great Basin Region

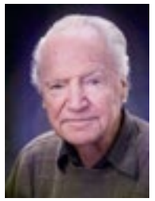
Randy A. Brown, 61, left us on February 18 to carry on with our lives and important conservation work without him. Randy spent nearly 30 years with the Service. He was a fisheries biologist first and foremost but worked tirelessly to protect and conserve wetlands and aquatic habitats in northern California for many species throughout his career. He was passionately dedicated to restoration efforts on the Klamath and Trinity rivers and many other regional projects over the years. ››

As a young man attending Humboldt State University in Arcata, California, Randy fell in love with Humboldt County while doing his graduate work in fisheries on Redwood Creek in Redwood National Park. He had always vowed to return to the area and eventually did just that. Randy worked briefly with the National Park Service, and with a consulting firm in Arcata before beginning his career with the Service. Before returning to Arcata, Randy spent his early Service years working in Sacramento, Lewiston and Weaverville, all in California. His primary focus was on FERC/hydropower issues, and efforts related to the Fish and Wildlife Coordination Act, until he became the Deputy Field Supervisor for the Arcata Fish and Wildlife Office.

Randy retired as Deputy Field Supervisor in 2012, after being diagnosed with frontotemporal degeneration (FTD), a rare dementia. Randy and his wife, Sandi Paris, sadly left their home in Humboldt County and relocated to a community where he could receive the care that he required.

Randy was well known for his extraordinarily kind, supportive and generous nature. He was a self-described "News Junkie," politically engaged, witty, very intelligent and hilariously sarcastic. Randy was also an avid cyclist who planned to ride his bicycle to his 100th birthday party. We now imagine him riding through the universe, arms held up in victory and a smile on his face. Ride like the wind, Randy Brown! □

Great Lakes Region



Robert Giles Personius, a career Service employee, died November 17, surrounded by family, music and love.

Born in Valley City, North Dakota, in 1922, Bob later moved to Bismarck where he graduated from high school. He enjoyed hunting, fishing and exploring the rivers, marshes and prairies of North Dakota. After serving in combat in World War II in the 104th Infantry Division in France, Belgium and Germany, earning a Bronze Star, Bob got a bachelor of science degree in wildlife management at Oregon State University where he met and married Mary Dolores "Dee" Brown. Bob then earned a M.S. in fisheries at the University of Minnesota, where he and Dee started a family.

Bob never abandoned his lifelong love of conservation biology. He dedicated his career to the Service including stints as assistant refuge manager for Crab Orchard National Wildlife Refuge in Illinois, refuge manager for Horicon National Wildlife Refuge in Wisconsin and refuge manager for San Francisco Bay National Wildlife Refuge in California. Bob's landmark work in wildlife management left an indelible impression upon his family with dinner time visits from conservation greats such as George Archibald and Fran Hamerstrom. Bob often recalled his favorite memories from his federal service as those during the 10 years their family lived in the old farmhouse on the edge of the marsh in Horicon Refuge.

After retiring from federal service, Bob settled in Anacortes, Washington, with Dee in 1989 and built their dream house overlooking Puget Sound. Dee passed away in 1997, but Bob was fortunate to meet a second remarkable woman in Ermalinda Guzman while visiting a decoy show in California. They married on Nov. 27, 1999, and continued to enjoy the Anacortes area. Bob was a lifelong decoy collector and duck hunter who loved to make an annual fall hunting pilgrimage with his sons and a few high school buddies to the Prairie Pothole region of North Dakota and Canada.

Bob bestowed upon his children a love of the outdoors, literature, conservation, science and art. He loved sharing a cold wind-swept duck blind, fishing boat or mountain hike to an alpine lake with friends and family. He loved to sing, had a quick wit, and was always known and loved as a "character." He was blessed in later years with a growing family of grandchildren and great grandchildren and passed along to them a rich history of memories of his life and times.

Robert is survived by his second wife of 20 years, Ermalinda, his sister Eileen (Walen) and his children, grandchildren and great-grandchildren. He will be remembered in their hearts and minds for his love of the outdoors, conservation, science and the arts. □

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parting shot

Black-footed Ferret Flies

In October, Frontier Airlines added an aircraft featuring a photo of a black-footed ferret on the tail. Its name is Wellington, home of the National Black-footed Ferret Conservation Center.

JASON WOLVINGTON/FORT COLLINS MUSEUM OF DISCOVERY

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