



# Fish & Wildlife *News*



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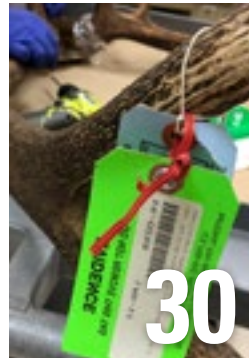
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Martha Williams,  
Principal Deputy Director

# Working Toward Environmental Justice

We encourage people to get outside because nature can be rejuvenating and good for the soul. Unfortunately, for many communities—including people of color or those living in poverty—nature simply may not exist outside their doors. Environmental Justice is a way to remedy this disparity.

Environmental Justice means that your economic status or race does not determine whether your neighborhood gets a national wildlife refuge or a wastewater treatment plant. It also means that diverse communities have a seat at the decision-making table. Actually, just sitting at the table is not enough. We must go beyond including to making certain these communities know that they belong. One of the ways to do that is to ensure that the policies we develop are centered on their voices.

President Biden understands the need to embrace Environmental Justice, and thanks to his leadership, the entire federal government has a charge to make addressing environmental injustices a priority. It is up to each of us in the federal family to find ways to bring Environmental Justice to those we serve (more on the Administration’s policies and programs on p. 14).

We must commit to confronting longstanding environmental injustices and to ensuring that historically marginalized and polluted, overburdened communities have greater input on federal policies and decisions.

How might the Service help communities find Environmental Justice?

One starting point could be communities in and around our 101 urban refuges such as Denver, Colorado (p. 16) and Albuquerque, New Mexico (p. 22).

We further Environmental Justice by listening to the community and asking questions to understand local conservation issues. Our work must support community needs. It is not what we think is best. It is what the community knows it needs.

As we listen, our relationships will expand beyond required consultation into meaningful community partnerships. Our work with Point Lay, Alaska, on the walrus (p. 26) and the Lower Elwha Klallam Tribe in Washington on the Pacific lamprey (p. 18) are good examples of listening to often-ignored voices.

It won’t be easy or fast. In many cases, we’ll have to overcome decades of injustice and mistrust.

But success is necessary. Communities gain a better quality of life. Fish, wildlife, and the environment gain just as much. People who feel they belong fight hard for what is theirs.

The Service’s mission is well-positioned to support vulnerable communities. This is not just about conserving and restoring public lands, protecting wilderness, or recovering endangered species. This is also about making our urban, rural, and suburban neighborhoods and Tribal communities safe, clean places to live, work, and raise families.

Under the President’s Build Back Better initiative, critical deferred maintenance projects and increasing recreation infrastructure in national wildlife refuges will create jobs and contribute millions to the nation’s economy: an investment in people. The Civilian Climate Corps will create well-paying maintenance jobs and connect people to the outdoors. In addition to tackling the climate crisis, the Build Back Better initiative will also help communities that have been left behind and rebuild infrastructure that support good-paying jobs while considering the needs of underserved communities. These are just a few examples of Service activities that can address Environmental Justice.

Many of you may have been on the frontlines, battling injustices for decades. Now our charge is to think and act broadly and inclusively about how to implement policies that improve the quality of all Americans’ lives now and for decades to come. I am honored and committed to doing this side-by-side with you, and look forward to what we build, together with folks who now believe nature belongs to everyone, including them. □

## Protecting Our Roots: Tubman Homestead Discovery

In October 2020, after years of negotiations, the Service partnered with The Conservation Fund to acquire 2,691 acres of forested wetlands to be added to Blackwater National Wildlife Refuge in Maryland. The parcel will provide essential habitat for migrating shorebirds, waterfowl, and other native species. Wildlife aren't the only ones, however, that benefit from the riches of these lands. Beneath the soil, deep historic roots may help us piece together previously untold stories.

For years, Blackwater has worked alongside the Harriet Tubman Underground Railroad State Park and Harriet Tubman Underground Railroad National Historical Park, preserving the landscape associated with Harriet Tubman's childhood. The newly acquired lands, formerly managed for forests and hunting, have been on their radar for nearly 20 years. Based on previously gathered historical deeds and court, birth, and census records, the partnership believed that within those 2,691 acres were the 10 acres Tubman's father, Ben Ross, received when released from slavery.

"Whether or not it's the land that Ben Ross owned, there's a story to be told there," says Chesapeake Marshlands National Wildlife Refuge Complex Leader Marcia Pradines. "We know this is the place where she grew up, where she learned about surviving on the land."



The water at Blackwater National Wildlife Refuge is crowded with waterfowl early in the morning.

(PHOTO: USFWS)

In March, the Maryland Department of Transportation's archaeological team, led by chief archaeologist Julie Schablitsky, confirmed that they had officially discovered the location of Ross' cabin.

### Making Up for Lost Time

The property has undergone a remarkable transformation and today looks far different from the landscape Tubman would have known. What were once irrigation ditches now gather water as the land is threatened by sea-level rise.

The ever-rising waters are largely the motivation behind the land acquisition.

"The reason why this land is so important, strictly from a habitat perspective, is that it will be at least partially marsh by 2100," Pradines says.

The saturated site houses flourishing ecosystems teeming with wetland wildlife. Although ideal for migrating waterfowl, this swampy terrain is a hazard to researchers. As the water rises, so too does a sense of urgency. Refuge staff and partners now race against the clock as water threatens to wash away pieces of history.

### Action and Exploration

During an initial dig, the archaeological team unearthed several compelling artifacts, including shards of ceramic dishes and an 1808 coin. Despite their best efforts to comb the muddy, unfor-giving landscape, they had not found substantial evidence of the Ross cabin.

With the threat of sea-level rise only steps behind them, the archaeological team returned in March to continue their search. After unearthing numerous key artifacts dating back to the 1800s, archaeologists were thrilled to say they had officially found the location of Ross' cabin. »

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### **Puzzling Through Pieces of History**

Through their continued research of this property, the archaeological team hopes to discover more about Tubman's upbringing.

These are the places where she learned the necessary skills to emancipate over 70 enslaved people. Under these stars she learned to navigate. In these forests she learned how to traverse the wilderness, find food to sustain herself, and hide among the trees. Working alongside her father who felled and sold timber for Baltimore shipyards, Tubman learned how to navigate the terrain. When interacting with mariners, she garnered knowledge of Maryland's waterways. These spaces, as much as the people around her, helped raise her into the leader she would eventually become.

As a society, we predominantly study history from written accounts. In doing so, however, we ignore the rich histories of people whose stories may have never reached the page. Enslaved people were largely illiterate, forcibly kept from written language by slave masters who sought to deprive them of education in order to avoid potential uprisings.

By preserving historical sites, we help ensure that these stories will not be forgotten. The physical evidence on the land gives us greater insight specifically into the lives of people whose stories have never been documented.

The cultural significance of land is not simply determined by what we find on it. When we hold spaces, even those that were once sites of trauma, we create space for healing and unity. By recognizing the significance of certain locations, we provide an opportunity for people of all backgrounds to gather and acknowledge both the painful and triumphant moments that occurred there.

### **Telling the Story**

The refuge hopes that by telling this history they can attract the attention of new visitors.

"I think there's a certain interest out there and folks typically are drawn to national parks for history, but we have our own set of history to offer," says our Regional Historic Preservation Officer Amy Wood. "Our unique piece is once you come for the history you'll end up learning more about conservation." □

SYDNEY GIULIANO, External Affairs, North Atlantic-Appalachian Region

## **A Remarkable Return: The Attwater's Prairie-chicken Is Bouncing Back**

After decades of protection and conservation efforts, Texas' critically endangered Attwater's prairie-chicken population is at its highest since 1993. Officials with the Service and The Nature Conservancy in Texas estimate the current population is at least 178 birds, with 89 males counted during the 2021 spring survey at the Service's Attwater Prairie Chicken National Wildlife Refuge and on private ranch lands participating in grassland management activities as part of the Conservancy's Refugio-Goliad Prairie Project.

While populations remain at extreme risk, this year's count demonstrates a remarkable turnaround from near extinction in the wild just a few years ago.

The Attwater's prairie-chicken, which is actually a member of the grouse family, was once extremely common in coastal grasslands of Texas and southwest Louisiana. Historical writings speak of Attwater's prairie-chickens being so numerous that cowboys working cattle distant from ranch headquarters relied upon them for fresh meat.

Because of habitat loss due to woody species invasion and conversion to agriculture, cities, and non-native pasture, the Attwater's prairie-chicken disappeared from Louisiana early in the 20th century and by mid-century was struggling to hang on in Texas. In 1967, the Attwater's prairie-chicken became a member of the "class of '67"—among the first on the United States list of endangered species.



The 2018 spring count revealed only 13 male Attwater's prairie-chickens in the wild. The 2021 spring survey was 89.

(PHOTO: JOHN MAGERA/USFWS)

As early as 1937 with the closure of hunting season, increasingly intensive efforts were undertaken to stabilize declining populations as the species rapidly approached extinction. Research identified factors driving these declines, and work was undertaken to restore prairie grasslands unsuitable for prairie-chickens.

In the early 1990s, a captive-breeding program was started to preserve as much genetic representation as possible from failing populations and to provide source stock for rebuilding wild populations. Still, for the next 25 years, wild populations remained on the brink of extinction, and wildlife officials were at a loss to explain why despite so much effort directed toward recovery of the species. »

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It was only the safety net provided by captive flocks at Texas zoological institutions, such as Fossil Rim Wildlife Center, the Houston Zoo, the Caldwell Zoo, and the Abilene Zoo, and now the Sutton Avian Research Center in Oklahoma, that prevented total loss of the species.

Finally, researchers documented another factor: red imported fire ants were likely derailing prairie-chicken recovery efforts by reducing native insects required as food for newly hatched prairie-chicken chicks. Red imported fire ants, native to South America, first showed up in Attwater's prairie-chicken habitats around 1970. Widescale control of fire ants in areas where prairie-chickens were released led to promising signs from Attwater's prairie-chicken populations.

These gains were repeatedly frustrated by catastrophic weather events such as the historic drought in 2011 and Hurricane Harvey in 2017. Following the devastating effects of Hurricane Harvey, the 2018 spring count revealed only 13 males in the wild.

But just three years later, the population has managed to rebound well beyond its pre-Harvey level. The remarkable recovery from an all-time population low following Harvey, to a population level not seen in almost 30 years, is a testament to the strength of the recovery program, and to the resiliency of Attwater's prairie-chicken itself. This rebound demonstrates that these birds still possess the potential for the sort of population growth needed to make recovery possible. It also provides new hope for multiple government agencies, non-governmental groups, and individuals that are actively engaged in helping this celebrated inhabitant of coastal Texas grasslands regain a foothold on the way to recovery. □

MIKE MORROW, Attwater Prairie Chicken National Wildlife Refuge, Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions

## Service Helps Montana Deal with Drought by Putting River Conditions at the Public's Fingertips

Water sustains everything: communities use it for drinking, ranchers use it for irrigation, recreationists use it for fishing, businesses rely on it for tourism, and fish and wildlife need it for habitat. In the arid, drought-plagued West, it's no joke that water is as precious as gold. Surface water in Montana, comprised of lakes, ponds, rivers, and creeks, covers only 1% of the state's 147,040 square miles. Like other western states, Montana is facing serious water challenges due to drought conditions.

In 2018, the Service joined forces with the Montana Department of Natural Resources and Conservation, the Environmental Protection Agency, and Montana State University to develop the River Conditions Tool, a response plan to help natural resource

managers and communities build resilience against drought.

The web-based tool improves access to real-time river conditions data to aid decision making. Team lead Matt Heller, a geographic information system administrator with the Service's Science Applications Program, says, "This collaboration brings needed information directly into the hands of people, whether that's someone in an office working on drought planning or in a parking lot at a boat ramp."

A few of the species heavily impacted by drought include cold-water fish, such as westslope cutthroat trout and Arctic grayling, and waterfowl, such as the trumpeter swan. These species are of conservation concern to natural resource agencies and »



Matt Heller uses the River Conditions Tool app on the Gallatin River.

(MARY MCFADZEN/USFWS)

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conservation organizations. A myriad of other species, from bugs to bears, also depend on the nourishing waters of healthy aquatic ecosystems.

Montana State University worked with Heller and eight watershed organizations on developing drought response plans within the Upper Missouri Headwaters Basin in southwest Montana. This 14,700-square-mile basin at the northern doorstep of Yellowstone National Park is traversed by wide valleys shouldered by mountain ranges and interspersed with communities of varying shapes and sizes. The basin holds the headwaters that feed the Missouri River, the longest river in the United States. Flowing over 2,300 miles through six states, the Missouri eventually drains into the Mississippi River.


Key features of the River Conditions Tool include access to real-time stream data for stream flow and stream temperature. Having access to these data aids decision-making on what actions should be implemented. For example, rising water temperature and low stream flow are extremely stressful and potentially lethal to cold-water fish. To protect the fishery, managers can temporarily restrict fishing or to ask landowners to voluntarily reduce water for irrigation, which increases the amount of water in streams.

Additional features include interactive charts of real-time and historic stream flow and temperature data, location of public access sites, snow and weather stations, and more.

Launched in 2019 on the watershed organizations' websites, the River Conditions Tool is available to everyone on any device with an internet connection.

Tana Nulph, associate director of the Big Hole Watershed Committee, helped with the River Conditions Tool. "We developed a river conditions map in 2016 that I would update manually during the summer months. This meant constantly checking the stream data to make sure our map was up to date with Montana Fish, Wildlife, and Parks' fishing restrictions and conservation triggers identified in the Big Hole River Drought Management Plan. With the new River Conditions Tool, updates are done automatically, saving me so much time!" Nulph adds, "I love the consistency with neighboring watersheds and some of the additional functions that were built into this tool, including the three-day trends."

With the tool operating successfully for watershed organizations in the Upper Missouri Headwaters Basin, Heller can expand its use to other basins. He recently joined forces with four new watershed organizations that are excited to soon have river conditions at their fingertips. □

 [Explore the River Conditions Tool.](#)

MARY MCFADZEN, Montana State University and the Service's Science Applications, Missouri Basin and Upper Colorado Basin Regions

## Building on a 25-Year Partnership with Canada and Mexico for North America's Wildlife and Ecosystems


Communication. Coordination. Collaboration. These three themes repeatedly rose to the surface during the 25th annual meeting of the Canada/Mexico/U.S. Trilateral Committee for Wildlife and Ecosystem Conservation and Management, hosted by the United States in May.

Over the last 25 years, the Trilateral Committee has fostered a strong conservation partnership among Canada, Mexico, and the United States. This partnership is reinforced and strengthened in annual meetings, where participants come together to discuss, coordinate, and plan activities with shared goals ranging from conservation to wildlife law enforcement and implementation of the Convention on International

Trade in Endangered Species of Wild Fauna and Flora (CITES).

This year was the first time the meeting took a virtual format, due to the COVID-19 pandemic. The virtual setting brought about cameo appearances by not only children, cats, and dogs but also chickens, horses, and Brood X cicadas from the Mid-Atlantic region.

"This is a good reminder that we're all human and all in this together," noted the Service's Principal Deputy Director, Martha Williams. "And I'd like to add a challenge: let's see what kind of animals you can add next year!" »

 The Sonoran pronghorn antelope is one of the Trilateral Committee's Species of Common Concern. (PHOTO: USFWS)



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One of the positive aspects of the virtual setting was accessibility. Chairs welcomed a record number of participants to their sessions, along with a broader and more diverse representation.

Greater representation connected directly with another central theme: the need for improved diversity and inclusion in the work we do. How can we better involve under-represented groups, including Indigenous people and other groups that have been marginalized or insufficiently engaged in conservation efforts in the past? And how can we draw upon the field of human dimensions more broadly and utilize social science to identify, understand, and involve these groups while improving conservation outcomes?

All three countries spoke about the need to ensure a community-based, ground-up approach that takes these aspects into consideration in their plans to address ecosystem conservation and mitigate climate change through the America the Beautiful initiative, an effort to conserve 30% of America's lands and waters by 2030.

"Communication is key, and coordination is important—only with these can come collaboration," said Williams. "We're OK with the 'what' and 'how' of what we do, but we need help on the 'why:' why is what we do important, and how can we bring others onboard, especially if they haven't been part of the conversation until now?"

This is where nontraditional conservation partners come in, such as the San Diego Museum

of Art. Attendees of this year's Trilateral Committee meeting experienced a virtual field trip of the museum's exhibition titled *Young Art 2021: My World, Our Planet*, which featured artwork around the theme of environment and sustainability by kindergarten through 12th-grade students.

By the end of the week, inspiration grew among meeting participants with a renewed commitment to conserve North America's wildlife on a continental scale. Discussions were lively throughout the week. By the meeting's closing ceremony, several important proposed plans emerged, including: a Letter of Intent on grasslands among all three countries; strengthened regional collaboration on bird and pollinator conservation as well as on ecosystem management on islands and across large conservation landscapes; improved information flow regarding law enforcement activities; and increased efficiencies in transboundary translocations of endangered species such as the Mexican wolf.

Demonstrating efficiency in their ability to communicate, coordinate, and collaborate, the three women leading the country delegations, Williams for the United States, Maria de los Angeles Palma Irizarry for Mexico, and Tara Shannon for Canada, adopted Diversity and Inclusion as a standalone priority for the Trilateral Committee in addition to the priorities of Zoonotic Disease, Climate Change, Integrating Human Dimensions, and Technology Innovation for Conservation. In the end, this efficiency and progress encouraged participants to follow Williams' parting advice to "go home inspired." □

BIGHORN SHEEP

## Decades of Wildlife Restoration Funding Help Recover Nevada's Bighorn Sheep



Since the 1960s, biologists in the United States and Canada have undertaken an ambitious effort to recover bighorn sheep—a species that nearly vanished across western landscapes due to disease transmission from domestic sheep, degraded habitat, unregulated hunting, and human disturbances.

The recovery effort in Nevada has been funded by many sources, including donations from sportsmen's organizations that leverage a substantial amount of federal dollars provided by the Service's Wildlife and Sport Fish Restoration (WSFR) Program. The program administers funds generated from the excise taxes manufacturers pay on firearms, ammunition, archery equipment, and fishing and boating equipment. The funds are distributed to state agencies

Bighorn Sheep at Point of Rocks on Ash Meadows National Wildlife Refuge.

(PHOTO: USFWS)

through targeted grant programs designed to benefit fish, wildlife, habitat, and outdoor recreation opportunities.

"The Wildlife Restoration Act is one of our nation's first conservation laws from the 1930s and was established to help foster collaborative efforts to recover declining wildlife populations," says Justin Cutler, a grants management specialist for WSFR in the California-Great Basin Region. "The story of bighorn sheep recovery in Nevada is one of many examples of this program's success, made possible through the funding model of this long-standing program. This model is only realized through the shared »




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conservation priorities of federal and state agencies, equipment manufacturers' tax contributions, non-profit conservation groups, and passionate volunteers."

Today Nevada boasts a population of over 11,000 bighorn sheep, up from just 2,000 when recovery and management efforts began.

"I am grateful to be a part of something so grand in Nevada in restoring bighorn sheep, our state animal, to their historic ranges," says Mike Cox, Nevada Department of Wildlife's statewide bighorn sheep program coordinator. "We Nevadans are also aware and proud that Key Pittman, former Nevada senator, was the namesake and cosponsor to the original Wildlife Restoration Act. It is so cool for us in Nevada to have financial support from the WSFR Program, the legacy left by the visionary Senator Pittman to support the restoration of Nevada's true natural heritage, the bighorn sheep." □

#### Learn more

 [On-the-ground action and research continues to help recover Nevada's bighorn sheep.](#)

## Counting Sheep: Biologists Pioneer Promising Wildlife Survey Method

Determining animal population sizes is vital to effective stewardship strategies, whether for the benefit of game management or the conservation of endangered species.

"Counting animals is no simple task," says David Stewart, a statistician and biologist for the Service. "Surveys must contain desirable properties and should produce an estimate that is consistent, unbiased, and precise, and, most important, be easy to compute."

For six months in 2017 and 2018, Stewart and other biologists from the Service and the New Mexico Department of Game and Fish addressed the issue and produced some promising

results. Their research, described in *Scientific Reports*, pioneers an innovative method to count animals by estimating their population sizes simply, safely, and affordably.

### Keeping it Simple

When it comes to being surveyed, all animals are not created equal. Those with distinct markings, such as ocelots or giraffes, make for more convenient individual identification and therefore easier population surveys. Similarly, animals living in open areas, like Serengeti grasslands or arctic tundra, are readily observed and counted from small aircraft. A simple process is needed for counting animals not readily identified or observed, too.

Stewart and company used camera traps placed in animal habitats to capture images when animals move in front of them. The challenge is transforming

animal images into useful metrics about wildlife populations.

"In the past, estimating abundance of an animal population using camera traps was limited to populations containing marked individuals or animals with uniquely identifiable pelage [fur] patterns," says Matthew Butler, a biometrician and biologist with the Service. "With uniquely identifiable animals, biologists can implement mark-recapture techniques to estimate abundance from camera trap images."

Grant Harris, another Service biologist and project collaborator, explains: "Pretend you want to know the number of catfish in a pond. You boat out, catch 50, and mark each with a small tag before releasing them. Two days later you catch another 50 catfish, and 25 have marks [the tags]. You tagged 50, re-caught half, so the pond »

The Red Rock facility, and the bighorn sheep it's produced, has been central to recovering the species from its New Mexico-endangered status to hunted big game.

(PHOTO: CAMERA TRAP AT THE RED ROCK WILDLIFE MANAGEMENT AREA)





The International Union for Conservation of Nature highlighted the team's research as filling an important data gap. (PHOTO: CAMERA TRAP AT THE RED ROCK WILDLIFE MANAGEMENT AREA)

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estimate is twice the original sample, namely 100 fish. Basically, this is how the estimation process works with marked animals, be it fur patterns or tags, as in our example."

For many animals, however, it's not that easy to identify individuals, and marking them with unique tags can be expensive, time-consuming, and sometimes dangerous.

To estimate animal numbers without marks, the team combined camera trapping with "distance sampling," a methodology that builds a mathematical function based on the assumption that animals farther from an observer (or camera) are observed less frequently than those that are close.

**Put to the Test**

Their laboratory: The Red Rock Wildlife Management Area, a 1,500-acre captive breeding facility for desert bighorn sheep on a remote site with rocky, steep terrain in southwestern New

Mexico. Constructed in 1972 by New Mexico Game and Fish in cooperation with the Bureau of Land Management, the area was stocked with sheep captured in the nearby San Andres Mountains and in Mexico. Since 1980, the facility has produced approximately 500 surplus animals, used to augment wild sheep populations throughout the state.

Of the sheep population at Red Rock, Eric Rominger, a biologist with New Mexico Game and Fish who has worked on sheep conservation for more than 40 years, says that all births, deaths, and removals are recorded. "And, since 1997, the facility has been surveyed each year, resulting in a true count. So, this intensively managed herd provided an extremely rare opportunity where the population size of a wild animal in native habitat was known."

Harris adds that "having this known population was important because we could test our method and evaluate how well it worked by comparing our results to truth."

At Red Rock, the research team combined imagery gathered from 11 trail cameras spaced along an 800-meter grid and used distance sampling to estimate the abundances of the desert bighorn sheep within it.

**The Results Are In**

Distance sampling isn't new, but coupling it with camera trap imaging is a relatively novel approach to conducting wildlife surveys. Further, testing or validating results before this study has been limited to computer simulations.

At Red Rock, the team field-tested their estimates against the known sheep population size. Their work was amazingly accurate. Results were always within five animals from the known population size of desert bighorn sheep in Red Rock.

"This is very significant," says Harris. "In the U.S., helicopters are often used to count sheep, which is expensive and dangerous. Globally, over 70 percent of wild sheep and goat species are endangered and, in most places, it's unaffordable to fly and count them, so population sizes are unknown. Our method offers a cheap and applicable solution." □

BEN IKENSON, freelance writer, Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions

**New Bridge Leads to Sustainable Infrastructure at Malheur National Wildlife Refuge**

The new bridge at Malheur National Wildlife Refuge in Oregon is more than a way across the creek. It's also a bridge to the future of sustainable building.

The 16-foot thermoplastic structure carries vehicle and foot traffic across Bridge Creek on East Canal Road. The span is made from 100% post-consumer and industrial recycled plastic.

The bridge weighs just over 19,000 pounds and was made from the equivalent of 866,542 plastic water bottles. It will support up to 19 tons, a significant increase from the previous 3-ton limit.

"It's fantastic that we were able to use recycled materials for a much needed bridge here on the refuge," says Malheur Project Leader Jeff Mackay. "Additionally, it brings together modern technology while using the rock abutments that are on the National Register of Historic Places. They were built by the Civilian Conservation Corps in the 1930s. We hope the public will enjoy this blend of new and old technology as they enjoy their public lands at the refuge."

The bridge is open to the public and often used by anglers, birders, and wildlife enthusiasts, as well as fire response and refuge staff. Karla Mingus, an archaeologist with the Service, worked with the Oregon State Historic Preservation Office to obtain approval to mix the new technology with the old. »



ENVIRONMENTAL JUSTICE

**Edwards Aquifer Habitat Conservation Plan Promotes Species Habitat Restoration and Supports Environmental Justice**

The Edwards Aquifer provides water to over 2 million people and thousands of agricultural irrigators in the south central Texas region. Additionally, its unique artesian springs and aquatic environment are home to a number of endangered and threatened species that occur nowhere else.

The Edwards Aquifer Habitat Conservation Plan (EAHCP), now in its ninth year, supports protection and recovery of those federal listed species. The EAHCP has been good news, for instance, for expansion of the federally endangered Texas wild-rice, leading to a 125% increase in the plant's coverage area.

Additionally, the EAHCP program has led to a decrease in non-native aquatic plant species in the Comal and San Marcos spring systems, which include their namesake rivers. That helps not only Texas wild-rice but six other endangered species, one threatened species, and three petitioned species.

Groundwater conservation of the Edwards Aquifer has also increased, which aids pretty much everything, including people. Even during periods of drought, the EAHCP has »

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The project was funded through a Federal Highway Administration Coordinated Technology Implementation Program (CTIP) grant. The goal of CTIP is to provide a forum for vetting and deploying new or underutilized innovations on federal land transportation projects. It is the Service's first thermoplastic bridge project.

"One of the goals behind using these funds and the thermoplastics is to determine if it's a viable and cost-effective solution moving forward for other bridge replacements," says Eric Bergey, a transportation program specialist with the Service. "Malheur National Wildlife Refuge is a great spot to test out this project because they have such a wide range of weather and temperature extremes."

The thermoplastic composite was first utilized for railroad crossties and recently extended to use on

bridges. The recycled material has a much longer life span than a traditional wooden bridge, and it also offers a lot of positive features for elements of the high desert of eastern Oregon. The bridge is:

- Highly resistant to cracking and warping caused by the sun's ultraviolet rays
- Fire resistant with the ignition point of 662 degrees Fahrenheit
- Resistant to most acids, salts, wood-boring insects, rot
- Won't rust and is virtually impervious to water
- Maintains structural integrity in humid and wet environments

Rob Moriarty, a civil engineer with the Service, worked to develop and manage the project. Following the administration's lead, the Department of the Interior has identified facilitating economic recovery through smart infrastructure as a priority.

A new 16-foot thermoplastic bridge crosses Bridge Creek at Malheur National Wildlife Refuge. The span is 100% post-consumer and industrial recycled plastic. The new bridge span rests on rock abutments that were built by the Civilian Conservation Corps in the 1930s. (PHOTO: USFWS)

Using a recycled material for the bridge helped with that priority. Each year 27 million tons of plastic waste is generated in United States and 90 million tons in the world. According to EPA-Municipal Solid Waste Generation, plastics are only recycled at a 7% rate and only 20% of the recycled plastics are in good use.

"The support from the engineering, manufacturing, and construction community helped make this project a reality," Moriarty says. "The thermoplastic materials are the environmentally right fit to provide a great bridge with long-term sustainable green technology for the Service." □

BRENT LAWRENCE, External Affairs, Columbia-Pacific Northwest Region



ENVIRONMENTAL JUSTICE

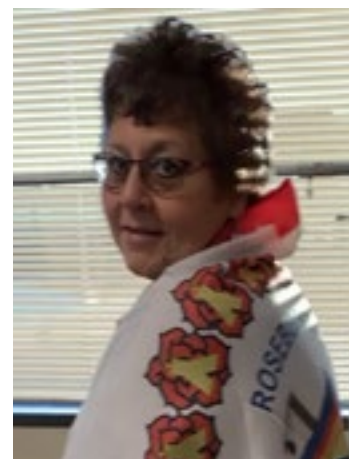
**Ensuring Access for All to Public Lands: Our Public Civil Rights Program Helps Everyone Enjoy the Outdoors**

What does outdoor access mean to you? Do you have a space nearby where you can enjoy hiking, fishing, birdwatching, hunting, or experiencing wide-open spaces? Not everyone does, and that is why we are committed to ensuring equal access to public lands through our Public Civil Rights Program.

What does lack of equal access look like? For someone in a wheelchair, it could mean staying in the parking lot while their friends are out on the hiking trails. For someone without transportation, connecting with wildlife may be limited to what's in their neighborhood. Or, if there is a river nearby, is it even safe to play in?

Our Public Civil Rights Program is governed by the Civil Rights Act of 1964 and other landmark laws that guarantee equal access to government services and facilities, along with other civil rights. These laws uphold the core tenant of Environmental Justice—that no community be negatively impacted, or disproportionately bear the consequences, of government actions.

We work closely with Service staff, state partners, national organizations, and other federal agencies to improve access to public lands.



Bobbea Burnette Cadena

Bobbea Burnette Cadena assumed leadership of the program and the team of eight specialists earlier this year. For her, “managing the Public Civil Rights Program for the Service, to increase access, is a life-long desire.”

Ensuring access starts at home, so we regularly review our own programs, activities, and facilities to identify and remove any barriers that reduce or prevent access to the public areas we manage such as national wildlife refuges or national fish hatcheries. The team accomplishes this by working hand-in-hand with managers to provide access to boating, hunting, wildlife viewing, and other activities.

Equal access to public spaces, programs, and activities outside the agency is also important. We provide federal funding to state fish and wildlife agencies that requires them to abide by »

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maintained springflow by implementing measures such as the Regional Water Conservation Program.

The EAHCP was also set up with Environmental Justice in mind.

EAHCP developers considered how water use restrictions may impact the livelihood and economy of agricultural communities in the area. Water conservation efforts, they knew, could hit rural communities.

Millions in the United States lack basic access to safe drinking water and sanitation, two nonprofits said in 2019. Clean water is Environmental Justice.

To ease that effect, the Regional Water Conservation Program partnered with municipal water providers to distribute low-flow toilets and promote other water-saving measures including leak detection.

Volunteers measure Texas wild rice during the 2015 survey in the San Marcos River, Hays County, Texas.

(PHOTO: USFWS)

In Uvalde, the program distributed and installed nearly 3,000 high-efficiency/low-flow toilets and plumbing kits from 2014 through 2016.

Groundwater conservation has also improved equitable access to recreation.

The San Marcos River runs through the city of San Marcos, with a population of 43% Hispanic or Latino and an official Hispanic Serving Institution (Texas State University). The city has numerous public access sites and parks for people to enjoy the river for free. That means that during the heat of the summer the community has a cool place to swim.

The success of the EAHCP with respect to species recovery, water savings, and Environmental Justice makes it an example for other Habitat Conservation Plans the Service develops. □



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relevant federal civil rights laws, related statutes, and executive orders.

To help them, we provide technical guidance on how to create model programs for accessibility. We also conduct annual reviews of fish and wildlife agencies that receive funding.

What does a model program look like from a public civil rights perspective? In Portland, Oregon, the Service’s Urban Wildlife Conservation Program embarked on a partnership that converted a landfill into a city park in the heart of a low-income and mostly minority neighborhood. Cully Park was born. Investing funding and expertise to help create a green space is an excellent example of how we can combine the resources of state, city, and various community partners to connect people with nature.

Another example is the Arizona Department of Game and Fish’s Limited English Proficiency (LEP)

Students from Scott School Elementary in Portland, Oregon, attend Cully Critter Cruise at Cully Park and learn about biodiversity in an urban setting, storm water management, native plants and ethnobotany, entomology, and careers in construction and design. (PHOTO: USFWS)

program. It offers a stipend to bilingual employees who can pass a proficiency test if they volunteer for interpreter duties. In addition, their LEP program includes contracts with companies that offer an array of language services, including translating documents.

We also ensure our visitors have access to accessible blinds, such as the one at Sutter National Wildlife Refuge in California. The Service works to provide access for people with disabilities to boating, hunting, wildlife viewing, and other activities at various locations throughout the nation.

The stories in this issue of the magazine draw connections between the work we do in the Service and Environmental

Justice, prompting each of us to consider what access to nature means to others. To Cadena, who was born and raised on the Rosebud Reservation in South Dakota, this meaning is deeply personal and relevant.

“As a Sicangu Lakota it is important to me to ensure Unci Maka (Mother Earth) is free from contaminants and the oyate (people) have access to the land for hunting and fishing,” she says.

When you are out on the water, hiking a mountain, photographing the most recent bird for your life list, join us in reflecting on ways that we can make these experiences accessible for everyone. □

Public civil rights specialists  
MARCUS BANDY, BRIAN LAWLER,  
KATHLEEN LUCAS, and MICHAEL  
SANCHEZ, Public Civil Rights Program,  
Headquarters

### The Marvelous Milk-vetches



Packard’s milk-vetch is one of Idaho’s rarest plants, only growing in an approximately 10 square mile area in northeastern Payette County. More than 3,000 species of milk-vetches exist worldwide, and some live in extremely harsh environments. [Tour across the United States and visit](#) some of these amazing plants and the unusual habitats they call home. (PHOTO: JUSTIN FULKERSON)

# STRIVING FOR ENVIRONMENTAL JUSTICE



A child decorates a pair of butterfly wings to wear at John Heinz National Wildlife Refuge at Tinicum in Philadelphia, Pennsylvania.

(WINGYI KUNG/USFWS)



Throughout our history, communities of color, low-income families, and rural, Indigenous people have suffered from air pollution, water pollution, and toxics sites near their communities. Environmental Justice looks to change that grim reality: to ensure fair treatment and meaningful involvement of all in the environmental arena. Environmental Justice communities define the environment as “where we live, work, play, learn, and pray.” In recent months, Environment Justice has become a key tenet of the U.S. Fish and Wildlife Service. We are working to ensure that future environmental crises in the United States are more evenly distributed and reduce the impact and frequency of environmental crises in Environmental Justice communities. »

# NEXT STEPS

*What's new with Environmental Justice? A lot.* | By KIM LAMBERT





Environmental injustice clearly is nothing new. Governments and industries across the nation have a track record of building toxic facilities and other sites in or near minority and low-income communities. Health issues stemming from such environmental contamination can contribute to shortened life expectancies, and families may be trapped in toxic environmental conditions for generations because of poverty. In part, the lack of wealth and clout often prevents positive changes in their neighborhoods.

**B**ut environmental equity is a basic human right.

The challenge of Environmental Justice is moving toward environmental equity, spreading environmental disadvantages equitably among all people, ensuring that all people share the benefits of conservation, and providing everyone with a seat at the table when discussing environmental issues.

For years, grassroots organizations, environmental groups, advocates, and academic experts have been working to address environmental injustices, climate change, and systemic racism greatly impacting marginalized communities across the country. But many front-line communities believe that when it comes to environmental protections and public amenities, the federal government and others simply ignore them.

President Biden has raised the importance of Environmental Justice by signing Executive Order 14008 that includes initiatives such as Justice40, putting Environment Justice and climate change at the center of the federal government agenda. Simple stated, Justice40 supports communities in climate crisis

by mandating that 40% of the benefits from government-funded climate action or existing programs go to disadvantaged communities.

The Administration has tapped more than two dozen advocates from around the country to serve on the White House Environmental Justice Advisory Council (WHEJAC), which has already hosted two virtual public meetings since March. WHEJAC's primary focus is Justice40. The members are asking affected communities and organizations across the country, "What Justice40 programs would help you?"

It's not enough to put policy in place. Within the Department of the Interior, [Secretary Deb Haaland released a statement after the George Floyd verdict](#): "We must acknowledge the pain that African-American communities across the nation and around the world are feeling during these turbulent times and commit ourselves to real progress. Serious inequities exist in this country. We cannot continue with business as normal. We must tackle these issues and build a country where race doesn't determine access to opportunity, justice, and accountability... That means...lifting up the voices of those who have been underrepresented, and centering those perspectives in the decisions and policies we implement as part of a broader commitment to Environment Justice..."

The U.S. Fish and Wildlife Service too has Environmental Justice among our top objectives. And you will read about our Environmental Justice work in this magazine.

In addition, relationship-building is underway within the Service with communities of need, but it is not easy and won't happen overnight. It can take years to truly build trust within a community and to know community members' concerns and ideas. Communities will not judge on words but deliverables. To start, previous DOI Secretarial Orders that unfairly tilted the balance of public lands, climate change, equality, or meaningful community engagement have been revoked. These Secretarial Orders and policy guidance prevented Environmental Justice for Tribal communities and marginalized communities for current and future generations.

"For those who are sick, desperate for federal assistance, they want to believe help is on the way. Those who died, it's too late. The White House Environmental Justice Interagency Advisory Council and WHEJAC embrace these changes and challenges to bring equality to those who begged and pleaded for assistance. Delivering on the content of Justice40 can result in deliverables unheard of within federal government. To ask for clean water, air, food, good health, and just the necessities of life is the right of everyone on planet Earth," says Kim Lambert, who represents the Service on the Interagency Advisory Council and is the Service's Environmental Justice Outreach Specialist.

The administration has stitched climate and Environmental Justice into the fabric of decision-making across the federal government. We have our goal of environmental equity. Now, everyone is wondering what success will look like. □

For additional information, contact [<kim\\_lambert@fws.gov>](mailto:kim_lambert@fws.gov).

KIM LAMBERT, External Affairs, Headquarters

(Previous page) John Heinz National Wildlife Refuge at Tinicum in Philadelphia, Pennsylvania, attends the Lindbergh Boulevard community meeting, Neighbors gave them ideas on how to make Lindbergh Boulevard a more safe and welcoming street, while enjoying hoverball archery, crafts, free pollinator plants, and food. (PHOTO: WINGYI KUNG/USFWS)

# A REFUGE FOR ALL

*Denver's Rocky Mountain Arsenal National Wildlife Refuge receives long-term funding increase to support inclusive urban programming.*

By JESSICA SUTT and MATT TROTT



Colorado Senator Michael Bennet and 7th District Representative Ed Perlmutter enjoy the fishing pier with Mile High Youth Corps leaders. (PHOTO: FRIENDS OF FRONT RANGE WILDLIFE REFUGES)

(Above) Scouting Troop 2119 conducts pollinator garden and bluebird rest stop maintenance at Rocky Mountain Arsenal National Wildlife Refuge Headquarters. (PHOTO: TOM WALL/USFWS)

We know that 80% of Americans live or work near cities and that many of these urban communities represent underserved populations. The work of our Urban Wildlife Conservation Program may not always be called Environmental Justice. From our standpoint, it's about being an asset to the community, inspiring the next generation of outdoor enthusiasts, and ensuring long-term conservation.

**E**nvironmental Justice is about spreading environmental disadvantages equitably among all people. It is also about helping all people to share the benefits of conservation. And it's about making sure everyone is part of discussions about environmental issues that affect them.

That's where our Urban Wildlife Conservation Program comes in.

We work to understand individual conservation issues as they affect the interests of local communities. Then we try to address these needs to help fish, wildlife, and people.

We have set up such programs across the country, including one in Denver, Colorado.

On National Get Outdoors Day, June 12, Missouri Basin and Upper Colorado Basin Regional Director Noreen Walsh announced that Denver's Rocky Mountain Arsenal National Wildlife Refuge will be awarded \$1 million in additional annual funding to expand their Urban Wildlife Conservation Program. With this funding as a flagship urban refuge, Rocky Mountain Arsenal will be able to better support local communities in the Denver area by offering a safe outdoor place for the community and visitors to enjoy recreation in their nearby nature. The refuge will also be able to improve infrastructure, provide more environmental education opportunities, and support community partnerships.

"We are thrilled to be able to invest additional resources in providing opportunities for diverse local communities to use and enjoy the refuge,"



A 4-year-old takes aim at the new archery range on Rocky Mountain Arsenal National Wildlife Refuge. The range is free and open to the public sunrise to sunset. (PHOTO: ANNA MUNOZ/USFWS)

Walsh says. "Our vision is for the Rocky Mountain Arsenal National Wildlife Refuge to be a place where all are welcome and where visitors can enjoy access to the natural world and learn about our native wildlife. We are especially excited to be able to invest these new resources in connecting to and partnering with our neighbors in this urban metropolitan area."

Established as a national wildlife refuge in 1992, the prairie and lakes of Rocky Mountain Arsenal attract raptors, migrating songbirds, wintering ducks, and geese. The refuge also provides habitat for a variety of mammals including bison, coyote, deer, and one of North America's most endangered mammals, the black-footed ferret.

What makes this public land truly unique is its location in the Denver metro area.

At 15,000 acres, Rocky Mountain Arsenal National Wildlife Refuge is one of the largest urban refuges in the country. It is a place where wildlife thrives, and people can reconnect with nature. Visitor amenities include more than 20 miles of hiking trails, an 11-mile wildlife drive, seasonal fishing, a visitor center, and much more.

Over the last eight years, Rocky Mountain Arsenal and the two other refuges in the Denver metro area, Two Ponds and Rocky Flats National Wildlife Refuges, have become leading destinations for Denver's fast growing diverse urban population. Latinx and African-American residents make up 75% of the communities surrounding the refuge. The Service has been engaging with the local community to understand their vision for the refuge. Visitor Services Manager Sarah Metzger says, "Conservation success stems from our understanding of the communities we serve, and we are committed to listening, growing, and continually improving from community feedback."

During this first year of increased funding, the staff will invest in infrastructure projects that improve accessibility and connect refuge lands to local communities through pedestrian pathways with nature play areas at those entrances. The Service plans to build additional capacity through staffing, focusing on recruiting Spanish-speaking interpreters to help better connect with the Spanish-speaking community. The refuge will also expand youth hiring programs to offer opportunities for local youth to connect to conservation.

Biden Administration priorities of equitable conservation, diversity and inclusion, climate resilience, and building back better are all supported by this opportunity at Rocky Mountain Arsenal. □

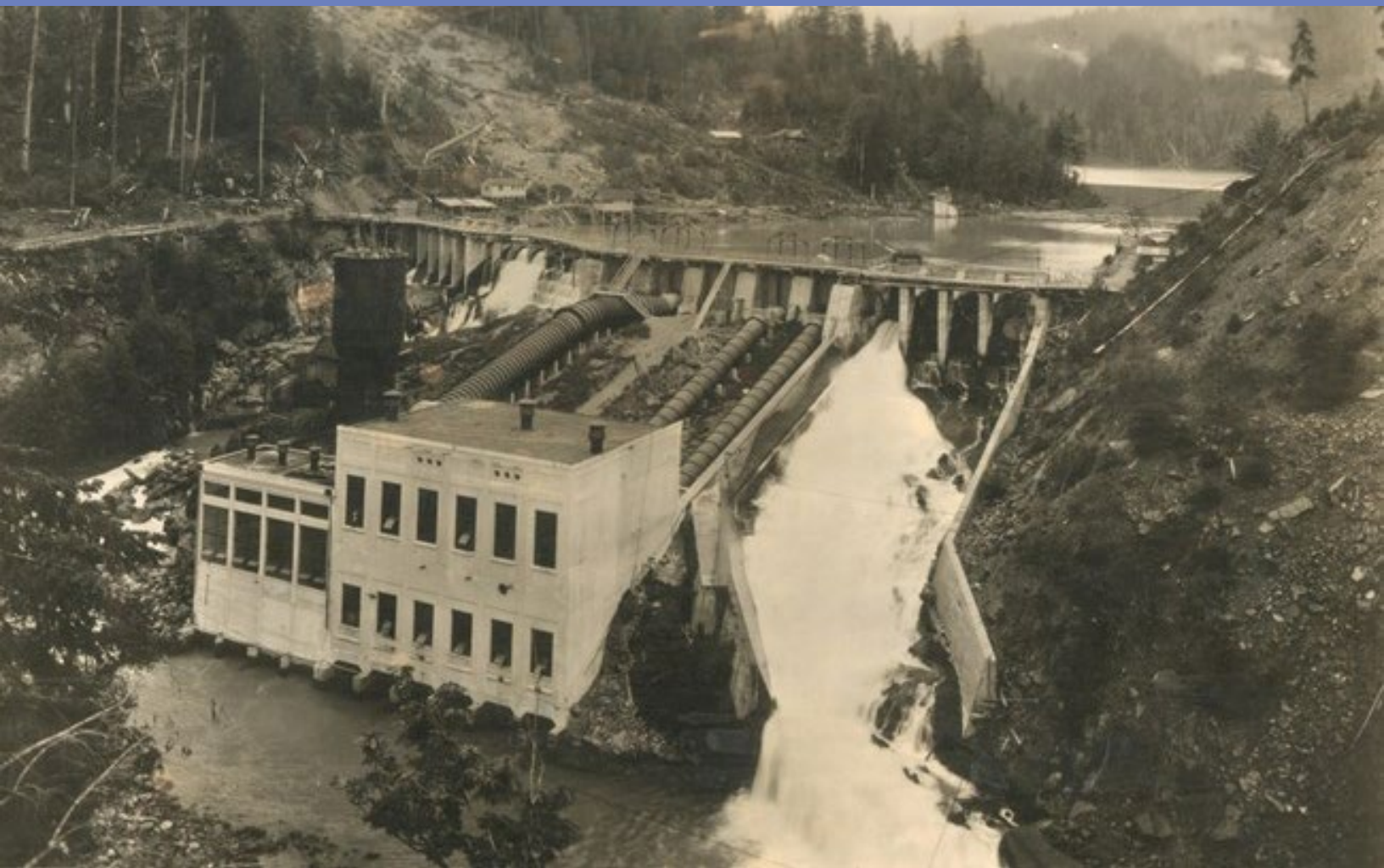
JESSICA SUTT, External Affairs, Missouri Basin and Upper Colorado Basin Regions, and MATT TROTT, External Affairs, Headquarters

# MORE THAN FOOD

*The Lower Elwha Klallam Tribe,  
lamprey, and restoring a way of life.*

By NATHAN DEXTER, SARAH LEVY, and AMANDA SMITH

(Below) A 1913 photo shows the Elwha Dam powerhouse. (PHOTO: NPS)



The Olympic Peninsula in southern Washington is home to breathtaking beauty and a variety of ecosystems. Foggy temperate rainforests, brilliant glacier-capped mountains, diverse beaches and tidal zones, and interconnected lakes and rivers provide sanctuary for an extraordinary number of species. Anchoring the peninsula is the Elwha River, 45 miles of riverine ecosystem that has provided Indigenous people sustenance for thousands of years.

**T**oday, the Lower Elwha Klallam Tribe of Washington, federal and state agencies, and other partners are working hard to restore the Elwha River drainage after the removal of two dams. The Pacific lamprey, a historically significant Tribal species, is a cornerstone of the restoration effort.

“The lamprey were a source of food for our Tribal members,” says Russ Hepfer, vice chairman of the Lower Elwha Klallam Tribe. “I would like to see it reintroduced as a food source.”

Among Tribes, food, such as the lamprey, is more than a resource. In many Tribal histories, plants and animals gave of themselves to sustain human life. Villages, lifeways, languages, religions, and cultures were built around and upon them. The very identity of a people is intertwined with the foods that they gathered, harvested, shared, and consumed. Respect for these resources is tantamount to respect for life.

In negotiating treaties, it was no mistake that Tribes specifically reserved hunting, fishing, and gathering at usual and accustomed places—doing so was necessary for continued existence and an expression of Tribal sovereignty. It is amazing to realize that Tribal leaders could see ahead 150 years ago to these future needs of their people.

### Why Lamprey Matter

Long before dinosaurs appeared on the scene, lamprey inhabited our planet. Older than trees, these jawless fishes first appeared in the fossil record about 400 million years ago. With approximately 44 species, lamprey are found all over the world in fresh and salt water. Fourteen of these lamprey species are native to the West Coast of the United States. In the Northwest, Pacific lamprey play a vital role in determining ecosystem health and provide a valuable first food for Indigenous people.

### Historic Dam Removals

Between 1911 and 1927, private financiers built the Elwha Dam and Glines Canyon Dam to provide power to the Olympic Peninsula and community of Port Angeles, Washington. These dams blocked anadromous fish from accessing 90% of the watershed and degraded downstream habitat by blocking the delivery of sediment and woody debris.

Anadromous fish, such as Pacific lamprey, spend most of their adult lives at sea but return to fresh water to spawn.

After decades of work by the Lower Elwha Klallam Tribe and others, Congress passed the Elwha River Ecosystem and Fisheries Restoration Act in 1992 to restore habitat and allow anadromous fish to return to the watershed. Between 2011 and 2014, both dams were removed,



Elwha Tribal Elder and Fisheries Technician Ernest “Sonny” Sampson releases a newly radio tagged Pacific lamprey into the Elwha River. (PHOTO: TIFFANY ROYAL)

completing the biggest dam removals in history and starting the process of restoring the river ecosystem. Restoration can be a lengthy process, and there are many methods of measuring the degree of an ecosystem’s resilience. The lamprey, an ancient, often misunderstood fish, provides one of those meaningful measurements. >>

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### Emerging Threats

Despite current efforts to conserve Pacific lamprey, threats continue to emerge. Although Pacific lamprey were historically widespread along the west coast of North America, their abundance is declining, and their distribution is contracting throughout Oregon, Washington, Idaho, and California. Threats to Pacific lamprey occur throughout much of the range of the species and include: restricted fish passage, reduced water flow, loss of streams, habitat degradation, degraded water quality, and changing marine and climate conditions. These threats, in conjunction with declining distribution and depressed abundance, affect the status of lamprey.

### Climate Change

We also know that climate change poses a threat to lamprey, too, but don't yet know what it means for the future of these fish.

Resident species of lamprey are especially at risk in a changing climate because they cannot migrate to cooler waters. Warming temperatures, changes in precipitation, and altered water flow may be especially problematic for southern species of lamprey, but lamprey species in the Northwest face passage impediments and the loss of habitat, making them also vulnerable to climate change.

If rearing and spawning habitats become unavailable to lamprey due to changing temperatures, reduced water availability, or extreme events, the communities that depend on lamprey could also be at risk.



### Restoring the Ecosystem

Funding for these restoration efforts has come from a number of sources, including the Service's Tribal Wildlife Grants (TWG). The purpose of TWG is to provide a competitive funding opportunity to federally recognized Tribal governments for the development and implementation of programs that benefit fish and wildlife resources and their habitat. Tribes apply TWG awards, administered by the Service's Wildlife and Sport Fish Restoration Program, toward a variety of projects including restoration of habitats and species of cultural importance.

In the Columbia-Pacific Northwest Region, besides the Elwha River work, TWG funds have been used to: restore

For the first time in a century, young Pacific lamprey were found in the Elwha and White Salmon rivers, five years after Elwha and Condit dams were removed, respectively. (PHOTO: USFWS)

bighorn sheep populations along the Salmon River in Idaho with the Nez Perce Tribe; restore shrub-steppe species on the Yakama Indian Reservation with the Yakama Nation; employ beavers to restore ecosystem functions in the Snohomish watershed with the Tulalip Tribes; and conserve Pacific lamprey in the Tenmile Lakes Basin with the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians. >>

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While the objective of TWG is to develop and implement programs that benefit fish and wildlife resources and their habitat, these projects often support Environmental Justice objectives as well.

### **Environmental Justice and Ecological Restoration**

Much of the conservation work of Tribes today, such as that of the Lower Elwha Klallam Tribe to remove the Elwha Dams and restore the ecosystem of the Elwha River, is as much about the protection of their identity and way of life as it is about restoring plants and animals or ecological function. To apply TWG funds toward such projects as the Pacific lamprey recolonization of the Elwha River is an Environmental Justice effort realized. It's the reversal of over a century of efforts, actions, and policies that put little value on or paid little heed to the importance of an ecosystem to the sustenance and identity of Indigenous people. □

NATHAN DEXTER, SARAH LEVY, and AMANDA SMITH, External Affairs, Columbia-Pacific Northwest Region



**READ MORE**



[The Service is partnering with Tribes and others to pioneer Pacific lamprey aquaculture.](#)

(Top) Removal of the Glines Canyon Dam.

(PHOTO: USGS) (Bottom) The Elwha River flows free after the Elwha Dam removal. (PHOTO: NPS)



# RESTORING ECOLOGY & BUILDING EQUITY

*Valle de Oro National Wildlife Refuge emphasizes its community on the banks of the Rio Grande.*

By BEN IKENSON





The community of Mountain View, in Albuquerque’s South Valley, may seem an unlikely setting for a federally managed wildlife refuge. Beset by some of the worst poverty rates in New Mexico’s largest city, the predominantly Hispanic neighborhood is home to asphalt and concrete manufacturers, a massive sewer treatment plant, sprawling auto salvage lots, and bulk-fuel terminals – along with high levels of air pollution, contaminated groundwater, 47 EPA-regulated sites, and two federal Superfund sites, all within an 11 square-mile area that 6,000 residents call home.

**B**ut it is exactly these dynamics that underscore the significance of the role [Valle de Oro National Wildlife Refuge](#) is hoping to play in the local social fabric. The refuge was established in 2012 when community members worked with local organizations and the Service to set aside 570 acres stretching along the Rio Grande, on land that had been part of a large dairy farm. The refuge’s establishment disabused notions at the time of using the site to expand the nearby sewage plant, and the refuge now protects the place—the largest remaining tract of undeveloped farmland in the city—as it works to restore ecological health.

The refuge also represents the nation’s first federal public land with a site-specific strategic plan addressing issues of environmental and economic justice.

“The work of the refuge is invaluable to the immediate community. As a first of its kind to address issues that have been ignored for too long, the refuge is extremely important in offering neighbors access to green space while drawing attention and resources and creating opportunities that will help empower the community,” says Richard Moore, a former Mountain View resident and veteran activist who co-chairs the newly created White House Environmental Justice Advisory Council. “And the kinds of issues the refuge is trying to address locally are fortunately now being taken seriously at the highest levels of government.”

Moore is also co-founder of local grassroots organization Los Jardines Institute, which, along with the Friends of Valle de Oro National Wildlife Refuge, and staff of the refuge itself, crafted Valle de Oro’s “Environmental and Economic Justice Strategic Plan.”

The document outlines a number of specific goals, such as engaging in local

contamination monitoring and mitigation work, helping facilitate studies of health and pollution remediation, integrating Environmental Justice principles into the refuge’s development, and providing support, services, resources, employment, and other opportunities for refuge neighbors. Another main point of the plan calls for early, meaningful and ongoing community involvement in the refuge’s decision-making process. Altogether, the plan aims to build a place that serves as a premier model for community-based natural and cultural resource management rooted in equity. >>

(Previous page) A group of people on a birding walk at Valle de Oro National Wildlife Refuge. (PHOTO: CECILIA BELTRAN/USFWS) (Below) In a normal year, more than 100 youth have jobs based out of Valle de Oro as they work on public federal, state, and local lands, and Tribal lands. (PHOTO: USFWS)



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To these ends, the refuge, with grant support from the EPA and oversight by its Environmental Justice leadership team, has appointed a program manager to update the strategic plan over the next four years, foster collaboration between the refuge and the Mountain View community, and develop an Environmental Justice curriculum for refuge staff, volunteers, interns, partners, local schools, and the general public.

The refuge also hosts an annual Environmental Justice community day each spring, a kind of block party with food, music, educational booths, and crowds of neighbors gathering to discuss issues that impact the local environment and people.

“The whole idea is to involve the community as much as possible, so that they ultimately guide refuge management and development to meet their needs,” says Jennifer Owen-White, who has managed the refuge since it was established nine years ago.

As manager, Owen-White also oversees a number of ecological restoration efforts, from the creation of seasonal wetlands and the restoration of grasslands and upland habitats, to the expansion of the forested riverbank of native cottonwoods and willows known locally as the “bosque.”

This work, too, involves much participation from the immediate community. Many Mountain View residents weighed in on design considerations for habitat features, and local volunteers and youth crews are helping restore more than 500 acres of fallow farmland back to historic conditions as a native Rio Grande floodplain ecosystem.



In fact, the refuge is very involved in putting young people to work through partnerships with the Ancestral Lands Conservation Corps, the Rocky Mountain Youth Corps, and the [Federal Youth Conservation Corps](#). In a normal year, more than 100 youth have jobs based out of Valle de Oro as they work on public federal, state, and local lands, and Tribal lands.

“It’s amazing how committed the refuge is to presenting opportunities for young people,” says Dakota Dominguez. A crew supervisor with one of the youth corps programs himself, Dominguez, 28, was hired by the refuge earlier this year as a park ranger and volunteer coordinator, and he continues working closely with youth crews on various conservation projects.

But, as with ecological restoration work, the evolution of the refuge and its significance in the community will require patience. “It won’t happen overnight,” says Owen-White. “It’s about generational change, which takes committed, intentional effort over years and decades.”

Valle de Oro is the first refuge in the nation to have an Environmental Justice strategic plan.

Certainly, the history of the neighborhood reflects this sobering reality. A tranquil but thriving and established agricultural community on the banks of the Rio Grande, Mountain View grew as Albuquerque rapidly began expanding in the 1940s. The area was re-zoned in the 1970s, opening it to industrial development—and to the legacy it wrought.

Today, many residents are skeptical about the quality of the water in the river that feeds the neighborhood’s traditional farm irrigation systems, or “acequias.” And continuing proposals to build more industrial facilities in the area are deeply concerning to members of a community already plagued by some of the county’s highest death rates and shortest life spans. Currently, the Friends group and other community advocates are hoping to get an air quality permit for a proposed asphalt plant on a 61-acre site within two miles of the refuge rescinded at a hearing scheduled for later this year. >>

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“Mountain View residents were instrumental in helping to establish the Valle de Oro National Wildlife Refuge, the first green space in their community,” says Aryn LaBrake, executive director of the Friends group. “While it is disheartening that their only green space and their health is threatened by new polluting industry, the refuge is a huge step in mitigating a local pattern of exploitation evident in far too many vulnerable communities across the country and throughout the world.”

The refuge certainly represents a milestone for the federal agency that manages it. As part of the Service’s growing network of more than 100 urban refuges nationwide helping cities pursue innovative community-based solutions for wildlife conservation while increasing public access to the outdoors in urban settings, Valle de Oro, which is easily accessible to more than half of the state’s entire population, is the first such refuge in the Southwest.

“Valle de Oro is setting an important precedent in fostering positive change, ecologically and socially,” says Regional Director Amy Lueders of the Service’s Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions. “This is extremely valuable and important work.”

After years of planning, a 10,000-square-foot visitor center at the refuge will open this fall, to feature an amphitheater, classroom, community meeting space, and a career center where young people can learn about and apply for jobs in natural resources conservation. It will also highlight the refuge’s unique mission with a library devoted to Environmental Justice. □

BEN IKENSON, Freelance Writer, Arkansas-Rio Grande-Texas Gulf And Lower Colorado Basin Regions



(Above) Valle de Oro Refuge Manager Jennifer Owen-White (lower left) joins partners and youth crew members in a watermelon-eating contest at the refuge’s 4th birthday celebration. (PHOTO: USFWS) (Left) “It’s amazing how committed the refuge is to presenting opportunities for young people,” says Valle de Oro staffer Dakota Dominguez, a former crew supervisor with one of the youth corps programs. (PHOTO: CHELSEA MCKINNEY/USFWS)



READ MORE



[Valle de Oro’s “Environmental and Economic Justice Strategic Plan.”](#)

# BIG VISITORS, BIG CHALLENGE

*An Alaska Native community and the Service pull together to safeguard Pacific walruses on shore.*

By ANDREA MEDEIROS



The elders of the small Inupiaq village of Point Lay in the northwest reaches of Alaska remember a time when the Arctic sea ice and the animals that depend on it followed reliable patterns. In particular, they tell of a time when only a handful of Pacific walrus visited the shores of the barrier island beyond their community.

**W**hat was once true is no longer. Thousands of Pacific walrus now show up, raising concerns and sparking a community-wide effort to help the massive marine mammal survive in a dramatically changing climate.

“When the walrus first started coming to shore, it was kind of strange to us that they were all beaching on the shore,” Leo Ferreira III, former Tribal council president, said in 2016. “Then we just realized that there is no ice and that is why they’re coming to shore.”

And the walrus aren’t the only rapid changes in the environment. The permafrost is melting, causing the ground to sink. The houses, which are built on piles, now balance precariously high above the tundra with large pools of water on the ground below during the summer months. People see birds and insects they have not seen before, and the timing of migrations is shifting.

Changes to wildlife can be especially hard for the citizens of Point Lay. They depend on foods collected from the land and sea.

“You know food gathering, that’s how we live. We learned it from our ancestors. It’s our culture,” resident Allen Upicksoun said in a 2017 interview. “Your body is designed to eat certain foods, and when you don’t eat them, it’s like you’re missing something, you know?”

The people of Point Lay also have a deep respect for and spiritual connection to the Earth and the animals they live with and from.

At traditional drumming and dancing practices, each song and dance tells a story about the animals, hunting, fishing, or gathering. One song called Walrus ends with the children making the sounds of walrus with their pointer fingers hanging down from their mouths.

The walrus is also a way of life for some Point Lay residents, such as ivory carver Ira Itta.

And so it was that the unusual arrival of the big visitors prompted a partnership that includes the Service—an effort designed to protect the seagoing mammals and their young while on shore. These efforts include monitoring and working to prevent human-caused disturbances.

Since 2007, say biologists, walrus female and their calves have been leaving the Chukchi Sea and coming ashore on the barrier island near Point Lay, a village 700 miles northwest of Anchorage on Alaska’s North Slope. They show up in late summer or early fall—a response, scientists say, like Ferreira, to the loss of sea ice. Biologists call these groups of walrus on land haulouts.

This is a marked change in behavior. Traditionally, mothers and their young left the Chukchi’s depths to rest on sea ice. Walrus are better suited to life on the ice instead of land, as they can slip easily back into the sea to forage or avoid predators.

On land, the creatures are skittish: a sight, sound or odor can cause the walrus to panic and flee to the sea for safety. When large numbers of animals do this, it is called a stampede. The animals—particularly the yearlings and calves—can get injured or killed. >>



Leo Ferreira III, former Native Village of Point Lay Tribal council president. (PHOTO: USFWS) (Previous page)  
Cow and calf walrus resting on sea ice. Females and young prefer to hang out on ice floes in small groups where they can easily access feeding grounds and be relatively safe from predators.

(PHOTO: USFWS)



Artisan Ira Itta carves walrus ivory.  
(PHOTO: BRIAN ADAMS/USFWS)



Point Lay Elder Allen Upicksoun. (PHOTO: USFWS)



The people of Point Lay have a deep respect for and spiritual connection to the animals they live with and from, such as the walrus. (PHOTO: BRIAN ADAMS/USFWS)

Walrus aren't the only seasonal visitors to Point Lay. The arrival of the large mammals draws reporters and other curious people, too. That's not surprising. The creatures are immense—a male walrus weighs about the same as a Toyota RAV-4, about 3,700 pounds.

But Point Lay does not have the infrastructure to host the two-legged visitors: there are no restaurants, and the only lodging in town closed in 2016.

To help people understand why it isn't a good idea to attempt an in-person visit to see the walrus, the Service and the tribe have worked with the nonprofit Alaska Teen Media Institute to develop short educational videos. Youth at the local school, with training and support of the institute, interviewed elders and one another for the videos.

Point Lay and the Service have a common goal: to keep walrus around for future generations.

In Point Lay, people are guided by their traditional value of respecting the earth and all that it provides for future generations. The Service and the tribe will continue to work together to keep the walrus safe while on shore.

"We can prevent walrus disturbance and many trampling deaths," Ferreira said, "but everyone needs to listen and pay attention to help the walrus." □

ANDREA MEDEIROS, External Affairs, Alaska Region

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Thousands of walrus now come to the barrier island just north of Point Lay, says Jim MacCracken, a supervisory wildlife biologist with the Service. "The site has been occupied by as many as 40,000 animals at its peak," he says.

Aircraft overflights are particularly concerning. "We noticed that during that time the airplane traffic was causing stampedes," Ferreira said. "I witnessed it with my own eyes."

The Service and village contact local air carriers directly and work with the Federal Aviation Administration to let pilots know when the animals have hauled out and provide guidelines.



Artist's rendering of Diamond Alkali proposed park. (USFWS)

## Clay Stern: Rewriting history through NRDAR

Clay Stern's passion for Environmental Justice is evident as he recounts the industrial history of the greater New York area—and the unfair price current residents pay in the form of contamination and lack of green space. It's clear he finds improving lives, in addition to fish and wildlife habitats, rewarding.

As a fish and wildlife biologist, Stern has overseen the Natural Resource Damage and Restoration (NRDAR) Program and oil spill preparedness and response at the New Jersey Field Office for more than 20 years. Before joining the Service, he was a molecular biologist in both medical research and forensic laboratories.

"In many ways, I much prefer working as an environmental steward," Stern says.

The goal of NRDAR is to replace, restore, or acquire the equivalent of the resources and recreational opportunities affected by contamination at no cost to taxpayers. Although the restoration focus is injured resources, federal and state trustees also consider Environmental Justice when choosing projects.

### Innovation in Restoration

The extensive Diamond Alkali Superfund site centered in Newark, New Jersey, is contaminated with hazardous chemicals, including dioxins and polychlorinated biphenyls (PCBs). The National

Oceanic and Atmospheric Administration (NOAA) and the Service are Federal Natural Resource Trustees for the site. In December, they issued a draft early restoration plan and environmental assessment proposing a five-acre park along the Passaic River in East Newark.

In addition to bird and pollinator habitat, the park will offer much-needed natural green space and waterfront access to the local community, which is 60 percent Hispanic or Latino and has a poverty rate of 13%, above the national average. The project supports President Biden's climate plan, which recognizes that communities of color and low-income neighborhoods have been disproportionately harmed by climate change and environmental contamination for decades.

"It will provide a model for a Potentially Responsible Party to resolve, in part, their liabilities under the Superfund law by restoring injured natural resources sooner at lower expense," says Stern. "The public will benefit by having injured resources, and the services they provide, restored potentially decades sooner."

That translates to more children growing up with a place to explore the outdoors. □

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



# PORTRAIT of a POACHER

*Teamwork brings down  
serial poacher at Crater  
Lake National Park.*

By BRENT LAWRENCE

Kathy Spengler needed to paint a picture.

Not a paint-by-numbers type portrait but one that had to be closer to a masterpiece.

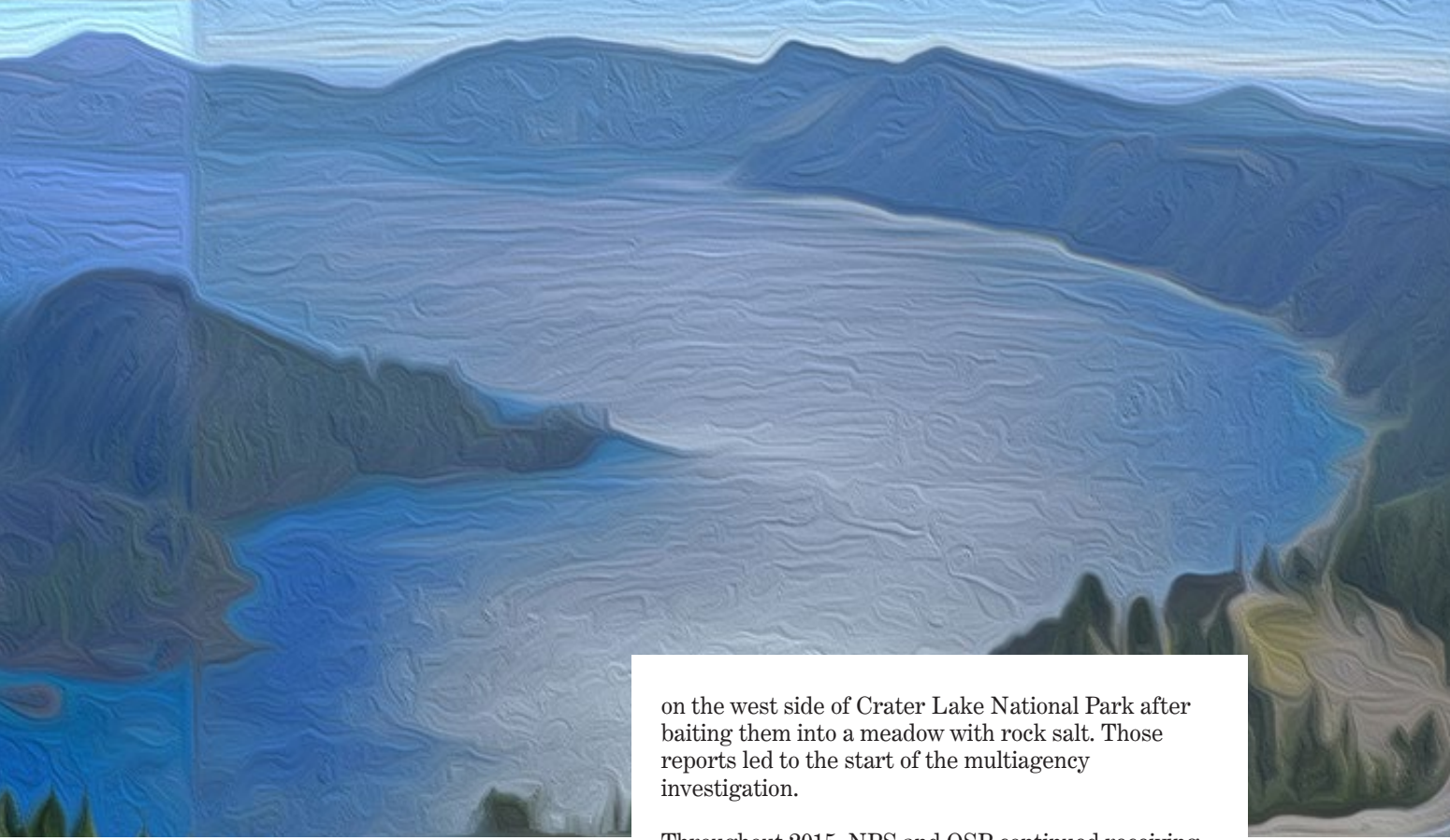
A special agent with the Service's Office of Law Enforcement in Wilsonville, Oregon, Spengler in 2018 inherited an ongoing wildlife poaching investigation. There were numerous parts and pieces of evidence that reached back many years, and the potential crime scene covered thousands of acres of rough, remote terrain. »



(Left) The evidence tag on a set of elk antlers at the Service's Forensics Lab in Ashland, Oregon. (PHOTO: KATHY SPENGLER/USFWS)

(Above) Crater Lake. (PHOTO: JANE PELLICOTTO)





on the west side of Crater Lake National Park after baiting them into a meadow with rock salt. Those reports led to the start of the multiagency investigation.

Throughout 2015, NPS and OSP continued receiving reports of Wood's illegal poaching. Park rangers found carcasses and evidence of salt use in an area of the park thought to be frequented by Wood.

On September 22, 2016, OSP trooper Mike Cushman encountered Wood in his vehicle near the boundary of Crater Lake National Park. Although Wood stated he had not been hunting, the trooper observed blood on Wood's hands and clothing. When questioned further, Wood produced a partially validated Oregon Department of Fish and Wildlife archery elk tag that contained traces of blood.

The next day, Cushman returned to the area and walked into Crater Lake National Park. He watched for ravens, which often feed around carcasses, and followed signs of human activity. Soon, he discovered a freshly killed and partially butchered elk. Its antlers had been removed.

"By the time trooper Cushman came back to town, pictures of Wood posing with this big bull elk had already been sent around town," Spengler says. "Trooper Cushman looked at the pictures and said, 'Wow. That is where I was at.' He went back to the park and matched up the location of the carcass with the photo of Wood with the bull elk."

Special Agent Jimmy Barna, the lead investigator on the case for the U.S. Fish and Wildlife Service at the time, obtained a search warrant for Wood's residence. Critical pieces of evidence were located during the search on Oct. 4, 2016, including several wildlife specimens and racks, freezers of meat, digital evidence, and Wood's GPS unit. >>

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Catching a poacher under these circumstances would require ongoing collaboration with partners in the Oregon State Police Fish and Wildlife Division (OSP) and Crater Lake National Park to sort through the information. Then Spengler would need to use the evidence like dabs of paint on a palette to create a picture that could be handed off to the U.S. Department of Justice for prosecution.

Finally, after years of persistence, the team used the evidence to paint a portrait of a poacher killing deer and elk inside the boundaries of Crater Lake National Park.

On February 4, Adrian Duane Wood of Oregon was sentenced for violating the Lacey Act by illegally poaching a trophy bull elk in Crater Lake National Park. Wood was sentenced to three years' federal probation, banned for the term of his probation from Crater Lake National Park, restricted from hunting for the duration of his probation, and required to pay \$42,500 in restitution to the National Park Service (NPS) for the wildlife illegally taken from the park. Wood also must be in a residential reentry program for 180 days and complete 300 hours of community service.

### **A Fresh Canvas**

It all started with rumors and tips.

In 2014, multiple sources told NPS rangers and OSP troopers that Wood had killed several deer and elk



*Continued from previous page.*

That evidence served as the underpainting, the first layer of paint that is the foundation on a fresh canvas. Next, it was time to start adding layers and details to see if the evidence would paint a recognizable portrait.

### **Adding Layers of Detail**

Spengler took over the case in 2018. As she reviewed the files, the GPS unit caught her attention. Spengler hoped to paint a clear image of Wood's movements through data found on the GPS device.

Liz Cruz, a geographer from the Service's Columbia Pacific Northwest Regional Office in Portland, took the GPS data points and placed them on a map, overlaying it with roads and Crater Lake National Park boundaries.

"Liz's map was beautiful," Spengler says. "She was able to plot the waypoints and track logs, which helped show us where to look for evidence and start tying everything together. The maps confirmed that the majority of his GPS hunting waypoints and track logs between 2011 and 2016 were within the boundaries of Crater Lake National Park." Some waypoints on the GPS unit were pinned with key words such as "4 Wallows," "Way Inn," and "Saalt," along with locations of

parked vehicles on Forest Service roads that ended outside the park.

Spengler started piecing together a timeline by matching track logs and dates with photos, social media posts, Oregon Turn-In-Poachers (TIP) Line reports from the public, and other evidence.

"We were able to tie it all together with all the digital evidence, the statements he made, and the photos. For sure, the September 22, 2016, elk—that big bull he poached from the park—it was crystal clear what happened by the evidence," Spengler says.

But the evidence revealed even more. Just five days before he killed the bull elk, there were reports that Wood had killed a deer and elk in the park.

"On September 17, 2016, someone had reported through the TIP Line that Wood had taken an elk and a deer. I'm looking at the map and his track log on September 17, and I see this big red splotch on the map," Spengler says. "I called Liz and said, 'What was he doing and how long was he there?' She could zoom in on the points from the track log and see he was going back and forth at the edge of a meadow for 45 minutes. I went back into Crater Lake National Park with the park ecologist, and we found cow elk remains there at that very spot on the map."

A few small herds of Roosevelt elk call Crater Lake National Park their summer home. (PHOTO: CRATER LAKE NATIONAL PARK)

The painting became more refined with each data point and piece of evidence. Then it was time to add more details to the portrait through forensic analysis of the evidence.

### **More Brushstrokes**

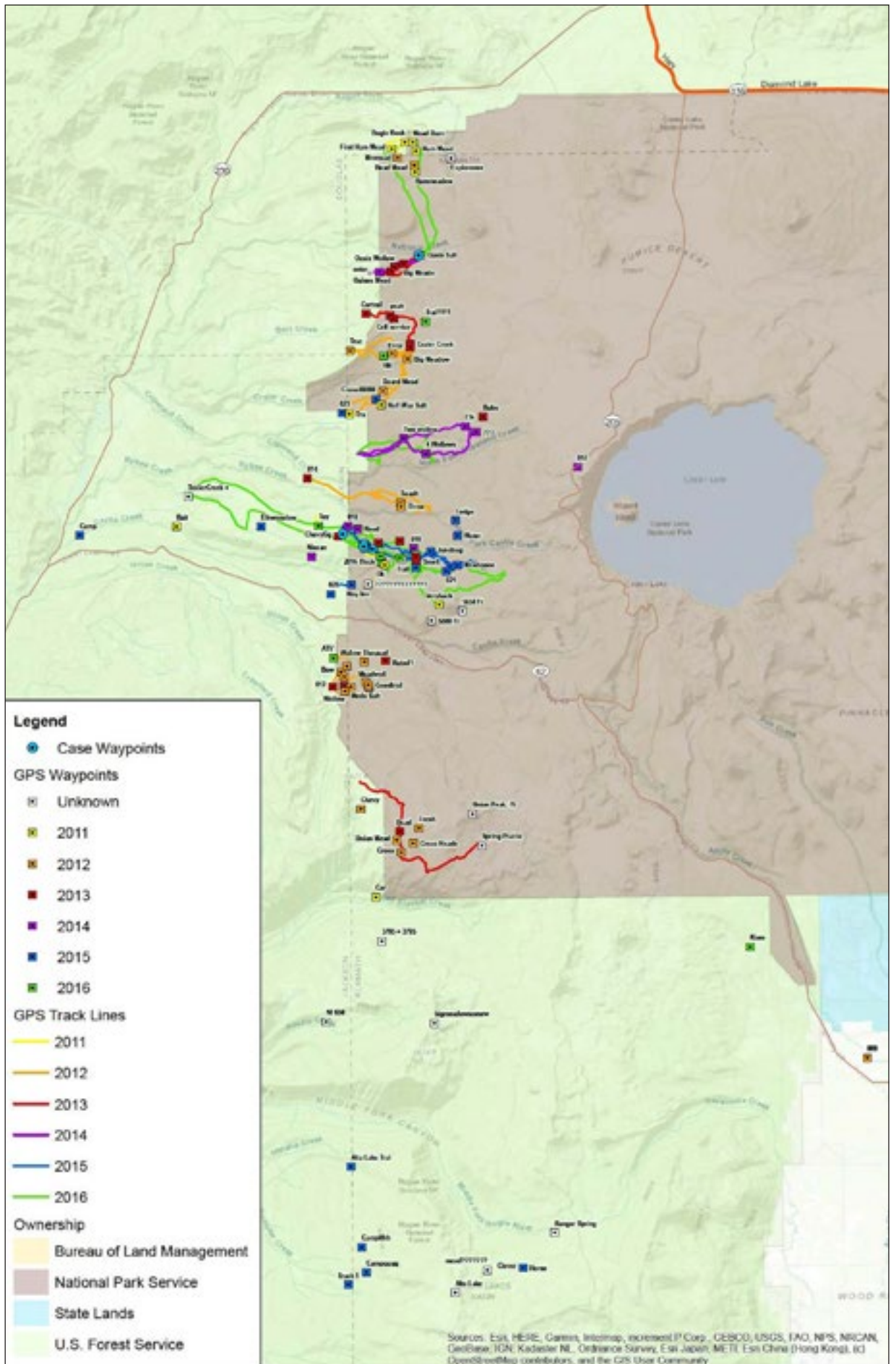
Next up at the easel was Brian Hamlin, a forensics scientist in the genetics section at the Service's Forensics Laboratory in Ashland, Oregon. Hamlin has worked for 22 years at the world's only full-service forensics laboratory dedicated to wildlife.

"The evidence has a story to tell, and we're here to help it tell that story," Hamlin says.

Hamlin extracted DNA from remains from the field, and the meat in the freezer, the wildlife specimens, and antlers seized from Wood's residence. In total, Hamlin and his colleagues in the pathology, morphology, and criminalistic sections of the laboratory analyzed 128 pieces of evidence.

"Genetics certainly played a big role in developing the forensics triangle—linking the victim, the crime scene, and the suspect," Hamlin says. "The DNA from the bull elk carcass they recovered from >>

Service geographer Liz Cruz used data from a seized GPS unit to map multiple trips that a poacher made into Crater Lake National Park from 2011 through 2016.





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Crater Lake, along with the archery hunting tag containing trace blood that OSP had seized from the suspect, both matched the DNA from the set of antlers seized from the residence. In multiple instances, we were able to link the suspect directly to evidence found in the park and suspect's residence through DNA."

The laboratory's tests revealed that Wood possessed parts of at least 13 elk, 12 deer, and one black bear. Analysis in the pathology and criminalistic sections of the lab revealed the elk taken on September 22, 2016, had been killed by a gunshot instead of by archery.

All of the forensics evidence, layered together with text messages, social media posts, reports of Wood's activities from members of the public and other hunters, his GPS track logs and waypoints, and photos painted a dramatic and dark image.

Brian Hamlin, a forensics scientist in the genetics section at the Service's Forensics Laboratory in Ashland, Oregon, uses a drill to extract DNA samples from a set of antlers from a bull elk that was poached in Crater Lake National Park. (PHOTO: KATHY SPENGLER/USFWS)

It was the portrait of a serial poacher at Crater Lake National Park.

### **The Finished Portrait**

Spengler presented the finished portrait to the U.S. Attorney's Office for the District of Oregon. Adam E. Delph, Assistant U.S. Attorney for the District of Oregon, served as the government's lead attorney for the case.

Wood was indicted May 1, 2019, by a federal grand jury in Medford, Oregon. On August 17, 2020, Wood pleaded guilty to the Lacey Act charge and agreed to pay restitution to NPS for the wildlife illegally taken from the national park.

In total, investigators definitively linked six seized specimens to elk or deer poached by Wood in the national park in 2015 and 2016.

"One of the most important duties of the U.S. Attorney Office is to enforce our nation's environmental laws," says Acting U.S. Attorney Scott Erik Asphaug. "These laws protect vulnerable wildlife populations, ensuring their continued health and survival. Mr. Wood preyed on elk and deer unaccustomed to being hunted and thus lacking the instinct to protect themselves. Mr. Wood showed no remorse for his crimes, bragged about his poaching on social media, and even engaged his minor son in his illegal activity. Without the determination and persistence of federal and state investigators, Mr. Wood's destructive behavior would continue to this day."

The importance of catching and convicting this poacher was particularly important to the Oregon Hunters Association. The group provided a supporting letter at sentencing, asking the judge to impose a strong sentence in the case.

"Poachers are thieves, stealing wildlife from all of us," says Paul Donheffner, legislative committee chairman for the Oregon Hunters Association. "They are armed robbers, often preying on wildlife at night and in closed areas, such as Crater Lake National Park. Legal hunting is regulated to protect wildlife populations in a sustainable way. Poachers upset the sustainable balance and are a key factor in why some deer and elk herds are below management objectives.

"Adrian Wood's case is a prime example of egregious poaching. ... The Department of Justice, U.S. Fish and Wildlife Service and Oregon State Patrol spent so much time, money and effort on this case that the very least we could do was write a letter asking the court to drop the hammer as hard as possible. If nothing else, perhaps this sends a message to others." >>



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### **Signing the Masterpiece**

This case hinged on the dedication of the multiple agencies and individuals who worked together over a long period of time. Many of the investigators and prosecutors moved on to new jobs or retired during the multiyear case, handing it off to new people to finish the portrait.

Because of this diligence and commitment, the Department of Justice was able to secure a guilty plea.

“We had a great team, and everyone worked together. Crater Lake National Park and Oregon State Patrol were heavily involved from the beginning of the case. National Park Service ranger Shane Rogers collected the bull elk carcass from the field and was also responsible for finding other evidence that proved to be essential to the investigation. He reached out to the U.S. Fish and Wildlife Service saying they had a Lacey Act case and was going to need the Forensics Laboratory’s help with identifying some of the genetic components of the case,” Spengler says. “The Department of Justice really embraced this case as well. It took a real team to complete this case.”

There were many people who had a hand in solving this poaching case, including:

- U.S. Fish and Wildlife Service—Office of Law Enforcement special agents Jimmy Barna, Sheila O’Connor, and Kathy Spengler; Forensics Laboratory staff Laura Daugherty, Brian Hamlin, Rachel Jacobs, Katie Poplin, and Tabitha Viner; and National Wildlife Refuge System geographer Liz Cruz.
- Oregon State Police—Senior Fish and Game Trooper Mike Cushman, Sgt. Jim Collom, and others.
- Crater Lake National Park—Park Rangers Walters, Shane Rogers, Jordan Neumann, and Kean Mihata; ecologist Sean Mohren; and others.
- U.S. Department of Justice—Adam E. Delph, Assistant U.S. Attorney for the District of Oregon.

With the case closed, the team can finally put away their paint and clean their brushes. This masterpiece portrait, painted by more than a dozen of dedicated professionals, is complete. □

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BRENT LAWRENCE, External Affairs, Columbia Pacific Northwest Region

A view of Crater Lake National Park from Mount Scott. (PHOTO: CRATER LAKE NATIONAL PARK)

# HOMAGE TO HISTORY

*Lanphere and Ma-le'l Dunes in California distinguished as a National Natural Landmark.*

By JOHN HEIL

After two previous efforts and decades of hard work by Service employees, volunteers, Tribes, and partners, the Lanphere and Ma-le'l Dunes were recognized as a National Natural Landmark (NNL) on January 19.

**M**anaged by the Service and the Bureau of Land Management, the dunes are west of Arcata in northwestern California, within Humboldt Bay National Wildlife Refuge and Ma-le'l Dunes Cooperative Management Area. The site includes a diverse array of native vegetation and is known for several species of rare flora.

“Being recognized nationally really validates all the restoration work we’ve been doing in the dunes,” says Andrea Pickart, Service coastal ecologist for the refuge, of the efforts to remove invasive European beach grass and other species. “It is really exciting.” >>



(Top) Large expanses of moving dunes are believed to have been set in motion during the last megaquake on the Cascadia subduction zone in 1700. These dunes are juxtaposed with stabilized forested dunes. Wildlife leave the forest at night to hunt, leaving their tracks to be seen by day. (Bottom) The seaside daisy is one of a diverse collection of wildflowers that grow in the open dunes. These species have specialized adaptations to survive the harsh dune environment.

(PHOTO: ANDREA PICKART/USFWS)

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Says Cashell Villa, Service project leader for Humboldt Bay Refuge, “It is amazing, just incredible to be recognized.” She adds, “Andrea has been a driving force—such a dedicated, hardworking employee.”

The National Park Service, which administers the landmark process, says, “Andrea has been working to conserve, restore, and protect this site for over 30 years and deserves a large amount of credit for this project.”

Conservation of the area started in the 1940s by Hortense and William Lanphere, “who were determined to conserve the property,” Pickart says. In 1976, the Lanpheres, who were both professors at what is now Humboldt State University in the Wildlife Department, donated the land to The Nature Conservancy, which expanded the territory before transferring to the Service in 1997.

“Ma-le’l” is named after one of several Wiyot Tribal villages within the dunes in 1850, and Adam Canter, Tribal botanist/GIS specialist for the Wiyot Tribe Natural Resources Department, says: “I think that the significance of the designation of the dunes as a NNL is in part an homage to the Wiyot’s role and history as stewards and members of this place and the natural world. If ever there were a people of the dunes in California, that title could very well go to the Wiyot.

“Hopefully this will ensure that funding for maintenance restoration, Wiyot eco-cultural restoration, and ecological research will be maintained into the future. Having worked at Lanphere and Ma-le’l, I appreciate and understand the hard work of many that have contributed to the preservation of the natural characteristics and processes at the dunes. Hopefully this designation will provide increased opportunities for the Wiyot to continue co-managing and stewarding its ethnobotanical area and provide eco-cultural restoration opportunities for Wiyot youth.”

Marnie Atkins, the manager of the Wiyot tribe’s Da gou rou louwi’ Cultural Center, adds, “The dunes are special to me because it is a direct connection to my Wiyot ancestors. I can see where they lived, and I can follow in their footsteps along the paths that they made and that the BLM and Service personnel and community volunteers recovered from overgrowth and underuse. It is true that the landscape holds varieties of plant life that will continue to be enjoyed, understood, and protected to maintain important biodiversity and animal habitat. >>

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The saltmarshes of the Lanphere and Ma-le’l Dunes have been restored through the removal of non-native *Spartina* and now support native saltmarsh species including two rare species. (PHOTO: ANDREA PICKART/USFWS)





(Top) Close-up of pixie cups lichen. A lichen is a symbiotic pairing of an algae or cyanobacteria, which is capable of photosynthesis, with a fungus. (Left) A pair of nesting ospreys fly above a nest in a large snag. The freshwater swamps found in the Ma-le'I Dunes provide habitat for these and other bird species. (Bottom) The forested dunes are renowned for their diversity of nonvascular plants and fungi. Pictured here are reindeer lichen, bearberry, and beaked moss carpeting the forest floor. (PHOTOS: ANDREA PICKART/USFWS)





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“Further, Ma-le’l is a place that illustrates the cultural significance and historical activities that happened on the land by the ancestors of present-day and future Wiyot people. Ultimately, it is a place that demonstrates and validates the connection to the lived landscape that my Wiyot ancestors constructed over thousands upon thousands of years.”

The landmark process, which started in 2016 for the dunes, recognizes and encourages the conservation of sites that contain outstanding biological and geological resources. According to the Park Service’s evaluation, “the Lanphere Ma-le’l Dunes represents a perfect example of this concept, containing one of the most diverse and highest quality remnants of coastal dunes in the North Pacific Border Bio Physiographic Region.”

Executive Director of the Friends of the Dunes Mike Cipra says the complex at Lanphere and Ma-le’l Dunes contains dynamic interrelated habitats, including foredunes, herbaceous, and woody swales, freshwater wetlands, parabolic dunes, coniferous and riparian forest, and saltmarsh. “This exciting mosaic of healthy, intact habitats yields a tremendous amount of floristic diversity in a relatively small area. As a result, this integrated ecosystem is a wonderland for exploration, inspiration, and learning.”

Canter agrees, “The removal and absence of invasive non-native species makes this site one of the most pristine stretches of dune systems along the West Coast.” Canter also acknowledges “the rich history of the Wiyot’s occupation of the dunes.

“This landmark provides a rare glimpse at what the West Coast would have been like before Western contact, while also serving as a refugium for species more commonly found further north. Ma-le’l is also one of the more significant Wiyot ethnobotanical

sites within the tribe’s ancestral territory.”

The dunes also afford the public an inspiring view of a natural coastal ecosystem that was once common along the West Coast.

“The benefit I see for the community is recognition and publicity, which could lead to increased use and a greater investment in this unique resource,” Pickart says.

“This shines the light on just how rare these systems are,” says Tom Anderson, Service assistant refuge supervisor for the California-Great Basin Region. “I’m glad it is getting the recognition it deserves. It is so far away from everything else. This designation might draw more people to the other side of the bay now.”

The Blue Lake Rancheria has collaborated and consulted with the Service on managing the numerous important cultural sites located at Ma-le’l Dunes and the new Northern Dunes Unit. Janet Eidsness, Tribal historic preservation officer, has coordinated with Pickart, the Wiyot tribe, and Bear River Band of the Rohnerville Rancheria on developing site protection measures to allow for the natural migration of the parabolic dunes.

“If not for these dunes, there would be no Humboldt Bay, and their natural patterns are important to resiliency related to rising sea levels,” says Eidsness.



A member of the California Conservation Corps plants native dune grass on an adaptation site, part of a six-year research project to understand effects of climate change on the dunes and develop strategies to increase resilience. (PHOTO: ANDREA PICKART/USFWS)

“Those of us who work in coastal conservation, who lead community-based education and stewardship programs here, and who recreate in these restored dune ecosystems know how truly unique and inspiring the Lanphere and Ma-le’l Dunes are,” says Cipra. “We’re thrilled that this connected and conserved landscape is finally being recognized as nationally significant. The recent National Natural Landmark designation is a tribute to our partners at the U.S. Fish and Wildlife Service, the Bureau of Land Management, the Wiyot tribe, and literally thousands of community members who have worked for years to conserve and restore these special places.” □

JOHN HEIL, External Affairs, California-Great Basin Region

MUSEUM  
OBJECTS  
COME TO  
LIFE

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



### Clay Catfish Caves

To mimic the spawning conditions that catfish seek out in the wild, fisheries biologists must create cave-like cavities in their hatchery ponds. Nowadays plastic barrels are used, but as recently as the mid-2000s, handmade clay jars were used at hatcheries that raise catfish. The jars are

1.5 inches thick and measure 2 feet high with a 14-inch diameter. This clay catfish jar is from Inks Dam National Fish Hatchery in Texas and was last used there in 2006. It was handmade by Marshall Pottery in eastern Texas in the 1930s. Before the clay jars, attempts at creating suitable artificial spawning habitat included constructing wood boxes and using other items that were easy to obtain including metal barrels and milk cans.

(APRIL GREGORY)

### Autographed ‘Elk’

Olaus Murie, author of 1951’s *The Elk of North America*, autographed a copy to his longtime friend, Howard Zahniser, or “Zahnie.” An important book in its own right, it also is a wonderful link to two of our nation’s conservation heroes. Zahniser worked for the Service for 15 years before moving to The Wilderness Society in 1945 to serve as its executive secretary. He helped lead the successful fight in the early 1950s to defeat the proposed Echo Park Dam in Dinosaur National Monument and was the primary author of the Wilderness Act of 1964. Murie was a field biologist with the Service for 25 years.

Like his friend Zahnie, Murie left the Service for The Wilderness Society, where he served as director and president. In addition to his groundbreaking elk work, Murie was an expert on Arctic mammals. Zahniser’s copy of *The Elk of North America* and a number of his other objects and archives were donated to the museum

by his son Ed, who before his retirement in 2013, was the senior publications writer and editor at the National Park Service’s Harpers Ferry Interpretive Design Center.

(STEVE FLORAY)



### Beep, Beep! Fish Coming Through



This U.S. Bureau of Fisheries license plate was very likely on

an early fish-stocking truck. It hails from Leadville National Fish Hatchery in the Rocky Mountains of Colorado. Leadville was established in 1889, making it the second oldest federally operated fish hatchery in existence today. (Neosho National Fish Hatchery is the oldest continuously operated federal hatchery.) Leadville sits at an elevation of 10,000 feet, and throughout its history, trout have been stocked in the high mountain lakes and streams nearby. Even in the early days of automobiles, many of the high alpine lakes were stocked using horses, which don’t require license plates. Some of the high lakes that Leadville stocks today are done via horse, foot, and even helicopter.

(APRIL GREGORY)

### Graduation Day



In 1925, Rachel Carson, the Service’s most celebrated scientist, entered the Pennsylvania College for Women (now Chatham University) in Pittsburgh. Four years later, she graduated Magna Cum

Laude, with a bachelor of arts degree in biology. Chatham’s Falk School of Sustainability and Environment “is inspired by the work of Chatham alumna Rachel Carson,” arguably its most famous graduate. Carson’s diploma, cap, and gown are three of the nearly 900 objects in the Rachel Carson Collection at the U.S. Fish & Wildlife Service Museum and Archives. The Rachel Carson Collection includes nearly 600 volumes from her personal library, her Presidential Medal of Freedom and DOI Distinguished Service Award, and a number of other personal items, such as her magnifying glass, master of arts diploma from Johns Hopkins University, numerous other awards, photographs, and papers. It is a great honor to care for the collection of this true American (and world) hero. (STEVE FLORAY)

## transitions

### Missouri Basin and Upper Colorado Basin Regions



After 25 years of capturing, spawning, tagging, incubating, and caring for many species of fish, **Rob Holm** retired this summer. Since his Service career began in 1986, Rob has worked as an observer on tuna boats in the Pacific, at Gavins Point, Jones Hole, and Tishomingo National Fish Hatcheries, and ultimately as the project leader at Valley City and Garrison Dam National Fish Hatcheries. His unique skillset has led to the rearing of millions of fish for the benefit of angling, the restoration of fish stocks that were gone from their native waters, recovery of the pallid sturgeon and receipt of a 2006 Recovery Champion award, and the mentoring of many biologists and fish culturalists who will carry on Rob's legacy. Rob has built partnerships in every one of his roles and has been a true conservation leader with the Service.

In May, Rob was featured in a [Prairie Profile by the Minot Daily News](#), receiving well-deserved community recognition for his impactful and lasting contributions to fisheries in North Dakota and beyond. As his external community celebrates Rob's career, so does his Service family.

Self-described Fish Enthusiast Holly Richards with the Fish and Aquatic Conservation Program simply says, "It's just good to see Rob getting the recognition he deserves!" While he will undoubtedly and humbly acknowledge all of the people he's been lucky to work with along the way, this is the time to honor Rob. Congratulations to Rob on his retirement and all his upcoming time with family and grandkids! □

### North Atlantic-Appalachian Region



**Sherry White** has been selected as the Division Manager for Training at NCTC.

She previously was the Assistant Regional Director of Fish and Aquatic Conservation (FAC) in the North Atlantic-Appalachian Region. Sherry served in this position for the past seven-and-a-half years, managing a region-wide field-based program from Maine to Virginia with 160 employees at 12 National Fish Hatcheries, 9 Fish and Wildlife Conservation Offices, a Fish Technology Center, and a Fish Health Center.

Before becoming an Assistant Regional Director, Sherry served in multiple roles in FAC and the National Wildlife Refuge System (NWRS). These positions included Chief of Branch of Habitat Restoration in the NWRS Headquarters staff, propagation

coordinator in Legacy Region 6, and acting project leader, assistant project leader, unit leader and biological technician at Alchesay-Williams Creek National Fish Hatchery Complex in Arizona. Sherry started her career as an animal caretaker.

Sherry has a bachelor of science degree in natural resource management from Ohio State University. She served in the U.S. Peace Corps as a fisheries extension agent in Liberia in West Africa.

Sherry brings nearly 30 years of experience with the Service to this position. Her in-depth knowledge of FAC, experience in Headquarters and regional operations, extensive supervisory experience, and her successful cultivation of federal, state, and Tribal partnerships through collaboration, policy boards, management boards, and conservation cooperatives will bring critical leadership and insight to NCTC's ability to provide training and employee development that supports the programmatic and regional needs of the Service.

Sherry brings both professional and personal knowledge and experience of leadership development needs to this position. She has been a participant in the Project Leader Academy and a participant and speaker in the Fisheries Academy. Sherry participated in Stepping Up to Leadership as a participant and a coach, and in the Advanced Leadership Development Program (ALDP) as a participant and twice as a coach. Her most recent role as a coach in ALDP 18 immersed her in the new leadership curriculum design in which she distinguished herself among her peers as an adaptive leader, effective communicator, and a

systems thinker. She is known to facilitate and implement inclusive processes for program visioning, organizational realignment, and workforce planning. Sherry's career aligns closely with the NCTC mission and will ensure that we meet the current and future needs of the Service. □

### Headquarters



**Gloria Bell**, Deputy Assistant Director of the International Affairs Program and 32-year Service

employee, retired at the end of April.

Gloria began her conservation career as a field biologist with the Puerto Rico Department of Natural Resources (PRDNR), working on imperiled species such as the West Indian whistling duck, white-cheeked pintail, and snowy and Wilson's plovers. After three years with the PRDNR, she joined the Service in 1989 as an endangered species biologist in the Caribbean Ecological Services Field Office. While there, she helped to establish the Puerto Rican Parrot Field Office. She moved to Atlanta to the Southeast Regional Office's endangered species staff, where she coordinated the listing and recovery programs, and later served as Endangered Species Chief, overseeing all aspects of the Endangered Species Program for the region. In 2008, Gloria joined Headquarters staff as Deputy Assistant Director of the Endangered Species Program. She moved to the National Conservation Training

Center staff as Deputy Chief of Training in 2010 but returned to Headquarters in 2014 as Deputy Assistant Director of the International Affairs Program.

Gloria has a bachelor of arts degree in biology from the College of Notre Dame of Maryland and a master of science degree in wildlife management from Clemson University in South Carolina.

Gloria and husband Bruce, a retired Service biologist, are considering moving to Florida, where Gloria can live her “changes-in-latitudes” dream of eating “cheeseburgers in paradise.” □

## honors

### Headquarters



Looking to acknowledge “unsung heroes,” Partners in Amphibian and Reptile Conservation (PARC) has honored the Service’s **Su Jewell** as the 2021 recipient of the Alison Haskell Award for Excellence in Herpetofaunal Conservation. “PARC recognizes Su’s outstanding passion for, and dedication to, conservation of

amphibians and reptiles through leadership, science, and collaborations.”

The Alison Haskell Award is presented annually by PARC in memory of Alison Haskell, PARC’s first federal agencies coordinator and a former Service employee. It recognizes one individual each year in North America who exemplifies extraordinary commitment to herpetofaunal conservation.

Su is the Service’s Injurious Wildlife Listing Coordinator in the Fish and Aquatic Conservation Program and a career Service employee. Su has used her expertise in aquatic conservation to help reptiles and amphibians and their habitats.

PARC specifically mentioned Su’s knowledge of the Lacey Act and invasive species laws and her work that has helped prevent the introduction of the deadly chytrid fungus (*Batrachochytrium salamandrivorans* or Bsal) to the United States through importation. Su is also a member of Bsal Task Force, which would provide fast action if Bsal were ever detected at a U.S. field site. Just having Su as a ready partner has raised the profile of national amphibian conservation in the United States, especially relative to pathogen threats in trade markets. PARC also applauds her work as a guide and mentor on the complex system of regulations. Finally, PARC says she provides “an important perspective on the need for thoroughness, science support, and timing to get conservation actions approved.” □

### Service-wide

We shine a spotlight on scientific excellence with the Service’s annual Science Awards. As the conservation world faces increasingly complex challenges, the value of current scientific information is rapidly increasing. The Science Awards recognize that effective wildlife management and conservation is founded on innovative scientific inquiry and principles. We honor the scientists and technical staff who demonstrate outstanding leadership, integrity and dedication to upholding the highest standards of scientific excellence in their work.

### Rachel Carson Award for Exemplary Scientific Accomplishment

*Recognizing scientific excellence through the rigorous practice of science applied to a conservation problem.*



**Dr. Richard “Rick” Lanctot** and **Dr. Sarah Saalfeld**, both of the Alaska Region, were selected for the Rachel Carson Award in recognition of their work to conserve shorebirds. The team’s innovative and collaborative work with domestic and international partners has resulted in several on-the-ground conservation outcomes, including the discovery of previously unknown breeding, stop-over and wintering sites for six shorebird species. As a team,

Rick and Sarah have worked tirelessly within numerous flyways to promote, facilitate and coordinate shorebird conservation, management, education and research activities, and to improve communication between shorebird specialists and managers in the field to minimize and reverse shorebird declines.

### Sam D. Hamilton Award for Transformational Conservation Science

*Recognizing an individual and/or team working on big picture challenges, developing collaborative partnerships, and improving how the Service develops and delivers science for conservation.*



**Nancy Gelman** in International Affairs has been selected for the Sam D. Hamilton Award in recognition of her work to develop the Service’s Mentoring for Environmental Training in Outreach and Resource conservation (MENTOR) program in Africa. The MENTOR program brings together teams of emerging African conservation leaders to address major threats facing wildlife populations. Nancy’s work has resulted in a growing support network for conservation professionals in Africa.

### Science Leadership Award

*Recognizing supervisors who empower their staff to accomplish scientific work and who champion the use of science in conservation decision-making.*



**Nicholas "Nick" Hetrick** of the California-Great Basin Region is being recognized for his

commitment to productive partnerships and innovative solutions to salmonid management in the Klamath Basin. Since arriving in the Arcata Office, Nick has become a unifying voice. He brings stakeholders to the table, promotes sound science, fosters a healthy work environment, and pursues initiatives that improve staff retention and productivity. □

## *in memoriam*

### North Atlantic Appalachian Region



**Henry J. Bouchard III**, who made significant contributions to national fish hatcheries and fish conservation

over his 24-year Service career in Lake Champlain, the Lower Great Lakes, and across Vermont, Massachusetts, and New York, died peacefully at home with his family on May 20. His dedication, leadership, relationships with partners, commitment to science, passion

for fish culture, and enthusiasm for educating youth made his many successes possible.

Just after graduating from Unity College, Henry started his Service career at Pittsford National Fish Hatchery in Vermont as a temporary employee where he (along with future wife Kirsten) walked over 40 miles of Connecticut River tributaries in the Green Mountains identifying critical spawning habitats for Atlantic salmon. Several years later he was hired as a biologist at Pittsford (later renamed Dwight D. Eisenhower National Fish Hatchery) where he became the hatchery manager for that hatchery along with White River and Berkshire National Fish Hatcheries.

At all three hatcheries, he was responsible for not just fish culture but also major re-openings and renovations. He also worked closely with staff and partners to ensure the success of fish restoration programs. The results of his work include: salmon returning to rivers and reproducing naturally for the first time in over 150 years in tributaries to Lake Champlain; a thriving lake trout fishery and population in Lakes Erie, Ontario, Champlain, and across Vermont; and brook trout fishing opportunities across Vermont and Massachusetts including opportunities for youth to catch their first fish and learn about their life history from Henry—a knowledgeable and patient teacher.

For his sustained outstanding accomplishments, Henry was granted the Superior Service Award of the Department of the Interior in 2020.

Henry was a close friend to his staff and colleagues who appre-

ciated his kindness, patience, generosity, and sense of humor. He was also incredibly brave, dedicated, and thoughtful as he managed his illness and treatments, thinking about the impact on other staff more than on himself. Toward the end of his life, he said, "I feel so lucky to have had my dream job. I loved working with everyone." □

### Headquarters



**Sylvia Cabrera**, a 56-year Department of the Interior employee and longtime

economist with the Service, died May 11 after a short illness. Sylvia had retired in July 2020.

Sylvia began her career at the Bureau of Outdoor Recreation on June 22, 1964, as a recreation resource specialist. After time with both the National Park Service and the Bureau of Reclamation. She came to the Fish and Wildlife Service in January 1989, where she served as the project leader for one of the oldest and most comprehensive continuing recreation surveys—the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation—with the Wildlife and Sport Fish Restoration Program from 1989 until 2020.

Like many women of her generation entering the male-dominated conservation world, Sylvia found herself in situations where her significance to the work was diminished solely

because of her gender. She also held a master's degree in international affairs from Georgetown University in a field dominated by biologists.

These meant that Sylvia often struggled to make her voice heard, but she did so with professionalism and determination. Sylvia's exceptional standards of excellence earned her admiration at every level of the Department. She would also help to pave the way for women to not only have a place of respect in this profession but expect it.

Sylvia's greatest strengths were her abilities to use available resources to achieve desired results and to adapt to important issues. She always brought to the table her independent judgment and initiative in discerning problems and opportunities.

Sylvia was steadfast in her commitment to continually improving the accuracy of the National Survey collection methodology, working closely with the U.S. Census Bureau and the Association of Fish and Wildlife Agencies.

Sylvia maintained personal contacts with officials in Washington, DC, regional and field offices, congressional offices and committees; high level officials from Interior agencies, state fish and wildlife agencies; business executives; and civic leaders nationwide. She was usually one of the more memorable characters each manager had.

Sylvia's work was her life, and through it, the Department, the greater conservation community, and the nation are the better for it. □

## parting shot



### Clearing the Land

Biological Science Technician and Wildland Firefighter Rachel Delany sets a fire line along the southern edge of the West Pool impoundment at Edwin B. Forsythe National Wildlife Refuge in New Jersey while more prescribed fires burn simultaneously on the northern line seen in the background. This Marchmore prescribed fires the first at the refuge in nearly 10 years. It was an effort to reduce the density and cover of invasives.

(PHOTO: YIANNI LASKARIS/USFWS)

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