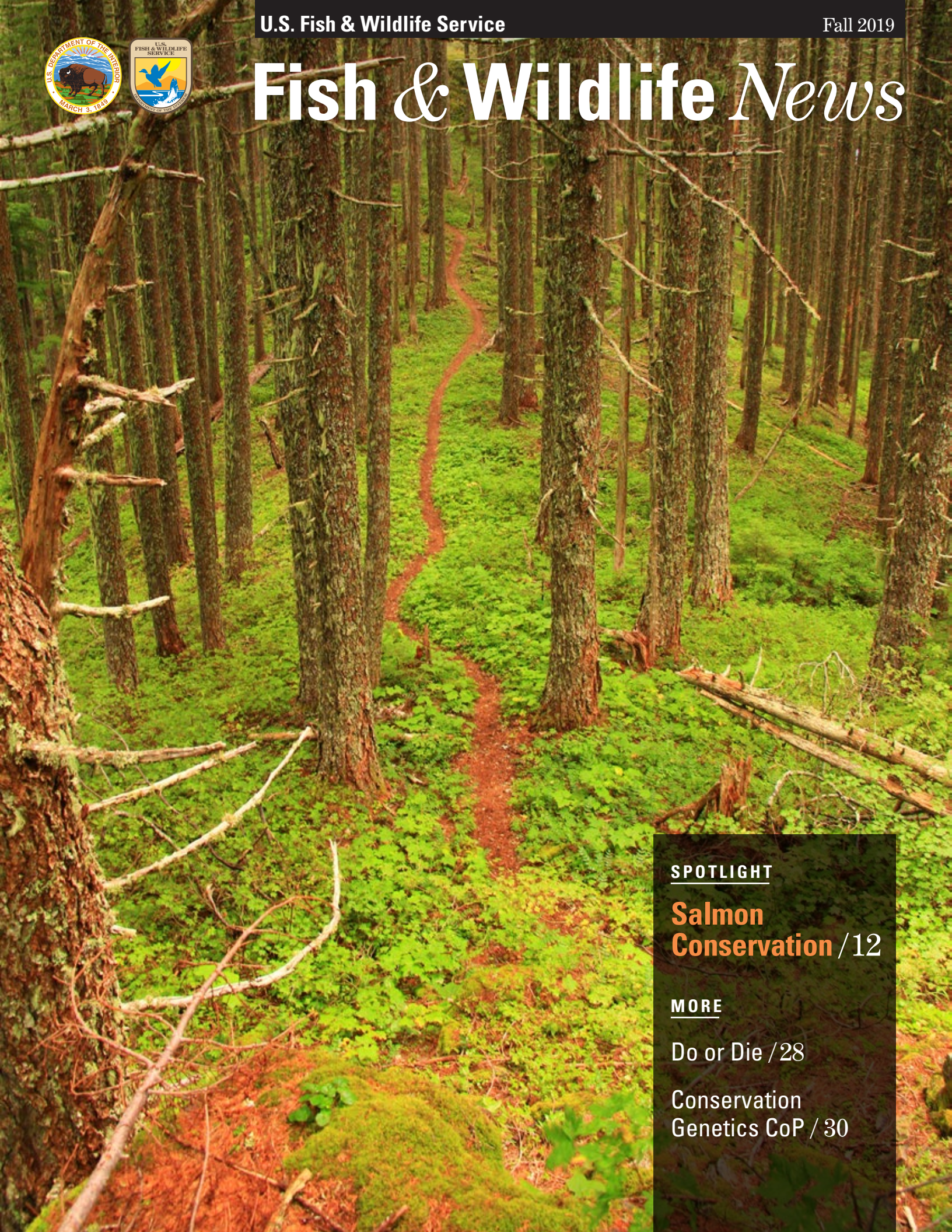




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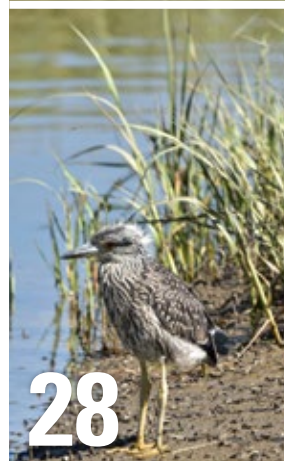
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Margaret Everson,
Principal Deputy Director
of the U.S. Fish and
Wildlife Service

Working Across the Country on Salmon Conservation

This year is the International Year of the Salmon, and *Fish & Wildlife News* is taking advantage to highlight our work with salmon on both coasts.

Salmon are anadromous, meaning they divide their lives between freshwater and the ocean. They are born in freshwater, mature at sea and return to their natal streams to spawn a new generation.

The U.S. Fish and Wildlife Service is dedicated to working with partners to ensure that their migration routes remain open, or in some cases, are reopened.

Oregon's Salmon SuperHwy (p. 14) is a project to do just that. We are updating road crossings and fixing other barriers, restoring full access to more than 75 miles of habitat since 2014. This work also helps improve road safety and reduce flooding. This win-win may explain the plethora of partners on this project.

For centuries, people have fished for Atlantic and Pacific species of salmon and the catch has supported them.

You can read about the importance of Atlantic salmon to the Penobscot Indian Nation in Maine in this issue on p.27.

In Alaska, our "Creek to Plate" summer program (p. 22) helps many diverse urban youth become more competent and comfortable fishing and being near water, offering them a way to bring home healthy meals.

One of the goals of the International Year of the Salmon is to raise awareness of both salmon's importance and the challenges they face.

The Service worked with partners in Vermont and New York to tell the story of the comeback of Lake Champlain's salmon population (p. 18).

In these places and locations such as California's Klamath Basin (p. 26) and Battle Creek (p. 24), we are using the strongest science available to ensure the future of salmon.

These are, of course, just a tiny portion of our work with salmon, but they show the many aspects of our salmon conservation, something definitely worth celebrating in this International Year of the Salmon. □



He'eia Estuary Once Supported Community; Now Community Rallies Around Estuary

On the windward side of Oahu, the rainy peaks of the Ko'olau mountain range tower above the coastal lowlands, where water from two valleys collect into a marshy area known as the He'eia. Water flows down from the mountain valleys through the estuarine ecosystem along small streams that feed into the bay. Until the mid-1800s, Hawaiians farmed kalo (taro) in the wetlands, while down on the bay they built a massive fishpond that circled out from the shore. These sustainable systems supported the community.

But as recently as nine years ago, He'eia was an estuary in name alone. For a generation, invasive plants had been creeping in and taking over. The streams were clogged with organic matter that blocked fish passages. Hau bush and California grasses were choking out the native 'ilima, naio and 'ohai. Mangroves had displaced native species habitat, trapped sediment and overtaken an ancient fishpond wall.

The He'eia estuary is a part of the larger He'eia ahupua'a—a traditional Hawaiian land designation that incorporates the whole landscape from mountaintop (mauka) to the ocean (makai). The ahupua'a was cared for holistically as a complete system. Today those systems are being restored.

For nearly a decade, the Service has been promoting the restoration of the He'eia estuary ecosystem through the Hawaii Fish Habitat Partnership, a semi-independent group that works



KRISTEN NALANI KANEHUI O KO'OLAUPOKO

(Top) Lower He'eia estuary basin looking downstream after a Hawaii Fish Habitat Partnership-funded mangrove removal project was completed. (Right) O'opu nakea is an endemic, migratory Hawaiian stream fish. Each individual must pass from freshwater to the ocean and back again to complete its life cycle. These fish are regularly seen in the estuary and streams of the He'eia watershed.

to help direct Service funding from the National Fish Habitat Partnership and the National Fish Passage Program to nonprofit groups implementing conservation actions on the ground. From funding invasive species removal and outplanting efforts to offering technical assistance for planning and permitting, this support has increased the habitat available for recreationally and culturally important fish species, as well as improved overall ecosystem habitat.

Many organizations and individuals are part of the He'eia Estuary Restoration Project, achieving a singular outcome



GORDON SMITH/USFWS

even as they pursue their own goals, from the preservation of cultural practices to ecosystem restoration and improved access for fishing and recreation. The ends have woven together into a tapestry of recovery that is transforming the landscape.

"The Service's goal in this project is supporting the fish and wildlife habitat," says Gordon Smith, fisheries partnership coordinator

for the Pacific Islands Fish and Wildlife Office. "But that work has incredible side benefits to the ecosystem and the community as a whole, from improved fishing and recreational access to the opportunity for community members to embrace and perpetuate sustainable Hawaiian cultural practices."

The He'eia Estuary Restoration Project is made up of three efforts—the recovery of the streams and estuarine habitat in He'eia State Park, the restoration of the He'eia Fishpond—a stone enclosure used by Hawaiians to trap and harvest fish—for use by the local community, and the development of traditional agricultural and cultural practices on the He'eia wetlands.

In 2001, Paepae o He'eia, a nonprofit that cares for the ancient fishpond, began clearing mangroves from the pond wall. Mangroves were introduced to He'eia in the 1920s to control erosion that began when wetlands were lost up the valley. Community members began working by hand, cutting down the invasive trees that were choking the estuary, trapping leaf litter and attracting other invasive species such as pigs and rats. One foot at a time, community members have been clearing the fishpond wall, and as of 2018, more than 4,800 feet of the fishpond wall have been cleared.

Toward the ocean from the fishpond, the 405-acre Hoi wetland is being returned to kalo farming. Since 2010, Kako'o 'Oiwī, a community-based nonprofit working to restore agricultural and ecological productivity to the He'eia wetlands, has been promoting traditional lifeways and agricultural development of the He'eia estuary. Every year the group sustainably grows and harvests tons of produce for local markets and families.

The Hui o Ko'olaupoko is a volunteer-driven effort to restore six acres of estuary and stream habitat in He'eia State Park. At monthly work days, volunteers have removed nearly all of the mangroves and outplanted more than 4,000 native plants.

Native plants such as 'ilima, naio and 'ohai, hala, and 'aweoweo have all begun growing again throughout the He'eia estuary, and improved water quality and volume along the now open streams have increased habitat for culturally and recreationally important fish.

"The mangroves of He'eia were one of the largest established forests of invasives in Kaneohe Bay with trees over 40 feet tall! Restoring the estuary is an inspiring, larger community effort with so many opportunities to connect people with 'aina (the land)," says Jeanelle Miller, executive director of the Hui O Ko'olaupoko.

In 2017, the area was designated the He'eia National Estuarine Research Reserve in collaboration between Hawaii and NOAA.

By supporting long-term, sustainable, and community driven efforts, the Service and the Hawaii Fish Habitat Partnership are helping bring the He'eia estuary back to life and back to the community. □

HOLLY RICHARDS, External Affairs,
Pacific Region

Service Biologist Goes the Extra Mile

The Service is made up of fantastic people, and it is a real treat when someone outside our family lets us know about a Service employee's awesomeness. Ken Erickson did that in early May, and we'll let Ken tell the story involving Brendan Woodall, a private lands biologist with the Partners for Fish and Wildlife Program in Madison, Wisconsin.

I became involved with the U.S. Fish and Wildlife Service's Partners for Fish and Wildlife Program in the spring of 2018. I had recently purchased 56 acres of former Christmas tree plantation that had sat unused for 16-plus years.

The land was overgrown with Scots pines in the central sands area of Wisconsin. I knew I wanted to improve habitat and bring the overall health of this acreage back to when it was oak savanna/prairie.

I was very fortunate to get in touch with Brendan Woodall. It was quickly established that my land was in the federally endangered Karner blue butterfly range. We then embarked on a 28-acre forestry mulching/invasive species control project with native prairie seeding.

This short story, however, does not revolve around the habitat restoration project but the selfless giving of one of the

The Service's Brendan Woodall and Ken Erickson build a wheelchair-accessible blind.



COURTESY KEN ERICKSON

U.S. Fish and Wildlife Service employees. While I have hunted from my wheelchair for many decades, I had not been successful in harvesting a wild turkey. Brendan helped me, on his own time, build a wheelchair-accessible blind during the summer of 2018. He then volunteered, again on his own time, to travel to my property during Wisconsin's spring turkey season.

On the day of the hunt, Brendan and I arrived at the blind about 5 a.m., with legal shooting hours starting about 5:15 a.m. I was nervous and excited, but Brendan did a masterful job of calling, and, a beautiful gobbler worked himself into range at approximately 6:45 a.m. I was happy and relieved to complete a humane one-shot kill roughly 30 yards out from the blind.

As exciting as the harvest was, it paled in comparison to spending time with the fine young man who took time out of his busy schedule to make this hunt a success. Brendan exemplifies everything good in federal employees and the U.S. Fish and Wildlife Service. □



CHARLES LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES/JAMES RIVER ASSOCIATION

Restoration of Important Brown Pelican Rookery on Fast Track

“Good Queen Bess” (a.k.a. Queen Elizabeth) is credited with putting an end to a period of instability in mid-16th century England. Unfortunately, the tiny scrap of land in Louisiana that bears her name, Queen Bess Island, has been anything but stable. The island, located about two and a half miles north of Grand Isle in Barataria Bay, has been sinking and eroding into the Gulf of Mexico. This is a matter of grave concern because Queen Bess Island supports the third largest brown pelican rookery in Louisiana.

Less than five acres of suitable nesting and brood-rearing bird habitat remain on the island, so immediate action was needed to stop the erosion and build back what has been lost. Using \$18.7 million of Deepwater Horizon

Natural Resource Damage Assessment (NRDA) settlement funds from the Deepwater Horizon oil spill, a restoration effort aimed at adding 37 acres of prime nesting habitat started in late August. If not for a remarkable regulatory feat, project managers would have had to wait until next year to start the project. The Service's streamlining of the environmental compliance process led to the U.S. Army Corps of Engineers ability to issue a permit for the project in only two days, instead of many months—sometimes even more than a year.

A regulatory process and the issuance of a permit by the Corps must be completed before Deepwater Horizon NRDA projects can begin. Erin Chandler, an environmental compliance coordinator for the Service's Deepwater Horizon Gulf Restoration Office (GRO), explains that the Deepwater Horizon NRDA projects are designed to restore the fish, wildlife and habitats injured by the spill. “But we still must ensure that potential incidental impacts to

Queen Bess Island supports the third largest brown pelican rookery in Louisiana.

the environment and cultural resources have been assessed, understood and clearly outlined.”

The Service streamlined the regulatory process for the Queen Bess project by taking on some of the compliance review the Corps would have had to cover in their analysis of the permit application.

Brad LaBorde from the Corps of Engineers New Orleans District Regulatory Branch says that thanks to the agency coordination during the pre-application stage, the Service and the Corps “were able to identify where our processes overlapped, developed a plan and executed it accordingly. For the Corps, it saved man-hours—not days but months—and for [the Service] it resulted in a timely permit decision.”

John Tirpak, a wildlife biologist for the Service, says people can't engage in restoration

efforts on Queen Bess Island while birds are nesting, which leaves only a six-month window (October through March) to get construction done. "This is a reason why a speedy compliance review was so important. If the restoration work is not started before nesting begins, we would have to wait and we'd lose more of the island. Without restoration, we will lose that nesting colony within the next decade."

In addition to being the third largest nesting colony of brown pelicans in Louisiana, Queen Bess Island is the only colony for the birds in Barataria Bay. "We need to make sure to have brown pelicans in all locations where they were historically," Tirpak says. "So if, God forbid, a hurricane knocked out a colony, there would still be others."

"The Deepwater Horizon GRO is constantly looking for ways to maximize efficiency while still fully meeting all of our regulatory requirements," Chandler says. "The speed with which the Queen Bess Island compliance and permitting process were completed was made possible by the Service's strong relationships with other Deepwater Horizon NRDA implementing agencies. Maintaining these cooperative relationships with our restoration partners is paramount to protecting and restoring the Gulf ecosystem." □

NADINE LEAVITT SIAK, External Affairs, Southeast Region

Fire Hose Recycled to Benefit Captive Wildlife

One dark night, Fire Management Officer Reese Kerbow at Okefenokee National Wildlife Refuge in Georgia couldn't sleep. He spent his evening searching the Internet for an answer to a perplexing problem of what to do with 100 feet of 5-inch fire hose left over from the Honey Prairie wildfire on Okefenokee Refuge in 2011. The hose had been ordered to help protect the Refuge Visitor Center. Kerbow offered the unused hose to local fire departments, but they did not need it. When he found the nonprofit Hose2Habitat, run by volunteer firefighters specifically to repurpose hose for the benefit of wildlife in captivity, he had a solution.

What was excess property for the refuge has now become useful enrichment for animals living at the Zoo at Chehaw Park in Albany, Georgia. Thanks to the staff at the zoo, and the Hose2Habitat volunteers who taught them how to make interesting items, the animals now spend their time investigating things to do with the firehose-toys, while Kerbow sleeps soundly.

The unused fire hose is especially valuable for use with captive animals as habitat enrichment items for them to interact with. "We can't take hose contaminated with industrial chemicals,

like we might find with used structural fire hose," says Lisa Daly, a former firefighter and Hose2Habitat co-founder.

"The durability of the firehose is perfect for longer lasting enrichment items and our animals love them," says Tayler Royal, the primary keeper at the zoo. "Our biggest goal with the donation was to create a second set of firehose enrichment items so that we could have a carnivore

set and an herbivore set."

The zoo staff got to work during a lunch-time "firehose party" on crafting some of these enrichment items, such as braided feeders, firehose cubes and hammocks.

(Top) White-nosed coatis enjoy their firehose hammocks. (Bottom) Zoo staff builds items for their animal at a lunch-time "firehose party."



“We are excited and humbled to be able to make this donation to the zoo, which helps connect people with nature,” Refuge Manager Michael Lusk says. “We can also relate to the hardship faced by the park, which, like our Southeast refuges, suffered severe hurricane damage.”

When the refuge staff brought the hose to the zoo, they witnessed first-hand downed trees, storm damaged animal enclosures, and damaged fencing and other facilities that still remained at the park. The facility suffered severe damage from Hurricane Michael in 2018 and was still in the process of cleaning up storm debris and repairing facilities.

The zoo at Chehaw is a nonprofit facility that annually hosts more than 10,000 visitors. Its mission—similar to goals of the Service’s National Wildlife Refuge System—is inspiring people to connect with nature and encouraging conservation action through positive recreational and educational experiences. Its 800-acre facility houses hundreds of animals in naturalistic exhibits. □

KAREN MIRANDA GLEASON, Branch of Fire Management, National Wildlife Refuge System

Eastern Black Rails, the ESA and the Powerful Tool that Supports Both

The eastern black rail is one of the planet’s most wide-ranging migratory birds, with many populations flying thousands of miles annually to marshlands across the United States and Latin America. It uses salt marshes, shallow freshwater marshes, wet meadows and other types of flooded grassy vegetation across this broad range for cover, forage and nesting.

Following population declines of as much as 90 percent, the eastern black rail was proposed for protection as threatened under the Endangered Species Act (ESA) in 2018. Primary threats are the loss of its habitat across the United States and Latin America.

The bird is elusive, however. So much so that it even featured in the birding comedy *The Big Year*, as the only bird in North America the protagonists were unable to spot. It is so elusive that even dedicated biologists have difficulty locating and studying them, meaning that little had been known about them to date.

So how did the Service go about evaluating the status of this elusive wetland-loving bird?

Given that nearly half of all species protected under the ESA are wetland-dependent in some fashion, this is an important question for more than just the eastern black rail. Wetlands are home to countless fish, wildlife and plants—many of which are of significant commercial



BRIAN HIRSH/USFWS

and recreational importance. These habitats are also critical to people. Wetlands recharge groundwater, mitigate flooding, provide clean drinking water, offer food and fiber, and support cultural and recreational activities.

The answer to the question involves some of the most highly visited Service webpages. Every week, thousands visit the Service’s National Wetlands Inventory (NWI) pages for detailed science, maps and statistics that are vital to their livelihoods. These stakeholders include scientists, city planners, citizens, landowners, developers, and decision-makers from local, state and federal governments, state wildlife agencies, conservation groups, industries and universities. Few outside this group of power users, however, know about this resource and its ability to bring American wetlands, wildlife and natural resources issues alive to anyone with a computer.

The NWI was initiated in 1974 to create the nation’s first comprehensive inventory of its wetlands and to monitor changes to ecosystems, wildlife habitats and natural resources.

A biologist holds an eastern black rail in southern Louisiana coastal wetlands.

NWI’s geospatial dataset captures wetlands from coast to coast, providing information on water fluctuations, vegetation and soil type, salinity, proximity to lakes and rivers, and human modifications, such as ditching. Among other things, this allows biologists to assess habitat for wildlife and develop strategies for conserving species. It also allows planners and landowners to make better-informed decisions, which not only protect their bottom line but also support conservation.

The development of the eastern black rail Species Status Assessment (SSA), a foundational scientific document that informed the rail’s ESA decision, serves as a powerful example of the role key factors play in ESA work. To determine the status of the rail, Service physical scientist Rusty Griffin used NWI data to analyze its habitat. The dataset helped him identify the rail’s habitat needs and assess the current conditions of available habitat within the species’ range—all important SSA requirements.



Biologists with Audubon Louisiana gather rail data.

To determine possible future habitat conditions, Griffin used data from NWI Wetlands Status and Trends reports. These reports represent some of the most important scientific and conservation documents on American wetlands. Wetlands Status and Trends reports, renewed every five to 10 years, have catalyzed billions of dollars worth of wetlands restoration and conservation efforts across America. They helped turn around the rapid loss of wetlands and related wildlife that began in the 1800s and continued until the 1950s. Using the Wetlands Status and Trends data, Griffin worked with FWS biologist Whitney Wiest to develop habitat projection models.

The resulting models predicted future population numbers for the eastern black rail by projecting extinction and colonization rates for sites currently occupied by the rail. The result was a science-based finding that the rail faced the possibility of extinction in the foreseeable future, spurring conservation actions and research that have had meaningful impacts.

While there is much more to be learned about the eastern black rail and changes to the diverse wetland habitats that they call home, the NWI will no doubt play a central role in these efforts.

“Conservation of wetlands is critical for countless species, especially long-distance travelers like migratory birds and waterfowl, and conservation begins with good science,” says Megan Lang, NWI’s chief scientist. “Maps of important habitat and information on how that habitat is changing, are essential for supporting conservation across large areas.

“Good science and resources like the NWI, Wetlands Mapper, and Status and Trends reports, which that are available to stakeholders and citizens at any time and outline... are also the foundation of conservation partnerships, sustainable planning and endangered species conservation,” adds Lang.

“After all, you can’t protect what you don’t know exists,” Lang says. □

BILL KIRCHNER, Science Applications, Pacific Region, and BRIAN HIRES, External Affairs, Headquarters

Service is First Federal Office in Minnesota Named Breastfeeding Friendly

The Service’s Midwest Regional Office, in Bloomington, Minnesota, has been named a Breastfeeding Friendly Workplace by the Minnesota Department of Health for contributions to the health of our working mothers and their babies through on-site education and the construction of a new lactation room. It’s the first federal office in the state to receive this designation.

“The Service is committed to diversity and inclusion in our ranks,” says Midwest Regional Director Charlie Wooley. “When it was brought to my attention that we could better accommodate the needs of working mothers in our office through the creation of a lactation room, it was an easy

decision and we moved to make it happen immediately.”

A small group of mothers in the office designed a room where nursing employees could comfortably express milk. Important elements are the room’s central location in the office, a privacy lock on the door, a refrigerator designated for breast milk storage and a private sink for cleaning breast pump parts. A mirror, coat hooks, dimmable light and wildlife-inspired artwork are additional details that turn the room into a haven for mothers juggling the demands of work with the nutritional and health needs of their children. In celebration of the room’s completion, a presenter from the Minnesota Department of Health ran a training on the rights of breastfeeding employees and the benefits of creating work environments that support breastfeeding employees. □

Taking Aim



Girls learn archery at Rocky Mountain Arsenal National Wildlife Refuge in Colorado.

Taking Care of Our Own

The Service takes care of those who provide public safety on the lands and waters it manages—and that includes its four-legged corps.

When Federal Wildlife K-9 Gino—partner to Federal Wildlife Canine Officer (FWCO) Darrin Speegle—had a spinal stroke in March, he was rushed to a top veterinary hospital in Georgia. The 83-pound German shepherd went through weeks of rehabilitation to overcome the paralysis of his hind legs, but he suffered more strokes and eventually passed away in June, having served nearly nine years as a Federal Wildlife Canine (FWC).

The loss was as personal as it was professional. “We traveled all over the Southeast together, on wildland fires, on Operation Border Support in Arizona, finding lost kids and sometimes lost hunters,” says Speegle. “Even though canines are a law enforcement tool, they are so much more. I probably spent more time with him than with my family. Gino always had my back.”

The Federal Wildlife Law Enforcement Canine Program, now composed of nine units, accepts only 1 percent of eligible canines. Canines complete 420 hours of rigorous training with their handlers because FWCs perform a much broader range of responsibilities than most working dogs: They help locate



USFWS

people, evidence, contraband and wildlife. They must be friendly ambassadors with the public. They are rarely kenneled—as most law enforcement canines are—but instead are with their handlers 24/7. The FWC motto is, “Wherever we go, they go.”

Speegle, with the Service since 1989, has been a canine handler since 2003. He grew up just seven miles from Wheeler National Wildlife Refuge in Alabama, where he has served his entire career. His first FWC was Jax, with whom he gained invaluable experience. Then came Gino, who was “over-the-top enthusiastic about doing the job.”

Speegle and Gino served not only Wheeler Refuge, but the greater Southeast Region to provide security at wildland fire responses, special law enforcement operations, hunting and fishing safety checks, and routine patrols.

Federal Wildlife Canine Officer Darrin Speegle and partner Federal Wildlife K-9 Gino worked out of Wheeler National Wildlife Refuge in Alabama.

During one routine hunting stop, the two encountered a man who decided to run rather than go through the routine safety check. He turned himself in the next morning because he said, “Every time I closed my eyes, I saw that dog.” The man had several outstanding warrants for methamphetamine production and distribution.

On another patrol, Speegle stopped a group of men who were illegally night hunting on Panther Swamp National Wildlife Refuge in Mississippi. Gino became fixated with the bottom

of their truck. “What in the world is wrong with this dog,” Speegle thought. The outcome? Gino found a rock of crack cocaine about the size of a #2 pencil eraser that the men had thrown under the truck. These men also had outstanding warrants for their arrest.

Gino helped ensure that Speegle would come home every night to his wife and four children, including son Jack, who formed a special bond with Gino after difficult surgeries when he was a young boy.

Beyond fighting wildlife crime, Speegle and Gino were community assets. For example, they annually visited a garden club, where they performed an obedience and scent discrimination tracking demonstration. One garden club member was so impressed, she offered to buy an FWC for the Service. Gino and Speegle also worked annually at Wheeler Refuge’s Summer Day Camps for children ages 8–13 and were highly visible as they traveled as partners in the K-9 truck with its special logos.

“Darrin and Gino were true ambassadors for the Service,” says Federal Wildlife Canine Coordinator Adam Rawlinson. “From talking to families and kids as they traveled from refuge to refuge, to catching the bad guys, they exemplified what it means to be public servants. Gino had an outstanding career and will be long remembered.” □

Learning from the Past: Tribal Retreats Keep Traditions Alive in the Klamath Basin

Through traditional and cultural practices, the next generation of wildlife conservationists are working with tribal community members in the Klamath Basin to nurture a renewed understanding and appreciation of the natural world.

Last fall, the Service's Yreka Fish and Wildlife Office's Klamath Basin Tribal Coordination Program partnered with Inter-Tribal Student Services (ISS) to hold two tribal restoration retreats for residents of the Lower Klamath Basin. The ISS is a local organization that assists and supports tribal students pursuing higher education goals in northern California, primarily at Humboldt State University.

Participants had the opportunity to learn from and engage with federal and tribal staff at each retreat. The events included presentations and demonstrations in the field, learning about on-the-ground projects and ongoing research activities.

Teaching was from the perspective of tribal members using traditional methods, tools and practices. They shared how the Klamath River and its natural resources, such as the wildlife, are connected to their daily activities.



SERENA DOOSE/IUSFWS

The first retreat took place at Ah Pah Village near Blue Creek, California, where participants were taught about the process of smoking salmon. This practice is based on traditional tribal cultural activities related to subsistence harvest. It's not just about catching and eating the fish but about understanding the entire salmon lifecycle. This includes learning about the water quality, effects of weather and the vital role salmon play in tribal culture. It also means observing salmon health and abundance, and ensuring enough fish spawn for future seasons.

Yreka Fish and Wildlife Office's Klamath Basin Tribal Coordination Program partnered with Inter-Tribal Student Services to host the annual Klamath River Tribal Retreat. Participants learned traditional methods for salmon harvest and preparation during the Ishi Pishi campout with Karuk tribal fisherman Ron Reed (middle row second from left).

For the second retreat participants met at Ishi Pishi Falls for a campout hosted by Karuk tribal members. The events of this weekend taught participants about the importance of traditional fishing practices and how they represent the heart of the tribal relationship with the environment.

Watching traditional fisherman Ron Reed and his sons work as a team to maneuver around boulders along the river's edge in search of good spots for dip-netting salmon was symbolic of how engaging with natural resources strengthens both family and culture.

Serena Doose, a Service fish and wildlife biologist and retreat participant, says the experience gave her a deeper appreciation for the tribal connection with the natural world.

"The workshop deepened my understanding of how integral the natural environment is to the core and future of tribal culture," Doose says. "It also fostered a stronger sense of place, being exposed to the unique natural and cultural history of the mid-Klamath area."

By bringing agency professionals, college and high school students, and faculty together, these retreats offered participants from all backgrounds an opportunity to improve their appreciation of the unique natural resources of the Klamath Basin and their important ties to tribal culture.

Another retreat is planned for next spring. □

Wisconsin's Fort McCoy Honored with Military Conservation Partner Award

Fort McCoy in Wisconsin recently completed 107 high priority conservation projects, exceeding a 98 percent completion rate, and on July 11, Deputy Assistant Secretary for Fish and Wildlife and Parks Aurelia Skipwith presented the Military Conservation Partnership Award to Fort McCoy for their excellence in habitat restoration and wildlife management.

In her remarks, Skipwith thanked Garrison Commander Colonel Hui Chae Kim and the Fort McCoy Natural Resource Branch, which fosters the wise stewardship of natural and cultural resources to support and sustain a realistic military training environment, biological diversity, the integrity of sensitive or unique sites, and commercial and recreational opportunities.

Fort McCoy's landscape supports four federally and 33 state-listed species and is proactively collecting data on eight species undergoing status reviews. Some of the best remaining habitat and largest populations of rare butterflies are found at Fort McCoy, including the Karner blue, regal fritillary, frosted elfin and ottoe skipper.



LARRY DEANUSFWIS

Also at the ceremony, then-acting Midwest Region Deputy Regional Director Thao Tran presented Liane Haun, Director of Fort McCoy's Public Works, with the Midwest Regional Director's Partner Appreciation Award. This award recognizes the partnership and the incredible work done by Fort McCoy's Directorate of Public Works to enhance and improve Fort McCoy's natural resources. It honors the contributions of eight members of their Environmental Division Team—Kira Kaufman, Jim Kerkman, Charles Mentzel, Leigh Neitzel, Dave Beckmann, John Noble, Mark McCarty and Tim Wilder.

"Fort McCoy's proactive, flexible and collaborative approach to managing habitats and species has had a big impact on the ground and is a model for other military installations," Tran said. "The Fort's dedicated team of natural resource specialists have proven that the needs of rare habitats and species can be balanced with military readiness training."

These awards reflect the tremendous amount of mutual trust and pride the U.S. Fish and Wildlife Service has for military installations, which achieve myriad conservation successes while fully supporting their

Deputy Assistant Secretary for Fish and Wildlife and Parks Aurelia Skipwith holds a bull snake during a field visit with staff from Fort McCoy and the U.S. Fish and Wildlife Service to learn more about conservation work on military lands. Then-acting Midwest Region Deputy Regional Director Thao Tran is at right.

mission of training soldiers in a challenging environment. The Service values its many partnerships with the military services and appreciates the role of military lands in conserving the nature of America. □



Idaho Salmon and Steelhead Days: Kicking off the School Year with a Memorable Field Trip

“Teenage salmon travel from Idaho, over 900 miles, to the ocean to eat a seafood smorgasbord for two years,” Vicki Runnoe, an environmental educator with the Idaho Department of Fish and Game, enthusiastically tells a group of Idaho fifth-graders, “and then they travel all the way back to Idaho as adults!”

The students are wearing knee-high wading boots and ready to explore the Boise River, an educational surrogate for salmon and steelhead natal streams. These kids cannot wait to get their feet wet and learn the type of food salmon eat while in Idaho. Kids in the Creek, is one of six stations during Idaho Salmon and Steelhead Days, and at this station, they learn about aquatic insects and healthy aquatic ecosystems.

This event has been taking place for 23 years, and over the course of three days, approximately 2,500 Idaho fifth-graders from the greater Treasure Valley get a chance to learn about salmon

and healthy aquatic ecosystems. The event is sponsored by many state and federal agencies, Idaho tribes, conservation organizations and private citizens. Margaret Anderson, a recently retired Service employee, has poured her heart and soul into organizing this event over the years, and says that the event feeds her passion for education, fish and conservation. Her favorite station is called *Gyotaku*, where kids paint real (dead) fish and make fish prints. “It is a great opportunity for kids to have a hands-on experience with, not only fish biology, but also with *Gyotaku* (pronounced ghee-oooh-ta-koo), the ancient Japanese art of fish-printing.” “Furthermore,” Margaret says, “I love to say the word ‘gyotaku,’ and teach the kids how to say it by shouting it and repeating it over and over.”

Other stations at the event are 1) Salmon History, hosted by one of the event’s tribal partners; 2) the Salmon Maze, where kids learn about the challenges associated with the long migration to and from the ocean; 3) the Ecology Station; and 4) the Living River. “Kids can learn all of this stuff in a classroom,” says Julie Collins, project leader for the Service’s Lower Snake River Compensation Plan, which is a longtime supporter of the event, “but they remember these lessons because they get to

be outside and in the river for the ultimate, hands-on learning experience.” The event fills up every year, and there is a waiting list for classes to get in.

Salmon returns to Idaho are really low this year, and biologists are concerned that this trend will continue into the near future. Reversing this trend, similar to hosting an event such as Idaho Salmon and Steelhead Days, is going to take participation and support from a diverse group of conservation partners. It is, therefore, important to educate everyone, including our youth, about conservation of these unique fish.

“Has anyone ever heard of a salmon before today?” Runnoe asks the group of fifth-graders. “Yes! My parents love to fish for them, and I love to eat them,” says a fifth-grader from Longfellow Elementary School in Boise. The organizers of the event hope that by teaching kids how cool these fish are, their importance in Idaho’s history and economics, and the struggles they currently face, a passion for fish conservation will be cultivated in our future generation. □

ALLYSON TURNER, Idaho Fish and Wildlife Office, Pacific Region



(Top) Completed *Goytaku* prints dry in the wind. (Bottom) Students explore a river.



SALMON CONSERVATION

This year is the International Year of the Salmon, which seeks to bring people together to help ensure the future of salmon. The Service works on both coasts to restore and protect salmon and their habitats. We also strive to introduce people to the beauty of salmon and sustainable salmon fishing. Much of that work, such as improvements to fish passage, also benefit people. Read on for just a few examples of salmon conservation. >

Pictured: Sockeye Salmon migrate up a small stream in Alaska.

A DIFFERENT KIND OF ROAD

*Salmon SuperHwy is connecting
fish, people and community.*

By BRENT LAWRENCE

Project partners and
stakeholders visiting
a successfully
completed fish
passage
project.



There's a highway along the Oregon coast you won't find on a standard roadmap. It's one of the most used highways, with travelers crowding its width at times.

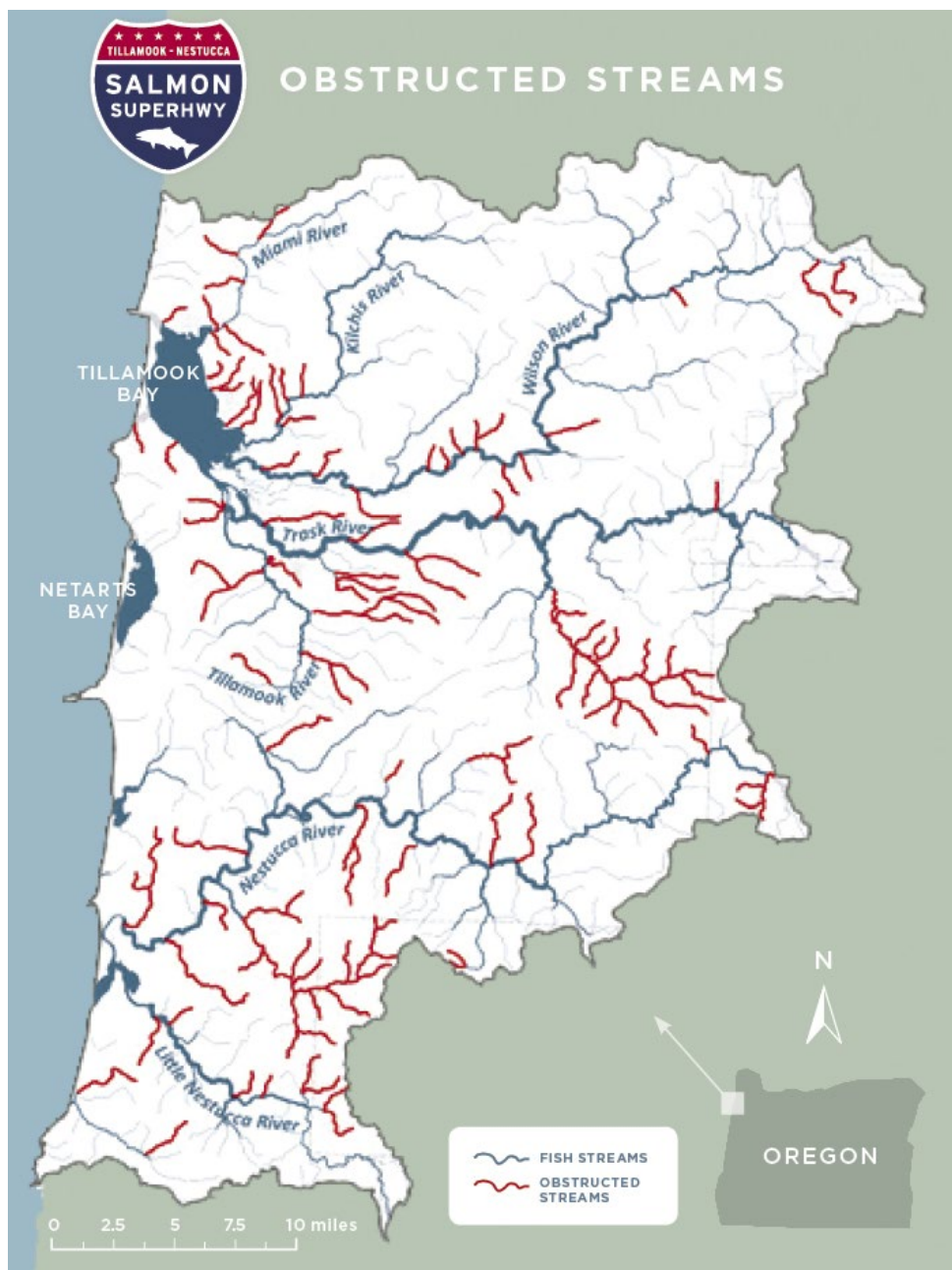
This highway connects farmers and fishermen, loggers and conservationists, people and fish.

It's the Salmon SuperHwy (SSH), an effort across a six-river landscape to reconnect fish populations with the habitat they need by updating road crossings and other barriers, while also addressing flooding and road safety. When complete, it'll span 178 river miles and reconnect a 940-square-mile landscape on the North Oregon coast that feeds Tillamook and Nestucca bays.

The project has a positive impact on fishing and anglers. By opening up miles of critical spawning habitat for adult salmon and steelhead and additional places for juveniles to mature, it provides more fishing opportunities in more areas.

The partners are many; the impact enormous.

"This project does an immense amount of good for both fish and people. Not only do undersized and failing culverts block fish, but they also limit the stream's ability to distribute gravel and wood throughout the system, both of which are important components of healthy fish habitat. Wood and gravel also have the ability to plug undersized culverts and flood our roads," says Garshaw Amidi-Abraham, the council coordinator for the Nestucca, Neskowin and Sand Lake Watersheds Council. "These multi-benefit projects integrate the needs of both people and aquatic life. The collaborative nature of the Salmon SuperHwy directly aligns with our Watershed Council's spirit of bringing together community, organizations and agencies."



Amy Horstman is the Service's biologist for Oregon's North Coast. She leverages three of the Service's programs (National Fish Passage, Partners for Fish and Wildlife, and Coastal) to get the most funding and technical expertise for these projects.

"The Service's role is pretty typical of what our restoration programs do," Horstman says. "In addition to assistance with funding for project design and implementation, we provide technical assistance...and oversight and reporting. Basically, we provide money and tools to help remove obstacles so that our partnership can make things happen on the ground." >



The Salmon SuperHwy will, when complete, allow access to approximately 95 percent of historic fish habitat while creating an estimated 400 local jobs, all completed with millions of dollars in locally sourced supplies.

In the Tillamook and Nestucca watersheds, there are detailed assessments of road crossings (usually culverts) that block fish movements in rivers and streams. The culverts are usually far smaller than the stream's width, resulting in increased water speeds that create a washout at the downstream end. The team used the detailed assessments to identify the highest priority barriers based on the length and quality of upstream habitat as well as the number of at-risk fish species that use the stream.



The Salmon SuperHwy partnership placed a bridge over Jewel Creek to replace three undersized culverts, restoring aquatic connectivity and improving transportation safety.

The projects span a variety of land ownerships dairy farms, industrial forest, private roads, state highways, and many are on county-owned roads. Ron Newton, an engineer for Tillamook County Public Works, is a major partner: "Tillamook County is an enthusiastic supporter of the Salmon SuperHwy program. In partnership with local Watershed Councils, USFWS, TU [Trout Unlimited] and others, the program brings otherwise unavailable technical and administrative support to one of the county's most critical challenges. Currently, Tillamook County is faced with culvert inventory that is decades past design life with many in very bad condition. The SSH program identifies and proactively replaces culverts before catastrophic failure. Replacement structures built to meet fish passage requirements also represent reduced maintenance and resilient transportation improvements to the countywide transportation system. In simple terms, there is no better investment of limited county resources than the Salmon SuperHwy program." >

By replacing the crossings with appropriate-sized bridges or culverts, fish use and road safety are maximized while minimizing flooding and road damage. That's a win-win collaborative project we can all get behind.

The six rivers in the project are the Nestucca, Tillamook, Trask, Wilson, Kilchis and Miami. This will help restore historic habitat for Chinook, coho, steelhead, chum, sea-run cutthroat trout and Pacific lamprey.

The partner list is a virtual who's-who of western Oregon conservation.

On the local side there's Tillamook County, Tillamook Estuaries Partnership, Tillamook County Creamery Association, Tillamook Bay Watershed Council, Nestucca-Neskowin and Sand Lake Watershed Council, Pelican Brewery, farmers, forestry landowners and many private landowners.

For the state of Oregon, there's the Department of Fish and Wildlife, Department of Forestry, Department of Transportation, Watershed Enhancement Board and the Fish Passage Task Force.

On the national and federal side, there's the Service, Trout Unlimited, U.S. Forest Service, Bureau of Land Management and Natural Resources Conservation Service.

What it all adds up to is a historic opportunity for Oregon.

"Trout Unlimited has a long history of forging collaborative partnerships to accomplish restoration goals, but the Salmon SuperHwy takes partnerships to a different level," says Sarah Zwissler, Salmon SuperHwy coordinator with Trout Unlimited. "The fish passage projects have a huge benefit to the community

infrastructure. Tillamook County has a long history of flood events and when undersized culverts fail and wash out roads, dairy farmers can't get to their herds, or get milk to the production facilities. Creameries can't get product to market. Forest access is blocked for logging operations and recreation. While this is a big 'reconnect' project for Trout Unlimited and provides critical habitat connection for spawning adults and juvenile rearing, the community benefits are equally important. We see a lot of community support because of this unique partnership.

"Working as a team, we're able to accomplish more, and we're getting more efficient with each project we complete. It's a great feeling knowing our partnership benefits both fish and communities."

An essential element of the SuperHwy has been the strategic nature of the plan. By assessing the entire six-river landscape feeding Tillamook and Nestucca bays, the partners identified all 260-plus remaining barriers to fish passage and determined it would cost \$140 million and about 70 years to fix them all at current spending levels.

The cost of some of projects simply outweighs the overall benefit. Through a detailed cost-benefit analysis, the team determined the precise projects that achieve maximum habitat bang-for-the-buck. The final tally will be 93 projects completed over 10 years at a cost of about \$34 million. From 2014-2018, the partnership completed 20 projects restoring full access to more than 60 miles of habitat with a funding investment of \$4.9 million dollars. Construction in 2019 includes nine projects, reconnecting 16 more miles of habitat.



Each successfully completed project gets a Salmon SuperHwy road marker.

"We used a landscape-scale approach to maximize benefit and minimize costs," Horstman says. "I'm proud of the collaboration between many partners to improve stream systems for salmon and native fish as well as to support critical infrastructure upgrades and increase public safety. And all of the projects are beneficial to the local economy in that there are jobs created and materials purchased. This is a huge win-win for people and fish."

The Salmon SuperHwy is the route to follow!! □

BRENT LAWRENCE, External Affairs, Pacific Region

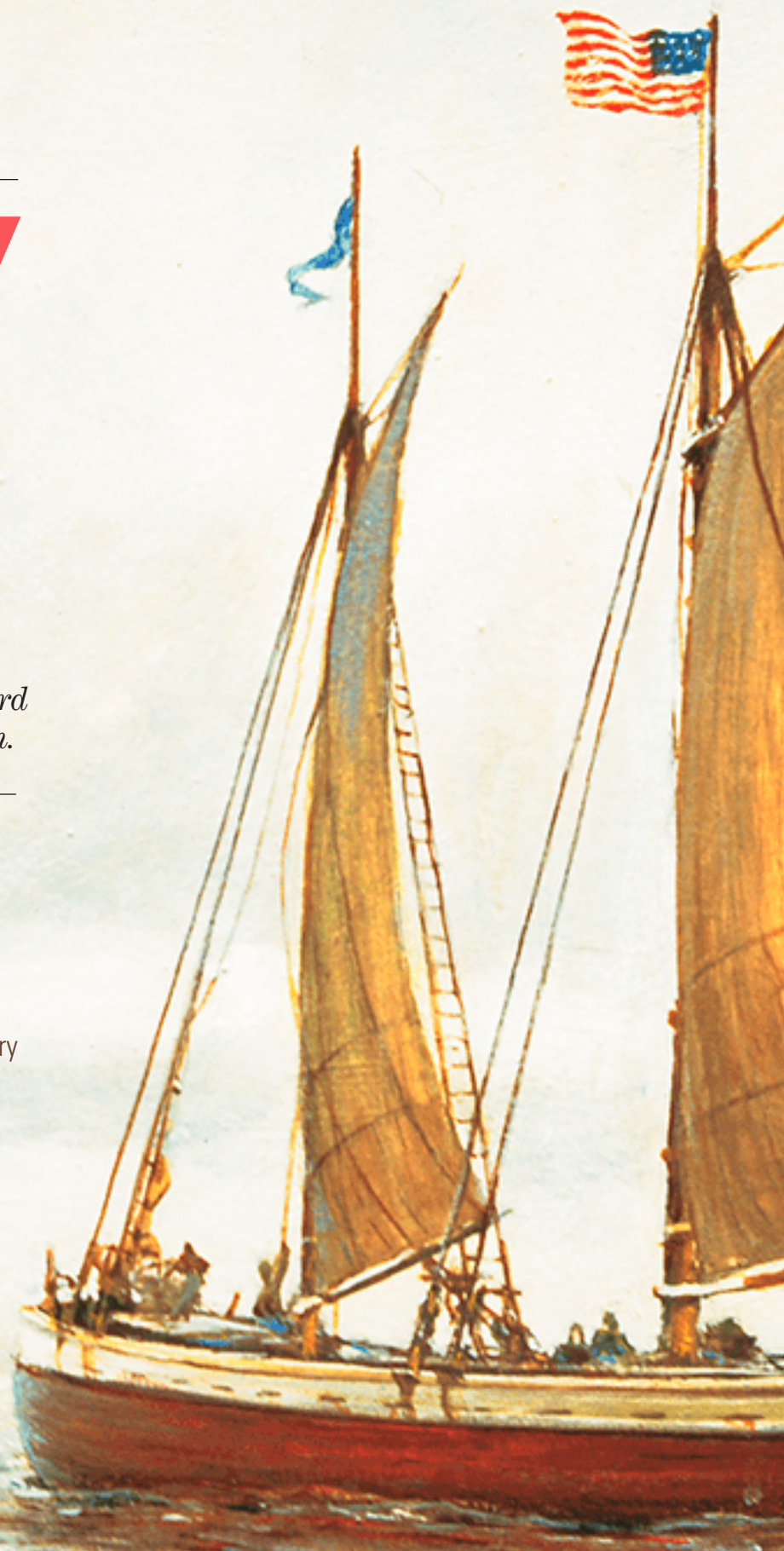
HISTORY IN THE MAKING

The Lois McClure steers a course toward salmon restoration in Lake Champlain.

By BRIDGET MACDONALD

On December 9, 1876, Captain William Montgomery set out on Lake Champlain aboard his barge the General Butler, carrying a load of marble from a quarry in Isle La Motte, Vermont, to a company in Burlington that made monuments and tombstones. He was lucky he didn't need one himself that day.

COURTESY OF LAKE CHAMPLAIN MARITIME MUSEUM



As he approached Burlington, Montgomery got caught in a fierce storm and was forced to abandon ship within sight of the port. With waves pummeling the boat, he and his passengers leapt one-by-one onto the ice-covered stone breakwater that protects the harbor.

“People were gathered on the waterfront watching this saga unfold,” says Erick Tichonuk of the Lake Champlain Maritime Museum. “And by all accounts, right as William Montgomery made the jump, the last to leave his sinking ship, the General Butler disappeared beneath the waves.”

That same year marked the dramatic disappearance of something else in Lake Champlain.

In his 1876 report to the U.S. Commission of Fish and Fisheries, Winslow Watson remarked on the decline of the once abundant salmon in the watershed as a result of steamboat traffic, railroad construction, and the “most formidable and indeed insuperable obstacle” to migratory fish: “the innumerable dams constructed on almost all of the streams near their mouths.”

The date is a coincidence. The drama is connected. Canal boats such as the General Butler, and captains such as Montgomery, who were driven to take risks for economic gain, symbolized the massive ecological transformation taking place in the Lake Champlain Basin in the 19th century.

Early settlers clear cut forests to harvest timber, which led to erosion of streambanks that filled creeks with silt. Dams, built to power mills, blocked fish from tributaries. The cumulative impact of these activities was the complete loss of native landlocked Atlantic salmon in the Champlain Basin by the mid-1800s.

So why revisit this history now?

Because over the summer, you could visit it in person. >

A painting of the ill-fated schooner the General Butler by Ernie Haas.



In honor of the International Year of the Salmon, the Service partnered with the Lake Champlain Maritime Museum, the Lake Champlain Basin Program and the Champlain Valley National Heritage Partnership to share the story of the remarkable comeback of Lake Champlain's salmon population through a life-size symbol of its decline.

I got a chance to visit that symbol, the canal schooner *Lois McClure*, which acts as a kind of mobile museum welcoming visitors aboard for free while docked at various ports of call, was built to spec from an underwater archaeological study in the 1980s of two wrecks—one was the *General Butler*, which is still sitting on the bottom of the lake with its cargo-hold full of marble.

About a decade earlier, the partners that now make up the Lake Champlain Fish and Wildlife Management Cooperative—the Service, Vermont Fish and Wildlife Department and New York State Department of Environmental Conservation—came together to figure out how to salvage another wreck: the native landlocked Atlantic salmon population.

Since the 1970s, these and other partners have developed a coordinated, adaptive, science-driven program to reintroduce salmon to the basin and address the factors that led to their demise. Factors linked directly to the economic growth fueled by the *General Butler* and its canal boat brethren, such as declining water quality, habitat loss, the introduction of invasive species through the canal system and of course, the construction of dams.

First, the partners focused on reestablishing a fishery in the lake by stocking salmon from state and federal fish hatcheries, and by controlling parasitic sea lamprey—which likely entered Lake Champlain through the canal and can fatally wound salmon.



USFWS



NANCY WINSHIP MILLIKEN

(Top) Once abundant in the Lake Champlain Basin, native landlocked Atlantic salmon had disappeared from the system by the end of the 19th century. (Bottom) Partners from multiple agencies and organizations have been collaborating to bring salmon back to the Lake Champlain Basin by stocking fish and managing the factors that led to their decline.



In some cases, partners have addressed the issue of dams blocking salmon from migrating upstream to spawning habitat by giving them a ride.

Now, partners are looking beyond the fishery toward a long-term goal of a self-sustaining salmon population, and they are working together to get there by improving habitat in the wild and techniques in hatcheries to better prepare salmon for the real world. For example, raising young salmon in brook water rather than in well water so they will develop the ability to imprint and home back to the stretch of river where they are stocked.

Partners are also collaborating to address that “insuperable obstacle”: dams that prevent salmon from migrating up tributary rivers to spawn and reproduce.

Today, there are about 442 dams and 13,822 culverts in the Lake Champlain Basin, not including its Canadian tributaries. Wherever possible, the Service and partners have been working to remove obsolete barriers to open access to upstream spawning habitat.

Where it’s not possible — as on the Winooski River, where the Winooski One hydropower dam produces enough energy to power more than 2,700 homes for an entire year — partners are improving fish passage through other means. A fish lift and transport program helps salmon above the first of three dams on the Winooski. Research-based modifications to fish-passage structures enable juvenile salmon to migrate back downstream to the lake to mature and help their population grow.

The story of salmon’s comeback in the basin is complex, involving myriad interconnected partners, sites, activities and studies. But the Lois McClure provided a portal for visitors to see the big picture. Exhibit panels described how partners worked together to address historical threats to salmon such as dams and habitat degradation and emerging threats such as climate change.

Tichonuk was part of the team that explored the wreck after its discovery in 1980, measuring every dimension, and documenting every detail. He explains that the boat featured “obvious elements of sail.” Although the masts were gone, the deck of the boat had a tabernacle — like a cup holder for the mast that could be opened on one side to lower the 70-foot tall structure before the boat entered the heavily bridged canal.

A replica of a style of boat that had been lost to history, the Lois McClure is its own comeback story.

On Course

Before disembarking from my visit to the Lois McClure, I was recruited to help furl, or stow, her mainsail — a 1,309 square-foot, unruly sheet of heavy canvas.

“You just reach down, get a good arm’s length, bring it back up on top of the boom, and then keep folding it over itself,” Tichonuk instructs the crew. “We’re going to make it look like ribbon candy.”

Forty-five minutes later, it did—more or less. With the sail neatly stowed, it would be easier for the crew to raise at the end of the day when the Lois McClure got underway for the first of a series of visits to ports on the New York side of the lake. One stop was at Willsboro, which represents a milestone for salmon.

“Willsboro is a big one because a dam was removed there recently,” Tichonuk says, referring to the partner-driven effort to remove the obsolete Willsboro Dam that stood between salmon and more than 70 miles of suitable spawning habitat in the Boquet River.

“Now they are finding naturally born salmon fry above the former dam site,” he says. “Everybody seems pretty excited about it, especially the salmon I suspect.”

No wonder. It’s the first time in 150 years that naturally born salmon have been documented anywhere in the Lake Champlain Basin. It’s history in the making. □

BRIDGET MACDONALD, External Affairs
Northeast Region

FISHING FOR A CONNECTION

Teaching non-traditional anglers in Alaska.

Story and photos by KATRINA LEIBICH

Cooking the catch (pink salmon) in Hope, Alaska, with Anchorage's Muldoon Boys and Girls Club.



Anchorage, Alaska, is surrounded by wilderness and bisected by salmon streams. Despite this, many diverse urban youth don't participate in fishing due to a variety of barriers including apprehension and unawareness through lack of parental participation. "Creek to Plate," a Service summer program, helps youth become more competent and comfortable fishing and being near water. The program includes fishing, cooking the catch and extensive safety training.

Fishing

We start with simple lake fishing techniques using bobbers and closed face reels. Participants practice basic casting, baiting their hook with an egg and fish handling techniques. As the summer progresses and salmon start returning, we move to river fishing techniques using open face reels and larger rods. Locations include a variety of easily accessible lakes, Alaska's most popular urban fishery for Chinook and Coho salmon in Ship Creek (a tidal river system in Anchorage), Campbell Creek (a sinuous river with a forested riparian area in Anchorage) and Resurrection River in Hope, Alaska. We have youth experiment setting minnow traps to help them understand where in the river channel fish prefer to stay.

Cooking the Catch

Each day, participants have the option to have their catch filleted and cooked on-site or take it home to caregivers. Instructors teach basic fish anatomy during filleting demonstrations, as well as how to avoid attracting bears to popular fishing spots by disposing of carcasses in the current and not on the shore. Participants learn how to care for fillets (e.g., placing fillets skin to skin in a bag to minimize slime on the meat, avoiding contamination by wiping fillets vs. washing them and keeping fillets on ice). We eat as a group when participants are willing to share their catch (it varies!).

Safety

In 2019, we introduced safety modules into the programming using pool, classroom and outdoor settings with several key partners including the Alaska Office of Boating Safety and Anchorage Fire

Department. Topics included cold water safety, using a personal flotation device properly, rescuing a friend from the water, climbing back in a canoe from the water, wader safety, how to cross a river solo and in a group, using a map and compass to find point locations on a map, and basic wilderness first aid.

Results

This past summer was our third year running consecutive events over the course of an entire summer (May-August). Some youth have participated in all three years of the program and we had high week-to-week return rates this year. The results are amazing. The youth who fish multiple times with us over the course of a year have developed the techniques to successfully catch fish. It takes several outings to accomplish this, especially if current is involved. New participants who join us midway through the season have less success. This year we offered six pool sessions with 25 participants each session rotating through different water safety stations. A number of youth were unable to swim the first session and clung to the instructors. By the fourth session, they were comfortable swimming with a life jacket, filling their waders and floating "to shore" and doing basic self-rescue techniques. We also practiced crossing rivers in multiple settings, which greatly reduced the number of youth filling their waders from the previous year:

It all makes "Creek to Plate" not just a program name but a reality. □

KATRINA LEIBICH, Fish and Aquatic Conservation, Alaska Region



(Top) Directorate Fellow Kris Pacheco teaches a safety module on orienteering to youth from Anchorage's Mountain View Boys and Girls Club. (Bottom) The fishing program culminated with a salmon fishing trip on the Kenai Peninsula.

RECLAIMING THE LOST POPULATION

Spring release looks to repopulate winter-run Chinook salmon in upper Battle Creek in California after the loss of nearly the entire in-river juvenile population during the drought of 2014 and 2015.

By JAKE SISCO

Battle Creek is an east-side tributary to the Sacramento River downstream of Shasta Dam. Battle Creek is unique because its cold water springs and high year-round base flows provide the only historic spawning habitats for winter-run Chinook salmon downstream of Shasta Dam.

Winter-run Chinook salmon are unique in that they spawn during the summer months, from mid-April to mid-August, when California is at its hottest. This proved to be catastrophic in 2014 and 2015 when the drought killed nearly the entire in-river juvenile salmon population.

This event prompted the Service, the National Marine Fisheries Service and the California Department of Fish and Wildlife to reinitiate a captive broodstock program at Livingston Stone National Fish Hatchery, part of the Coleman National Fish Hatchery Complex. The program started in 1992 and was suspended in the early 2000s.

Last year, the Service released 220,000 tagged and fin clipped juvenile winter-run Chinook salmon into the north-fork of Battle Creek. This year, in a continuing effort to jump-start the population, 185,000 juvenile winter-run Chinook salmon were released.

“We are trying to expand their population,” says Brett Galyean, Coleman’s project leader. “Currently winter-run salmon are in the upper Sacramento River, and there is a large effort to restore Battle Creek and improve the habitat. By doing this jump-start effort, we are just moving ahead with the reintroduction plan to repopulate winter Chinook salmon into upper Battle Creek.”

The jump-start plan uses the offspring of captive broodstock winter-run Chinook salmon from Livingston Stone and is focused on reintroducing winter-run salmon to Battle Creek while not impacting the Sacramento River population.

“This year is about fine-tuning. We learned a lot from the first year,” says Galyean. “Winter Chinook act differently than some of the other salmon we have here.

“They seem a little more skittish, so we used belt feeders [which feed throughout the day instead of having someone walk by the raceway or tank and feed the fish every hour] a little bit longer,” he says. “Also, we reared them inside longer than we did last year.”

Today, Sacramento River winter-run Chinook salmon are protected as an endangered species under both federal and state law.

“The winter Chinook salmon supplementation and captive broodstock programs at Livingston Stone are absolutely the reason why there are still winter-run Chinook salmon swimming in the Sacramento River,” says Galyean. “The warm water and low river flow conditions during the last drought were devastating on the natural populations of winter Chinook salmon, and both of the programs at the hatchery played a key role in rearing winter Chinook salmon during those years.”

In addition to facing warmer water temperatures, the salmon also have to contend with human-made obstacles.

“Battle Creek has several hydroelectric dams, diversions and a complex canal system that was developed in the early 1900s,” says Laura Mahoney, information and education specialist at Coleman. “The canal system moves water between

the north fork and south fork of Battle Creek. However, as part of a restoration project on Battle Creek, modifications will be made to two powerhouses that will prevent water from being mixed between the two forks.”

More than 500 of the salmon received acoustic tags to help track where they travel and their survivability rate. The survival rate helps researchers estimate the number of fish in the ocean and expected to return for spawning.

“Acoustic tags are a form of telemetry that is used in the fisheries field to study the survival, timing and distribution of fish as they move through the system or through watersheds,” says Laurie Earley, Red Bluff Fish and Wildlife program manager for the Battle Creek restoration program. “We are interested in the Sacramento River and the Sacramento-San Joaquin River Delta, especially these salmonids as they travel through the system and make their way out to the ocean.”

It takes about three years for the salmon to make the long journey from the hatchery to the ocean and back. While a few salmon from the 2018 spring release may return to Coleman this year—77 2-year-old males returned—the majority will return next year. □

JAKE SISCO, External Affairs,
Pacific Southwest Region

Winter-run juvenile Chinook salmon are loaded into a tanker truck for transport to the Battle Creek release site as part of a reintroduction plan to repopulate winter Chinook salmon into upper Battle Creek. Once released the salmon will start a nearly 320-mile trip to the delta.



Ensuring a Sustainable Salmon Fishery in the Klamath River

The Klamath River, flowing 257 miles southwest from Oregon through northern California, is the most important North American river for anadromous fish migration south of the Pacific Northwest's Columbia River. The Klamath is also the second largest river by volume to flow through California and historically a major salmon fishery.

Chinook salmon are the most abundant salmon in the Klamath Basin. Also known as king salmon, they are the largest species of Pacific salmon, are highly prized by anglers and were a major source of food for Native Americans.

The Klamath River has two distinct groups, or runs, of Chinook salmon: spring and fall. Runs of fish are named for the season that they re-enter the rivers after maturing in the ocean. Though they return to the river at different times, both runs spawn in the fall.

Spring Chinook populations have experienced dramatic declines and were recently proposed for protection under the California Endangered Species Act. Currently spring Chinook are only found in the Salmon and Trinity rivers of northern California, both tributaries to the Klamath River.

Fall Chinook are much more abundant, widespread and represent the largest salmon fishery in the Klamath River. Fall Chinook populations have been closely monitored for decades to ensure their numbers remain sustainable.

Eutrophication and raised water temperatures induced by the construction of dams have created challenging



SERENA DOOSE/USFWS

conditions for migrating salmon, especially in years of drought. Somehow Klamath River salmon, steelhead and rainbow trout seem more resilient to these conditions relative to salmon in other rivers in the Pacific Northwest.

Each October since 1986, fisheries crews from numerous organizations raft, snorkel and wade approximately 700 river miles of suitable Chinook spawning habitat in the main stem of the Klamath River and tributaries such as the Shasta, Scott and Salmon rivers.

Partners in this collaborative effort include Native American tribes, watershed councils, natural resource organizations, state, federal and local agencies, and volunteers, including students from area middle and high schools.

Fisheries managers use these data to estimate the abundance of salmon in the ocean, to determine tribal and recreational harvest levels and to estimate the escapement (the amount of fish that “escape” commercial or recreational fisheries and return to spawn).

A fall Chinook salmon carcass collected during the annual survey. Chinook salmon are semelparous or single spawners, meaning they only spawn once before they die.

Without having a long-term, high quality dataset to establish fishing season quotas and harvest limits, it would be difficult to maintain a fishery and still have a healthy population of fish for years to come.

This fall, crews will once again head to the streams and rivers to conduct the 33rd annual salmon habitat survey to ensure a sustainable salmon fishery continues in the Klamath Basin. □

SERENA DOOSE, Fish and Aquatic Conservation, and SUSAN SAWYER, External Affairs, Pacific Southwest Region

A Tribal Perspective

Atlantic Salmon and the Penobscot Indian Nation

The Penobscot River in Maine has been home to Atlantic salmon and the Penobscot Indian Nation since time immemorial. With its forested upland, diverse rivers and many lakes, the Penobscot River Basin has sustained the people of the Penobscot Nation for thousands of years. The rivers flowed freely, abundant with salmon and other diadromous fish species. The history, culture and economics of the Penobscot Nation are intimately connected with the river and the sea-run fish that return every spring. Atlantic salmon were at one time a herald of spring, a very welcome food source and proof of the health of the river and its people.



Ten miles upriver from the head of tide lies Indian Island, the springtime home of the Penobscot Nation. It is a tribally significant place where weddings,

celebrations and important meetings between tribal clans have taken place over the centuries. All clans would gather on the island every spring and take advantage of the seemingly endless supply of fresh fish in the falls below Indian Island. These falls had many islands and side channels that provided excellent opportunities for catching Atlantic salmon and other sea-run fish that swam up the Penobscot River each spring.

In the early 1800s, dam construction on the Penobscot isolated sea-run fish from their upriver spawning grounds. Timber dams were built along the river at falls



MEGAN BACEY/USFWS

such as Veazie, Great Works and the falls below Indian Island, now known as Old Town Falls. The islands below Indian Island at Old Town Falls were permanently flooded by the construction of the concrete Milford Dam in 1906. Fishing grounds disappeared along with the fish, and the Penobscot Nation's people and the salmon were barred from their traditional use of the river.

Today, there is hope for the future health of the Penobscot River and its sea-run fish. Through the Penobscot River Restoration Project, the two main-stem dams downstream of Indian Island, the Veazie Dam and the Great Works Dam, have been removed from the river. The Milford Dam is now the first dam on the river and has a new state-of-the-art fish lift that began operating in 2014. Farther up river, a stream-like bypass channel was built around the Howland Dam in 2016. The nature-like fishway bypasses the Howland dam and allows aquatic and terrestrial wildlife to move both up and down the river, connecting the Piscataquis River to the Penobscot River and ultimately the Gulf of Maine.

These projects dramatically increased access for sea-run fishes. More than 1,000 miles of river and stream habitat now have improved or complete access for the sea-rush fish of the Penobscot River. Since the installation of the fish lift at the Milford Dam, returns of Atlantic salmon have grown from a historic low of 261 adult salmon in 2014 to nearly 1,200 in 2019.

Joe Dana of the Penobscot Indian Nation paddles a birch bark canoe by the area where the Veazie Dam was being demolished.

During that time, river herring (blueback herring and alewife) numbers have climbed from 187,438 to more than 2 million fish annually. Another success is the return of American shad to the Penobscot River. In 2014, 817 American shad were captured, in 2016, 8,223.

The Penobscot River Restoration Project is a collaborative partnership, including the Service, the Penobscot Indian Nation, Maine, and other natural resource conservation groups. Projects such as this one exemplify how a healthy and functioning river benefits all people. Today, Atlantic salmon and their sea-run fish brethren have significantly better and safer access to the waters up the Penobscot River. In time, the healing Penobscot River will provide sustenance for the Penobscot people who have always called this land home. Once again, the Penobscot Nation can look to the Atlantic salmon as a herald of spring. □

Originally written by Dan McCaw, a fisheries biologist with the Penobscot Indian Nation. He talks about the historical connection between native people and the species that helped sustain them for thousands of years, Atlantic salmon. Revisited by McCaw and the Service's Mike Crowley.

DO = or = DIE

Couple fought against developers and local officials to save California estuary that became national wildlife refuge.

By JANE HENDRON

It was November 1980, when the phone rang at the Imperial Beach home of Mike and Patricia McCoy. Ralph Pisapia, manager of the Service's Ecological Services office in Laguna Niguel in California, was on the line. He asked the McCoy's to meet him at the end of Seacoast Drive the following morning at 10.

The McCoy's held their breath as they drove to meet Pisapia. All of their time, money and energy expended over the past 10 years to save the Tijuana Estuary rested on this meeting.

When the McCoy's arrived, they could see a government vehicle was already parked.

Four men got out of the car, while another man pulled up in a pickup. The man who got out of the truck was a stocky no nonsense American cowboy, complete with oversized belt buckle and Stetson hat. "Ralph told us, 'I want you to meet Larry Dean, manager of the Tijuana Slough National Wildlife Refuge,'" recalls Mike.

And it was done. The estuary that the McCoy's had fought against developers and local officials to save was permanently protected as a national wildlife refuge.

"Mike and Patricia are two of the most amazing people I've been privileged to befriend and work with during my career with the Service," says Brian Collins, the current manager of Tijuana Slough Refuge.



Top) Brian Collins with the McCoy's after their plaque is unveiled. (Left) Closeup of McCoy Trail dedication plaque. (Bottom) Yellow-crowned night heron perched on bridge along McCoy Trail on Tijuana Slough National Wildlife Refuge.

MIKE AND PATRICIA MCCOY: USFWS/JANE HENDRON
PLAQUE: USFWS/LISA COX
HERON: USFWS/JOANNA GILKESON

Recounting the story, almost 40 years later, the McCoys, who were recent guests at the refuge for the re-dedication of a trail named in their honor, still seem surprised at what they managed to accomplish. “It was a do or die situation,” says Mike.

Though Mike and Patricia grew up in vastly different places—he’s originally from Colorado while she grew up in suburban Gloucester, England—they share a love of nature, especially wetlands and marshes.

After earning his veterinary degree from Colorado State University, Mike worked for the Service then the San Diego Zoo, and eventually landed in Imperial Beach as an associate in a private practice in 1970.

Gazing across the estuary for the first time, Mike says, “I saw a fantastic marsh system. I had seen the marshes in northern San Diego County, and they all had rail lines or roads through them. This marsh was special. It had not been impacted by the hand of man. It seemed relatively pristine, absolutely beautiful.”

More than 370 species of migratory and native bird species use the estuary, which is also a critical nursery for fish.

But in 1970, the estuary was about to give way to development. “I found out they were going to dredge it,” says Mike. “Everyone was saying how much it would improve the city, economics, the usual stuff. I told them you’re not going to do any of that in the marsh.”

The idea of conserving the marsh was not popular with most of the residents and elected officials, and the McCoys were frequent targets of threats and harassment. It was a rough and tumble fight and there was a lot of money at stake. “We got death threats all the time,” says Patricia.

Ignoring personal risk, the McCoys launched their campaign to secure the

estuary. “We decided to go the political route,” says Patricia. “We lobbied.”

Those who wanted the estuary developed lobbied equally hard against the McCoys, including trying to get Mike fired from his job.

In 1972, the southern portion of the estuary was purchased by California State Parks for the 1,316-acre Border Field State Park, but most of the northern portion of the marsh remained vulnerable to destruction.

The McCoys took their case to Washington, DC, where they secured a meeting with Nathaniel P. Reed, undersecretary for the Department of the Interior. Mike told Reed about their problem. Reed suggested getting together with their congressman, Representative Lionel Van Deerlin.

Van Deerlin “got it,” says Mike. “He understood the value of the estuary.”

“When you look at a flyway, you don’t look at the whole flyway,” Mike explains. “You look at stopover points,” such as the estuary.

The McCoys also reached out to the Service. “We were trying to get the Service to look at the value of urban refuges,” says Patricia. “Between Camp Pendleton and Tijuana, the estuary is like a breathing space.”

Sensing they were losing the fight to develop the estuary, some of those opposed to the McCoys efforts were growing increasingly hostile.

One evening, the McCoys and a group of volunteers were at the local firehouse celebrating a cleanup day at the estuary. What happened next is still not completely clear to Mike. “It all happened so fast,” he says. “Three guys walked in packing guns. One of them drew and shot a man in the face.”

It was pandemonium, recalls Patricia. “People were climbing up the back wall

of the property or running into the street to get away. They were trying to get an ambulance.” Mike went back inside the firehouse to help. “I rolled the guy over on his side so he wouldn’t choke to death on his blood,” he says.

The bullet lodged in the man’s hard palate and luckily he survived.

“A couple of the people in the crowd told me the gunmen were looking for Mike and thought they had him picked out,” says Patricia.

Shaken but undeterred, the McCoys continued urging the Service to buy the northern part of the estuary from its owner—Helix Land Company. Mike also met with Helix executives, pressing them to reach an agreement with the Service on the sale of the estuary land.

“I told them, you’re never going to build a marina here and if you don’t work a deal with the Service, you will wind up with egg on your face.”

Finally, on December 24, 1980, the deal was sealed. For \$7.6 million, 606 acres of land transferred from Helix to the Service. At the time, it was the most expensive dollar-per-acre refuge acquisition in the history of the refuge system.

“They said it was impossible to do,” says Mike. “It was amazing. It really was.”

“We are now well into the third decade of scientific study in this estuary,” says Collins. “Lessons we learn here are transmitted to a global audience of conservation professionals and the general public.”

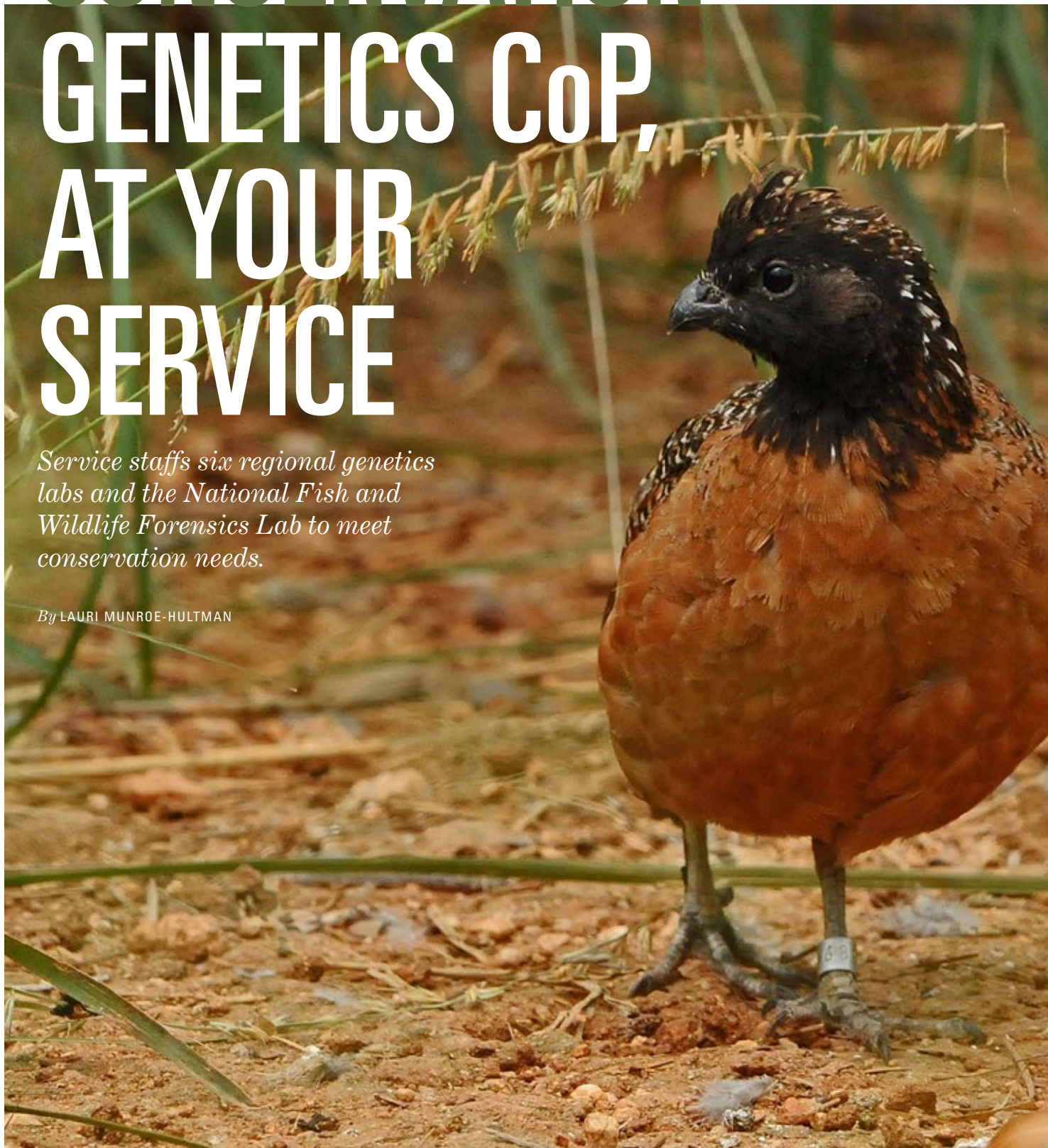
The McCoys remain committed to protecting habitat across San Diego County, but the refuge holds a very special place in their hearts. “Mike visits the refuge almost every day. He just loves it,” says Patricia. □

JANE HENDRON, External Affairs,
Pacific Southwest Region

CONSERVATION GENETICS CoP, AT YOUR SERVICE

Service staffs six regional genetics labs and the National Fish and Wildlife Forensics Lab to meet conservation needs.

By LAURI MUNROE-HULTMAN



WILLIAM RADKE/USFWS

When searching for answers to life's tough questions, it's a good idea to look within. That's the message the Conservation Genetics Community of Practice (CoP) would like to send their fellow Service employees.



(Previous page) For help with captive-breeding of endangered masked bobwhite, the manager turned to genetics. (Above) Dr. Steve Mussmann worked on the issue.

“Many within the agency aren’t aware that we have these services in-house,” says Dr. Mike Millard, director of the Northeast Fishery Center in Lamar, Pennsylvania. “You don’t need to send money out the door for genetics expertise; we can do the work less expensively and in a more timely fashion.”

Made up of Service staff at six regional genetics labs and the staff at the Service’s National Fish and Wildlife Forensics Lab, the CoP has operated for more than a decade. Through monthly conference calls, annual meetings and an active listserv, members collaborate, learn from one another and foster genetics expertise within the agency.

One of their signal achievements was working with staff at the Service’s National Conservation Training Center to design the hands-on course “Applied Conservation Genetics.” Over the span of a week, participants from lab, field and management positions gain the background and skills to evaluate situations involving genetics.

“The Service’s genetics labs have a range of specialties, from traditional population genetics and taxonomic resolution, to environmental DNA and genomics,” says Dr. Meredith Bartron, regional geneticist and director of the genetics lab at the Northeast Fishery Center in Lamar, Pennsylvania. “The labs can assist with all aspects of designing and conducting studies and interpreting results, especially as they relate to conservation issues.”

From endangered species issues, to law enforcement cases, to captive-breeding programs, the CoP is ready to serve.

Fishing for the Right Source

Found only in the lower Susquehanna River, the Chesapeake logperch is listed as threatened in Pennsylvania and Maryland and is under review by the Service for Endangered Species Act protection.

The Pennsylvania Fish and Boat Commission’s species action plan for the fish includes reintroduction. Before moving fish, however, biologists must identify differences between populations and make sure source fish are genetically strong.

“Their numbers are small, so we want to make sure we dot our i’s and cross our t’s when planning,” says Doug Fischer, ichthyologist/nongame biologist with the commission.

Fischer wondered whether fish in the mainstem river differed from those in tributaries and whether ones above the Conowingo Dam were the same as individuals below the dam.

Bartron helped him design a study to answer these questions.

For the last two summers, Fischer and his team have sampled fish in eight locations, clipping small pieces of fin to test in the lab. Although the work is ongoing, an early finding shows that one of the populations that’s abundant and easy to sample is also the most inbred and, therefore, not an optimal source of fish for reintroduction.

Not good news, but important information...that only genetics experts could provide. >

The One that Didn't Get Away

In 2009, state and federal wildlife law enforcement officers arrested a Maine man for illegally taking endangered Atlantic salmon from the Piscataquis River, a tributary of the Penobscot. Officers bought several fish in bags labeled "brown trout" from the man and later seized blood-stained clothing and fishing equipment, along with salmon meat.

Robert Rothe, special agent in the Office of Law Enforcement in Concord, New Hampshire, contacted the Clark R. Bavin National Fish and Wildlife Forensics Laboratory in Ashland, Oregon, for help with the case.

Fortunately for all but the accused, the Northeast Fishery Center's Genetics Lab had a database with genetic information from Penobscot River salmon sampled as they passed a downstream fish lift earlier the same year.

By comparing genetic results from the evidence to the existing data, scientists at the Forensics Lab confirmed that the man had caught eight sampled salmon, which led to his conviction under the Lacey Act. He was sentenced to pay \$100 and serve six months in federal prison. His fishing license was revoked for eight years.

"The Forensics Lab was not only able to identify many of the samples to the species level but also designate individuals," says Rothe. "This was important in tracking the salmon from where they were sampled by biologists on their migration up river, to where they were ultimately caught illegally."

That's one angler who won't be telling fish stories for a while.

A Boost for Bobwhite

The federally endangered masked bobwhite was last seen in the wild in Mexico in 2007. Captive birds are raised at Buenos Aires National Wildlife Refuge in Arizona, George Miksch Sutton



AARON HENNING

Avian Research Center in Oklahoma and Africam Safari in Puebla, Mexico.

Wild quail were last added to the U.S. programs in 1986. Since then, the populations have naturally lost genetic diversity and have had multiple "bottleneck" events, such as disease outbreaks, that have reduced the number of breeding birds.

With no source for new blood, Bill Radke, project leader at Buenos Aires Refuge, turned to the Southwestern Native Aquatic Resources and Recovery Center in Dexter, New Mexico, for guidance on managing the captive-breeding program.

Dr. Steve Mussmann analyzed the genetics of quail from the refuge and the research center to find the degree of relatedness among the birds at each facility. He identified repeated bottlenecks over the last decade but decided that enough genetic diversity remains to minimize inbreeding by pairing unrelated birds.

Mussmann recommended the annual exchange of eggs between the refuge and the research center.

Radke says he has been consistently pleased with the support he's received from Service genetics labs over the years.

Doug Fischer, with the Pennsylvania Fish and Boat Commission, clips the fin of a Chesapeake logperch.

"While workloads are daunting, the personnel have always been willing to answer my questions and advise me, review proposals from other labs and capably take on sequencing and analysis work," he says. "I think communication is more effective and objectives are better understood because we all work for the same agency."

When you need to know who that masked bird is, ask a geneticist.

Is this Wolf Listing Warranted?

The Alexander Archipelago wolf is a subspecies of gray wolf found in southeastern Alaska and coastal British Columbia. In 1997, the Service found placing it on the Endangered Species list was unwarranted. A petition in 2011 requested not only that the wolf be listed but also that those on Prince of Wales Island be deemed a distinct population segment.

Because petitioners cited genetic studies done since the first decision to support their case, Ecological Services staff in the Alaska Regional Office asked the



ROE CHRISWELL



USFWS

Jeff Kalie from the Northeast Fishery Center Conservation Genetics Lab processes genetic samples from Chesapeake logperch.

The Chesapeake logperch, found only in the lower Susquehanna River, is under review by the Service for Endangered Species Act protection.

The pair’s analysis helped lead to the Service’s second “unwarranted” finding in 2016. Wenburg’s and Olsen’s opinion was that, while the wolves on the island appear to be genetically differentiated, the data do not show they harbor unique genetic material significant to the survival of the species as a whole.

“Given the differing viewpoints in the literature on the validity of the subspecies designation, having in-house expertise to dig into the data and provide an independent review on a short timeline was key,” says Drew Crane, endangered species coordinator in the Service’s Alaska Regional Office. “The feedback they provided gave us greater confidence that our assessment had adequately addressed the questions surrounding the subspecies classification.”

When it comes to telling one wolf from another, Wenburg and Olsen are your guys. □

LAURI MUNROE-HULTMAN, External Affairs, Northeast Region

Conservation Genetics Lab in Anchorage for help with the Species Status Assessment. Dr. John Wenburg, lab director, and Dr. Jeff Olsen, deputy lab director, reviewed the studies and compared them to those of other North American wolves.

Genetics Community of Practice website: fws.gov/ConservationGeneticsCOP

Service Genetics Labs

Clark R. Bavin National Fish and Wildlife Forensics Laboratory

Ashland, Oregon
Contact: Mary_Curtis@fws.gov

Conservation Genetics Lab

Abernathy Fish Technology Center
Longview, Washington
Contact: Christian_Smith@fws.gov

Conservation Genetics Lab

Anchorage, Alaska
Contact: John_Wenburg@fws.gov
Conservation Genetics Lab

Northeast Fishery Center

Lamar, Pennsylvania
Contact: MereditH_Batron@fws.gov

Conservation Genetics Lab

Warm Springs Regional Fisheries Center
Warm Springs, Georgia
Contact: Nathan_Whelan@fws.gov

Molecular Ecology Lab

Southwestern Native Aquatic Resources and Recovery Center
Dexter, New Mexico
Contact: Wade_Wilson@fws.gov

Whitney Genetics Laboratory

Midwest Fisheries Center
La Crosse, Wisconsin
Contact: Emy_Monroe@fws.gov

MUSEUM
OBJECTS
COME TO
LIFE

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

Stamp of History



Marking property with a facility, town or company name—think of those metal folding chairs with “City of...” or “Property of...” goes back farther than one might think. Here in the Service, we know it goes back at least 115 years. A recent addition to the National Fish and Aquatic Conservation Archives is a metal marking stamp with the letters “USFC.” USFC stands for U.S. Fisheries Commission, or the U.S. Commission of Fish and Fisheries, the predecessor of today's Service. The USFC was established in 1871 as our nation's first federal conservation agency and ran from 1871 to 1903, when it became the U.S. Bureau of Fisheries (1903–1939) before joining with the Bureau of Biological Survey to become the U.S. Fish and Wildlife Service in 1940. This marking stamp was discovered by Tyler Hern, project leader at Erwin National Fish Hatchery in Tennessee. Tyler found the stamp in the maintenance shop at the bottom of a bucket. Erwin Hatchery was established in 1894. That means the stamp has been floating around the hatchery for at least 116 years, and was never lost, thrown away, used for scrap metal, etc. We are excited to add it to the collection as it is the only USFC stamp we have. It will join a metal stamp in the collection that is nearly identical except the letters read “USBF” for U.S. Bureau of Fisheries. (April Gregory)

Sending Out Salmon

This postcard, pre-1907, shows the nation's first national fish hatchery. The first fish raised at a federal fish hatchery were salmon, still a popular sport fish. McCloud National Fish Hatchery, later called Baird National Fish Hatchery, was established in 1872 on the McCloud River in California. It was soon sending salmon eggs to the East Coast and around the world. Today, the site of the old hatchery lies under the waters of Lake Shasta.

Lake Shasta was created by the construction of the Shasta Dam, completed in 1945. (April Gregory)



Frozen Peas and the Fish and Wildlife Service



Did you know that the man who invented the modern freezing process for foods worked for the Department of Agriculture's Bureau of Biological Survey, which later became the U.S. Fish and Wildlife Service? Clarence Birdseye was a biologist working in the Arctic when he noticed that natives froze their fish on racks, and he realized that quickly freezing foods under pressure would ensure very little loss of flavor.

It seemed that a fast freeze prevented ice crystals from forming in the foods. He patented his process in the 1920s, started his own company, and the rest is history. Every time you eat a TV dinner or some frozen broccoli, thank the Service for this yummy discovery!



Great Wall of Birds

We recently received an exhibit of a bush that holds almost 100 mounted songbirds. It was confiscated because those who had it violated the Migratory Bird Treaty Act. We call it the great wall of birds. I cannot imagine in what circumstance that many birds of a different feather (or different species) could ever congregate in such a compact area. There would have to be some very tasty bird seed or berries on that particular bush. It never ceases to amaze me what type of trophies folks want to display. I think real bird lovers are perfectly happy with paintings or photographs, or just sitting outside! (Jeanne M. Harold)

Forged by the Sea: More than a Navy Slogan

Key West National Wildlife Refuge was established in 1908, but its islands were once owned by the Navy, and over the years, several of the Marquesas Keys in the refuge were used for military training. For example, beginning in 1940, some were used as bombing and strafing targets. In the early 1960s, the Navy built an observation tower on a Marquesas island to monitor the offshore strafing and bombing exercises in adjacent state-owned waters. The Cuban Missile Crisis in 1962 closed both the Marquesas Keys and the nearby state-owned waters to allow for round-the-clock military exercises.

Save for a couple of dock pilings, during my first Marquesas visit in 1985 there was no sign of any past Navy activity...or so I thought.

In 1990, while conducting a sea turtle nesting survey, I noticed that a green sea turtle had crawled beyond the narrow beach and dune, and attempted to nest at the edge of the woods. The turtle's body pit indicated the nesting attempt had been aborted. I noticed a piece of exposed metal beneath the body pit and futilely tried to remove it for inspection. I pierced the sand repeatedly with a stick to gauge the metal's dimensions. Hundreds of probes and 25 feet later the old *Jaws* movie line "You're going to need a bigger boat" came to mind.

Over hundreds of feet my stick quivered like a dowsing rod as it struck metal hidden beneath the sand. I was in awe and perplexed: It was as if the dune had been paved with metal and then covered with sand. After digging and exposing a desk-

sized section of the metal, I noted it was thick and had symmetric holes cut in it. I had a moment of discovery, as if I had discovered uranium.

Silly me. "Marston matting? No, never heard of it," I replied to a Navy representative. Turns out the Navy had used Marston matting (aka perforated steel planking, or PSP) to create a landing pad for helicopters near the observation tower. The steel mats interlock; each weighs about 66 pounds. The Navy had removed most, but clearly not all, the PSP panels decades ago.

The refuge lacked the equipment and personnel to tackle the project, but the Navy could not have been more willing to help. On the day of the scheduled work project, I arrived early at the Marquesas with two refuge volunteers. We cheered when, right on schedule, nine Navy personnel and boats arrived with shovels, winches and chains. The cavalry had arrived!

It was one of those priceless backbreaking projects fueled by shared inspiration and a strong sense of purpose. The mats, their holes entwined with plant roots, proved formidable foes, we laboriously removed 60 PSP mats that day. But even after considerable digging and using paired winches and chains, about 20 other panels could not be extricated due to imbedded roots.

During annual nest surveys over the next 22 years, two successful green turtle nests were found in the area where the PSP mats had been removed. Interagency cooperation—more than trite buzzwords. Forged by the Sea—more than a Navy slogan. □

TOM WILMERS, Retired Wildlife Biologist for National Wildlife Refuges of the Florida Keys

A green sea turtle buries her nest.



NATIONAL PARK SERVICE

transitions

Headquarters



Bryan Arroyo returned to the Service in July as Deputy Director of Operations.

As a 28-year veteran

of the Service, Arroyo brings a wealth of experience to the position of Deputy Director. In this capacity, he will oversee the day-to-day operations of the Service, including providing executive direction through the Regional Directors, Native American programs, Diversity and Inclusion, and the National Conservation Training Center.

He most recently served as Deputy Director in the Department's Office of Environmental Policy and Compliance, where he provided leadership and guidance on the utilization and conservation of natural, cultural and historical resources. Before being elevated to the Department, Arroyo led the Service's International Affairs program as Assistant Director, where he oversaw the Service's efforts to implement international wildlife conservation and trade agreements, and to provide training and financial assistance to support wildlife conservation initiatives across the globe.

His diverse experience with the Service includes assignments at field, regional and headquarters levels. He served as the Service's Assistant Director for Fisheries for three years, as well as Deputy Assistant Director and Assistant Director for the Endangered Species Program. From 1998 to 2006, he was the Assistant Regional Director for Ecological Services in the Service's Southwest Region.

Arroyo began his career with the Service in 1990 as a student trainee in the Arlington, Texas, field office. In 1991, he was appointed to a full-time permanent position in that office and then transferred to the Service's field office in Austin, Texas. There, he served as a fish and wildlife biologist conducting project reviews under the Endangered Species Act and National Environmental Policy Act. In 1994, he transferred to the Service's Headquarters office in Arlington, Virginia, where he worked primarily in policy and budget development.

Born in New York City and raised in his parent's native Puerto Rico, Arroyo graduated from Ponce High School in 1982. He attended Catholic University of Puerto Rico and graduated in 1988 with a bachelor's degree in science with a major in biology. In 1991, he earned a master's degree in science with a major in zoology from the University of Arkansas. He is an outdoor enthusiast and particularly enjoys hiking, bass fishing and nature photography. □

Linda Walker, Division Chief for Visitor Services in Refuges in Headquarters, has been named one of 12 Field Special Assistants for the Department's 12 Unified Regions. The Field Assistants will help meet the goals of the reorganization, including modernizing the way the Department does business, continuing to responsibly manage America's natural resources and preparing the Department for future challenges. Linda is Field Assistant for the Missouri-Basin (Interior Region 5). □

After a seven-month detail with the Department of the Interior's Office of Communications,

Darin Schroeder in July took a position as a Senior Public Affairs Specialist in the office. He was a Partners and Intergovernmental Affairs Specialist in External Affairs (EA).

Darin began his Service career in 2016 after a gig as vice president of government relations for the nonprofit American Bird Conservancy. He also served on Capitol Hill as aide to U.S. Senator Russ Feingold for more than seven years and with U.S. Representative Ron Kind for six. For Representative Kind, Darin served as communications director and then senior policy adviser, with an emphasis on fish and wildlife conservation and sportsmen's issues.

"While I am leaving FWS EA, I'm not going all that far," he says. "I am fortunate that I will be able to continue to work with all of you in my new capacity and shine the proper light on the media work that you are doing for the Service." □

Midwest Region



A "mainstay" and a "go-to-guy" describe the Midwest Regional Refuge Chief **Charlie Blair** who retired

from the Service in August after 41 years. He started his career in 1978 as an assistant manager at Eastern Neck National Wildlife Refuge in Maryland, and, realizing the refuge system was his personal utopia, he never left the system.

During his tenure, Charlie worked at 11 stations in three Service regions. Before coming to the Midwest Regional Office as Refuge Chief in 2013, he held positions as assistant manager at Bombay Hook/Prime Hook Refuges in Delaware; acting manager at Nowitna Refuge in Alaska; and manager at Ninigret Refuge Complex in Rhode Island, Ottawa Refuge in Ohio, Crane Meadows-Sherburne Refuge Complex in Minnesota, Maine Coastal Islands Refuge in Maine and Minnesota Valley Refuge and Wetland Management District Complex in Minnesota.

No stranger to controversy or challenge, Charlie faced both early and often in his career. Throughout it all he remained the consummate professional, a true ambassador for the resource and a mentor to the next generation of conservation leaders. He is known for his common-sense, straightforward approach to issues and great commitment for the places, wildlife and people he worked with. His dedication is what makes him a true conservation leader. >

Charlie will be greatly missed, and he will continue to be a mainstay for our resources due to the legacy he has left behind. We wish him happy trails and a wonderful retirement!



Todd Turner is retiring after 30 years with the Service. Since 2012, he served as the Midwest Region's Assistant

Regional Director for Fisheries. From 2009 to 2012, he served as the Midwest Deputy Assistant Regional Director for Fisheries. Before that, he was the Midwest Region's Hatchery Program Leader, beginning in 2001. He also served as assistant hatchery manager and then hatchery manager at Genoa National Fish Hatchery in Wisconsin. Todd started his career with the Service in 1989 at Sullivan Creek National Fish Hatchery in Michigan, formerly Hiawatha Forest National Fish Hatchery. A Minnesota native, he is an alumnus of Bemidji State University. Before working for the Service, he served in the U.S. Army Reserves for seven years and worked for the Leech Lake Reservation Department of Resource Management as a fisheries technician.

In retirement Todd plans to pursue his outdoor hobbies, including hunting, fishing, making maple syrup and snowmobiling. He is close to his family and will surely be spending even more time with wife Laurie, his two adult sons and his parents. Congratulations to Todd on his impressive and meaningful career with the Service's Fisheries program in the Midwest Region. □

Pacific Region



Ginger Phalen has retired from her position as the state coordinator for the Partners for Fish and Wildlife

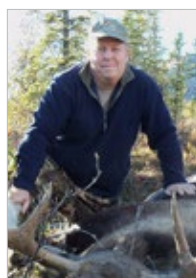
Program in Washington. Ginger leaves an outstanding legacy of quality restoration and conservation projects throughout the state and will be sorely missed by her many partners and colleagues. We want to thank Ginger for her many years of service, leadership, contributions to species recovery and long-lasting contributions to private lands conservation in the Pacific Northwest. Since retiring, Ginger has been on a three-month bicycle trip across the United States with a charitable organization that will raise funds for a cause dear to her heart. We wish Ginger all the best in her retirement and her next adventures in life! □



Nick George did such an impressive job as a Partners biologist in Southern Illinois that he is moving into a state

coordinator role for the Service's Washington (state) Partners for Fish and Wildlife. Nick will be sorely missed in Illinois as he conserved a significant amount of habitat and helped numerous landowners be the stewards of the land they wanted to be. They just needed someone like Nick to move them in the right direction. Washington is getting an extraordinary biologist and a very impressive guy! □

Southwest Region



After 28 years working for the Service in Refuges, **Robert Jess**, project leader at South Texas Refuge

Complex, retired at the end of September to seek new adventures.

He had been at South Texas since 2012. The complex is composed of three refuges: Santa Ana, Laguna Atascosa and Lower Rio Grande. Before that, he was refuge manager of Yukon Flats National Wildlife Refuge in Alaska, the third largest refuge in the system at nearly 10 million acres. Rob was also project leader of

J.N. "Ding" Darling, Island Bay, Matlacha, Caloosahatchee and Pine Island National Wildlife Refuges Complex on Sanibel Island, Florida. Before leaving Sanibel, he was recognized by the Sanibel & Captiva Chamber of Commerce as the "2006 Citizen of the Year." This was for his efforts to educate the citizens of Lee County on the importance of coastal water quality and future impacts from pollutants along the Caloosahatchee River and the west coast of Florida.

Rob's initial exposure to the Service was as a cooperative education student at Bear River Migratory Bird Refuge in Utah, with subsequent assignments at National Elk Refuge in Wyoming and Ouray National Wildlife Refuge in Utah. His first permanent station was at Charles M. Russell National Wildlife Refuge in Montana (1993–1997) where he was an assistant manager, working with the Black-footed Ferret Recovery Program and coordinating the public use program. From 1997 to 1999, he served as a deputy refuge project manager at ACE Basin National Wildlife Refuge in South Carolina. From 1999 to late 2001, he served as deputy refuge supervisor over Florida and the Caribbean Islands in the South East Regional Office of Atlanta, Georgia.

Before joining the Service, Rob worked in construction before returning to college to begin a degree. He received a bachelor's degree in fisheries and wildlife management from Utah State University in June 1993. >

His greatest accomplishment thus far was when he and his wife returned to college with their five children. The daily meals of elk and deer meat subsidized with “yellow death” (macaroni & cheese) paid off as they both graduated with college degrees in 1993, all of this while he worked part time and she raised children. Liz graduated with a degree as a registered nurse.

Rob and best friend and wife Liz, who is from Draper, Utah, are parents to daughter Melissa, and four boys, Ryan, Richard, Tyson and Logan. His outside interests extend to hunting, fishing, genealogy, antique vehicle restorations and listening to the wonderful stories and history of the baby boomers.

Rob and Liz will reside in Logan, Utah, where both can chase their nine grandchildren and new dreams.

Adds Rob:

“The work that we do has been a dream for my family and me as we explored and witnessed so much of what the vast lands of this country has to offer. The experiences gained have become wonderful memories whether it be my sons working summers as FWS fishery techs in remote areas of Alaska as they tended salmon weirs with periodic guests such as wolves, black or grizzly bears invading their camps or as a family witnessing manatee with their young blubbery babies in the

shallow bays of Florida. Other experiences such as bugling for elk with my young daughter instead of going to college class and watching the expressions of awe on her camo-face as a bull bugled within three yards of us or releasing black-footed ferrets in Montana as the Hale-Bopp Comet lit the dark cold night. Important times such as listening to mentor and friend Donny Browning on the back porch of an 1820 plantation house in South Carolina as we felt the rays of a setting sun while deer fed in the grove of the plantation. I will miss people who have retired such as John Wallace, Donny Browning, Mike Hedrick, Sam Drake, Dale Hall and Elizabeth Souheavor. Thoughts will endure for those whom I admire such as Ricky Ingram, Emery Hoyle, Jason Vehrs, Sonny Perez, friend and fellow patriot Tim Cooper who is the master of the vernacular. Missed will be the leaders that have come and gone to the other side of the veil such as Sam Hamilton and Steve Thompson. However, missed most will be the comradery and conversations had with staff and peers whom I so value and love. It was an honor to hire staff—to see them grow and mature as they learned from both opportunity and mistake then to become leaders. A well-respected manager once said, ‘You will never be remembered by what you accomplished but you will always be known for who you hired.’” □

Southeast Region



Supervisory Fisheries Biologist **Wilson Laney, P.h.D.**, has retired. He served the Service and the public with

a deep sense of duty, respect for science and adherence to high ethical standards for more than 39 years. His work concentrated largely on the conservation, restoration and protection of diadromous fish species and their habitats, along with some other estuarine-dependent and interjurisdictional fish species

Wilson achieved numerous accomplishments in fisheries management and built an extensive network. He was involved with the Atlantic States Marine Fisheries Commission, the Mid-Atlantic Fishery Management Council and the South Atlantic Fishery Management Council, as well as multiple other regional and state partnerships such as the Albemarle-Pamlico National Estuary Partnership, the N.C. Nongame Wildlife Advisory Committee, and served as the Southeast Region FERC Hydropower coordinator. He also served briefly as a refuge manager and hatchery manager. Beyond the professional relationships, Wilson built true friendships that will continue long after retirement as he moves into the next chapter of his career. He remains an adjunct assistant professor at North Carolina State University. □



Fish and Wildlife Biologist **Laura Fogo** (seen with Partners for Fish and Wildlife North Carolina team holding picture) transferred from the Raleigh Field Office to the Asheville Field Office, where she will continue her Partners for Fish and Wildlife conservation career. Thank you, Laura, for your dedication to the work of the Raleigh Field Office, and we look forward to continue working with you. □

honors

Headquarters



In early May, **Kim Lambert**, partners and intergovernmental affairs specialist with the Service's

External Affairs Program in Headquarters, was honored by Morris College with an honorary degree of Doctor of Laws.

Kim serves as the Service's principal representative for the Federal Interagency Working Group on Environmental Justice, which is composed of 17 federal agencies and White House > offices. She is also the first black woman honored as the Service's Individual of the Year, in 2017.

In 2013 and 2017, the Board of Directors of the National Environmental Justice Board recognized her with a proclamation stating “we honor Kim M. Lambert for her Civilian Public Service, as an agent of the Federal Government who continues to be in the forefront, demonstrating her federal leadership to advance environmental justice and philanthropy, using innovative and collaborative techniques and leading the way to a more just America for all communities.”

Kim was the first woman unanimously elected president of the DOI-Chapter of Blacks in Government in 2008. She served until 2014 and during her term as president, the National Council of Negro Women granted her request to personally award 61 scholarships to high school seniors in the District of Columbia, Maryland and Virginia in honor of Dr. Dorothy Height.

Morris College is proud to have conferred an honorary Doctor of Laws degree upon Kim for, it says, her “unrelenting energy, keen insights, splendid contributions and all that she does to help young people become successful.” □

Service-wide

Nature’s Good Neighbors was an innovative national communications campaign that showed the Service’s commitment to conservation benefiting wildlife and people. We invited staff to see themselves as storytellers and to push their creative and communications boundaries—and did they ever!

Thank you to those who nominated your colleagues last fall for storytelling excellence awards and to all who supported this campaign in 2018.

Storytelling excellence judges included current and former journalists, university staff and Service staff.

So, let’s celebrate some outstanding work.

Most Impact

This category recognizes the team effort—public affairs, program, congressional, partners and social media—behind a Nature’s Good Neighbors story in supporting a story from idea to outcomes in reaching intended target audiences.

› A Promising Future for a California Plant Once Believed Extinct, author Ashley McConnell, Pacific Southwest Region;

› Building Blinds, Building Lives, author Brent Lawrence, Pacific Region;

› Artifacts of Epochs Past, author Craig Springer, Southwest Region.

Most Compelling Photo

This category recognizes visual storytelling by a photographer in illuminating a Nature’s Good Neighbors story’s central character(s) and sense of place and livelihood.

› Tied to the River, Cookie and John Davis by their tractor, photographer Steve Droter, Northeast Region (seen, next column);

› Sweet Present, Rich Past, Carolyn Read portrait, photographer and author Joanna Gilkeson, Pacific Southwest Region;

› Walking the River, Gary Lang portrait, photographer Ryan Hagerty, NCTC.

Best Narrative Writing

This category recognizes storytelling craft by a writer in creatively profiling a central character(s) and his/her livelihood and providing a sense of place, connection to conservation, and relationship with the Service and/or other conservation assistance providers.

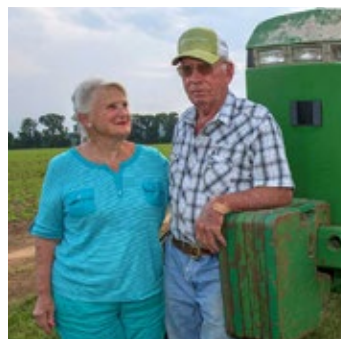
› He Speaks for the Sea, author Lauri Munroe-Hultman, Northeast Region;

› Tied to the River, author Darci Palmquist, Northeast Region;

› Walking the River, author Isaac Burke, Northeast Region.

FWS Favorites

Service staff from across the country cast votes for their favorite Nature’s Good Neighbors story.



› Sweet Present, Rich Past, author Joanna Gilkeson, Pacific Southwest Region;

› A New American Dream, author Bridget Macdonald, Northeast Region;

› What the Eyes Don’t See the Heart Doesn’t Feel, author Jennifer Strickland, Mountain-Prairie Region.

See all the Nature’s Good Neighbors stories at fws.gov/natures-good-neighbors. □

Service-wide

Recovery Champions are Service staff and their partners whose work is advancing the recovery of endangered and threatened species of plants and animals in the United States.

Pacific Region

The Service’s **Rebecca Chuck** and **Anne Walker** were recognized as 2018 Recovery Champions for their leadership in the recovery of the threatened Oregon silverspot butterfly. Due to their vision and perseverance, significant conservation and recovery milestones have been accomplished over eight years of interagency collaboration, including intensive coastal prairie habitat restoration and the establishment of non-essential experimental populations within a part of the species’ historical range from which it was once extirpated. Viable and secure subpopulations of the butterfly was established at Nestucca Bay National Wildlife Refuge in 2017 and at the Saddle Mountain State Natural Area in 2018. >

Members of the Saving 'Akikiki from Extinction Team have worked tirelessly to lift the rare forest bird of Hawaii back from the brink, and have persevered through numerous challenging obstacles to secure a population in conservation breeding centers. From using helicopters and heavy ladders during severe weather to collect tiny 'akikiki eggs in the forest canopy, the team has proven their dedication to protecting this imperiled species. With 45 'akikiki raised, reared and cared for in an intensive care setting for the first time in history, the team has accomplished monumental milestones for conservation breeding efforts for this species and set the precedent for many more.

Members of the Saving 'Akikiki from Extinction Team: Dr. **Lisa Cali Crampton** and **Justin Hite**, Kaua'i Forest Bird Recovery Project, the Service's **Megan Laut**, **Michelle Clark**, **Jay Nelson** and **John Vetter**; and **Bryce Masuda**, **Jeremy Hodges**, **Amy Klotz** and **Angela Ray** of San Diego Zoo Global.

Southwest Region

The Service's **Omar Bocanegra** was a leader in endangered black-capped vireo recovery. When the species was first listed in 1987, only 350 adult birds remained in the known breeding range. Since 2005, He has worked to strengthen working relationships and build trust with key partners to foster interest in vireo recovery. Consequently, the 2017 species

status evaluation revealed that years of collaborative conservation and adaptive management paid off. Black-capped vireo populations have become robust and resilient enough throughout their range that the species successfully recovered and no longer needs federal protection under the Endangered Species Act.

Cynthia Dale of the White Mountain Apache Tribe was recognized for her leadership in conserving the Mexican wolf, as well as numerous other threatened, endangered and sensitive species important to the White Mountain Apache Tribe. The tribe has been an instrumental partner in the Mexican Wolf Recovery Program, supporting the Service's decision to establish a sustainable population on the Fort Apache Reservation. Less than six months after 11 captive-bred wolves were released into the Arizona wilderness in 1998, individuals began occupying eastern portions of the reservation. There are now at least 130 Mexican wolves occurring throughout Arizona and New Mexico. Under Dale's direction, the Tribal Game and Fish Department's Sensitive Species staff conduct wolf monitoring, management and outreach, significantly contributing to endangered Mexican wolf recovery.

Midwest Region

The Service's **Kris Lah** has worked on the recovery of the endangered Hine's emerald dragonfly. Kris has worked with a diverse group of partners to

manage, restore and create habitat for the species. As a result of the partnership he built with the University of South Dakota, researchers improved the development of mass rearing capabilities at Genoa National Fish Hatchery. He also had the vision to engage the U.S. Geological Survey in making decisions on a permit application for a proposed mine expansion that may impact the wetlands where the dragonfly breeds. Bringing together a team that could fully assess the potential groundwater impacts and work to design an innovative hydrology management plan transformed the permit review process into a collaborative search for solutions.

Over the last 20 years, Center for Aquatic Mollusk Program staff—**Mike Davis** and **Bernard Sietman**, Minnesota Department of Natural Resources, and **Mark Hove**, University of Minnesota—have made countless significant contributions to the recovery of several federally endangered freshwater mussels, including the ground-breaking discovery of the fish host for the spectaclecase mussel in 2017. The search for the larval host for the spectaclecase was among the most challenging of any freshwater mussel species—more than 50 species of fish and other aquatic animals were tested for nearly two decades. Putting an end to the long and difficult quest, program staff, with the help of many partners, discovered the host fish is the goldeye. With this knowledge, captive rearing and propagation, augmentation and reintroductions of this species possible.

Southeast Region



The Service's Eastern Indigo Snake Recovery Team, including **Kenneth Blick** and **Tony Brady** of Welaka National Fish Hatchery and Dr. **Michele Elmore** of the Georgia Ecological Services Field Office, have worked across two Service programs and with **Michelle Hoffman** of the Orianne Center for Indigo Conservation to improve the status of the species through captive propagation and augmentation efforts. By coordinating with the Service's Ecological Services and Fisheries and Aquatic Conservation programs, the team created the agency's first snake rearing facility in Florida at the Welaka National Fish Hatchery. Team members helped train hatchery staff in snake care and protocols that resulted in significant population growth for the snakes. The partnership released 10 snakes into Alabama's Conecuh National Forest in 2018, and 23 are planned for release in 2019. This first release generated tremendous excitement among the public, researchers and partners, and returned this species back to the longleaf forest. >

Over the last decade, **David Withers** of the Tennessee Department of Environment and Conservation has helped move the conservation needle for a number of invertebrate species in Tennessee. His monitoring and restoration efforts provided key information for the status assessments for the Nashville crayfish, as well as a major land purchase protecting the only known population of the painted snake coiled forest snail. Withers has overseen work to control invasive, exotic plants and restore habitat at Sequatchie Cave State Natural Area in Marion County to benefit the Sequatchie caddisfly and endangered royal snail. In lieu of using chemicals, Withers used a herd of eight sheep to help control invasive kudzu—the first time livestock was used for invasive plant control within Tennessee state natural areas.

Northeast Region

The Service's **Robert Anderson** has worked to conserve a variety of species in the Service's Northeast Region. As a widely recognized national expert on freshwater mussels, Robert has shared his knowledge to help others more effectively conserve these imperiled species. He has also worked with key state and federal partners to simplify ESA regulatory processes and improve conservation of the bog turtle. For example, he is leading efforts to complete a programmatic formal consultation for transportation projects that will support statewide bog turtle conservation efforts and streamline future consultation processes. Additionally, he

has worked with a variety of partners to acquire and manage habitat to benefit the Indiana bat. He also helped finalize the approval of the region's first endangered species conservation bank to protect important habitat for the species and provide project proponents with a mitigation option.

Janet Clayton of the West Virginia Division of Natural Resources has led the recovery of endangered freshwater mussels. Her efforts with the pink mucket, fanshell, clubshell, northern riffleshell, purple cat's paw, rayed bean and spectaclecase mussels have increased populations throughout West Virginia and elsewhere within their range. She has worked to systematically survey streams throughout West Virginia to locate new populations of these listed species, established programs to regularly monitor their status and developed standardized protocols to assist others in conducting accurate and reliable surveys. She then worked to expand and apply these techniques to other states and regions resulting in significant improvements to the status of freshwater mussels throughout the Ohio River basin.

Mountain-Prairie Region

The Service's **Randy Matchett** was recognized for his leadership in recovery of the endangered black-footed ferret. Through his stewardship of the UL Bend National Wildlife Refuge black-footed ferret reintroduction site, he has helped other conservation

partners establish successful reintroduction sites in seven other states, a monumental milestone. One of the most significant achievements is the development of an automated manufacturing and distribution process for sylvatic plague vaccine and systemic flea control baits. By working with nongovernmental organizations and nontraditional partners, his innovations have enabled wildlife managers to accomplish sylvatic plague management on a large scale, which helps to address the most significant challenge to black-footed ferret recovery.

Paul Marinari's time as the lead at the National Black-footed Ferret Conservation Center and his continuing effort as the longest-standing studbook keeper for the species have been instrumental in making black-footed ferret recovery one of the most successful and inspiring conservation stories in North America. Significant achievements under his leadership include the expansion of the captive breeding program into a large, stable, genetically viable population from the last remaining individuals; establishment of new, successful reintroduction sites; and advances in the science of husbandry, preconditioning and reproduction. The program has prospered and thousands of kits have been successfully born, reared and released into the wild.

Alaska Region

The Service's **Nathan Graff's** leadership in managing and implementing Steller's and Spectacled Eider Breeding Ecology Field Program near Utqia'vik and contributions to the Eider Recovery Program have been vital to these species. Since 2014, he has strengthened partnerships with the Utqia'vik community by increasing public awareness, engaging in one-on-one conversations with local community members and involving local students in our field projects. The Service's relationship with the community of Utqia'vik has significantly improved, largely due to his efforts and understanding the community's concerns, improving cooperation and ultimately our collective success in conserving these species.

Since 2015, **Dr. Riley Wilson** of the Alaska Zoo has provided guidance and training to the Service's polar bear program on ways to improve handling of bears to minimize their stress and discomfort during capture operations. These improvements help ensure we continue to > be good stewards of not only an important arctic species, but one that is culturally significant to Alaska natives. His work as the veterinarian with the Alaska Zoo has had a meaningful impact on the Service's mission and the conservation of polar bears. His assistance in helping our biologists conduct research on captive bears at the Alaska Zoo has increased our knowledge of the species and improved our field research and capture techniques.

Pacific Southwest Region



Dan Blake, Evan Childress, Julie Day, Kirk Groves, Joel Ophoff, Josh Rasmussen, Laurie Sada and Mike Senn of the Service's Klamath Falls Fish and Wildlife Office—with support from Ron Barnes and Tracey Liskey of Gone Fishing, LLC—have made significant contributions to the recovery of the endangered shortnose and Lost River suckers. Staff implemented an adaptive recovery program and have worked to identify and address threats to sucker survival, such as water quality and predation. The team established a captive rearing program to help juvenile fish survive beyond their first two years, eventually maturing into a spawning adult population. The program resulted in 21,000 juvenile sucker larvae being collected, with 2,500 2-year old juveniles released back into Klamath Lake last year. Four additional rearing ponds constructed in 2018 are expected to be in production this summer. The expansions will likely double the rearing capacity from 8,000 to 16,000 fish in 2019.

The Santa Barbara Zoo has been instrumental in the recovery of endangered, threatened and at-risk species along California's central coast. More than 40 years of partnership has lifted the endangered California condor back from the brink of extinction. Zoo staff monitored nests, provided veterinary support, installed and operated nest camera technology, and engaged the public to build support for the species' recovery. Through a successful captive breeding and reintroduction program, the zoo has also helped island fox populations on San Miguel, Santa Rosa and Santa Cruz islands rebound to self-sustaining levels, and ultimately these three subspecies were removed from the endangered species list in 2016—marking the fastest recovery of any mammal under the ESA. Additionally, zoo staff have recently taken the lead in the rearing, rehabilitation, color banding, and releasing of abandoned and rescued western snowy plover eggs and chicks, contributing to the recovery of this tiny, yet resilient shorebird.

Honorees were **Erin Arnold, Julie Barnes, Rich Block, Carol Hunsperger, Aaron Marshall, David Meyer, Rachel Ritchason, Estelle Sandhaus and Nadya Seal Faith** of the Santa Barbara Zoo. □

Headquarters



The National Association of Government Communicators' 2019 Blue Pencil and Gold Screen Awards competition honored **Science Applications Headquarters** (SA HQ) with the top prize in Internal Communications for "Fighting the Persistence of Gender Bias," the HQ Women's History Month 2018 observance.

SA HQ's awareness and education campaign featured three events, a clothing drive for the DC chapter of Dress for Success, weekly emails to HQ staff, slideshows, posters and a "MORE" book/journal of content and actions that the team updated weekly to help break down bias barriers and encourage a more aware, responsible and diverse work culture.

NAGC's Blue Pencil and Gold Screen annual international awards program recognizes superior government communication products and those who produce them. The SA HQ team included Jesse Brent, Jill Cohen, Megan Cook, Jason Goldberg, Elsa Haubold, Kurt Johnson, Laura MacLean (seen accepting the Blue Pencil and Gold Screen Award), Seth Mott, Sonja Scott, Cecilia Todd and Anna-Marie York with assistance from Kayt Jonsson, Jesse Wild and Julia Bumbaca. □

Northeast Region



Wendi Weber (seen to left of fellow honoree Mary Leftridge Byrd, Federal Security Director in Georgia for the Transportation Security Administration), the Service's Northeast Regional Director, was among 15 winners of the inaugural Theodore Roosevelt Government Leadership Awards recognized in September at the Washington National Cathedral by the Government Executive Media Group.

More than 200 distinguished leaders were nominated for the awards earlier this year.

Weber was lauded for making significant investments in people at all organizational levels and creating a program to strengthen supervisory excellence, resulting in increased employee engagement and productivity. As a result, her 2018 Federal Employee Viewpoint Survey engagement scores topped 70 percent—among the highest in the federal government.

“Wendi’s commitment to supporting the people whose work she oversees stood out to our selection committee. She is clearly dedicated not only to the mission of the Fish and Wildlife Service, but to making her organization a great place to work,” says Tom Shoop, Government Executive editor-in-chief and chairman of the selection committee.

Weber has worked with supervisors to cultivate employee feedback to improve the workplace in the more than 130 offices she oversees. She also is a national leader in the agency’s effort to recruit and retain a diverse workforce. Last year, she hired 14 veterans, bringing the region’s veteran employment rate up to 28 percent of the total workforce. In her eight years as regional director, she also initiated a partnership with the Hispanic Access Foundation to employ Hispanic youth and a Career Development Internship Program, which won the Diversity Award from The Wildlife Society.

□

in memoriam

Pacific Region



Larry Reigel, a wildlife biologist and GIS specialist for the Oregon Fish and Wildlife Office, died on June 5

at the age of 67.

Larry worked for both the U.S. Bureau of Mines and the Bureau of Land Management in temporary assignments before securing a permanent position with the Service.

For more than 20 years, Larry managed the geospatial data and provided GIS support for the staff of the Oregon Fish and Wildlife Office and its four field stations. He was an integral part of the team and his work contributed to conservation accomplishments in Oregon and the greater Pacific Northwest.

Larry always came to work with a positive attitude and made sure staff had exactly what they needed in quick fashion. His maps were essential to many *Federal Register* notices, listing and delisting decisions, critical habitat designations, presentations and public meetings.

The Oregon Fish and Wildlife Office will remember Larry for the hard work and dedication he brought forth every day in his time with the Service and a memorial brick will be placed at NCTC’s Fallen Comrades Memorial plaza in his memory. □

Mountain-Prairie Region



Partners for Fish and Wildlife Program biologist **Sue McNeal** died July 22. She was 60. She began her career

as a wildlife biologist managing national wildlife refuges, including Minnesota Valley National Wildlife Refuge, Crab Orchard National Wildlife Refuge in Illinois and Port Louisa National Wildlife Refuge in Iowa and Red Rock Lakes National Wildlife Refuge in Montana. She started working for the Partners for Fish and Wildlife Program in 1996. Sue also attended federal law enforcement training.

She was awarded the Weed Fighter of the Year for 2008 and 2013 by the Montana Weed Control Association. She also received an award for Dedication and Service to the Mountain-Prairie Region Partners for Fish and Wildlife Program as well as an award for conservation efforts within the Crown of the Continent.

Sue had a deep love for her dogs, Molly, Prairie and Sara, and her horses Rex, Scout, Aspen and Mae. She enjoyed riding in the mountains, hiking, fishing, hunting with her dogs, cross country skiing, art and music. She was the treasurer for the Front Range Art Association, youth teacher at Choteau Baptist Church and founding member of the Rocky Mountain Front Weed Roundtable to help control noxious weeds in Montana. □

Southeast Region



Chris Nehrling, who worked briefly for the Service in 1974–’75 at the Raleigh North Carolina

River Basins Office and Chattahoochee Forest National Fish Hatchery in Georgia, died October 16. Husband Rick Nehrling, who retired from the Service in 2008 after 38 years, calls her “a trailblazer for women, for the National Fish Hatchery System and for the Fisheries Program.” She was, he says, “the first woman in the entire nation to be assigned/ transferred into a permanent fishery biologist position and she was the first woman to successfully complete all of her assigned duties and tasks during her probationary period at the hatchery.” She resigned from the Service to go after her passion—teaching. □

parting shot

What a Duck Sees

Journalist Corey Robinson took this photo of Neil Bien's ranch in the Prairie Pothole Region of South Dakota. The ranch currently encompasses 8,200 acres, about three-quarters of which are in grass, primarily native prairie. In addition, the ranch is dotted with hundreds of pothole wetlands some of which have been restored but most are natural and in Neil's words are "pure as God made them." The Bien family has practiced conservation for more than a century.



COREY ROBINSON/PIONEER STUDIOS

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