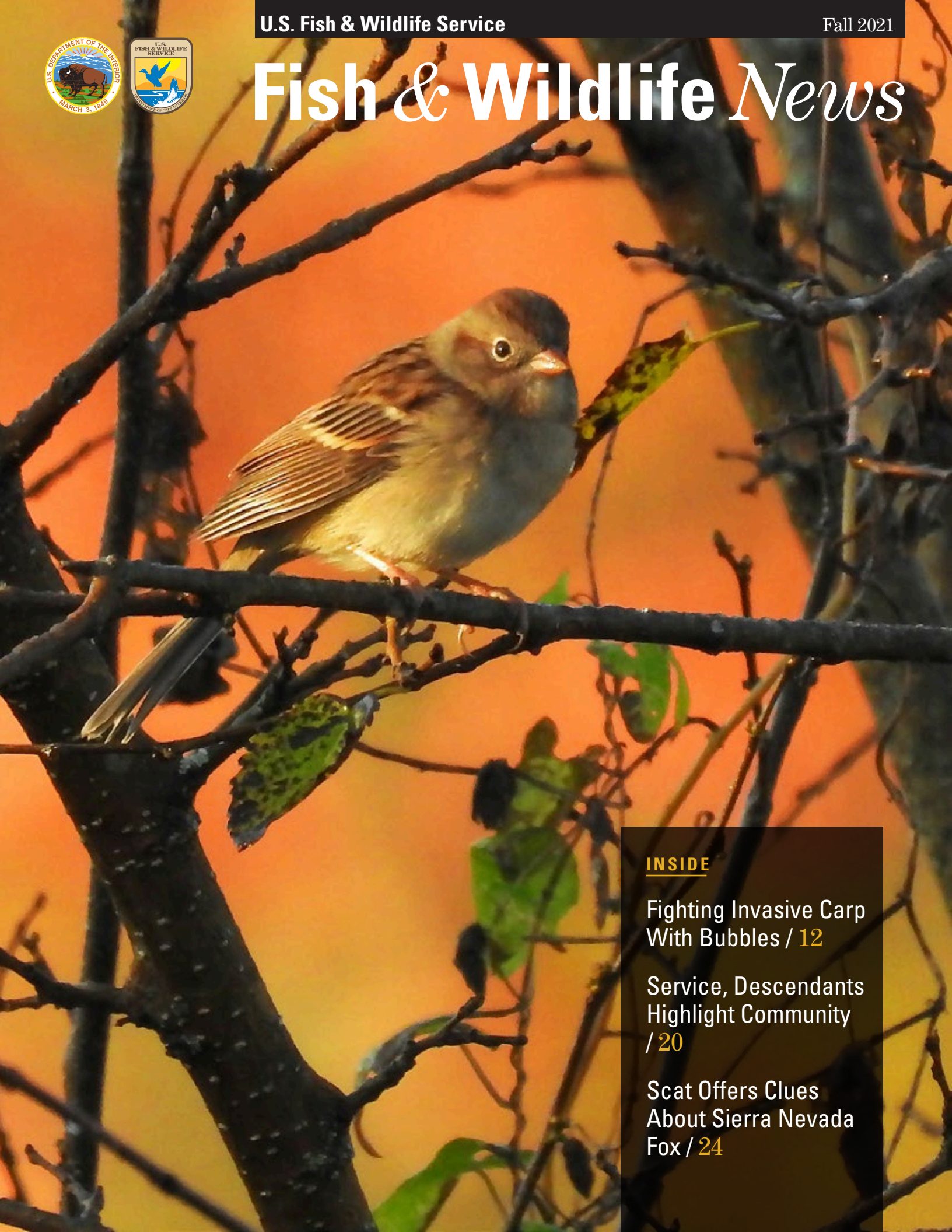




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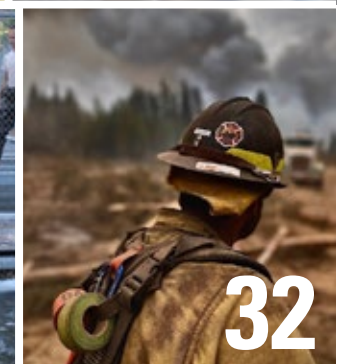
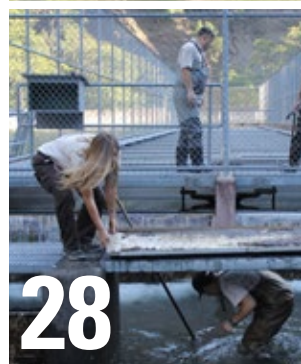
(CREDIT: MICHAEL
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Another Milestone at Palmyra Atoll — 1 Million Coconut Palms Removed



Located in the Northern Line Islands, approximately 1,000 miles south of Honolulu, Palmyra Atoll—a national wildlife refuge, Nature Conservancy Preserve, and Mission Blue Hope Spot—is an important center of wildlife and species abundance in the Central Pacific region.

Before Palmyra Atoll's establishment as a refuge, a number of invasive species were introduced to the atoll. These introductions had negative impacts on the native ecosystems affecting many of its species.

The refuge was established in 2001 to protect and preserve the natural character of the resources associated with the lands and waters of Palmyra Atoll. It is the only moist tropical atoll ecosystem in the Central Pacific that is entirely protected under a federal conservation mandate. It is also the only atoll ecosystem in this region that

is not experiencing wholesale exploitation of both marine and terrestrial natural resources by burgeoning human populations.

In 2011, Palmyra Atoll celebrated a tremendous conservation success with the eradication of rats from the atoll—a partnership effort that started back in 2004. Successful removal of invasive black rats secured habitat for native seabirds, crabs, and plant populations.

Almost immediately following the successful removal of rats, invasive coconut palms sprang up across the atoll. Without rats to eat them, rapidly growing coconut palms formed dense stands, outcompeting native trees. By 2016, an estimated 29,000 adult palms and 2 million seedlings covered the atoll's islands.

To reverse the palm's dominance and restore Palmyra's native rainforest, the three conser-

Four devoted coconut control team members (affectionately called the CoCo crew) celebrate after surpassing the clearing of 1 million coconut palm trees at Palmyra Atoll National Wildlife Refuge. (CREDIT: LAUREN PEDERSON/USFWS)

vation partners initiated the Palmyra Atoll Rainforest and Reef Resilience Project in April 2019.

In areas where rapidly growing coconut palms have outcompeted native tree species, dense stands have formed resulting in lower diversity of birds, land crabs, and even insect species, compared to the native rainforest.

The relentless conservation efforts at Palmyra Atoll continue to shine with a new milestone—surpassing 1 million palms removed. This feat is paving the way for natural recovery and

planting of native vegetation.

Since 2019, 25 full-time volunteers have dedicated months of their lives to living at Palmyra investing over 4,700 person hours of coconut control work, making significant progress even amid the pandemic. Much remains to be done before declaring full coconut control success, but this level of progress is inspiring.

A positive sign took place in late 2020, when a native *Pisonia grandis*, a naturally dominant tree species, dispersed seeds across the atoll in numbers not seen in almost a decade. To supplement the natural recovery, field teams are hand-planting native tree species where coconut palms have been removed.

Vegetation recovery is a critical project goal because branching native trees provide more suitable habitat for native seabirds. Roosting in the native trees, seabirds' nutrient-rich guano seeps into the surrounding land and marine environment, feeding phytoplankton, which in turn nourish fish and corals.

Palmyra Atoll serves as a living laboratory for conservation scientists to better understand the cascading benefits of protecting coastal ecosystem, and to study climate resilience of atolls. This rainforest to reef connection is critical since insights gained by studying Palmyra Atoll's rainforest and reef will have far-reaching benefits for similar island ecosystems around the world. □

IVAN VICENTE, External Affairs, Pacific Islands Region

Observations of Seasonal Activity Benefit Refuge Staff and Volunteers Alike

Neal Smith National Wildlife Refuge, 20 miles east of Des Moines, Iowa, seeks to restore the ecosystems that once covered the state—tallgrass prairie, oak savanna, and sedge meadow. Refuge staff also educates the public about these diverse native ecosystems and helps local landowners improve habitat for wildlife.

The native species that make up these diverse ecosystems exist in a delicate synchrony; they rely on each other for survival. To better understand the seasonal events of priority species, staff at Neal Smith began documenting phenology, the study of the timing of life cycle events of plants and animals, such as the timing of arrival of birds to summer breeding grounds and the timing of open flowers on nectar plants.

Our Inventory and Monitoring Initiative has funded the USA National Phenology Network since 2014 to support national wildlife refuges in implementing standardized and scientifically rigorous phenology monitoring programs to inform management practices as well as engage volunteers and visitors in data collection.

In 2017, Neal Smith Wildlife Biologist Karen Viste-Sparkman gathered interested volunteers to create a monitoring site within Nature’s Notebook, the network’s plant and animal phenology program. They began to track when they saw monarch butterflies, including their eggs and caterpillars. They also



Neal Smith National Wildlife Refuge volunteer Steve Haase checks a common milkweed for monarch eggs and caterpillars. (CREDIT: USFWS)

tracked seasonal activities of the plant species on which monarchs depend such as butterfly milkweed and tall blazing star.

“Monarchs are charismatic and people get excited about them,” Viste-Sparkman says. “They are also a species that has experienced dramatic declines, so finding out how the refuge is doing at providing habitat for them is important to both the staff and volunteers at the refuge.”

Monarch butterflies typically visit the refuge from May to October. The refuge has dozens of nectar plant species including milkweeds, which are the only plant on which monarchs lay their eggs. Observers recorded that in 2019, butterfly milkweed had leaves starting in mid-May, and monarch butterflies started arriving shortly after that. Nectar was available from open flowers on butterfly milkweed starting in

June and tall blazing star starting in July. Monarch butterflies were not observed after mid-October, which was also the end of milkweed leaves and flowers.

Viste-Sparkman was glad to see the overlap between the nectar resources and the appearance of the migrating monarchs. “This area was rowcrops 25 years ago, and it is encouraging to see that our restoration efforts, including planting native seeds from local sources, have paid off for monarch butterflies. The life cycles of the plants and monarchs are in synchrony.”

In addition to gaining a better understanding of whether monarch butterflies have the resources they need when they need them, the refuge benefits from dedicated volunteers who come back to the refuge to record the data year after year.

Volunteer Steve Haase, who has been a phenology observer for multiple years, says: “After I had begun to help with the Nature’s Notebook program, I became aware that by doing the observations and recording the information we could also influence the future, not just on a local level but nationally as well. ... If a pollinator is making an appearance earlier, then we could try to plant some earlier flowering plants, or if the pollinator is hanging around later and later, then we could focus on some later blooming plants.”

Even after just a few years of data collection, the Neal Smith team is already learning important information about the restoration efforts, as well as the timing of when native plants flower. All this will help to inform future management activities at the refuge. □

KAREN VISTE-SPARKMAN, Neal Smith National Wildlife Refuge, Great Lakes Region, and ERIN POSTHUMUS, Liaison to the USFWS, USA National Phenology Network

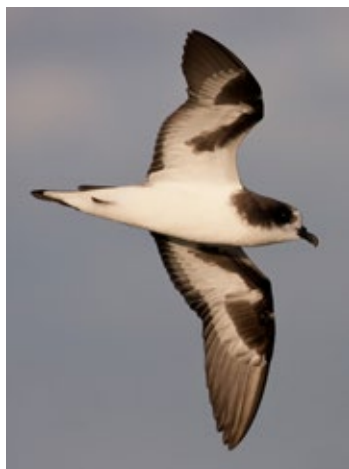


LEARN MORE

Phenology monitoring programs can take many forms to meet both management and outreach goals. Interested refuge staff is invited to learn more about how refuges across the country use phenology to better understand changes in priority species. [Contact Erin Posthumus for more information.](#)

[FWS phenology monitoring programs](#)

Nunulu Chicks Fledge at James Campbell National Wildlife Refuge



A nunulu (Bonin petrel) flies above James Campbell National Wildlife Refuge. (CREDIT: PACIFIC RIM CONSERVATION)

The first wild nunulu (Bonin petrels) have successfully fledged from nests at James Campbell National Wildlife Refuge in Hawaii. They are part of a larger translocation success story for multiple seabird species that also includes moli and ka'upu (Laysan and black-footed albatrosses), and 'akihihe'ehi'ale (Tristram's storm petrels).

The Service and Pacific Rim Conservation, in partnership with the U.S. Navy and Papahānaumokuākea Marine National Monument and others, have translocated more than 500 seabird chicks from the monument and Pacific Rim Missile Facility on Kauai to the refuge since 2015.

A safe site was created by removing invasive kiawe and installing a predator-proof fence around 16 acres of coastal dunes. It provides a climate-resilient nesting habitat for species threatened by sea level rise on low-lying islands. In addition to the return of all four species as wild adults, two additional seabirds, koa'e 'ula (red-tailed tropicbirds) and 'ua'u kani (wedge-tailed shearwaters), have begun nesting at the refuge.

"Sea level rise and surge from storms and tsunamis put these nests at risk of flooding and chicks drowning," says Lindsay Young, Pacific Rim Conservation executive director. "By translocating these seabird chicks to the high island of Oahu, we are not only saving the chicks on the perimeter of the low islands from drowning, but we are founding a new colony to create a more resilient population."

Says Laura Beauregard, acting refuge manager: "James Campbell National Wildlife Refuge is home to native and endangered species, some of the last freshwater wetlands in Hawaii, and now, the newest members of our seabird colony. This partnership demonstrates how working together can make a difference for the future of wildlife." □

Saving California's Only Freshwater Turtle

Food, water, and shelter for California's only freshwater turtle are becoming scarcer across the western United States. Wildlife experts say that worsening drought conditions, habitat loss and fragmentation, and invasive species could threaten the long-term survival of western pond turtles in the wild.

"Turtles, in general, are among the most imperiled vertebrates in the world," says Cat Darst, assistant field supervisor with the Service in Ventura, California.

That's why federal, state, and private partners across four western states and Mexico have developed a range-wide management strategy to help guide efforts to enhance, protect, and restore habitat vital for western pond turtles.

"Western pond turtles are a charismatic species that people get excited about," says Jessie Bushell, director of conservation at the San Francisco Zoo. "Kids love turtles. Adults love turtles."

Western pond turtles are made up of two distinct species, the southwestern pond turtle and northwestern pond turtle. They range from Puget Sound, Washington, in the north to northwestern Baja California, Mexico, in the south. Disjunct populations reside in far western Nevada.

The strategy was developed by the Western Pond Turtle Rangewide Conservation Coalition, a comprehensive team of stakeholders with a shared vision of ensuring the future of western pond turtles in the wild.



A juvenile southwestern pond turtle documented by biologists in Los Padres National Forest. Western (CREDIT: USFWS)

The coalition, part of the Association of Zoos and Aquariums' Saving Animals from Extinction initiative, includes representatives from the Service, other federal and state agencies, several zoos, and a nongovernmental organization from Baja California.

"The strategy is a blueprint for agencies and organizations across the West Coast to help western pond turtles when and where they need it the most," Darst says.

Strategy recommendations include coordinated surveys, identification of priority conservation areas, threats management, outreach and education, and targeted research for recovery. »

Continued from previous page.

“People really care about turtles, and that bodes well for the long-term outlook,” Darst says. “I’m optimistic and amazed by the level of interest and collaboration, but I am concerned about the increasing level of threats.”

According to Darst, the coalition’s shared vision requires on-the-ground commitment and action by landowners and land managers across the landscape.

“There are areas that will need more protections, more intervention, and more monitoring to be sure that they don’t disappear,” Bushell says.

“With such a long-lived species,” she says, “we still have time to help keep this turtle in much of its native range.” Although maximum lifespan is unknown, some western pond turtles live to be over 55 years old in the wild. Older adults, especially females, are critical for population stability.

In December 2020, the Service and Department of Defense formalized recommended best management practices for



Mature female turtles lay a clutch of eggs on land, leaving them to hatch and overwinter in the nest. The hatchlings emerge the following spring and find their way to water. (CREDIT: JOE PIGNATELLI/WASHINGTON DEPARTMENT OF FISH AND WILDLIFE)

western pond turtles on military installations that own and manage thousands of acres of land across the West Coast.

These practices include identifying and protecting nests during the breeding season; adding basking sites such as trees or logs; removing barriers such as fencing between ponds, streams, and nesting habitats to allow for migration; and removing invasive predators such as bullfrogs, snapping turtles, and non-native game fish.

“While the [best management practices] were developed for military installations, they can be used by landowners and land managers across the pond turtle’s range,” wildlife biologist Robert McMorran says.

Besides the other threats, the turtle pet trade presents another hurdle. Invasive red-eared sliders, native to the eastern United States, compete with native turtles for resources and habitat. McMorran explains that red-eared sliders are often

bought as pets, but when they are no longer wanted, “pet owners often release them into nearby aquatic habitats where potential for introducing disease and increased competition may be detrimental to our native species, such as the pond turtle.”

In 2012, the Center for Biological Diversity petitioned the Service to protect the western pond turtle under the Endangered Species Act. In 2015, the Service determined protection may be warranted and is currently reviewing the species’ status based on the best available science. The status review is on target for completion in 2023.

“Turtles and other native aquatic species are indicators of healthy ecosystems and clean water,” Darst says. “When we start losing our native species, it’s an indication that our water systems are impaired, and that’s not good for people either.”

According to Bushell, the combined commitment and actions of the Western Pond Turtle Rangeland Conservation Coalition can get people on the ground and projects moving forward, especially in critical areas. “And I don’t think we are too late—we just need to keep moving forward,” she says. □

ASHLEY MCCONNELL, External Affairs, California-Great Basin Region



Western pond turtles use basking sites, like a downed tree or rock, to regulate their body temperature. Landowners can help western pond turtles by adding basking sites to their streams or ponds. (Credit: USFWS)

Controversy to Conservation: Recovered Snail Darter Proposed for Delisting

There was a time when the snail darter was the biggest little fish in the United States. In the 1970s, the tiny, endangered Tennessee fish was in the news regularly, the subject of a Supreme Court ruling, an act of Congress, and a giant proposed dam that threatened it with extinction.

Inspired by its Endangered Species Act (ESA) protections, over the last 40 years, conservation partners went to

“The Endangered Species Act was passed to ensure all wildlife, even species that some might view as insignificant, deserve to be preserved for future generations,” says Martha Williams, Principal Deputy Director of the Service. “It is very fitting that this fish, which was once a source of controversy, became the subject of cooperation and partnerships to save it. We would like to thank the many partners, including



work protecting and restoring snail darters, conducting surveys that located additional populations, and reintroducing the fish to rivers it once called home. Due to these and other efforts and collaborations, our scientific status review has found the snail darter no longer faces the threat of extinction, and we are proposing it for delisting.

Snail darters grow up to 3½ inches long and eat mostly snails. (CREDIT: USFWS)

the Tennessee Valley Authority, which made this possible.”

Snail darters grow up to 3½ inches long and eat mostly snails—hence their name.

The species first made news in 1975 when the Service protected it as endangered due to the threat posed by a proposed impoundment for the Tennessee Valley Authority’s (TVA) Tellico Dam, near Lenoir City, Tennessee. At that time, it was the only known location for the fish. Conservationists sued to stop the dam from being completed due to its threat to the fish. The snail darter was the first ESA case to reach the Supreme Court, and in 1978 the court ruled in favor of protections for the fish.

Following the Supreme Court finding, Congress passed an amendment exempting the Tellico Dam from ESA consultations on behalf of the fish so that it could be completed. President Carter signed the bill into law in 1979.

Meanwhile, snail darters were collected from the Little Tennessee River, the river threatened by the dam, and transplanted to the Hiwassee and Holston rivers in Tennessee and then to other locations within the fish’s native range.

TVA also launched the Reservoir Release Improvement Program, which increased dissolved oxygen concentrations in more than 300 miles of river downstream of TVA dams and improved water flows. In addition, TVA implemented several other techniques for increasing dissolved oxygen in its reservoirs, including turbine venting, compressors, and weir dams. These programs increased water quality, allowing snail darters to recolonize the Tennessee River. The improvements helped

not just the fish but countless other wildlife that rely on clean, abundant water resources. Environmental reviews conducted by TVA also helped minimize impacts to the snail darter and its habitats.

In 2015, TVA biologists collected snail darters in new locations more than 100 river miles downstream of previously known occurrences. This initiated a focused sampling effort that extended the length of the Tennessee River. TVA biologists have since documented snail darters in portions of eight of the nine Tennessee River reservoirs, a reach spanning 442 river miles.

“Environmental stewardship is an important part of TVA’s mission,” says Allen Clare, TVA vice president of river & resources stewardship. “We are committed to helping create healthy, oxygen-rich waters in which fish and other aquatic life can thrive, particularly in those areas below TVA’s dams. As part of our mission, we’ve contributed millions of dollars over the years to protect and improve water quality and habitat in the valley, and these efforts were a key factor in improving the destiny of the snail darter.”

The snail darter was downlisted from endangered to threatened in 1984 due to successful relocations and the discovery of new populations. It can now be found in Alabama, Georgia, Mississippi and Tennessee. □

Trafficked Alligator Snapping Turtles Returned to East Texas

This summer, a team of biologists, law enforcement officers and natural resource experts transported 30 alligator snapping turtles from Natchitoches National Fish Hatchery in Louisiana to release sites at several waterways in East Texas. Though their trip was only a few hours long, it marked the final leg of a years-long journey from wildlife poachers to law enforcement personnel to hatchery staff and finally to natural resource professionals who set the turtles free.

The story began in 2009, when Texas game wardens and Service law enforcement personnel caught wind of poachers who were capturing and transporting truckloads of alligator snapping turtles from Texas to Louisiana.

Alligator snapping turtles are among the largest freshwater turtles in the world and the largest in North America. They can live 50 to 100 years and average out at 26 inches and up to 175 pounds.

Alligator snapping turtles have no natural predators. A decline in their numbers has been attributed to hunting for their shells and meat, as well as for the exotic animal trade.

Harvest of alligator snapping turtles is illegal in Texas. In Louisiana, the sale of the species breaks the law. Moreover, the transportation of alligator snapping turtles and their meat across state lines violates the

U.S. Lacey Act, a powerful federal law that prohibits the trafficking of wildlife taken, possessed, or transported in violation of Tribal, state, federal, and international laws.

But despite these laws, during the years-long Operation Snap, federal and state law enforcement officers found that at least several hundred alligator snapping turtles were being pulled from Texas waterways every year.

In 2016, Service special agents seized dozens of illegally trafficked alligator snapping turtles and their meat, and in 2017, two poachers received prison sentences after pleading guilty of conspiring to violate the Lacey Act by trafficking alligator snapping turtles.

“The sustainability of fish, wildlife, and plants, is a priority for the U.S. Fish and Wildlife Service, Office of Law Enforcement,” says Special Agent in Charge Phillip Land in our Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions. “This is a full-circle conservation success. The turtles will continue to live in the wild for generations to come, they and their offspring will provide valuable scientific research, a trafficking ring was dismantled, and those who tried to illegally make a profit went to prison. This success is as result of the commitment from professional partnerships and cooperative working relationships with our Service programs, federal, state, and local partners, non-government organizations, and the general public.”



Though this part of the story ended with good news—disruption of a poaching network—one question remained. What should be done with the turtles seized as part of the operation?

Initially, the turtles were transported to Natchitoches Hatchery, where staff planned to use them in a breeding program to help restock the species in its native waterways. Unfortunately,

(Above) This is one of the alligator snapping turtles held at Natchitoches National Fish Hatchery after being seized in an illegal wildlife trafficking case. (Below) An alligator snapping turtle is returned to its natural habitat in East Texas. (CREDIT: AUBRY BUZEK/USFWS)

Continued from previous page.

the turtles proved minimally successful at reproducing in the hatchery setting, and they started to outgrow their pond.

In late 2020, the Service, the Texas Parks and Wildlife Department (TPWD), and many others hatched a plan to get them back home.

“We have a unique opportunity to not only return these turtles to their range in Texas from which they were taken, but also to learn more about their habits and their biology so that we can more effectively conserve Texas populations to ensure » their viability for generations to come,” says Meredith Longoria, deputy director of the TPWD Wildlife Division.

Returning poached wildlife back to their native habitat is uncommon. Without knowing exactly where they are from or what diseases they may have encountered along the way, doing so could put other native wildlife in harm’s way. It is even more difficult when the habitat is across state lines because of state and federal requirements and restrictions on the transport of animals.

The turtle relocation team handled these concerns.

In advance of the release date, biologists coordinated genetic analysis on the alligator snapping turtles to determine their specific river basin of origin. Once identified, the participating agencies chose release locations where the turtles would have the best chance to survive.

Before leaving the hatchery, veterinary staff from the Houston Zoo evaluated all the turtles to ensure they were fit for the journey and to protect against diseases that could be spread to other native wildlife.

Finally, researchers from Stephen F. Austin University fitted the turtles with tags and radio telemetry equipment. A year-long study funded by the Sabine River Authority will help researchers learn about the survivability and movements of the turtles after reintroduction.

Once the trucks transporting the turtles arrived at the protected release locations in East Texas, the turtles embarked on one final ride in an all-terrain vehicle to get to their new homes. After quick removal from their burlap sacks, staff carefully walked them to the water’s edge, where they quickly disappeared into the murky water.

For the staff who had been with them from the beginning, it was a bittersweet moment.

“We put a lot of time and effort into them, and just like anything else, once you spend some time with them, there’ll be a little bit of sadness,” says Brett Hortman, hatchery manager at Natchitoches. “But it’s definitely the best for these turtles. We know that, so it makes us feel good that we’re getting them back in the wild.” □

AUBRY BUZEK, External Affairs, Arkansas-Rio Grande-Texas Gulf and Lower Colorado Basin Regions

Virginia Man Sentenced for Selling Elephant and Whale Ivory Online

Between November 2018 and February 2019, Gary Cooper of Virginia sold four pieces of carved ivory to a customer in New York. The transactions took place more than two years after the United States imposed a near-total ban on the commercial trade in African elephant ivory, implemented in response to unprecedented levels of poaching that were shrinking populations of the largest terrestrial animals on earth.

When the customer mentioned the illegality of the trade, Cooper said he would “be discreet” when shipping the items.

The customer was discreet, too. When he received the items—a carved ivory apple, a Buddha statue, a book, and a village scene—he surreptitiously sent them to the Service’s Forensics

Laboratory. Scientists there confirmed what Cooper himself insisted when the customer questioned the authenticity of the products: They were all made of genuine elephant ivory.

That would turn out to be bad for Cooper. His customer was a special agent for the Service.

In August, he was sentenced to 12 months of supervised probation for operating online storefronts selling elephant and whale ivory in violation of the federal Endangered Species Act (ESA). He also forfeited 136 pieces of ivory, which he had offered for sale, seized by special agents executing a search warrant at his home. »

In 2016, the U.S. imposed a near-total ban on the commercial trade in African elephant ivory. (CREDIT: JOE MILMOE/USFWS)





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Sperm whale, Asian elephant, and African elephant—common sources of illegal ivory—all have been protected under the ESA since the 1970s. In 2016, the United States implemented the near-total ban on the trade in African elephant ivory.

Cooper was aware of the laws, but he was also aware of the “antiques exception,” which permits the sale of items more than 100 years old that meet certain criteria. That’s why he told his customers he was selling pieces on behalf of elderly clients who were clearing out their estates.

“He was a schemester, flipping items he said were family heirlooms,” says Special Agent Stuart Curtin, who led the investigation. “It shows that you never know who you are dealing with.”

With the conviction, Curtin exposed red flags that consumers should look out for, such as paperwork. Specifically, a lack thereof.

In email conversations about the merchandise, Cooper told Curtin that many of the pieces had been brought to the United States decades earlier, and although the owners had them appraised, they no longer had most of the paperwork.

He said other items were brought into the United States legally without documentation for centuries by tourists and military personnel, “so that’s just the situation when buying 90% of these antique ivories.”

Another red flag was the quantity of items Cooper posted. “If you can’t find these kinds of items on the websites for legitimate auction houses, and someone is advertising tens of thousands of dollars worth of product, something isn’t right,” Curtin says. “If it seems too good to be true, it probably is.”

In addition to selling ivory to a special agent in New York, Cooper sold ivory to a special agent in Maryland—shipping seven pieces out of Virginia over the course of a little more than

Gary Cooper forfeited 136 pieces of ivory, which he had offered for sale, seized by special agents executing a search warrant at his home.

(CREDIT: USFWS)

two years, and offering for sale at least 50 pieces with a total market value between \$40,000 and \$95,000.

Investigators from the Virginia Division of Wildlife Resources identified the initial red flag. They came across an ad Cooper had placed online selling two tusks and forwarded it to the Service. What caught their attention was where the ad was posted—on a classifieds website in New York City, where the demand for ivory is higher.

The sale and shipment of ivory across state lines is prohibited by the ESA, and by the Lacey Act, with a few exceptions that require a permit from the Service.

“The state investigators could have just dealt with this guy on their own, but they recognized

the big picture,” Curtin says. “We can’t do our job without information. In this case it came from the state, but the public plays a huge role, too.”

Anyone can report a wildlife crime either by email (fws_tips@fws.gov) or phone (1-844-397-8477). The Service is authorized to pay rewards for information or assistance that leads to an arrest, a criminal conviction, civil penalty assessment, or forfeiture of seized property.

People can also help by being more than just cautious consumers, but conscientious consumers. Whether it’s an apple or a village scene, intricate carvings mask the reality that a piece of ivory represents a dead elephant or whale. Even ivory that looks old may be from recently poached animals.

Is the risk worth the price wildlife pay? □

BRIDGET MACDONALD, External Affairs, North Atlantic-Appalachian Region

Spring is Coming

Over the summer, we profiled Carl Millegan, Deputy Chief of Refuges in the Great Lakes Region, about his [work for and love of the outdoors](#). He shared that the American robin is his favorite bird species. “Many people might see the robin as a rather plain and unremarkable bird, but I love to hear it sing on cool spring evenings. Its song brings a sense of renewal to my soul. I get a sense of excitement and joy to hear the first robin of the spring.”

(CREDIT: TOM KOERNER/USFWS)



Building Community, One Day at a Time in Oregon

Tualatin River National Wildlife Refuge, in the Portland, Oregon, metro area, held a special community work day in September for roughly 40 volunteers from the Oregon Chinese Coalition.

Appropriately masked and following COVID-19 precautions, the Oregon Chinese Coalition members removed invasive plants, learned about wildlife conservation, and developed a relationship with public lands. The community work day was part of the Service's efforts to reach a diverse, urban audience.

"We were honored to have the Oregon Chinese Coalition at the refuge," says Eva Kristofik, acting project leader at Tualatin River National Wildlife Refuge Complex. "We're always looking for ways to reach new audiences as a part of the administration's priority of advancing racial equity by providing wildlife-related education and recreation opportunities to underserved communities. This is just the first step in developing a long-term relationship with the local Chinese community."

The day was the culmination of effort by the Oregon Chinese Coalition, the Service's Office of Law Enforcement, the refuge, and the Friends of Tualatin River NWR. Once plans were in place, the Oregon Chinese Coalition notified members of the community service opportunity, and the limited spots quickly filled up, with a number of people on the waiting list.



"When we formed five years ago, we had a wish to give back to the community," says Zhunquin Wang, one of the directors of the Oregon Chinese Coalition. "We have been doing quite a few service projects, and this is just one of them. Of course, younger generations like to do service projects in nature. Our organization uses things like this to inspire the willingness to give back to the communities, and this wonderful refuge is part of our community."

Paul Montuori, special agent with the Service's Office of Law Enforcement, connected the Oregon Chinese Coalition with the refuge.

"One of our goals is to promote a greater understanding of different ways to support wildlife conservation and highlight how we can come together in support of our public lands," Montuori says. "I'm glad we were able to connect the Oregon Chinese Coalition with the Friends group and refuge so they could put together this field day. My

family and I enjoyed getting to know the Oregon Chinese Coalition members and working side-by-side with them to remove invasive species."

The volunteers broke into small groups while at the refuge, rotating between three field opportunities. Members of the Friends took some on a tour to learn about wildlife, conservation, and opportunities at the refuge, while the two other groups worked with staff to remove invasive plants. One team cut out blackberry bushes around some trails, while the other team pulled velvetleaf and cocklebur from a dry wetland.

Wang says that many of the Oregon Chinese Coalition members are the first generation to live in the United States, which highlights the importance to introduce them to opportunities on public lands.

"Some of the [volunteers] might not have been here before and this is a wonderful opportunity to introduce them," Wang says.

A volunteer from the Oregon Chinese Coalition removes velvetleaf from a dry wetland at Tualatin River National Wildlife Refuge. (Credit: Brent Lawrence/USFWS)

"They might come back in the future. Most of the parents here are the first generation in the United States, and they come here to have families and this is their home. They want to help build a better hometown and pass that along to their children. We got an overwhelming response for this service project. We had a long waiting list, so we may be able to do more service projects here based on that interest."

It was such a success, the refuge and Oregon Chinese Coalition are now collaborating on a conservation-related art contest, as well as future community work days. □

BRENT LAWRENCE, External Affairs, Columbia-Pacific Northwest Region

The Diversity of our Climate Change Work at Today's Service

To speak of climate change at today's Service is to increasingly speak of a growing number of species and ecosystems that will be impacted. Most of these stories do not involve headline-grabbing, highly charismatic species such as polar bears and wolverines but humble plants, insects, and species that support entire ecosystems and food chains. In working to understand and meet these challenges, our efforts extend well beyond science and policy solutions. Key to success will be effective communications and outreach that inform, engage, and inspire to help see these efforts through.

The ways climate change is already impacting our environment include increased temperatures, hotter and drier conditions, altered growing seasons, increased wildfire and drought frequency and intensity, and greater frequency of extreme weather events. These effects are already putting countless pollinators and insects at greater risk, causing them to mistime the availability of their food sources, fragmenting and destroying their habitat, and driving the expansion of harmful invasive plants and insects. They are also greatly exacerbating existing, non-climate related threats, such as loss of habitat, use of pesticides and herbicides, invasive species, and disease.

Pollinators and insects recently protected under the Endangered Species Act (ESA) due in part to climate change include the rusty-patched bumble bee and Oregon silverspot butterfly. A 2020 decision on the monarch butterfly found that the species

warrants protection but higher-priority listing actions preclude it. This means the monarch is a candidate for protection under the ESA, and its status will be reviewed annually.

Across America's highlands, insects, birds, and mammals uniquely adapted to mountain life are declining amid the effects of warming temperatures. With rapidly melting of glaciers, reduced snowpack, and altered snow and precipitation patterns are impacting species such as lednian stoneflies. Protected under the ESA in 2019, their glacial habitat is literally melting out from underneath them. The Mount Rainier ptarmigan was proposed for protection under the ESA 2021 due to declining snowpack and other effects of climate change. Other species impacted by climate change include the whitebark pine and numerous species of caribou

recently proposed for protection under the ESA.

In America's streams and rivers, cold-water fish, such as sockeye salmon, brook trout, bull trout, and walleye, are increasingly threatened by lower water flows, higher water temperatures, drought, and loss of habitat. Given the importance of water for people and agriculture in drought-stricken places, additional pressure on stream and river ecosystems can be anticipated.

Climate change is also significantly impacting our wetlands. Supporting tens of millions of waterfowl, migratory birds, and more than half of all ESA-protected species, it's hard to overstate the importance of wetlands to our way of life. Rising sea levels are turning biodiverse marshlands into open water and "ghost forests," stands of dead trees killed due to saltwater intrusion, or ecosystems dominated by invasive species

such as phragmites. This is imperiling wildlife adapted to life in native marsh grasses and specific water levels, including the Cape Sable seaside sparrow, eastern black rail, and saltmarsh sparrow. Also losing nesting habitat due to rising sea levels are sea turtles, sand pipers, piping plovers, red knots, and even the American crocodile.

Reinvigorating our Climate Communications

These are just a few of the countless impacts climate change is already having in every state, region, and country. To meet these challenges, the Service must do more than just develop 21st century conservation solutions and partnerships. We must also tell our story. We must reach audiences with our conservation challenges, opportunities, successes, and needs in ways that convey a sense of hope and efficacy—that as individuals and as a collective, we can take meaningful action.

While polar bears, melting sea ice, and retreating glaciers generate headlines and attention to climate issues, equally relevant to Americans are stories about climate change in people's own backyards, affecting plants, insects, invertebrates, and organisms that point to healthy, functioning ecosystems.

In the coming years, we will tell this story with conservation partners from federal agencies, Tribes, and state wildlife agencies to nonprofit organizations, industry, and private landowners. □

BRIAN HIRE, External Affairs, Headquarters



Service, Partners Launch Course on Indigenous Stewardship

The Service is partnering with Alaska Pacific University (APU), Northern Latitudes Partnership, and Alaska Conservation Foundation to increase collaboration in land management.

An 11-week course titled “Indigenous Land Stewardship: Creating Meaningful Collaborations across Alaska” blends modern and ancient methodologies. The course, which began in September, draws on experts from Indigenous communities who are leading dialogues on decolonization and racial equity, as well as professionals who work for or closely with Tribes and Indigenous organizations on science and conservation challenges.

“We are encouraged by partnerships like this, where Tribal experts are the rightful leaders in teaching about the stewardship of this beautiful land,” says APU Interim President Hilton Hallock. “This partnership also will present an incredible opportunity for our students to work and learn alongside Alaska Native leaders and federal partners. We train Alaska’s future leaders, and this course will help ensure our students approach their careers with respect, awareness, and cultural understanding.”



The course originated through an alignment of efforts. APU Elders Council member Wilson Justin saw a connection between APU’s focus on being an Indigenous-serving university, his experience teaching in the Service’s highly regarded Alaska Native Relations Training, and efforts within the partners to build trust and collaboration among Tribes, agencies, and academia.

“The collaboration that has gone into designing this groundbreaking course is inspiring,” said Karen Cogswell, acting Regional Director for the Service in Alaska. “I look forward to this learning opportunity raising respect for the importance of two knowledge systems in conservation, and awareness that public lands are the homelands

of Indigenous people who are the first stewards of our nation’s fish and wildlife.”

Participants will gain an understanding of the impacts of colonization in Alaska and learn how knowledge systems can be used together for everyone’s benefit.

The course, offered virtually, is fully enrolled with a waiting list. Registered attendees include: Tribal, federal, and state conservation and resource management agency employees; conservation nonprofit representatives; APU students; and Alaska Native organization employees. The course will be offered again in 2022. □

The mountains in the Brooks Range in Alaska during the summer.

(CREDIT: LISA HUPP/USFWS)

fighting invaders with bubbles

Researchers test fence of bubbles, sounds, and lights in Kentucky to halt progress of invasive carp. Early results are promising. | *By* DAN CHAPMAN



The fate of millions of invasive carp—and fisheries along the Mississippi, Ohio, Illinois, Missouri, Tennessee, and Cumberland rivers—hinges on the high-tech tools housed inside two, nondescript metal containers atop the bullnose that separates Lake Barkley’s lock from its dam here in Kentucky.

The room-size boxes contain the computers and compressors that serve as the brains of a bio-acoustic fish fence, or BAFF. The fence runs diagonally across the lock chamber, well below a boat’s keel. It emits a series of bubbles, sounds, and lights designed to keep carp from passing farther upstream and ravaging billion-dollar fishing grounds.

Jessica Morris, the fisheries program coordinator for the Kentucky Department of Fish and Wildlife Resources, monitors the BAFF and, along with colleagues, turns the system on and off each week. The fish fence, made in the United Kingdom and designed specifically for invasive carp, is in the midst of a three-year test run. Morris is cautiously optimistic that it will be successful, a sentiment bolstered by laboratory tests and our biologists.

“It seems to be working,” she said this spring while walking the bullnose as silver carp jumped straight out of the Cumberland River below. “I’m encouraged, but we’re not 100 percent sold that it’s the golden ticket. The next few months will be very important.”

Summertime is mostly when the fish spawn, travel farther upstream, and become an all-around nuisance to anglers and boaters. There are four species of invasive carp—bighead, black, grass, and silver—with silver carp posing the biggest threat. They have voracious appetites. Silver carp eat plankton—algae and other microscopic organisms—which serves as

the basic food source for native fish such as crappie and largemouth bass. Black carp, with human-like molars, prey upon snails, mussels, and crayfish found throughout the Tennessee and other Southern river systems.

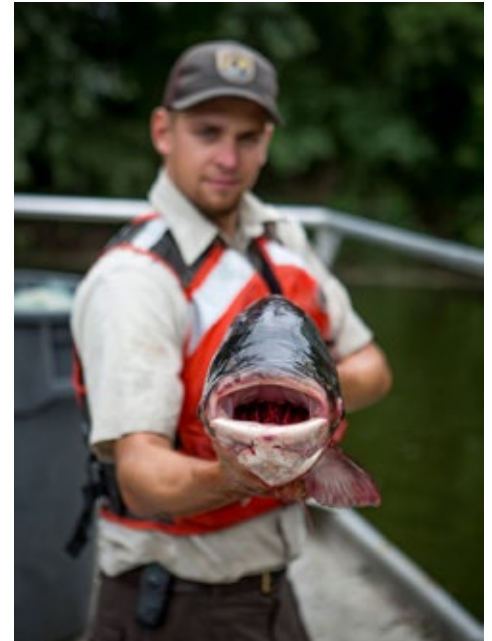
Silver carp, aka “flying carp,” can also jump 10 feet out of the water. Tales of broken bones and worse proliferate among boaters. Motors and other loud noises spook silver carp sending the 10-to-50-pound fish skyward. But it’s the potential big-dollar damage done to the boating, fishing, and tourism industries that’s more worrisome. Recreational fishing in western Kentucky alone brings \$1.2 billion annually.

‘Daunting’ Problem

The carp were imported from Southeast Asia to Arkansas and Mississippi in the 1970s to help clean catfish farms and wastewater treatment ponds of weeds and parasites. Flood waters helped them escape. They headed up the Mississippi River and into tributaries that reach into 31 states and Canada.

Silver and bighead carp, in particular, worked their way up the Ohio, Cumberland and Tennessee rivers, and reached lakes Barkley and Kentucky a decade ago.

“The invasive carp problem is daunting,” says Rick Campbell, an aquatic conservation coordinator with the Service in South Carolina. “There’s a lot of work that has to be done. And the work we’re doing here is critical.”



A Fisheries biologist holds bighead carp.

(CREDIT: RYAN HAGERTY/USFWS)

Campbell and Evan Boone, a Service fish biologist out of Tupelo, Mississippi, spent a week this spring catching, tagging, and relocating silver carp, and some native fish, on lakes Barkley and Kentucky. They were joined by biologists from our Great Lakes Region, the U.S. Army Corps of Engineers, and Kentucky’s fish and wildlife agency. Representatives from Fish Guidance Systems (FGS), the BAFF builder, and Innovasea, fish-tag makers, were also on hand.

The Kentucky crew switched on its fish-finder upon nearing Barkley’s eastern shore on the upstream side of the dam. Once they located a school of silver carp—there are possibly millions of the fish in the lake—the crew threw gill nets. They maneuvered the boat in corkscrew fashion to corral the fish.

The carp, entangled, thrashed about. With nowhere to go, the fish were hauled up, one by one, on to the boat. The researchers took the fish—400 silver carp and 15 grass carp that week—to a >>

(Previous page) U.S. Fish and Wildlife Service personnel net silver carp jumping in the Fox River in Illinois. (CREDIT: RYAN HAGERTY/USFWS)

Continued from previous page

boatload of U.S. Geological Survey biologists embedding pea-sized transmitters in carp bellies. The fish were then released back into the Cumberland River just below the BAFF. The goal is to see how many fish cross the fish fence and head back upstream.

Protecting the Great Lakes

Morris leans out over the bullnose and watches silver carp jump in the tailwaters below the massive Barkley dam. The BAFF hums, but she couldn't hear a thing from this height. Instead, she sees a ribbon of churning, white water—"a curtain of bubbles"—stretching from shore to shore.

"This is a high-head dam, so the only way to get through it, and further upstream, is past the BAFF and through the lock chamber," Morris says. "We want to stop them here."

We are leading the multiagency carp-deterrent effort, which counts 70 federal, state, nonprofit, and private partners across the Mississippi River Basin. The partners have battled the alien invasion for more than two decades with most of the attention, and dollars, focused on keeping the fish from traveling up the Mississippi River and into the Great Lakes. All manner of deterrents, tracking devices, and removal equipment—electric barriers, sound columns, bubble curtains, electro-fishing gear, acoustic telemetry—have been tested or deployed to monitor and thwart the carps' upstream advance.

Electric fences have been installed in the Chicago area. The Army Corps is also spending an estimated \$858 million on the Brandon Road Lock and Dam project, which includes an electric-acoustic-bubble barrier, along the Des Plaines River, about 40 miles from Lake Michigan. The goal: keep carp from destroying the Great Lakes' \$7 billion fishing industry.



USGS studied the feasibility of an underwater, carbon-dioxide deterrent system on the Fox River near Kaukauna, Wisconsin. In 2014, we deployed the "Magna Carpa," a customized boat with wing-like nets that winches carp out of the water once they've been electro-stunned. States also subsidize commercial fishermen to haul millions of pounds of carp annually from streams throughout the Mississippi River system.

In all, dozens of prevention and control projects are underway across the river basins that feed into the Mississippi.

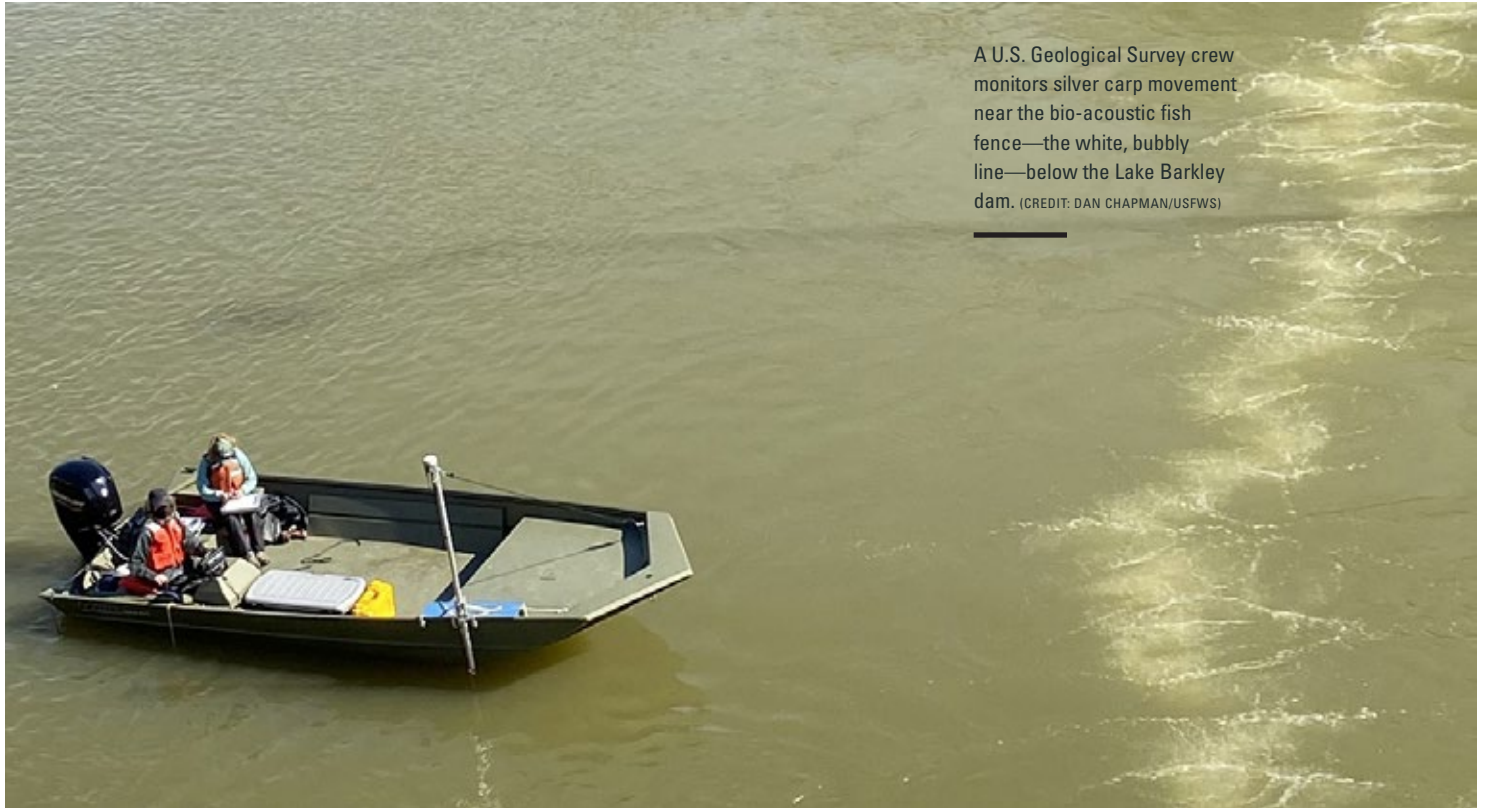
Kentucky is at the forefront of the latest battle. The state's wildlife agency, relying on expertise and assistance from the Service and other state and federal agencies, rolled out last year the so-called Modified-Unified Method, or MUM, to corral carp. Boats, equipped with nets and underwater speakers, steered carp into a cove and stunned them with electricity before scooping them up. And it was largely effective: trials in Missouri and Illinois removed as many as 90% of the fish from targeted waters.

With their voracious appetites, silver carp eat plankton, the basic food source for native fish such as crappie and largemouth bass. (CREDIT: RYAN HAGERTY/USFWS)

The 'Brains' of the System

And then there's the BAFF, which is undergoing an "unprecedented" field test on Lake Barkley. The fish fence came on line in 2019. It's about a third of the way through the trial. Tests will show how effectively the trifecta of sound, light and pressure deters carp, as well as the BAFF's impact on commercial navigation and recreational fishing. Barkley is an optimal location for the trial: carp have already passed through the lock so the fence should determine if their future passage can be slowed or stopped.

The BAFF is one complex piece of hardware. A concrete shell, 200 feet long, at the bottom of the river channel, is studded with bubble pipes, speakers, and high-intensity lighting that shoot air, sound, and light beams roughly 60 feet upward to the water's surface. Electrical lines and air hoses run from the concrete trough to the bank of computers and compressors housed in the two steel sheds. Local contractors dubbed the BAFF the "fish disco."



A U.S. Geological Survey crew monitors silver carp movement near the bio-acoustic fish fence—the white, bubbly line—below the Lake Barkley dam. (CREDIT: DAN CHAPMAN/USFWS)

Continued from previous page

Carp are very sensitive to sounds. FGS conducted scores of audiometric tests to determine which sounds and vibrations most displease carp (without, hopefully, bothering other fish). An array of telemetric receivers on either side of the bubble curtain tracks the tagged fish. Boaters may hear the sounds when passing over the fish fence. At night, they'll probably see flashing white lights.

“Every project we do teaches us something new, and Barkley lock is no exception,” says David Lambert, FGS’s managing director. “Over the last few months, for example, we have upgraded the sound projectors and installed other improvements to the BAFF. The system is specifically designed to help stop the spread of invasive carp. It is the culmination of 25 years of research, development and experience.”

Kentucky’s Morris, during a quick tour, unlocks the shed housing the computers that monitor the sound and light systems. One screen provides up-to-the-minute information on the BAFF’s five separate sections. Another records tagged-carp movements—one ping every three to five seconds—picked up by hydrophones.

“These are the brains of the sound and light systems,” Morris says before turning the BAFF off. “It’s all very cool.”

The technology, installation, and three-year trial is financed by the Service via the EPA’s Great Lakes Restoration Initiative and the Invasive Carp Regional Coordinating Committee.

If successful, BAFFs may be installed at strategic pinch-points along the Tennessee, Illinois, and other carp-infested streams. In a University of Minnesota lab, a small-scale BAFF

deterred up to 97% of silver and bighead carp. The results were replicated along an Illinois creek. Early returns are favorable at Lake Barkley.

In November 2020, 254 silver carp were tagged. When the BAFF was off, 57 silvers crossed the fish fence 129 times. When it was on, only four tagged silver carp crossed the BAFF seven times.

“These are pretty big contrasts in numbers,” says Teresa Lewis, a Division Chief for our Fish and Aquatic Conservation in Washington, during a recent BAFF presentation for partner agencies. “It’s still too early to tell, and we haven’t collected enough data, but we can say it’s a very exciting place we are in now.” □

DAN CHAPMAN, External Affairs, South Atlantic-Gulf and Mississippi Basin Regions

FOLLOWING THE PLAN



*Earthquake Tests Alaska
Maritime National Wildlife
Refuge Preparedness System*

By JULIA PINNIX

When an earthquake hit Alaska on July 28, the two land-based humans closest to the epicenter had just settled in for the night in their cabin on isolated Chowiet Island, on the east side of the Alaska Peninsula in a cluster of islands known as the Semidis.

B iologists Briana Bode and Katie Stoner had been working on Chowiet since May 17, studying seabirds for Alaska Maritime National Wildlife Refuge.

No one can predict exactly when a quake will happen, but thanks to their training and the robust safety plan the refuge developed, the biologists knew just what to do.

Both fled the cabin briefly, waiting out the shaking and discussing the plan. Because they were in camp and could get to their gear rapidly, the priority was that gear, specifically an InReach device, shoes, rain gear, data, computer, satellite phone, food and water, jackets, notebooks, and spare sleeping bags. They grabbed everything in about two minutes and raced up the ridge, punching a message into the InReach. They headed for higher ground because of the potential for a tsunami caused by the quake.

InReach devices permit satellite-connected communication via text. They are part of the suite of equipment the refuge provides for every field camp, a list that includes satellite telephones, VHF radios, and locator beacons.

Their message went to Lisa Spitler, the field camp communications coordinator, and Jeff Williams, deputy manager of the refuge, both of whom monitor their equipment around the clock. They were already in action: Williams had been awakened by an automatic tsunami alert on his cell phone. He immediately texted

Spitler, who responded, “What tsunami?” It took another three minutes for the alert to reach her phone.

By then, she and Williams had confirmed their planned division of tasks. Williams was in charge of communication to local employees and volunteers and communicating up the chain to the regional office for the Service in Anchorage. Spitler was in charge of reaching out to field camps and to the R/V Tiglax, the refuge’s research ship.

Several other pre-programmed contacts were included on the initial call-out from Chowiet, a redundancy in the system that

provides a safety net. Everyone knew their role and who the primary point of contact should be. The plan’s emergency directions are clear and easy to find, and everyone reviews them. So when the quake occurred, the responses were exactly right.

Bode and Stoner were texting back and forth with Spitler from 300 feet of elevation on the island. She kept them updated on the tsunami reports and other news as they huddled in their sleeping bags, “watching the sea and the darkening sky. We could smell and taste dust in the air,” they say in the report they sent to Spitler.

They were 30 miles from the epicenter of the largest earthquake in Alaska in 50 years. It measured 8.2 in magnitude.

The tsunami warning siren howled in Homer, where the refuge’s headquarters is, triggering evacuations for anyone living at low elevation. That included Supervisory Biologist Heather Renner, who fielded >>



Boulders had shifted and fallen to the beach and rock outcroppings had crumbled.

(CREDIT: USFWS)



The earthquake measured 8.2 in magnitude.

(CREDIT: USFWS)



Some murrens were killed by falling rocks. (CREDIT: USFWS)

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dozens of texts while hustling her children into the car. Lora Haller, the visitor center manager, got in touch with interns and volunteers to ensure they were headed for safety.

This was all according to plan, and it wasn't the first time the refuge has dealt with a tsunami warning. "It seems like an annual event now," Renner says. Homer has experienced four tsunami evacuations in the past four years.

"The refuge staff response from the office and field crews proved the safety plan that we put in place is well thought out," Williams says. "If the tsunami [had been] substantially greater than it was, then we would likely have saved lives." Fortunately, tsunami wave heights were less than a foot high.

At 1 a.m., Spitler relayed the all-clear to the field crews. Bode and Stoner made their way back to camp, where they found the cabin strewn with "fallen cans, dishes, and spices, while gear had fallen from the shelves and empty totes fell from the rafters," they say in the report. Although it was a mess, the cabin was still structurally sound.

Aftershocks continued through August 1, when the Chowiet crew returned to their research locations and checked to see what had happened to the birds and the landscape. They spotted a few murrens that had died atop their nest sites. Boulders had shifted and fallen to the beach and rock outcroppings had crumbled. But parakeet auklets "were seen flying into talus and puffins circled above, preparing to deliver lunch to their hungry chicks... going about life as usual," they say in the report. By the following day, the researchers themselves were back to business as usual, too. □

JULIA PINNIX, Alaska Maritime National Wildlife Refuge, Alaska Region



Biologists Briana Bode and Katie Stoner were 30 miles from the epicenter of the largest earthquake in Alaska in 50 years.

(CREDIT: USFWS)



WALKING FOR UNITY

Service, descendants of land that became refuge highlight connection, community.



By MARK DAVIS | The old church in Townsend, Georgia, has always been the meeting place, where folks meet to pay their respects to the past, discuss the present, and plan for the future. If you're one of the descendants of the Harris Neck residents who lived here before World War II, you know: This church is a touchstone.

First African Baptist Church is 153 years old. When the federal government in 1942 bought up thousands of acres in this coastal spot south of Savannah, a process called eminent domain, the people knew they couldn't watch their church be destroyed. Houses and businesses that couldn't be dismantled in time were bulldozed and burned to create a U.S. Army Air Corps field.

But congregants stood by the church to protect it long enough to move its hand-hewn columns, hard-as-stone wooden pews, and corner stone to erect a new building a few miles away from the original spot. This church remains the pillar of a damaged—yet resilient—coastal community.

The descendants of William Timmons understand. He was their father, grandfather, uncle, great-uncle. He was a front-porch sage who dispensed advice to anyone who stopped by. William Timmons slowly built the equivalent of a working-class empire on the banks of the Barbour River. Even now, nearly six decades after his death in 1962, elders remember Timmons Oyster Factory. It was a testimony to what faith and hard work can accomplish, even for a Black American living when Jim Crow segregation was absolute.

(Previous page) Johnnie Timmons (from left), Darrell Dunham, Margaret Ann Timmons Finley, Mary McIntosh, Edgar Timmons, Tyrone Timmons, and Fran Timmons. (CREDIT: MARK DAVIS/USFWS)

'Sorrow to Hope'

On July 27, the anniversary of the day their community was displaced from the land in 1942, those descendants of that long-ago oysterman commemorated the day with a "Walk of Sorrow to Hope." It was the culmination of a three-day observance stressing the community's connection to the area.

The walk stretched from the entrance of Harris Neck National Wildlife Refuge to the church, maybe a mile away. It symbolized the longer, forced migration from their homes that community members made 79 years ago. Participants carried lumber, a reminder that their forebears took wood from their old houses to help build new ones.

Another part of the commemoration honored some significant community sites throughout the refuge. Those included the original Harris Neck School, the First African Baptist Church, and the Gould Cemetery. They laid wreaths and prayed at those sites. Service staff and community members made the wreaths and signs together.

Partners

We have partnered with descendants of the community who want to ensure that their ties to the land are not forgotten. With the help of an intern hired especially to work with descendants of the original community, we are preparing programs, kiosks, and other interpretive features highlighting the cultural and historical significance of the land. They will help amplify the voices of those who lived on that land before it was a refuge.

In October last year, the descendants and the Service made the partnership official with a memorandum of understanding (MOU). It is a blueprint for plans recognizing the Timmonses and others who once lived there.

The MOU is a good thing, said Frances Timmons, one of William Timmons' seven children.

"We decided we were going to work together (with the Service) for good causes," she says.

One morning in July, with the heat and humidity rising, Fran Timmons met with six relatives to recall their forebear and check in to make sure everything was lining up in time for their July 27 walk. Naturally, they met at the church. >>

Alison Schwartz is a Service intern hired specifically to work with descendants of the residents who lived on land that is now Harris Neck National Wildlife Refuge. Her duties have included reading signs showcasing the community's connection to the coastal tract. (CREDIT: MARK DAVIS/USFWS)



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Joining Fran Timmons were her siblings, Margaret Ann Timmons Finley, Johnnie Lee Timmons, and the Rev. Edgar Timmons Jr., who is the church pastor. Tyrone Timmons, who is Edgar's son, sat beside family-friend Darrell Dunham.

They all agree: the land holds deep significance to the community, and it always will. They're a part of that land, and want to be sure those ties remain strong.

"Papa," says Edgar Timmons, "was such a peaceful man."

But a brewing war changed lives in Harris Neck.

Aviation History

The land that's now the refuge has an aviation past. Between 1929 and 1932, the Civil Aeronautics Authority established an emergency airfield at Harris Neck; a U.S. Navy chart from 1935 identifies airstrips on the site.

When the United States entered World War II, the Department of Defense condemned nearly 2,700 acres for use as an airfield. (Even today, refuge visitors can easily discern cracked asphalt where three long landing strips form a triangle among the moss-bearded oaks.)

In 1948, the war over, the federal government conveyed the land to McIntosh County, where Harris Neck is located. It was to be used as a county airport, but the land reverted to federal ownership in 1961 after federal officials decided the county had not complied with the post-war land-use agreement. In 1962, it became part of the Service's National Wildlife Refuge System.



Some descendants question the transaction, and the land's ownership has been a point of contention and friction for years. In 1979, Edgar Timmons and three others were arrested for camping on part of their ancestral land. Originally sentenced to 30 days, they served half that—a sympathetic judge, says Edgar Timmons, let them go home early.

Reaching Out

In recent years, the Service, wanting to strengthen relations with its Harris Neck neighbors, has reached out to former residents. Will Meeks, project leader of Savannah National Wildlife Refuge Complex—a seven-refuge complex that includes Harris Neck—applauds the walk. It should further cement relations between the Service and our neighbors, he says.

Harris Neck National Wildlife Refuge was founded in 1962. It comprises more than 2,800 acres. (CREDIT: MARK DAVIS/USFWS)

"I think the 'community' concept will continue to grow," says Meeks, a 26-year Service veteran. "I'm excited."

Meantime, Meeks has watched approvingly as Alison Schwartz, a recent University of Vermont grad hired specifically to help showcase the community connection at the refuge, has stayed busy with an array of duties. Her tasks have included collaborating with the Direct Descendants of Harris Neck Community to create new educational activity books, kiosks, audio-tour stops, structures honoring significant community sites, and more. She also coordinates frequent meetings between the Service and descendants to ensure the success and longevity of their partnership. >>



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Woody Pond from a 60-foot observation tower used by interns and biologists to monitor the wood stork population at Harris Neck National Wildlife Refuge. (CREDIT: BECKY SKIBA/USFWS)

She's made some friends in the family that once lived hard by the river. Schwartz says she's enamored by the culture of coastal Georgia and feels welcome there.

She hadn't been at Harris Neck a week when the Timmons family gave her a gift unique to the coast—wild oysters, still in the shell, picked from local waters. Schwartz was delighted—befuddled, too.

“I had to look up on YouTube how to cook them,” says Schwartz, 23. “They were really good.”

Even better: the connections a New Jersey native has made with people whose roots go back generations in the sandy soil of coastal Georgia. Schwartz is learning, too.

“If I've learned anything, it's that partnerships are hard,” she says. “It takes a lot of work on both sides, but the results are super rewarding.”

Her new friends in the community agree. They are eager to work with the Service as it embarks on making sure Harris Neck more fully recognizes the community that thrived there for years.

Fran Timmons welcomes the chance to work with the Service to make sure history records their past and present influence on the tract that's now a refuge.

“They [her forebears] were hard-working, God-fearing people,” she says. It's a fact worth sharing, and remembering—at the church, certainly, as well as at the refuge. □

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

WHAT DOES THE FOX (POOP) SAY?

*DNA found in scat
helps scientists learn
about secretive Sierra
Nevada red fox.*

By MEGHAN SNOW



Recently protected as an endangered species, the southern population of the Sierra Nevada red fox is estimated to consist of fewer than 50 individuals. (CREDIT: NATIONAL PARK SERVICE)

An elusive fox roams the southern Sierra Nevada Mountains, and experts are trying to learn more about its behavior and breeding success by analyzing one of the few traces of its presence—poop.

Recently protected as an endangered species by the Service, the southern population of the Sierra Nevada red fox is estimated to consist of fewer than 50 individuals. Living in areas above 9,000 feet in elevation, the fox is smaller than most, has fuzzy paws, and a thick fur coat—all adaptations to help it survive the heavy winter snows and challenging alpine conditions. Its fur can range in color from red to black to grayish-brown.

Recent hybridization with non-native red foxes that escaped from fur farms and other alpine foxes that traveled from Nevada or the Rocky Mountains has put this subspecies at-risk of going extinct.

“With most endangered species, we’re trying to manage the landscape to provide a path to recovery. For this species, we’re trying to preserve the Sierra Nevada red fox genes,” says Stephanie Eyes, biologist with our Sacramento Fish and Wildlife Office.

Collecting information on the fox is difficult because it’s rarely seen. However, ongoing research partially funded by the Service is helping to paint a picture of the fox, its behavior, and breeding success.

Since 2011, Cate Quinn, a post-doctoral researcher in the Mammalian Ecology and Conservation Unit at the University of California, Davis, has been studying the fox by collecting its scat. This type of tracking is called noninvasive genetic monitoring. It involves collecting DNA from scat, urine, or hairs left behind in the outdoors instead of using tracking collars.



Back in the lab, Stevi Vanderzwan, laboratory manager for the Mammalian Ecology and Conservation Unit at the University of California, Davis, processes scat and analyzes the DNA. The samples help create the “family tree” of the individual red foxes living in the high Sierra. (Credit: Don Preisler/UC Davis)

“The DNA found in scat is very powerful. You can tell which fox it came from and who they’re related to. This information helps us learn more about their movements across the landscape, their lifespan, and which other types of foxes they’re breeding with,” Quinn says.

Each year, starting in the late summer, Quinn and her team collect scat at four locations between the northern border of Yosemite National Park and Highway 4 in the Sonora Pass. Some trips can be completed in a day, but others require backpacking across rocky mountain ridges for up to five days, constantly scanning the ground for scat and carrying whatever is found the entire trip. The approximately 500 samples collected each year help create a “family tree” of the individuals living in the high Sierra.

“This annual census enables us to take the pulse of the Sierra Nevada red fox population. The information helps us answer key questions like: Are there big dramatic changes in the population? Is mortality going up or down? Is reproduction stopping?” Quinn says.

In 2018, Quinn added dogs to the team of scat collectors. The dogs are specially trained to sniff out fox scat, and their keen sense of smell can find it more easily than the human eye, especially in areas where the foxes’ presence is rare or unknown. >>



(Above) Cate Quinn, a post-doctoral researcher in UC Davis' Mammalian Ecology and Conservation Unit, collects fox scat in the high Sierra. (CREDIT: COURTESY OF C. QUINN)



(Below) "With most endangered species, we're trying to manage the landscape to provide a path to recovery. For this species, we're trying to manage a genetic landscape and preserve the Sierra Nevada red fox genes," says Stephanie Eyes, biologist with the Service's Sacramento Fish and Wildlife Office. (CREDIT: USFWS)

Continued from previous page

Once back in the lab, the DNA analysis tells its story. Quinn and her team have been able to identify and track the same individuals for several years and have found that the foxes are long-lived. They also travel long distances. One individual she's tracked traveled more than 60 miles in just one year.

“The DNA found in scat is very powerful. You can tell which fox it came from and who they're related to,” Quinn says.

The DNA also shows that hybridization continues with non-native foxes, but that's not entirely bad. With the small population, inbreeding (mating between related individuals), which limits genetic diversity and could lead to detrimental impacts to the species, is possible. Breeding with non-native or other alpine foxes—to a limited extent—could be helpful for alleviating inbreeding and supporting the long-term survival of the Sierra Nevada red fox. >>

Continued from previous page

“This research is helping us get a better understanding of where the foxes are living, their breeding and movement, and how their home ranges and genetics are changing over time. This information is incredibly useful as we determine ways to help recover this unique species,” Eyes says.

Currently, a group of representatives from the Service and other federal and state agencies, as well as biologists from universities and the private sector are developing a conservation strategy for the fox that will guide and prioritize recovery actions, such as translocations and possibly introducing other alpine foxes to support breeding.

While Quinn’s research will continue to shed light on the secretive fox, many are optimistic that this species will remain part of the Sierra landscape, even if the only trace of its presence is the brown piles left behind. □



(Top) USFSA multi-agency conservation strategy for the Sierra Nevada red fox is in development. This strategy will guide and prioritize recovery actions, such as translocations and possibly introducing other alpine foxes to support breeding.

(CREDIT: U.S. FOREST SERVICE)

(Bottom) Rogue Detection Teams train dogs to sniff out fox poop, and their keen sense of smell can find poop more easily than the human eye, especially in areas where the foxes’ presence is rare or unknown. This dog, named Filson, has tracked fox scat as seen in the foreground. (CREDIT: COURTESY OF ROGUE DETECTION TEAMS)

(CREDIT: COURTESY OF ROGUE DETECTION TEAMS)



BEATING THE HEAT

Service, Tribal partners work together to save salmon from extreme temperatures. | BY BRENT LAWRENCE



Warm Springs National Fish Hatchery staff and partners started working before the sun came up to safely load and transfer 348,000 young spring Chinook salmon during the extreme heatwave that hit the Pacific Northwest in late June. (CREDIT: KATIE ROYER/USFWS)

Mike Clark and a team of fisheries professionals watched the weather forecast for late June and knew it meant serious problems for the more than 7 million salmon being reared in Columbia River Gorge National Fish Hatchery Complex, six hatcheries in Washington and Oregon.

Each day the weather forecast for the Pacific Northwest brought increasingly dire predictions. What started as 104 degrees soon became a forecast of 108 degrees. Then 111...115...117 degrees.

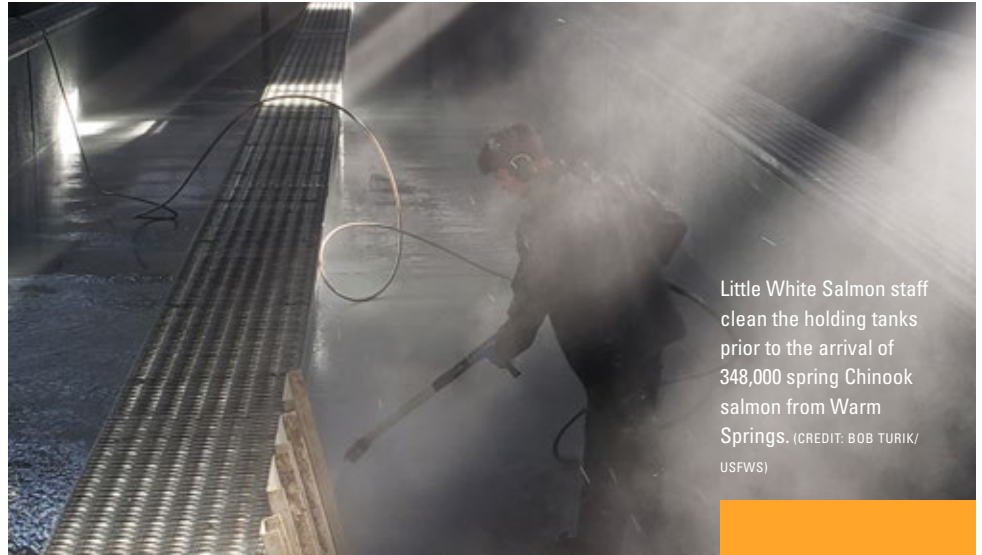
The numbers were unfathomable for the normally temperate Pacific Northwest. If they came true, they would exceed previous record highs for many areas by almost 10%. Clark, manager of the hatchery complex, and the staff knew it would have a pronounced impact on the water temperature and the juvenile salmon at hatcheries in the complex.

That meant a lot of work with little margin for error as the heat dome settled in June 25–29.

Fortunately, we and partners at the Confederated Tribes of the Warm Springs and Yakama Nation were ready for the challenge.

“This was a huge effort in some demanding weather conditions,” Clark says. “It took a lot of people pulling together in extreme weather to protect an important and very delicate resource. This year was particularly significant because of some juvenile wild spring Chinook salmon we had at Warm Springs National Fish Hatchery, which are incredibly important to our Tribal partners.”

When the week was all done, the numbers were staggering: Little White Salmon National Fish Hatchery in Washington recorded an air temperature of 122 degrees with a reading of 160 skin-



Little White Salmon staff clean the holding tanks prior to the arrival of 348,000 spring Chinook salmon from Warm Springs. (CREDIT: BOB TURIK/USFWS)

blistering degrees on the pavement on June 28.

Despite the hazardous heat, staff and partners transferred 348,000 spring Chinook salmon safely from Warm Springs National Fish Hatchery in Oregon and released another 7.15 million juvenile upriver bright fall Chinook salmon days ahead of schedule so they could make their way out to the Pacific Ocean before river temperatures hit the danger range.

A Numbers Game

There’s a lot of pressure to make sure everything goes swimmingly when you’re dealing with this cold-water fish. Salmon are culturally significant to multiple Native American Tribes. Salmon also are a critical part of the economy in the region through recreational and commercial fishing.

Without the Service’s national fish hatcheries, all of that could be in jeopardy.

In the days before the heat wave arrived, our fisheries leadership team focused on some important numbers: the predicted air temperatures and water temperatures at the hatcheries and in the Columbia River.

Sustained air temperature well over 100 degrees would result in rapidly increasing water temperature, leaving hatchery staff to weigh numerous factors to determine how to best protect the salmon.

“It’s always a balancing act trying to make the best decisions with the information you have available,” says Bob Turik, Little White Salmon manager. “Chinook salmon thrive in temperatures in the 50s and low 60s but some, like the Warm Springs fish, have adapted to above-average temperatures. Even with this adaptation, Warm Springs fish struggle to survive when water temperatures exceed 65 degrees, and especially when water hits above 70 degrees. Fish immune systems degrade and diseases really proliferate when the water temperature climbs like that. Trying to do anything with the fish at that temperature, even feeding them or walking next to a raceway, puts stress on the fish and they may die.”

Heating Up

Like most fish hatcheries, Warm Springs is dependent on the temperature of the river water that flows through them. Some hatcheries benefit from cool underground springs or a heavy snowpack to keep temperature low. >>

Continued from previous page

Warm Springs, however, draws directly from the Warm Springs River. The river is fed by snowpack in the Schoolie Flats and Schoolie Springs area, and some from the foothills of Mount Jefferson in the Cascade Mountains. A drought across the much of the West had a profound impact on that snowpack.

“We’re 100% dependent on the Warm Springs River, and the last several years we’ve had very low snowpack, which means that our water temperatures rise more quickly in the summer,” says Terry Freije, Warm Springs Hatchery manager. “Combining our low snowpack with lower than normal river flows, this heat wave made our temperatures spike earlier than normal. Having a good snowpack is absolutely critical for keeping this facility’s water temperatures where it should be in the summer.”

Little White Salmon receives most of its water from the Little White Salmon River. It is fed by runoff from Mount Adams’ snowpack and from a few local springs. The year-round snow and glaciers of Mount Adams keep the water temperature near 50 degrees even during the hottest parts of summer.

Warm Springs has been forced to transfer salmon before but was able to keep the salmon at the hatchery in 2018, 2019, and 2020.

Climate change forecasts suggested it would be a short-lived run of good luck. They were right.

We have a draft Climate Change Vulnerability Assessment for Warm Springs Hatchery. It indicates water quality and quantity would continue to be a challenge based on climate models



Little White Salmon National Fish Hatchery is part of the Columbia River Gorge National Fish Hatchery Complex. (CREDIT: BRENT LAWRENCE/USFWS)

predicting warmer, wetter winters with more rain and less snow, and hotter, drier summers.

“Given recent history and climate change predictions, we’ve been proactively working on contingency plans to improve rearing conditions for the salmon,” Clark says. “Our fish health experts David Thompson and Katie Royer have modified the Warm Springs annual operating plan to include criteria that might trigger the movement of fish off station. Once we hit those triggers this year, we were prepared and jumped into action. I know we couldn’t have been successful without our co-managers from the Confederated Tribes of Warm Springs, and support from Yakama Nation and assistance from other hatcheries and Service staff.”

It’s a good thing they were prepared because it was becoming increasingly clear that a heat wave of epic proportions was coming.

On the Move

On June 22, the Service and the Confederated Tribes of Warm Springs, co-managers of the hatchery, approved moving the salmon.

On June 24, based on updated weather predictions of sustained temperatures above 110 for three consecutive days, our Fish Health Program in the region recommended that all juvenile fish be moved from Warm Springs immediately. Little White Salmon was identified as the best destination thanks to its combination of cool water and available fish raceways.

Little White Salmon staff worked overnight moving fish on station and cleaning to ensure they were prepared to receive the salmon from Warm Springs. An additional fish transport truck was brought from Quinalt National Fish Hatchery. Additional commercial driver’s license holders were brought in to help. >>

Continued from previous page

It would take about seven truck trips to move the 348,000 salmon, which included hatchery stock, wild genetic stock, and hatchery/wild hybrid stock that all needed to remain segregated.

At 3 a.m. on Saturday, June 26, two trucks were loaded with cool water at Little White Salmon and driven 101 miles to Warm Springs where staff from the Service and the Confederated Tribes of Warm Springs' Bureau of Natural Resources was ready to help ensure the transfer went as quickly as possible.

After one of the two fish trucks developed electrical issues, Yakama Nation Fisheries quickly provided two fish transport trucks and two drivers for Sunday.

The air temperature hit 114 degrees and the water temperature was 71 degrees at Warm Springs as the last truck was loaded at 1:30 p.m. on Sunday. Water temperature that evening topped 77 degrees in Warm Springs' raceways, meaning the salmon likely wouldn't have survived the night.

The 348,000 spring Chinook were successfully delivered to the 48-degree water at Little White Salmon, where they'll stay until October when they'll be transferred back to Warm Springs. They will overwinter at Warm Springs and be released in April 2022.

"From time immemorial, salmon have been intrinsically linked to the Warm Springs Tribes who lived here," Freije says. "They have ceremonies when the fish come back, and they give a blessing to the fish when they're released. It's a significant cultural and food resource to the tribe. It's important that these fish survive.... But if climate change keeps on as predicted, this will be an even more serious problem."

Hit the Water

With one crisis averted, the Little White Salmon staff quickly moved on to the next climate-caused challenge.

There were 7.15 million juvenile upriver bright fall Chinook salmon waiting for their journey from the Little White Salmon River to the Columbia River and, eventually, the Pacific Ocean. The original release date for the salmon was penciled in as July 7, but surging water temperature in the Columbia River forced a change in plans.

The water temperature in the Columbia River at the Bonneville Dam, about 20 miles downstream from the hatchery, was increasing about a degree every two days. It sat at 63.9 degrees on June 20, and was up to 68.7 degrees on June 28.

"July 7 was the date we had on the calendar, but we always stay flexible and adjust to the conditions around us," Turik says. "The fish passed all the readiness tests and met all our criteria to be released. We needed to get them into the Columbia River before it hit 70 degrees so they would have the best chance to make it to the Pacific Ocean before the water got too warm."

On June 29, hatchery staff removed the planks keeping 4.95 million finger-sized fish in the raceways at Little White Salmon. As the first light of the day hit, the juvenile salmon started their journey toward the Pacific Ocean.

On June 30, 2.2 million upriver bright fall Chinook salmon were released from Willard National Fish Hatchery, a few miles farther up the Little White Salmon River. Half were released at Willard, and the rest were transported to Little White Salmon for release.

"It was a big team effort from the whole complex and our Tribal partners," Turik says. "We had multiple hatcheries involved with providing staff and assistance. They're all hard workers and they're dedicated. They care. They

worked on the weekend and overnight. They understand the importance of this resource to so many people."

The Journey Begins


It takes two to three weeks for the juvenile salmon to swim the 160 river miles from Little White Salmon Hatchery to the Pacific Ocean. The juvenile salmon are released en masse so they stand a better chance of evading predators and reaching the ocean, where they'll stay for three to five years before returning to the hatchery to spawn.

Like worried parents, Turik and Clark continued to monitor the Columbia River water temperature and await reports. Columbia River water temperature hit 70 degrees at Bonneville Dam on July 5.

On July 6, they got some great news. Dean Ballinger, based at Bonneville Dam with the Pacific States Marine Fisheries Commission, shared the information.

"Your fish passed the project in great numbers over the weekend and passage remains high at present. The fish appear robust and vigorous and mortality is negligible," his email read. "I don't anticipate any change in fish condition at this point so no news is good news going forward. Another excellent passage!" □

BRENT LAWRENCE, External Affairs, Columbia-Pacific Northwest Region

 **WATCH**

All videos by Brent Lawrence/USFWS

[Juvenile upriver bright fall Chinook salmon at Little White Salmon National Fish Hatchery.](#)

[Juvenile upriver bright fall Chinook salmon start trip to the Pacific Ocean.](#)



'MORE THAN WORTHWHILE'

By DAVID EISENHAUER

North Atlantic-Appalachian regional employees and others east of the Mississippi support wildland firefighting efforts across the West.

Crews removed from danger watch as smoke from the Harris Mountain Fire near Helena, Montana, rises over a ridge. (CREDIT: BART WILSON/USFWS)



Bart Wilson nervously scanned the billowing smoke and flames cresting the ridge in front of him.

As the crew boss for the 20-person Delaware Interagency Wildfire Crew, deployed in July to the Harris Mountain Fire north of Helena, Montana, Wilson knew he had to make a call. And he had to make it quick.

For most of the day, the crew had been able to keep a safe distance from the fire while working to contain it. “But the fire kept coming, and it didn’t look good,” Wilson says. “So the decision was made to get everyone out of there.”

When the crew returned to the scene the next day, the forested area where they had been making firelines or “fuel breaks”—strips or blocks of vegetation altered to slow or control a fire—was reduced to a landscape of smoldering ash and burnt-out trees.

“This was my first time as a crew boss, so I wasn’t just responsible for myself; I needed to look out for 19 other people and make sure they weren’t in harm’s way,” Wilson says. “Sometimes you just have to trust your gut.” >>

In a searing summer of wildland fires, Wilson and dozens of North Atlantic-Appalachian regional employees have signed up to support and relieve depleted fire crews across the country.

As of September 29, more than 46,000 fires have burned nearly 6 million acres during the 2021 fire year, according to the National Interagency Fire Center (NIFC). More than 16,000 wildland fire personnel are currently assigned to incidents across the country. >>



Chad Roderick, a maintenance professional at Silvio O. Conte National Fish and Wildlife Refuge, assists with the Bootleg Fire in Oregon. (CREDIT: USFWS)

Continued from previous page

The National Preparedness Level fell to 1 in late October; 5 is the highest. It was at 5 for much of the summer due to continued increased fire activity and intensity across much of the West.

Art Canterbury, regional fire and emergency management coordinator for the North Atlantic-Appalachian Region, says the extreme conditions coupled with travel and other restrictions due to COVID-19 have stretched fire resources to the limit, prompting the Service and other federal land management agencies to call for back up.

Canterbury says that as of late August, nearly three dozen North Atlantic-Appalachian regional employees have volunteered to support firefighting efforts in Idaho, Wyoming, Montana, Colorado, California, Arizona, and Washington state. They joined Service personnel from all over the country on wildfire suppression work.

The first eight months of the year, we have had almost 500 Service personnel working on firefighting efforts. Many of these 500 have mobilized multiple times this year alone.

“Their regular jobs might be maintenance staff, IT support folks, biologists, administrative officers, law enforcement—you name it, if they are certified to help the fire effort, we can bring them in,” Canterbury says of the North Atlantic-Appalachian Region volunteers, although he might as well be talking about anyone who has helped out.

Though some are first-timers, many have answered the call multiple times in their careers. Wilson, who normally works as a restoration project manager and geologist at Coastal Delaware National Wildlife Refuge Complex, says his summer deployment makes it 15 in 9 years.



Wilson’s leadership background, combined with other specialized skills, such as heavy equipment operation, makes him a valuable asset to short-handed fire crews.

“Knowing how limited firefighting resources are across the country right now, I really feel like I helped make a difference,” he says.

Unsung Heroes

Not all deployed employees are fighting fires on the front lines. Many are unsung heroes who provide critical support functions such as finance, purchasing, communications, and information technology.

Bart Wilson, crew boss for the 20-person Delaware Interagency Wildfire Crew, helps construct a fireline at the top of Novak Creek near the Harris Mountain Fire in Montana. (CREDIT: USFWS)

Nate Carle, a wildlife biologist at Chesapeake Marshlands National Wildlife Complex on the Eastern Shore of Maryland and Virginia, worked remotely to coordinate air traffic above wildland fires in California and create temporary flight restrictions so firefighting aircraft could operate safely.

Max Riley, a network engineer, helped ensure vital computer systems stayed up and running to support firefighting efforts near the Dixie Fire in northern California. >>

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Lisa Swainbank, an administrative officer at Missisquoi National Wildlife Refuge in Vermont, served as a member of the Eastern Area Buy Team based in Flagstaff, Arizona, purchasing food, water, equipment, gasoline, and other necessities to support the firefighting effort. She and others say the collateral duties are an extension of their commitment to public service.

“After more than 20 years working for the Fish and Wildlife Service in the same job series, I was looking for a new challenge, something that would make me feel like I was truly making a contribution to the mission,” Swainbank says. “Fire does that—it’s fast-paced and hectic. But at the end of the day, you know that what you did really helped in some way.”

Service and Sacrifice

Rebekah Green, a maintenance worker at Great Dismal Swamp National Wildlife Refuge in North Carolina and Virginia, has served fire crew details this year in New Mexico, Arizona, and most recently, California. One of her most memorable experiences was mopping up a small fire in high timber country—working with an engine crew to extinguish embers and snuff out smoldering remnants of nature’s fury.

“Even with the hard work, we managed to have a great time and left smiling,” Green says. “Doing work that benefits the public and the ecosystem requires time and service. But looking out over a landscape and knowing that we are restoring natural cycles or assisting in wildfire prevention makes giving time and service more than worthwhile.”

Reflecting on his own 20-year career as a firefighter, Canterbury understands the value of that service and sacrifice from multiple perspectives.



“Having others step up allows our primary firefighters to rest and recover—to pay bills, cut the grass, and spend time with their families,” he says. “It also gives our folks the opportunity to serve in a new capacity to safeguard wildlife and support communities across the country where people’s lives and property may be at stake. It’s all about public service, no matter where we are.” □

Rebekah Green, a maintenance professional at Great Dismal Swamp National Wildlife Refuge, helps extinguish smoldering embers near the Chicken Fire in northern California. (CREDIT: USFWS)

DAVID EISENHAUER, External Affairs,
North Atlantic-Appalachian Region

FRIGHTENING INVADERS OF OUR NATURAL SPACE

Invasive species are non-native plants, animals, and other living organisms that thrive in areas where they don't naturally live. Not all non-native species cause harm, and they are not considered invasive. They may not prevent the survival of others within the ecosystem. ▲ But invasive species cause tremendous harm to our environment, economy, and health. ▲ They are a primary cause of global biodiversity loss, driving out or eating native plants and wildlife. They threaten nearly half of the imperiled species in the United States and have contributed to more than 40% of the current listings under the Endangered Species Act. ▲ And they impact everyone. In the United States, invasive species cause an estimated \$123 billion dollars in damage and costs every year to agriculture, public health, hydropower facilities, municipal water supplies, and the aquaculture industry. More than 6,500 non-native species have established their home here. ▲ Many invasive species are spread or introduced into a new ecosystem accidentally. Some introduced species are brought in as pets or decorative displays and then escape or are released into the wild. Many invasive species thrive because they outcompete native species for food. ▲ The Service is the only federal agency whose primary responsibility is the conservation of the nation's fish, wildlife, and plants. Team up with us to [take down invaders](#) across the nation and help protect our public lands and waters. ▲ Some nasty invaders: »

ZEBRA MUSSELS ▼



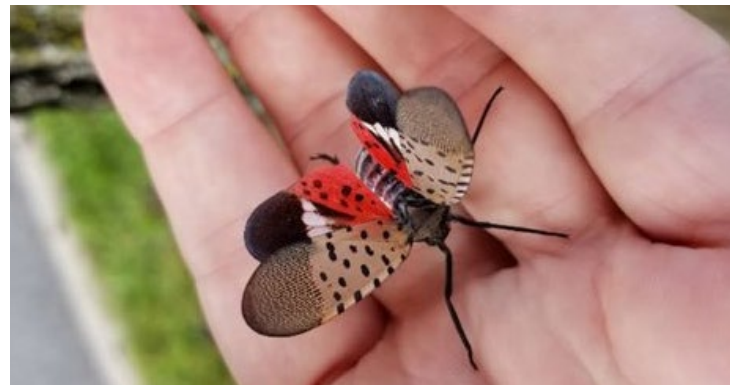
Invasive zebra mussels have been found in “moss balls,” plant products sold at aquarium and pet supply stores, garden centers, florist shops, and online retailers. Zebra mussels are regarded as one of the most destructive invasive species in North America. They filter out algae and plankton that native species need for food, and they attach to and incapacitate native mussels. If you recently purchased a moss ball, we recommend you take steps to destroy, dispose, and drain. [Destroy!](#)

[Don't Dump!](#) (IMAGE CREDIT: USFWS)

MAGNIFICENT BRYOZOAN ▼

Non-native magnificent bryozoan are colonial invertebrates found in freshwater environments. That means they form colonies that attach to submerged trees and stones. Those colonies are jelly-like green blobs on underwater vegetation, branches, and other structures. They can clog water pipes, filters, and drains and compete with native with other aquatic species for food and space. [Watch attack of the blobs.](#)

(IMAGE CREDIT: USFWS)



SPOTTED LANTERNFLY ▲

The spotted lanternfly is an invasive insect with a healthy appetite for plants, and it can be a significant nuisance. This pest feeds on sap from economically important fruit crops, grapevines, trees, and plants, causing extensive damage. They lay eggs on almost any surface, including vehicles such as rail cars and trailers, as well as outdoor equipment and patio furniture, and can be easily spread by people. (IMAGE CREDIT:

USDA FOREST SERVICE NORTHERN RESEARCH)

NUTRIA ▼



Nutria are South American semi-aquatic rodents that live in colonies along rivers, lakes, and wetlands. They were introduced between 1899 and 1930

through the fur industry and over the years escaped or were intentionally released from captive populations. Nutria breed year-round and can give birth to two to three litters of four to nine young, allowing their populations to grow rapidly. This species is highly invasive and poses a serious threat to water infrastructure, agricultural crops, and wetland habitats.

(IMAGE CREDIT: JACKIE ORSULAK/USFWS)

SPOTTED KNAPWEED ▼

The spread of invasive plants such as spotted knapweed has quickly become one of the largest threats to native prairies and grasslands that provide critical nesting habitat for many birds, mammals, plants, and pollinators. It is an aggressive weed that has overrun vast areas displacing native vegetation and reducing the forage potential for wildlife and livestock. (IMAGE CREDIT: USFWS)



INVASIVE CARP ▲

We and our federal and state partners are on the front line fighting bighead, silver (pictured), black, and grass carp (see p. 12). They are voracious filter feeders, eating up to 40% of their body weight in a day. This aggressive feeding can radically alter ecosystems and reduce food sources for native fish. The spread of carp threatens our aquatic biodiversity and local outdoor economies.

EUROPEAN GREEN CRAB ▶

The aggressive European green crab has already invaded the Atlantic Coast, damaging coastal ecosystems and collapsing the soft-shell clam industry in Maine. The green crab is also an intermediate host to a marine worm that can harm the health of local shorebirds. Recently discovered along the Pacific Coast, the crab could have huge economic and ecological impacts if it takes hold.

(IMAGE CREDIT: PAT DEHAAN/USFWS)



BURMESE PYTHON ▼



The Burmese python is a large nonvenomous constrictor found across south Florida where it represents a threat to native wildlife. Other creatures gaining a foothold in Florida include the Cuban treefrog, Nile monitor lizard, and various species of tegu lizards and chameleons. Some were released and some escaped. These aliens can disrupt an area's food chain and prey on endangered animals and native plants.

(IMAGE CREDIT: BRIAN SMITH/USGS)

VANESSA KAUFFMAN,
External Affairs, Headquarters

Contributors

Holly Richards, Fish and Aquatic Conservation, Headquarters, and John Klavitter, National Wildlife Refuge System, Headquarters

MUSEUM
OBJECTS
COME TO
LIFE

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

Home on the Hatchery



"Oh give me a home, where the fish all a-swim..." Families have been calling fish hatcheries home for well over a hundred years. Up until the 1980s, it was common practice to transfer hatchery employees to different hatcheries every few years so they could work with more species to become better-rounded fisheries biologists. Their families followed along, and it wasn't uncommon for hatchery kids to have attended 5, 10, or even close to 20 schools all around the country. Hatchery families seemed to make the best of it. They made each new hatchery their home and often helped with chores around the hatchery. Hatchery families still exist today, though the practice of transferring employees is now gone. Employees and their families who live on hatcheries, then and now, are there to respond in cases of emergency such as a water issue and to care for the fish year-round. This photo from the 1940s shows the Flynt family at the Marianna, Florida, fish hatchery. The Service no longer owns the Marianna hatchery. (APRIL GREGORY)

Net Needles –
No Meddling
Needed



Some technology changes drastically over time...other things were designed to withstand the test of time. The net needle has been used by fisheries biologists for the last 150 years. The only change over the years is they are now more commonly made of plastic than wood. Broken nets that need a quick fix in the field is where net needles continue to prove their worth. (APRIL GREGORY)

Fish Hatchery
Entrance
Pillars



At one time, many fish hatcheries had uniform entrance pillars. Tall columns usually made of concrete and painted white, they had triangular tops. From the column top, a metal rod with an iron cast of a fish cast in the likeness of a species raised there was proudly displayed. Heavy metal plaques were affixed to each entrance pillar. On one plaque it would read the hatchery name and another would list the species propagated there. The corresponding photo shows the entrance pillars at Austin Fish Hatchery in Austin, Texas, which is now closed. While many of the pillars have been removed, some older national fish hatcheries still have them intact, such as Uvalde National Fish Hatchery in Uvalde, Texas. (APRIL GREGORY)



Catch My Drift?

This driftnet invertebrate sampler was used by the Great Plains Fish and Wildlife Conservation Office in Pierre, South Dakota. Samplers are used to monitor and collect organisms from streams. The brass collection cup was manufactured by the Wildlife Supply Company, which was founded in 1938 in Saginaw, Michigan, by Dr. Herbert Trippensee. The company became well-respected by universities and government agencies for producing high quality environmental sampling equipment. This particular sampler was used in many rivers and streams throughout central and eastern South Dakota. (APRIL GREGORY)

transitions

Headquarters



Luis Santiago, Deputy Assistant Director for the Service's Office of Law Enforcement (OLE),

retired this summer after 35 years with the Service.

Before moving to Headquarters in 2019, Luis served as the Special Agent in Charge (SAC) for the Southeast Region in Atlanta, Georgia. He managed and led the Law Enforcement Program in 10 Southern states, Puerto Rico and the U.S. Virgin Islands. He also was Assistant Special Agent in Charge for the Southeast Region; Resident Agent in Charge for Central Florida; Senior Special Agent at Headquarters; Field Agent in San Juan, Puerto Rico, and Miami, Florida; and Wildlife Inspector at the ports of Honolulu, Hawaii, and Miami.

"I am especially proud of our work to stop wildlife trafficking," Luis says. "Throughout my career, I have witnessed the progression of wildlife crime to become the serious problem it is today. I am grateful to have been in leadership positions, which allowed me to facilitate national and international investigations, training, and other events to provide solutions and the opportunity to share our knowledge, skills, and abilities with conservation law enforcement officers all around the world."

Luis completed the Service's Advance Leadership Development Program (ALDP) and has served as a coach for ALDP, the Service's Stepping Up to Leadership Program, and Adaptive Leadership at the International Conservation Chief Academy.

Luis holds a bachelor of science degree in biology from the University of Puerto Rico. He is an alumni of several Harvard University Kennedy School of Government programs and holds a certificate in Strategic Management of Enforcement and Regulatory Agencies from the same institution. □

Alaska Region



Alaska Regional Director Greg Siekaniec greets Haretina Krukoff, the oldest survivor of internment at Funter Bay. (CREDIT: LISA HUPP/USFWS)

Alaska Regional Director **Greg Siekaniec** retired in August after 32 years with the Service. Greg began his conservation career at Charles M. Russell National Wildlife Refuge in Jordan, Montana. From there, he went on to successive management stints in North Dakota, Wyoming, and Alaska before heading to Washington, DC, to serve as Assistant Director of the National Wildlife Refuge System and then Deputy Director of the U.S. Fish and Wildlife Service.

Among his notable accomplishments, he led efforts to develop a plan for the Refuge System to meet the challenges of the 21st century, including an American Recovery and Reinvestment Act portfolio of infrastructure repairs, improvements, and construction. He also represented the Service on the Wildlife and Hunting Heritage Conservation Council and the North American Wetlands Conservation Act Council to facilitate partner interests in conservation, recreational use and enjoyment of refuge lands and waters, and user access to public lands administered for the benefit of future generations. In addition, Greg worked closely with the governor of Montana, National Park Service, and Tribal interests in bison conservation and Indian self-governance concerning the National Bison Range. In 2012, Greg left the Service to join Ducks Unlimited Canada as their chief executive officer. In that position, he furthered their landscape scale conservation strategies through partnerships with private donors, the government of Canada, and numerous multinational corporations interested in conserving North American wetland habitat and waterfowl. Greg returned to the Service in Alaska in 2016 where as Regional Director he led historic reconciliations with Indigenous peoples for both the devastating internment of Aleut people during World War II, and for the harm of past harvest regulations of migratory birds.

Learn more about Greg's life and career in the Alaska Region's employee podcast series, [My Life Wildlife](#). □

Missouri Basin and Upper Colorado Basin Regions



Landscapes: a possible orientation for printer paper, the inspiration for many great paintings, and an innovative way to think about

conservation. The latter is one of recently retired Regional Director **Noreen Walsh's** legacies in the Service. Noreen challenged Service employees to think beyond their individual programs and projects, and instead more strategically at the landscape level. Her goal: focus our limited resources on the biggest conservation opportunities. Her direction allowed employees to collaborate across programs and fields as they further the Service mission of "working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people."

Noreen's conservation story began in elementary school, when she first was inspired to pursue a career in wildlife conservation. Noreen spent summers exploring Seney National Wildlife Refuge in Michigan with her family, and her adventures as a Girl Scout solidified her love for the outdoors. Noreen's love for nature led her to pursue degrees in wildlife biology, and her first job after graduate school was with the Service. »

In 1990, Noreen began her

career as a biologist at Arctic National Wildlife Refuge in Alaska. Five years later, she moved to Oklahoma to serve as a biologist in the Oklahoma Ecological Services Field Office. It was there that she inspired a cooperative effort to conserve species—including the lesser prairie-chicken—in the Great Plains of Oklahoma, Kansas, Texas, New Mexico, and Colorado. After a brief stint in Headquarters working on national policy issues for the Endangered Species program, Noreen became the Chief of Endangered Species in the Southeast Region. The Southeast is home to hundreds of threatened and endangered species and she oversaw the program's work in 10 states, Puerto Rico, and the U.S. Virgin Islands. Her work in the Southeast led her to multiple leadership positions in the region including Deputy Assistant Regional Director for Ecological Services and then Assistant Regional Director for the program in 2005. In 2008, she took on the Deputy Regional Director role for the Mountain-Prairie Region, overseeing the Service's work in eight western states. Four years later she became the Regional Director, a position where she has been instrumental in species conservation at the landscape level and focusing the region's resources on working with partners to conserve important ecosystems to support both wildlife and people. Noreen believed "if our role is to be stewards of the planet and ensure that those who come after us have wild places and wild things to enjoy, then I'd rather fulfill that role with the Service than anywhere else." She certainly fulfilled her stewardship

role, making a lasting impact on every species, landscape, and Service employee she encountered.

Noreen was a champion and visionary for conservation in the sagebrush-steppe ecosystem, the Prairie Potholes Region and temperate grasslands, and multiple large river systems including the Colorado and Missouri rivers. And associated with these landscapes and ecosystems were numerous species who benefited from Noreen's conservation leadership.

One of those species is the black-footed ferret, one of the most endangered mammals in North America. During her tenure, Noreen oversaw the development of groundbreaking efforts to explore innovative solutions to help recover this endangered species. Since 2012, black-footed ferrets have been released into the wild on Tribal, public and private lands in five states. New technology dispersed life-saving vaccines via drones to combat the sylvatic plague, one of the greatest threats to the species survival. Also notable, on December 10, 2020, Elizabeth Ann was born, created from the frozen cells of Willa, a black-footed ferret that lived more than 30 years ago.

The ferret captive-breeding program has ensured that the Service won't be completely without a Walsh after Noreen's retirement. To commemorate Noreen's retirement, one of this year's black-footed ferrets was named Walsh in honor of Noreen's conservation legacy.

On September 8, Noreen released Walsh the black-footed ferret at Rocky Mountain Arsenal National Wildlife Refuge (seen in photo, previous page).

Before signing off from her final all-employee call as Regional Director, Noreen told employees, "Be bold, be strategic, be collaborative, be kind, and you'll do great things."

Thank you, Noreen, for your contributions to conservation and the conservation legacy that lives on in the many people you have empowered, inspired, and elevated both inside and outside the agency! □

North Atlantic-Appalachian Region



Christine Eustis, former Deputy Assistant Regional Director for External Affairs in the North Atlantic-Appalachian Region, accepted a position as Deputy Associate Director for the Office of Communications and Publishing for the U.S. Geological Survey (USGS). She started at USGS in late September.

Christine, whose career with the Service spanned 24 years, served as acting Assistant Regional Director for External Affairs from February 2019 to August 2021. In

that role, she supervised a staff of 14 employees who manage internal and external communications—including media, Tribal, and congressional relations, and digital communications—for 13 states from Maine to Virginia, plus the District of Columbia. She also helped guide the EA team through staff turnover, as well as challenges posed by COVID-19.

Christine moved to the North Atlantic-Appalachian regional office in 2013 to be the Deputy Assistant Regional Director for External Affairs and the region's congressional liaison.

Her career with the Service is distinguished by sustained excellence in leading communications and developing strong conservation partnerships. She is known as an approachable and supportive supervisor and colleague, who, throughout her two-plus decades with the agency, recruited and mentored an untold number of talented employees.

She spent more than 15 years in Headquarters – working as a congressional specialist, then Chief in the Office of Congressional and Legislative Affairs and eventually as Deputy Assistant Director for External Affairs. In the last role, she oversaw communications for significant, and often controversial, conservation actions; led initiatives such as Change@FWS.gov and a nationwide climate change campaign; and guided senior and regional leadership to invest in digital communications and social media. »

In congressional affairs, Christine’s political savvy, strategic thinking, and collaborative skills helped deliver conservation on the ground and billions in funding in support of the Service’s mission. Her contributions to neotropical migratory bird conservation, the fight against white-nose syndrome in bats, and landscape-scale conservation in the mid-Atlantic Highlands region and Delaware River and Chesapeake Bay watersheds are particularly notable.

Under her leadership, the Service significantly increased investments in the Tribal program and developed a Native American Policy in collaboration with Tribes. She created internships and entry-level positions to mentor, train, and hire Tribal youth and oversaw development of resources—including the agency’s first guidance on Indigenous land acknowledgement—to support all employees in their Tribal relations.

Before her work in Headquarters and the North Atlantic-Appalachian Region, Christine served as Assistant Regional Director for External Affairs in the Southeast Region. □



Tony Russell joined the Service in August as North Atlantic-Appalachian Region Assistant Regional Director for External Affairs.

Tony came to the Service from the Connecticut Department of Energy and Environmental Protection, where he was director of communications.

Before that, he spent 24 years working in various U.S. Coast Guard leadership positions, including press secretary to the commandant and national incident commander for the Deepwater Horizon oil spill, and chief of public affairs at Coast Guard Headquarters.

He has worked as a communications adviser to the White House Office of Energy and Climate Change. Tony also led the Professional Maritime Studies program at the U.S. Coast Guard Academy, where he served on the Leadership and Diversity Advisory Council and Equity Task Force.

Tony has a bachelor’s degree from the U.S. Coast Guard Academy and master’s degrees from Florida International University, Marine Corps University, and George Mason University. He and his wife live in Connecticut with their three sons and two boxer dogs. □

Columbia-Pacific Northwest and Pacific Islands Regions



Judith Gordon has been named Assistant Regional Director for the Service’s Fish and Aquatic Conservation Program in the Columbia-Pacific Northwest and Pacific Islands Regions, overseeing operations in Washington, Oregon, Idaho, Hawaii and the Pacific Islands. She has been the Deputy Assistant Regional Director for the program since April 2016.

“We are thrilled to have Judy as the new Assistant Regional Director for Fisheries and Aquatic Conservation,” says Robyn Thorson, Columbia-Pacific Northwest Regional Director of the Service. “With more than three decades of dedicated fisheries work, a strong scientific background, and a true passion for conservation, she has a track record of successfully managing natural resource challenges—we are lucky to have her at the helm.”

Judy has a bachelor’s degree in population biology from Princeton University and a master’s degree in quantitative ecology with a minor in statistics from Pennsylvania State University. Her affinity for fish biology has taken her many places. From

Massachusetts to Mississippi and Alaska to Washington, she has extensive experience in most types of water bodies and their species.

“I knew by the time I was 11 years old that I wanted a career in a marine biological science so I could be near the water and study biology,” Judy says. “I was inspired by the work of Jacques-Yves Cousteau, the oceanographer and marine conservationist.” □



Longtime public servant and Endangered Species Act (ESA) expert **Larry Salata** has retired. What began as a temporary appointment at Merritt Island National Wildlife Refuge at the Kennedy Space Center in 1979 became a 40-year career in wildlife conservation that ended with Larry as Branch Chief for Consultation and Conservation Planning of the Service’s Ecological Services program in the Columbia-Pacific Northwest and Pacific Islands Regions. “I only wish that I could go back and do it all over again!” he says.

At Merritt Island, Larry survived two tragedies. He witnessed the dying out of a species—the Dusky seaside sparrow—and lost a close friend and colleague in a wildfire. He credits these early experiences as having guided him ever since. “I learned quickly to fully utilize the authorities under »

the ESA, show proper attention to detail, step up when leadership moments are warranted, and savor the friendship of your colleagues.”

All federal agencies are beholden under Section 7 of the ESA “to use their authorities to conserve endangered and threatened species in consultation with the U.S. Fish and Wildlife Service.” Larry, in coordination with Service field offices, worked with other federal agencies to ensure that their operations were not jeopardizing protected species or their habitat. In addition to making sure wildlife wasn’t being harmed, he always looked for ways conservation could be furthered.

Proactive and respectful communication helped him negotiate with entities that didn’t necessarily prioritize protecting wildlife. “It is really important to build strong relationships and find some common ground to begin with,” Larry says. “Initially, conservation may not be on an agency’s radar, and they may not like the idea of modifying their actions. But once they are able to understand the impact of those actions on fish and people, they are on board—cooperation makes all the difference for conservation.”

Larry’s ability to foster this kind of cooperation led to what he considers one of his greatest career achievements—establishing an important population of the critically endangered least Bell’s vireo.

In 1984, Larry began working on Camp Pendleton Marine Corps Base in California as part of a 15-year intensive monitoring program for the rare songbird. At that time, the total population of the vireo throughout its range (from Mexico to Southern California) was only about 300 pairs. “The project involved extensive and intensive nest searches, removal of cowbird eggs and young from vireo nests, cowbird trapping, and the banding and color-marking of adult and juvenile vireos,” he says. He also had to apply his communication skills to persuade the base to do the required ESA work. “But once we help them understand that they can complete their mission while helping us with ours, it becomes a win-win.”

Perhaps even a win-win-win. After all, the wildlife certainly benefited from such coordination. The vireo population on the base, for instance, increased from about 20 pairs in 1980 to about 800 pairs in the mid- to late 1990s.

In addition to this professional milestone, Larry’s time at Camp Pendleton impacted his personal life as well. His work involved regular coordination with base personnel, including his future wife who was the base wildlife biologist.

Larry joined the Columbia-Pacific Northwest and Pacific Islands Regions in 1995. Now, after 26 years of overseeing the consultation and conservation planning programs, he decided to retire to spend more time hiking, fishing, and bird watching. “Professionally, I feel like I made a difference in helping species recover and I consider myself a very lucky man,” Larry says. □

Amanda Smith, External Affairs,
Columbia-Pacific Northwest Region

honors

Service-wide

On September 23, Secretary of the Interior Deb Haaland hosted a virtual convocation for the 75th Department of the Interior Honor Awards to celebrate the outstanding accomplishments of nearly 100 individuals from across the bureaus.

The Department of the Interior Honor Awards are the most prestigious recognition that can be granted to employees for career accomplishments, exceptional support of the Department’s mission, heroism, safety, and commitment to diversity and inclusion. This year, the DOI Honor Awards spanned a period of two years, 2020-2021.

The following individuals and teams from the Service received awards:

Distinguished Service Award
Recognizing outstanding contribution to science, outstanding skill, or ability in the performance of duty, outstanding contribution made during an eminent career in the Department, or any other exceptional contribution to the public service.

2020/2021 DISTINGUISHED SERVICE HONOREES:

Gloria Bell, International Affairs, Headquarters
Carmen Carda, Missouri Basin and Upper Colorado Basin Regions
Kevin Foerster, Columbia-Pacific Northwest and Pacific Islands Regions
Debora Goeb, Missouri Basin and Upper Colorado Basin Regions
Katherine M. Korte, National Wildlife Refuge System Law Enforcement, Headquarters
Debora McClain, South Atlantic-Gulf and Mississippi Basin Regions
Mark Newcastle, External Affairs, Headquarters
William Rice, Missouri Basin and Upper Colorado Basin Regions
Debbie Unbehagen, Wildlife and Sportfish Restoration Program, Headquarters
Keith Weaver, South Atlantic-Gulf and Mississippi Basin Regions

Valor Award

Recognizing Interior employees who have demonstrated unusual courage involving a high degree of personal risk in the face of danger. The act of heroism is not required to be related to official duties or to have occurred at the official duty station.

2020/2021 VALOR AWARD HONOREES

James E. McClelland, National Wildlife Refuge System Law Enforcement, South Atlantic-Gulf and Mississippi Basin Regions

Jason Vehrs, National Wildlife Refuge System Law Enforcement, South Atlantic-Gulf and Mississippi Basin Regions

Safety and Health Award of Excellence & Aviation Safety Awards

Recognizing individuals or groups who have performed an outstanding service for or made a contribution of unusual value to the occupational safety and health of employees, visitors, and volunteers; and aircraft accident prevention.

2020/2021 SAFETY AND HEALTH AWARD OF EXCELLENCE HONOREE

June Karp, National Wildlife Refuge System, North Atlantic-Appalachian Region

2020/2021 SAFETY AND OCCUPATIONAL HEALTH AWARD OF EXCELLENCE GROUP HONOREES

Joint Administrative Operations (HQ & Multiple Regions)

Joshua Flesher, Terry Goines, Shannon Taylor, Christina Bailey, Kerry Lyons, David Dorough, Dane Vanpelt, Jerry McCoy, Mark Ilg, Bradley Eadelman, Jimmy Lopez-Beniquez, Sean Wise, Barry Oelrich, Alan Williams, Kaylene Patten, Charles Murphy, Steven McEvoy, and Robert McGinn

2020/2021 AVIATION SAFETY AWARD HONOREE

Nate Olson, Alaska Region

Secretary's Diversity Award

Recognizing employees or groups of employees of the Department who have provided exemplary service and/or have made significant contributions to the Department in its efforts to increase diversity at all levels.

2020/2021 SECRETARY'S DIVERSITY AWARD HONOREE

Dr. Polly Wheeler, California-Great Basin Region

2020/2021 SECRETARY'S DIVERSITY AWARD GROUP HONOREES

Joint Administrative Operations-Workplace Culture Transformation Team

(HQ & Multiple Regions)
Janine Velasco, Elsa Haubold, Kim Hintz, Anna-Marie York, Gloria Bell, Ruth Benson, Megan Cook, Guy Foulks, Ann Froschauer, Corey Grant, Holly Gabriault, Nate Hawley, Dave Miko, Christina Milloy, Ron Niemann, Danielle Ross-Winslow, Deb Schlafmann, and Colleen Sculley

2020/2021 SECRETARY'S DIVERSITY AWARD GROUP HONOREES

John Heinz National Wildlife Refuge

North Atlantic-Appalachian Region
Lamar Gore, Mariana Bergerson, David Stoughton, Lawrence Balsamo, Brianna Amingwa, Wingyi Kung, Carmelita Rosner, Erika Scarborough, Leonardo Rivera, Kelly Kemmerle, Kelly Quain, Garrett White, and Brianna Gardner □

The Natural Resource Conservation Achievement Awards are annual Department of the Interior honors that include up to eight categories of achievement that protect environmental resources. Awardees for 2019 and 2020 include seven Service honorees—the most of any bureau within the Department.

Good Neighbor Award

This category recognizes external engagement with state or local governments and regional communities to achieve conservation results.

Chesapeake Bay Nutria

Eradication Project. Chesapeake Marshlands National Wildlife Refuge Complex's Blackwater National Wildlife Refuge in Dorchester County, Maryland, has lost 5,000 acres of wetlands through a combination of nutria (invasive rodent) herbivory, sea level rise, and land subsidence. Nutria accelerate and exacerbate the impacts of the other forces acting on the marsh by destroying wetland vegetation, thereby speeding up the rate of marsh loss. The Chesapeake Bay

Nutria Eradication Project is a consortium of multiple agencies on Maryland's Eastern Shore dedicated to the preservation of valuable habitat through eradication of nutria. Since its inception, the team has removed nutria from 250,000 acres on the Delmarva Peninsula. It has completed the "knockdown" and "mop-up" phases of eradication, where the large known concentrations of nutria have been eliminated and the nutria-infested watersheds were revisited to remove any animals that were missed.

Maintenance and Expansion of Fish Culture Programs with the Florida Fish and Wildlife Conservation Commission and Georgia Department of Natural Resources.

Welaka National Fish Hatchery in Florida anticipated a significant loss in production due to the COVID-19 pandemic in 2020. Through interagency cooperation, the hatchery stocked 1,077,848 Atlantic strain pure striped bass and hybrid striped bass into the public waters of Georgia and Florida, and 75,880 pure strain Gulf striped bass being stocked in Florida. The spring production season led to the development of new partnerships among Welaka, Georgia, and Florida. Welaka also produced 60,000 catchable channel catfish and bluegill for Georgia. Florida used hatchery ponds for a lake chubsucker program. These partnerships allowed several hatcheries to meet their goals for the season and strengthened relationships with neighboring stakeholders.

Natural Resource Stewardship

This category recognizes efforts to increase efficiency and cost savings in the use of materials, energy, water, or other resources and prevent or eliminate pollution from federal operations and buildings. The award includes efforts for improvements in building operation efficiencies, waste diversion and reduction, innovation, procurement of goods and services, and other pollution prevention and resource conservation efforts.

Artificial Reef Construction at Bears Bluff National Fish Hatchery in South Carolina.

Eastern oyster habitat has been negatively impacted by erosion. Bears Bluff partnered with local landowners to rehabilitate eastern oyster habitat through the construction of artificial reefs across the region. The hatchery constructed artificial reefs from donated (recycled) shell, providing essential habitat for oysters, marine fish and invertebrates protecting saltwater marsh ecosystems from erosion, filtering nutrients, stabilizing sediments, and contributing detritus. The team also established pollinator habitat for monarch butterflies through the creation of native milkweed gardens. The hatchery reused available fish tanks and scrap wood to construct raised beds for milkweed. Seeds were germinated and sprouted in an off-grid greenhouse, which uses rain barrels to collect water and a solar panel to power the water pump.

Paul Sarbanes Ecosystem Restoration at Poplar Island in Maryland.

Due to sea level rise and erosion, a once 1,100-acre island was reduced to just two acres by 1998, losing great environmental value and habitat to many species. The Ecosystem Restoration Project is a 50-year environmental restoration that incorporates dredge material from the Chesapeake Bay into habitat for Service trust resources. The dredged material is essential to maintaining Chesapeake Bay island habitat in the face of sea level rise. The partnership consists of the Maryland Port Administration, the U.S. Army Corps of Engineers, Baltimore District, and the Service. Over the last 20 years the partnership has enabled the restoration of island habitat that is rapidly disappearing in the Chesapeake Bay, which colonial nesting waterbirds rely on. It has also created essential stopover habitat for priority shorebird populations such as red knot and piping plover as well as a stopover and waystation for monarchs and other pollinators.

Ralph Regula Conservation and Stewardship Champion

This category recognizes those that champion America's special places to ensure the legacy of these natural and cultural resource treasures endure through collaborative stewardship and resource conservation efforts.

John D. Dingell, Jr. visitor center and headquarters building, Design Team, Detroit River International Wildlife Refuge, Michigan.

In 2002, Wayne County Parks purchased 44 acres of industrial brownfield lands in Trenton, Michigan, as the future home of the "Refuge Gateway," which includes the 11,800 square-foot Detroit River International Wildlife Refuges visitor center and headquarters building. This high-performance building was designed to save up to \$17,700 annually, is certified by the U.S. Green Building Council as Leadership in Energy and Environmental Design (LEED) Gold, and is the showpiece of the Refuge Gateway. It contains a highly efficient HVAC system, two energy recovery ventilating units, a high net metered 20 KW solar voltaic system, and more that contribute to its ultra-low carbon footprint. Community partnerships were essential in providing the Refuge Gateway with a high-quality wildlife habitat. The new visitor center is in the heart of the Detroit metro area. What was once the 44-acre site of an old Chrysler brake, paint, and solvent manufacturing plant now is a revitalized "Wetland of the International Importance" with a facility that provides recreational opportunities for over 4 million people in the Detroit metropolitan

area. It is the only project in the world to successfully clean up an industrial brownfield site to serve as an ecological buffer.

Trailblazer

Recognizes agents of change working across organizational boundaries or bureaucratic silos to enhance conservation outcomes and create efficiencies by resolving mission conflicts at the regional level.

Dan Murphy, Chesapeake Bay Field Office, Maryland.

Dan manages the Nutria Eradication Project, whose task is to remove invasive nutria from the Delmarva Peninsula. His job is to protect, restore, and enhance fish and wildlife habitat on public and private lands around the Chesapeake Bay. Dan has secured millions of dollars of grant funding to protect hundreds of acres of refuge lands and other environmentally sensitive areas. In 2019, he took the initiative to organize a partners' meeting at Patuxent Research Refuge to discuss policy changes and organize a landscape design process for southern Maryland. Currently on Maryland's western shore, Dan has been working with Maryland Department of Natural Resources, The Nature Conservancy, and others to protect 40,000 acres in southern Maryland for potential inclusion in the National Wildlife Refuge System. Because of his hard work and collaboration with many partners, all the known nutria populations have been removed from over a quarter million acres of the Delmarva Peninsula.

Monarch Conservation Science Partnership. The Monarch Conservation Science Partnership, made up of members of the Service, other federal and state agencies, universities, and nongovernmental organizations, was formed to address concerns relating to the migratory monarch butterfly, a species which has declined by more than 80% in the last two decades and has been considered for protection under the Endangered Species Act. The partnership, organized and led by the U.S. Geological Survey, is a consortium of government scientists, land managers, conservation policy analysts, nongovernmental conservationists, academic scientists, and citizen science program coordinators. Through the partnership, science producers and users worked collaboratively to define research questions and to develop and deliver ecological research resulting in improved environmental decision-making for conservation of monarchs. The partnership, for instance, conducted the extinction risk research used by the Service to establish a minimum overwintering population size required to sustain the eastern migratory monarch; this standard was subsequently adopted as the trinational goal of Canada, United States and Mexico. □

South Atlantic-Gulf and Mississippi Basin Regions

The Service's **Southern Surge Task Force (SSTF)** has received the Association of Fish and Wildlife Agencies' (AFWA) Conservation Law Enforcement Award.

"The Southern Surge Task Force stands as a shining example of the best of conservation law enforcement, exemplifying innovative strategies, investigative perseverance, inter-agency and inter-disciplinary collaboration, and above all, results in the fight against the criminal exploitation of our nation's natural resources," AFWA says.

The investigative efforts of the 14-member law-enforcement team helped break up a freshwater turtle smuggling network, and others.

"Perhaps most notable of all," wrote Col. Curtis Brown, director of the Florida Fish and Wildlife Conservation Commission's Division of Law Enforcement, "SSTF members and state investigators have worked closely with biological staff, conservation organizations, and members of academia to improve turtle conservation efforts and repatriate hundreds of native turtles that were removed in large numbers from the wild prior to their seizure during SSTF and related operations."

Brown nominated the task force for the AFWA award.

The task force was established in 2018 under the purview of the Office of Law Enforcement. It has helped federal and state investigators arrest 21 people, execute 37 search warrants, disrupt 15 trafficking networks, and seize money, equipment, and turtles valued at more than \$550,000. Eighteen people have been sentenced to 72 months in jail, and \$21,500 in fines have been levied.

Task Force members: Scotty Boudreaux (Louisiana), Andrew Hutchinson (Florida), Jimmy Barna (Georgia), Brian Cazalot (Louisiana), Tom Chisdock (North Carolina), Heather Green (Georgia), Jodie Horton (West Virginia), Jason Keith (North Carolina), Robert Register (Florida), John Skidmore (Florida), Tracey Woodruff (South Carolina), Jason Riley (Florida), Neil Gardner (Georgia), and Stephen Clark (Georgia). □

Headquarters



Paul Rauch, Assistant Director of the Service's Wildlife and Sport Fish Restoration Program (WSFR), has received a

special recognition award from the Association of Fish and Wildlife Agencies (AFWA) for outstanding commitment to the work of AFWA.

Paul was recognized for his tireless and proactive commitment to a state-federal partnership, through the capable execution of WSFR in collaboration with state fish and wildlife agencies.

In 2021 alone, the Service distributed \$1 billion to state wildlife agencies through WSFR. Generated by the hunting and angling industry, these funds support regional conservation projects across the country. □

Fish & Wildlife News

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parting shot



Fishing Fun

Warm Springs National Fish Hatchery in Georgia celebrated National Fishing and Boating Week in June by hosting their annual Kids Fishing Day. The hatchery had 217 kids in attendance with 15 fishing for the very first time. Over 600 catfish were caught and every kid was awarded with a prize for catching dinner for the family.

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