



U.S. Fish & Wildlife Service

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Fish & Wildlife *News*

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SPOTLIGHT

WHO IS THE FISH AND WILDLIFE SERVICE?



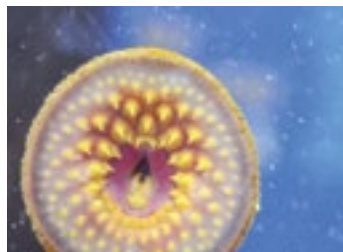
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Conservation4Youth Builds Connections

Everyone tends to think newer is better, but growing up in my day had one major advantage: We played outside a lot. And while we were playing, we connected with nature. Maybe we saw a bat or an unusual bird flying overhead. Maybe the tree that served as first base had a unique feel. Maybe we went fishing or hunting with an adult.

For many good reasons, this generation has a harder path to that connection. And for some—like those with challenging life situations—a connection with nature can be even harder to make. Developing that sense of wonder takes a backseat to just surviving.

That's why, for the third summer in a row, our award-winning Conservation4Youth Program (C4Y) welcomes a new group of interns to the U.S. Fish and Wildlife Service, young people from the Fairfax County and Washington, DC, foster care systems.

This program shows the Service as the socially responsible organization it is. But what's really important is that we get a chance to help foster a connection between nature and young people who might have never had the opportunity to see the wonders nature offers.

To date, C4Y has given 20 young people, ages 15 to 22, the chance to learn about wildlife conservation—taking part in real on-the-ground science and administrative support—while working in a professional setting. The interns can also gain confidence through on-the-job training, mentoring opportunities and shadowing assignments.

Local organizations provide mentor training for our participating staff, along with workplace training, transportation and salary funding for the students.

Many of the program's participating young people have been victims of abuse, neglect or abandonment, and their aspirations have consisted of little more than the basics of food, shelter and clothing. C4Y has created an opportunity for these youth to learn to set goals beyond these basics, to strive hard to achieve their dreams and to dream big.

We're starting to see these dreams become reality.

Several C4Y interns are now actively pursuing college degrees. One C4Y graduate was selected from hundreds of nominated students to become the recipient of the Joyce and Thomas Moorehead Foundation's College Scholarship Fund, which provides annual college funding, networking, mentoring and community service outreach. Another C4Y graduate was recently hired into a permanent position with the Service.

You will read in this issue of *Fish & Wildlife News* profiles of several current Service members. For all of us involved in conservation, though, the future is never far from our thoughts.

C4Y is just one way we are actively and enthusiastically developing the next generation of conservation professionals.

This summer, we welcome the largest group of students yet, including a number of returning alumni. Headquarters staff members will again give of their time and talent as they mentor selected teens.

We do take great pride in C4Y and the rare opportunity to make a committed difference in the world around us. But, as I said before, that is nothing compared to helping young people find their connection with nature.

If we are really lucky, one of the profiles in the *News* in 20 years will be about a former C4Y intern. □

DENISE SHEEHAN is the Assistant Director of Budget, Planning and Human Capital.

Service Crushes More Ivory in Fight Against Wildlife Trafficking

In an effort to crush what Secretary of the Interior Sally Jewell called the “bloody ivory market,” the Service, with wildlife and conservation partners, destroyed more than one ton of confiscated elephant ivory in early June in New York’s Times Square.

After brief greetings, dignitaries and thousands of onlookers witnessed an industrial rock crusher smash raw ivory as well as carved ivory tusks and statues.

Service Director Dan Ashe said: “Today’s Crush...sends a message to the traffickers whose pernicious greed is at the heart of today’s poaching crisis. This administration, this agency, these partners here, are committed to tracking you down, ending your activities, to putting you behind bars, to ensuring that you are no longer a threat to our planet’s wildlife.”

In two Ivory Crushes, the United States has pulverized more than seven tons of seized illegal ivory, signaling its leadership in the battle against traffickers and poachers.

Since the first Crush in November 2013, 10 countries have destroyed their seized ivory, and Ashe asked for more support.

“We call on all nations to join us by destroying their confiscated ivory stockpiles, enacting and enforcing strong regulations protecting wildlife from illegal trade, and reducing demand,” Ashe said in New York.



The event was the latest in a series of actions by the Obama administration designed to crack down on both the demand and supply that feeds international poaching and wildlife trafficking rings.

In July 2013, President Barack Obama signed an executive order to combat wildlife trafficking. The order established an interagency task force and charged it with developing a National Strategy for Combatting Wildlife Trafficking. With input from an advisory council of experts on wildlife trafficking, the task force set forth a robust government approach that focuses on three key objectives to stop wildlife trafficking: strengthening enforcement, reducing demand for illegally traded wildlife and expanding international cooperation.

Some may wonder at the U.S. effort, saying other countries are the major importers of ivory. But consumers or “middlemen” in the United States drive much of the world’s trade in wild animal and plant species—both legal and illegal.

In fact, much of the ivory that was crushed in June was confiscated from the Philadelphia, Pennsylvania, store of Victor Gordon, an art and antiques dealer who, in 2012, pleaded guilty to smuggling African elephant ivory into the United States. All ivory that has been illegally traded can never be sold in the U.S. market.

Although some African elephant ivory (including lawfully hunted trophies and certain other noncommercial items that meet specific requirements) can be imported, the United States prohibits commercial imports and

Secretary of the Interior Sally Jewell loads an item onto the crusher.

further regulates domestic trade of both raw ivory and ivory products. Many states, including New York, have also enacted strong legislation to ban the sale of ivory.

Event attendees included Congresswoman Grace Meng (NY-6); Congressman Steve Israel (NY-3); U.S. Customs and Border Protection Commissioner R. Gil Kerlikowske; Executive Vice President of the Wildlife Conservation Society John Calvelli; New York State Senator Brad Hoylman (Manhattan); Joseph Martens, commissioner, New York State Department of Environmental Conservation; and noted celebrities. □

Frog Slog: Volunteers Work to Protect Oregon Spotted Frog

March is usually the time when Oregon spotted frogs lay their eggs in the wetlands of south central Washington at Conboy Lake National Wildlife Refuge. It's also the time volunteers and staff do the "frog slog"—walking slooowly through knee-to-thigh-deep water, in line with your neighbors to count any submerged egg masses you see. Depending on the day, they can be hard to spot!

As one volunteer put it, "The search for egg masses is long and arduous. They are few and far between. When you do happen upon one, the experience is eggs-traordinary!!"

The Oregon spotted frog, listed as threatened under the Endangered Species Act, is a species unique to the Northwest. Its range stretches from southwestern British Columbia through the Puget Valley of Washington to the Klamath Basin in southern Oregon. It has disappeared from as much as 90 percent of this range and is suspected to be extinct in California and Oregon's Willamette Valley. The species has been heavily impacted by loss and degradation of wetland habitat, introduced non-native species such as bullfrogs and changes to hydrology.

The Service, in collaboration with Dr. Marc Hayes, has been studying the Oregon spotted frog at Conboy Lake since 1995. Since then, volunteers have come from all over northern Oregon and

Washington to lend a hand... and an eye! The first egg mass locations were documented in 1997, which led to a more intensive survey effort in 1998.

These surveys have occurred annually since that time through the commitment of dozens of volunteers and agency staff. The volunteer contribution is essential to providing the data the Service needs to effectively manage the Oregon spotted frog into the future.

Gina King, biologist for the Yakama Confederated Tribes, participated in this year's slog.

"I really enjoyed being part of the big, diverse group of people coming from all across Oregon and Washington to play a part in conserving these frogs. Past

surveys [with biological staff] were enjoyable and interesting field days, but this felt like participating in an event.

The enthusiasm of all our fellow volunteers and the lead biologists is infectious!"

Ten-year-old Maddie Engler, the daughter of a Service staffer, also came to hunt for eggs. She says what keeps her going when she is finding few egg masses and working in cold wet weather conditions is that she believes she is helping animals survive. "I love animals and I often spend lots of time thinking about how I can help them. I want to be a vet when I grow up, just to save animals' lives. The frog surveys are a great way to help."

Biologists such as Refuge Manager Lisa Wilson use survey results to help make better management decisions and evaluate past actions. "This year," she says, "for the first time

since 2009, the number of egg masses counted hasn't gone down."

The refuge has made many changes to its water management, beginning in 2013, and those changes appear to be paying off.

The counts, and seeing many more juvenile and adult frogs during the egg surveys this year, raise hope that there will be future increases in egg masses. "Females that were eggs in 2013 should be breeding for the first time in 2016" Wilson says. "More frogs should equal more eggs."

The promise of more frogs is what keeps everyone coming back to Conboy Lake; that, and the great company while counting them. □

TAYLOR GOFORTH, External Affairs, Pacific Region

Volunteers perform the frog slog at Conboy Lake National Wildlife Refuge.



BILL GOFORTH

Recovery in Action: Sierra Nevada Bighorn Sheep Return to Yosemite



STEVE BUMGARDNER/YOSEMITE CONSERVANCY

Bighorn sheep capture-and-release events are always exciting no matter how many times you are lucky enough to participate. Before the first bighorn sheep arrive at basecamp, almost everyone is quiet—listening for the helicopter. The noise signals the arrival of bighorn sheep, and the sight of the helicopter, its precious cargo dangling below it, sends everyone into action.

Releasing Sierra bighorn ewes into Yosemite National Park's Cathedral Range.

The endangered bighorn sheep that arrived at basecamp in Yosemite National Park's Cathedral Range in March were a unique subspecies—the Sierra Nevada bighorn sheep (or Sierra bighorn)—that occur only in the Sierra Nevada. A multiagency effort involving the Service; the California Department of Fish and Wildlife (CDFW); Yosemite, Sequoia and Kings Canyon National Parks; and Inyo National

Forest was reintroducing them to Yosemite and Sequoia National Parks. This release marks an important milestone for Sierra bighorn because the subspecies now occupies all areas considered essential for recovery. And Sierra bighorn now occupy a historic portion of their range—Yosemite National Park—for the first time in more than 100 years.

At one time, Sierra bighorn could be found along the crest of the Sierra Nevada from the Sonora Pass area south to Olancho Peak and even west of the Kern River. The number of Sierra bighorn before settlement is unknown, but there were likely thousands of animals. Following immigration of European settlers to the area, the population began to drop. This decline has been attributed to unregulated hunting and disease spread by livestock, specifically domestic sheep.

By the 1970s, the population of Sierra bighorn had dwindled to about 250 animals. These animals made up three populations in just two areas located at the southern end of their range. In an effort to increase the size and distribution of the population, CDFW began a translocation program in 1979 where Sierra bighorn from existing large populations were reintroduced to areas within its historic range.

Despite these efforts, threats such as predation by mountain lions decreased the population to about 122 animals by 1999. In 1999, CDFW upgraded the status of Sierra bighorn to state endangered, and the Service listed it as federally endangered.

In 2007, the Service and CDFW finalized the Recovery Plan for the Sierra Nevada Bighorn Sheep. The ultimate goal of the recovery plan is to attain population sizes and geographic distribution that assures the long-term viability of the Sierra bighorn. The plan also identifies the now-occupied areas, spanning the historic range of the subspecies, considered essential for recovery.

Since listing, recovery efforts led by CDFW have increased the number of Sierra bighorn to more than 600 animals.

The story of the Sierra bighorn highlights the success of the Endangered Species Act, but it also demonstrates how many years it can take to recover a listed species. Even now, Sierra bighorn face threats, so the population cannot be considered recovered. However, the tireless work of dedicated state and federal employees, researchers, and nonprofit organizations ensures the path toward recovery. □

ERIN NORDIN, Ecological Services, Pacific Southwest Region

'No Way to Treat a Bus,' But Greater Sage-grouse Benefit

On April 7, a bus pulled out of downtown Salt Lake City, Utah, loaded with 18 journalists on a field trip through America's sagebrush country to learn about the greater sage-grouse and the remarkable conservation effort underway to conserve healthy sagebrush ecosystems.

During the following week, the Sagebrush Country Institute rolled through five western states and 1,826 miles, some of them on dirt tracks so rough that the driver quipped, "This is no way to treat a bus."

Abused buses are par for the course for the Institute of Journalism and Natural Resources (IJNR), a Montana-based nonprofit that has hosted more than 60 field trips for more than 800 journalism "fellows" representing more than 350 different news outlets since 1995. The Sagebrush Country Institute followed IJNR's successful model: a diverse set of journalists embarking on a series of field visits, meetings and discussion forums with state and federal regulators, scientists, ranchers, industry officials, lawmakers and local citizens to provide a thorough understanding of greater sage-grouse conservation. The Service was the largest funder of the Sagebrush Institute.

"This really was an epic institute in many ways," says IJNR CEO Dave Spratt. "I see a lot of potential interaction between IJNR and FWS in the future."

On the tour, the journalists had access to a speaker list far more comprehensive than any one of

them would have been able to put together on their own. Policymakers included Undersecretary of the Department of the Interior Jim Lyons, Utah Division of Wildlife Resources Greg Sheehan and Colorado grouse "czar" John Swartout. Reporters got face time with premier sage-grouse biologists such as the Service's National Sage-Grouse Coordinator Pat Deibert, retired Idaho Fish and Game biologist Jack Connelly and San Stiver of the Western Association of Fish and Wildlife Agencies, to name a few. Tim Griffiths of the Sage Grouse Initiative, a partnership of ranchers, agencies, universities, nonprofit groups and businesses that support conservation through ranching, led a set of private-lands discussions, joined by biologists and ranchers from Colorado, Wyoming and Nevada.

An important aspect of all IJNR's field trips is to include speakers from all sides of an issue. Among the presenters were the Center for Biological Diversity, a frequent

litigant against the Service; anti-public lands grazing activist Western Watersheds Project; and Big Game Forever, a Utah group generally critical of the Service and federal sage-grouse conservation efforts.

The real value of the IJNR model is that it gets journalists into the outdoors to experience the places where issues are being played out first-hand. On a chilly morning, they watched more than 170 male sage-grouse lekking, or dancing to attract a mate, in northwestern Colorado. From Trappers' Point in Wyoming, they could see how migrating mule deer and pronghorn have to pick their way through development on their long seasonal trek to higher-elevation summering grounds. Fellows toured the Jonah Field, one of the 10 largest natural gas fields in the country, visited the site of the planned Chokecherry/Sierra Madre Wind farm, and peered down Newmont's Emigrant Mine, an active gold mine near Elko, Nevada.



Getting reporters out into nature was key in the institute.



THEO STEIN/USFWS

This was the first time that the Service had partnered with IJNR and the hope is that the increased accuracy, depth and perspective in news coverage generated by these journalists will help to promote greater public awareness of the species and the ecosystem, creating a better-informed civic discourse and more informed decision-making.

One month after the institute's conclusion, the Service had tracked more than a dozen good stories so far, with several more in various stages of development. At the very least, a group of talented and diverse reporters now better understand the many complicated angles of one of the most important conservation stories of our time — and they can tell the story to their readers across the country. □

THEO STEIN, External Affairs,
Mountain-Prairie Region

Protecting Sea Turtles with Wildlife-friendly Lighting

Five years ago at the end of April, the nation got the devastating news—BP’s Deepwater Horizon oil rig had exploded and was spewing oil into the Gulf of Mexico. As Service personnel were lining up to support the immense response effort, the evening news was delivering an unending stream of gut-wrenching reports. Eleven people died and millions of barrels of oil poured into the Gulf of Mexico.

The Deepwater Horizon Natural Resource Damage Assessment trustees have worked to uncover how the Gulf environment and its wildlife were injured. At the same time, the trustees have been trying to restore injured resources to their pre-spill condition.

Sea turtles were one of the many kinds of wildlife oiled and killed by the Deepwater Horizon disaster. Two years ago, the trustees approved an early-restoration project helping nesting sea turtles by replacing land-based white lights with amber light-emitting diodes (LEDs). The \$4.4 million project will change lighting in many nesting locations along the Florida and Alabama coasts.

Lighting may not seem important to tourists and other beach visitors, but it can make all the difference in determining the future of sea turtle hatchlings.

That’s because sea turtles typically hatch at night and are drawn to the light of the moon and stars as it is reflected off the ocean. The bright white lights of coastal development can cause hatchlings to get turned around. Amber-colored LEDs greatly reduce this effect on sea turtles. While LEDs have been available at home improvement stores for a while, it wasn’t until recently that a manufacturer was able to produce a commercially applicable amber LED and fixture that is certified as wildlife friendly.

“Sea turtle eyes are adapted to see underwater where they spend most of their lives,” according to Ben Frater, a Service restoration biologist and the project manager for the turtle lighting project. “They don’t have the ability to see amber or red wavelengths, so they simply don’t see the light coming from the LEDs. That’s why these LEDs don’t attract the sea turtles.”

Frater adds that the LEDs are more efficient than the old lighting; they will cost a fraction of traditional lighting to operate and maintain, and they’re expected to last 15 years.

Sea turtles hit the jackpot at Casino Beach

One of the first phases of the project was completed at the Casino Beach parking lot, a public beach on Florida’s Santa Rosa Island. Gulf Power, the

Santa Rosa Island Authority and Escambia County partnered with the trustees to complete this project. Twenty-one 35-foot concrete light poles, each bearing 250-watt bulbs have been replaced with 38 shorter poles, most bearing four 100-watt LED light fixtures. That makes the lighting at the beach’s parking lot significantly more turtle-friendly.

While sea turtles have yet to express their opinion of the lights, a substantial human fan club

is singing their praises. W.A. “Buck” Lee, Santa Rosa Island Authority executive director, says public reaction to the lights so far has been positive. “Everyone here is turtle-friendly. So we’re happy these lights will help turtles. We’re also happy that while the lighting helps turtles, the lighting is actually better for people.” □

NANCIANN REGALADO, Natural Resource Damage Assessment, Southeast Region



New LED light fixtures make Casino Beach on Florida’s Santa Rosa Island more turtle-friendly.

20 Years of Safe Harbors

Red-cockaded woodpeckers are just one of many species protected as endangered or threatened under the Endangered Species Act (ESA) that are helped by Safe Harbor Agreements (SHA), an innovative conservation tool to encourage voluntary conservation actions for listed species by private property owners. The cooperation of property owners is essential to help these species recover because more than two-thirds of the habitat for listed species in the United States is found on privately owned and managed land.

This year marks the 20th anniversary of the program, which eases a big concern some property owners have about supporting or attracting listed species on their properties: potential property-use restrictions related to the ESA in the future.

Under an SHA, participating property owners can contribute to the recovery of listed species on non-federal lands without fear. They receive formal assurances from the Service that if they fulfill the conditions of the SHA, the Service will not require any additional or different management activities by the participants without their consent.

An SHA also allows for 'take' should the species be inadvertently harmed by agreed-upon conservation actions or land management, such as timber



Red-cockaded woodpeckers have been big beneficiaries of Safe Harbor Agreements.

ERIC SPADEN/USFWS



Ten landowners have accepted 260 captive-raised black-footed ferrets on their property through a Safe Harbor Agreement.

RYAN HAGERTY/USFWS

management, prescribed burning and control of invasive species. Landowners are also allowed to return the property to the baseline conditions that existed before the agreement was signed once an SHA expires.

The first SHA was for the red-cockaded woodpecker in the Sandhills region of North Carolina. It was created because of the negative public sentiment about this endangered species near Fort Bragg, a 161,000-acre Army installation that has a significant population of red-cockaded woodpeckers.

Since that first SHA, 10 similar SHAs for the woodpecker are now in place from pine stands in southeastern Virginia to the longleaf forests of east Texas.

The success of the red-cockaded woodpecker SHA program has helped spark the development of 98 active SHAs across 5.2 million acres that maintain and improve existing habitat for 83 other listed species of animals and plants, or restore habitat and facilitate reintroduction of a species that has been lost. For example, a multi-state black-footed ferret SHA has facilitated the reintroduction of this species, thought to be extinct in the wild until 1981. Ten landowners have stepped forward to accept 260 captive-raised ferrets on 109,211 acres of ranching land through this SHA.

SHAs help both to maintain habitat for a species that currently inhabits private property and to reintroduce species, such as the Oregon chub and Northern aplomado falcon. And they're not limited to lands managed by individuals; county and state lands and corporate property can be enrolled, too. Only federal lands cannot be enrolled in a SHA.

Although Safe Harbor is a Service program, many partners such as states, cities, other federal agencies and non-governmental organizations help administer these voluntary agreements.

The success of SHAs across the country is the result of the many creative partnerships that form to help property owners "do good things" for listed species that make use of their lands. □

Recovery Efforts Bring Endangered Fox Back from the Brink of Extinction in Record Time

The island fox is known and loved as a symbol and important member of the Channel Islands ecosystem. But in recent history, these 12-inch tall relatives of the mainland gray fox faced extinction. In the late 1990s, island fox populations on San Miguel, Santa Rosa, Santa Cruz and Santa Catalina—four of the six Channel Islands they inhabit—plummeted to near-catastrophic levels. The foxes on each island are a separate subspecies.

On Santa Catalina Island, the island fox population fell from more than 1,300 in 1994 to about 100 by 2000. The decline was likely caused by canine distemper virus, likely transmitted by a raccoon that arrived from the mainland.

Foxes on San Miguel, Santa Rosa and Santa Cruz—the northern Channel Islands—faced an equally daunting threat: predation by non-native golden eagles. Golden eagles took up residence on the northern Channel Islands after breeding bald eagles disappeared in the 1950s because of the effects of the pesticide DDT. The presence of non-native species such as feral pigs, and the absence of bald eagles, enabled golden eagles to colonize the islands in the 1990s.

“Island foxes are diurnal, meaning they are active both day and night, so they were easy prey for the golden eagles that took up residence,” says Service biologist Robert McMorran.

Because bald eagles primarily prey on fish, smaller birds or carrion, they posed little threat to island foxes. However, golden eagles are terrestrial hunters and prey mainly on small rodents and mammals.

On Santa Rosa Island, the island fox population dropped from more than 1,700 in 1994 to only 15 by 2000. During the same timeframe, island fox numbers on Santa Cruz and San Miguel islands dropped from more than 1,400 to 55 and 450 to 15, respectively. By 2000, these four island fox populations had declined by more than 90 percent and were estimated to have a 50 percent chance of extinction over the next five to 10 years.

Conservation partners, including the Service, the National Park Service, The Nature Conservancy and Catalina Island Conservancy, immediately came together to recommend emergency action. A captive breeding program, initiated in 1999, played an integral role in recovery efforts. Golden eagles and their non-native prey bases were removed from the northern Channel Islands, and bald eagles were re-established to their historic territories. Foxes were also vaccinated to prevent the spread of canine distemper. And in 2004, the Service designated island foxes endemic to San Miguel, Santa Rosa, Santa Cruz and Santa Catalina islands as federally endangered under the Endangered Species Act (ESA).

(Top) A Santa Cruz Island fox roams across the terrain of Santa Cruz Island. (Right) Service staff, in partnership with Institute for Wildlife Studies, conduct health assessment on an island fox pup during annual monitoring efforts.

Now, less than two decades later, these Channel Island fox populations are thriving.

Surveys conducted in 2012 and 2013 estimate about 600 island foxes on San Miguel, nearly 900 on Santa Rosa, and more than 1,000 each on Santa Cruz and Santa Catalina.

“Due to the remarkable success of the Endangered Species Act, recovery actions by land managers and conservation partners have brought these endangered island fox subspecies back from the brink, in what has the potential to be the fastest population rebound due to recovery actions and ESA protections for any mammal in the United States,” said Steve Henry, field supervisor of the Service’s Ventura Fish and Wildlife Office, at an island fox press conference at Channel Islands National Park this spring.

In March, the Service began reviews to determine whether any or all of the island fox subspecies warrant reclassification or removal from the federal List of Endangered and Threatened Wildlife.

The Service also announced the publication of the final Recovery Plan for the four subspecies of island fox, which serves as a blueprint for conservation partners and land managers to prevent or address threats to island fox subspecies, and ensure the subspecies’ long-term viability in the wild.

“This is not only a story of recovery, but a story of the power of a dedicated team of conservationists, biologists and scientists,” McMorran says. “With the unwavering dedication of our partners, near tragedy has become a true recovery success story for the island fox.” □

ASHLEY SPRATT, External Affairs,
Pacific Southwest Region



Vandenberg Air Force Base Recognized for Excellence in Natural Resource Conservation

Vandenberg Air Force Base (AFB) encompasses 42 miles of some of the most pristine central California coastline and habitat types from coastal dunes and chaparral to wetlands and freshwater marshes. Located 160 miles northwest of Los Angeles, California, the 99,579-acre base provides habitat for 18 federally threatened or endangered species.

Vandenberg AFB's dedication and exceptional leadership in conservation efforts to protect and support species recovery on military land earned the installation recognition as the 2015 Military Conservation Partner by the Service.

"By supporting threatened and endangered species recovery, actively leading and contributing to habitat restoration activities, and building the scientific foundation for future conservation efforts both on and off base lands, the 30th Space Wing at Vandenberg Air Force Base is leading the way for proactive conservation efforts on military lands," says Pacific Southwest Region Deputy Regional Director Alexandra Pitts.

Nationwide, military installations have become important partners in natural resource conservation, and the Military Conservation Partner award annually honors a military installation whose efforts represent significant conservation accomplishments achieved in partnership with the Service and other conservation agencies.

Vandenberg AFB is a space launch and landing facility

operated by Air Force Space Command's 30th Space Wing. It is the only military base in the United States from which unmanned government and commercial satellites are launched into polar orbit. Built on what were once rural ranch lands, Vandenberg AFB stands as the third largest Air Force base in the United States.

Vandenberg AFB is committed to conducting its military mission while protecting and enhancing the environment. This includes restoring habitat for species from the federally endangered beach layia, an herb belonging to the sunflower family, and protecting one of the largest breeding sites for the Pacific Coast population of the federally threatened Western snowy plover.

Species habitat conservation efforts are guided by the base's Integrated Natural Resources Management Plan and conducted in coordination with the Service, the National Marine Fisheries Service and the California Department of Fish and Wildlife.

In 2014, Air Force staff and partners successfully restored 50 acres of coastal beach and dune habitat to benefit at-risk coastal species including the Western snowy plover and California least tern. Already this year, biologists on base have documented 17 Western snowy plover nests at the restoration site where last year there was none. This coastal restoration effort will expand to around 300 acres by 2019.

Air Force biologists also implemented surveys to document



PAM BIERCE/USFWS

federally endangered El Segundo blue butterflies across more than 1,200 acres on-base and extended their monitoring efforts to include adjacent state-managed lands. In partnership with the California Conservation Corps, Air Force staff planted more than 4,500 native plants across 16 acres to provide additional habitat for these and other pollinators. The base also monitors monarch butterfly sites and contributes to multi-partner efforts to identify and enhance monarch habitat across important migratory routes.

The base also restored 300 acres of habitat for the federally endangered Lompoc yerba santa plant and contributed to a Santa Ynez River watershed study to help map floodplains and conduct hydrological analysis to better manage water resources.

In addition to on-the-ground restoration activities, research and conservation planning, the Air Force also engages surrounding communities, including high school students, in hands-on outdoor education and

The Vandenberg AFB team with its award.

volunteer opportunities, including beach cleanups, summer school field trips, fishing days and docent programs.

During the award ceremony, Colonel Keith Balts, commander of the 30th Space Wing, emphasized the importance of good stewardship of the environment.

"Whether we are launching rockets, doing minor construction projects, cleaning up unexploded ordnance, or someday even landing rockets back on our location, we are going to keep the environment in mind," Balts said. "We know we are just borrowing the land for a short time in its geological history, and we want to make sure we do that right." □

PAM BIERCE and ASHLEY SPRATT,
External Affairs, Pacific Southwest
Region

Hunting Tool Leads to Safer Prescribed Burns

Who knew that an American hunting tradition could help keep wildland firefighters safe?

Bart Rye, a prescribed fire/fuels technician at St. Marks National Wildlife Refuge along Florida's Gulf Coast, has deer hunted for more than 20 years in nearby national forest using specially trained hounds that run miles at a time. The way he tracks his seven dogs gave him an idea for better monitoring his co-workers in heavy forest on the 70,000-acre refuge.

In these southeastern longleaf pine forests, it is easy to become disoriented in thickets of sprawling saw palmetto, sinkholes and sawgrass up to 10 feet high while walking or riding an all-terrain vehicle (ATV) during a prescribed fire. Hard-to-spot stumps can cause an especially dangerous situation for vehicles such as dozers and ATVs along an active fireline.

Rye suggested that his fire crew carry GPS transmitter collars, like those worn by his hunting dogs, so fireline supervisors could more easily locate multiple firefighters, vehicles and aircraft during prescribed burns over large areas. Rye has used the GPS system with his dogs in recent years, in place of older radio telemetry collars, like those used to tag wildlife.

Current GPS technology allows a user to visually track up to 20 moving targets with distinct colors and symbols on a single hand-held receiver screen. The GPS data refresh every five seconds, and the receiver lets out

audible alerts if a collar remains still for an extended period of time, indicating a potential problem.

The refuge first tested the collars last spring. When a firefighter unfamiliar with the local terrain inadvertently walked knee-deep into a grass-filled pond while igniting a burn, he became temporarily disoriented in vegetation over his head. The GPS device showed the supervisor his exact location, so he could be verbally directed out of harm's way. In February, a helicopter conducting aerial ignition of a 3,800-acre burn on the refuge carried both a collar and a receiver, allowing immediate location of the aircraft in case of an accident, as well as easy spotting by the pilot of crews on the ground.

"Bart's initiative added a level of safety that wasn't there before and may very well lead to national implementation," says John Segar, Chief of the Service's Branch of Fire Management, who recently presented Rye with the Service's second annual National Fire Safety Award for his suggestion. "This system is off-the-shelf and simple to operate."

The refuge bought a transmitting collar for each prescribed fire crew member, and two hand-held receivers for the fireline supervisors.

St. Marks conducts 40–50 prescribed burns a year, averaging 300–400 acres in size, to reduce the risk of wildfire and maintain wildlife habitat.



(Top) The wildland fire crew at St. Marks National Wildlife Refuge in southwest Florida equips its ignition specialists, ATVs and helicopter with GPS transmitter collars to track multiple real-time locations on a single hand-held unit during prescribed fire operations. Wildland firefighter Travis Pollard has a red collar on his back. (Right) The GPS collars are ready for use.



The refuge is a mecca for bird watchers, supporting more than 300 resident and migratory bird species, including the wintering endangered Whooping crane. It is also home to the historic St. Marks Lighthouse, still in use after more than 170 years. □

KAREN MIRANDA, National Wildlife Refuge System, Headquarters

Service Biologist Leroy Koch Talks Mussels with Prince Charles



GORDON GARNER, KENTUCKY WATERWAYS ALLIANCE

There are only six mussel species in the United Kingdom compared to more than 300 in the United States, yet Leroy Koch (left, with Prince Charles), a biologist in the Kentucky Field Office, and Prince Charles share common interests in conservation and mussels.

Koch met Prince Charles at a private reception in March at the home of Christina Brown, who is involved in the nonprofit Kentucky Waterways Alliance. Prince Charles visited Louisville that day for several events on sustainability.

Koch told Prince Charles about the spectacle case mussel, which has a British connection. Its scientific name is *Cumberlandia monodonta*, and the name “Cumberlandia” came from the Cumberland River and region in southeastern Kentucky. An early explorer, Dr. Thomas Walker, is credited with discovering and naming the Cumberland Gap and Cumberland River in 1750. He used the name Cumberland after the Duke of Cumberland, who was a son of King Edward II.

Koch later sent Prince Charles, via Brown, a couple of books about mussels that were donated by their authors: *North American Freshwater Mussels: Natural History, Ecology, and Conservation* by Wendell Haag and *The Freshwater Mussels of Ohio* by Thomas Watters, Mike Hoggarth and David Stansbery. He also sent Prince Charles a children’s book *Russell the Mussel* by Adele Conover, Richard Biggins and Richard Neves.

“It was a real treat to be able to say I shook hands with Prince Charles and actually had some time, although very brief, to talk about mussels,” Koch says. “He only was at the reception about 30 minutes, so any time at all with him was special. I really appreciate Ms. Brown’s thinking of mussels and myself as warranting Prince Charles’ time, even if very briefly.” □

ELSIE DAVIS, External Affairs, Southeast Region

The Natural World through the Eyes of a Child

If you’ve been to the National Wildlife Refuges Visitor Center on Roanoke Island in eastern North Carolina any Friday morning between 10 and 11, you might have been met by a troupe of toddlers making their way from the classroom to the nature trail behind the building.

The Preschool Young Naturalist Program, which combines story time, craft-making and a discovery hike, has been meeting for more than two years and has attracted both local children and visitors to the Outer Banks. Many of the children have been attending since the program’s inception and have continued to use the skills learned when they are away from the program.

Recently, the children designed walking sticks to be used on hikes. Walking sticks were introduced to the children more than a year ago, and many of the children had outgrown their original walking sticks.

A casual visitor may have viewed the classroom as chaotic, but from the chaos came beautiful designs.

Each child selected letter beads to spell out their names so everyone would know which stick belonged to which child and then tried the sticks out on a walk with Visitor Services Specialist Cindy Heffley.

The children used the sticks to roll over logs to look for anything that might be moving. Once found, the critters were carefully placed in a “bug box” to be viewed through a magnifying lens.

Many of the children enjoyed holding the bug box...especially when it held slugs!

After everyone has had a chance to get a close view of the bug, it is carefully placed back in its home and the log rolled back in place.

The caregivers and parents tell how much the experience has helped the children to appreciate the natural world around them. □

CINDY HEFFLEY, National Wildlife Refuge System, Southeast Region

Preschoolers created walking sticks.



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GEORGE GENTRY/USFWS

WHO || is the || FISH AND WILDLIFE SERVICE?

by MATT TROTT

*The U.S. Fish and Wildlife Service:
Conserving the Nature of America*

When one thinks of people working in the Service, the mind probably goes to the scientists and others out in the field—conserving, protecting and enhancing fish, wildlife, plants and their habitats for the continuing benefit of the American people. Indeed, several of the profiles in this section feature such scientists.

But the more than 8,500 men and women representing a diverse range of backgrounds and specialties are united not by similar jobs but by a single-minded commitment to keep the wild things and wild places of our world around for future generations.

Yes, that requires biologists, hydrologists, refuge managers, rangers and other natural resource specialists. But the Service needs many other skills to get the job of conservation done.

Fire managers and wildland firefighters protect and enhance Service lands. Outdoor recreation planners educate and engage the community. Special agents and wildlife inspectors enforce wildlife laws throughout the United States. Maintenance workers and mechanics do everything from creating trails to installing wiring.

In offices nationwide, realty specialists appraise and negotiate for land that the Service acquires. Natural resource economists provide critical analysis. Computer specialists support both the scientific and administrative activities of the Service. External Affairs specialists share information about Service activities to the media, Congress, key stakeholders and the public. Administrative employees track budget and expenditures, greet visitors, and more.

This is just a small list of the many professions in the Service. Conservation is a huge job, but the Service—along with its many partners—is ready. □

MATT TROTT, External Affairs, Headquarters

GATHERER *of* DUCK DATA

Satellite technology informs redhead conservation on the Texas Gulf Coast

by CRAIG SPRINGER

The redhead is arguably among the handsomest of waterfowl. That is of course a matter of opinion. But here's a fact: Eighty percent of all North American redheads spend their winters concentrated along the lower Gulf Coast of Texas in the Laguna Madre. The birds have an affinity for, if not an obligation to, freshwaters near salty shores. They feed on shoalgrass in the Laguna and fly inland to purge excess salts. Redheads, like most birds that feed in saltwater, have a salt gland near the eye that excretes excess salts ingested while feeding. It is essential that salt be purged daily in freshwater ponds. And knowing the array of habitats frequented by the bird during south Texas winter sojourns is essential for Dan Collins.



USFWS

He's as much a geographer as he is a wildlife biologist. For Collins, a scientist in the Service's Division of Migratory Birds in Albuquerque, New Mexico, avian fauna are his forte. With research into redheads in south Texas, he is waist-deep in remote-sensing—using photovoltaic cells, GPS and Doppler radar to find and follow the position of ducks. The technology lends an amazing advantage in learning how birds behave and how wildlife managers can make better informed decisions for the bird.

For Collins, who has earned three degrees in wildlife management and biology, culminating in a Ph.D. from Stephen F. Austin University in east Texas, birds are a way of life. He studies them and he hunts them—turkey, waterfowl and upland. A stringer of northern shoveler, and green-wing and blue-wing teal are preserved in a beautiful taxidermy mount on his office wall from a memorable hunt years ago. Five steps away, two computer monitors sport spreadsheets and maps with real-time satellite imagery—all duck data.

To the uninitiated, the map is a meager representation of the tip of Texas with blue dots scattered about. Other dots concentrate in clusters. The dots tell a story and inform the future. It's the

Dan Collins works with Sandhill cranes.



A redhead with a transmitter.



dots—superimposed with waterfowl habitat data: freshwater lagoons, salt marshes and fields, some studded with wind-energy turbines—that tell the tale. Each dot represents a redhead caught in a moment in time unknowingly sending a signal into the ethereal black of space to a satellite. The satellite relays the information back to the ground for Collins and collaborating researchers at Texas A&M University-Kingsville, to see. It's the time and space in between each data point that reveal what ducks do on their winter grounds.

Tiny photo cells charge the small transmitters attached to the ducks. They need four hours of sunlight per week to operate effectively. The tags emit signals very much like the GPS function on a smartphone, except these tags have to endure the rigors of flight and the pressure of water given that redheads

dive to find food. Each tag isn't cheap—about \$3,700 a piece—so birds are not tagged en masse, but the quality of the information is worth the expense.

Having virtually followed redheads for a season, the data show the birds have an aversion to wind turbines. “We’ve documented turbine avoidance,” says Collins. “It’s good they don’t fly into them, but there’s more to it. The turbines affect habitat use, they seem to displace birds, and that could lead to birds leaving wintering habitat in poorer condition.”

Redheads arriving on their summer breeding grounds in Canada, the Dakotas and Montana less fit could make the bird less successful on the nest. That remains an unknown. Only large males were tagged in this present research, says Collins—birds that could physically handle the tags.

“New, smaller tags are coming online that should allow us to tag more birds,” Collins says. With more data from more birds, females included, the picture of habitat use should become clearer. With what’s been acquired via remote-sensing thus far, wildlife managers are better equipped—much more informed—to steer waterfowl conservation and seek answers to new questions. This much is clear already: “The data revealed what areas are important for conservation outside of the wind farms,” says Collins, “and where best to engage our partners—where habitat enhancement and restoration would be most beneficial for the birds going forward.” □

CRAIG SPRINGER, Fish and Aquatic Conservation.
Craig is based in the Southwest Region



JOANNA GILKESON/USFWS

A single adult sea lamprey can kill up to 40 pounds of fish each year.

a LAMPREY LEGACY

*As his dad did,
Tim Sullivan fights the sea lamprey invasion*

by JOANNA GILKESON

JOANNA GILKESON/USFWS

Tim Sullivan, or “Sully,” is no ordinary Service employee. Since he can remember, Sullivan’s dream job was to be a biologist with the Service’s Sea Lamprey Control Program and help preserve the health of the Great Lakes ecosystem through controlling this invasive species — the mission of the Sea Lamprey Control Program.

Sullivan is a second-generation sea lamprey control employee and has a special connection to the program. The program was established in 1956, and Sullivan’s father was part of the original team. Sullivan describes his father as a “pioneer” in the program, working on the front lines developing control and treatment techniques. Tim now holds the same position his father did — treatment supervisor. For him, this is not just a job; it is his legacy, supported by teamwork and a strong sense of mission and passion. Sullivan’s father worked in the Service’s Marquette office and eventually helped to establish and start the Ludington office for sea lamprey control. Sullivan now works out of the Ludington office.



Tim Sullivan, "Sully," has been with the Sea Lamprey Control Program for 29 years.



Sea lamprey latched onto a lake trout.

THE SEA LAMPREY IS A PREDATORY FISH that attaches to host fish and feeds on the blood and body fluids. A single adult sea lamprey can kill up to 40 pounds of fish each year over its 12- to 18-month feeding period. Accidental introduction into the Great Lakes caused great damage to the native fish population, such as lake trout. The Service implemented a massive chemical control effort in the 1950s and by the early 1960s had reduced the abundance of sea lampreys by 90 percent.

While total elimination of sea lamprey populations from the Great Lakes is unlikely, continued chemical treatments along with new technologies and techniques such as mechanical and electrical barriers are leading to increasingly healthier fish populations.

Sullivan got his start studying fisheries in college. He graduated from Lake Superior State University in Michigan with a B.S. in fisheries and wildlife management, and spent a few years bouncing back and forth between the public and private sector before he finally ended up in the Sea Lamprey Control Program 29 years ago.

Sullivan is as humble as he is experienced. When asked what his favorite part of the job was, he speaks endlessly about the teamwork and partnerships that make this work possible and successful. "It is a challenging, yet very rewarding job. It takes teamwork, and it's good to know our team is working together to save the Great Lakes fish from sea lamprey." Sullivan describes the Sea Lamprey Control Program as a "border-blind program" in which the Marquette and

Ludington offices work with Canada's Fisheries and Oceans Canada as a team. The two countries plan treatment schedules together and support each other during treatments.

Sullivan says that during a treatment, you do whatever it takes to get the job done. A single sea lamprey treatment is typically around 10 days in the field. The staff conduct pre-treatment assessments and determine treatment logistics specific to a single stream and then spend three to five days treating the streams. "I have very talented people on the team. It takes a lot of people to manage, steer and adjust the treatment as weather conditions are constantly changing," Sullivan says. Whether this means working an overnight shift or a double shift, the team goes the extra mile.

Sullivan makes a point to end on this note: "I am very fortunate to be a team member here. No one is more or less important than others on the team. I'm very lucky and we all support each other."

From just one interaction, it is apparent that Sullivan is dedicated to the mission, his team and the legacy of protecting the Great Lakes, all while working in his dream career field. □

JOANNA GILKESON, External Affairs,
Midwest Region



OPERATION WARFIGHTER INTERN

*Don Wilson lends a hand
to protect the beauty around San Diego*

story and photos by LISA COX

OPERATION WARFIGHTER is an internship program for military service members who are convalescing at military treatment facilities throughout the United States. The program offers recuperating service members an opportunity to build their resumes, explore employment interests, develop job skills and gain valuable work experience.

Don Wilson: "Teaching the children about the importance of protecting the environment was also the most rewarding thing, because hey, it's up to them after we're old and gray."

Over the past 20 years with the U.S. Navy, veteran Donald Wilson, a security/anti-terrorism specialist, has been deployed to the Middle East five times, the Mediterranean and Guantanamo Bay, and he has been stationed at seven permanent duty stations around the United States and overseas. During his time on medical limited duty at Balboa Naval Medical Center in San Diego, he was introduced to San Diego National Wildlife Refuge Complex by his case manager for Operation Warfighter.



(Left) Don Wilson helps out at Anza Elementary in El Cajon, California. (Right) He helps maintain a small restoration site at San Diego National Wildlife Refuge Complex Headquarters.

Project Leader Andy Yuen kicked off Wilson's stay there with a tour of the four national wildlife refuges in the complex—San Diego, San Diego Bay, Seal Beach and Tijuana Slough—and soon after, Wilson got to work.

During the internship, he participated in projects such as reinstalling fencing for threatened and endangered birds, and helping create trails at a Schoolyard Habitat at Anza Elementary School in El Cajon. He also worked with biologists and refuge staff in collecting mole crabs on Tijuana Slough Refuge. The crabs were to be tested for parasites believed to be infecting and killing gull-billed terns.

Wilson learned a lot about wildlife, protected birds, the importance of keeping a healthy ecosystem and protecting what's left of the marshes on San Diego's

refuges. During his stay in San Diego, it surprised him to find Service-managed lands. "Right off the interstate, you are nestled right here in a gorgeous complex of several acres of land set aside for our wildlife here in southern California. Just going around to the other three refuges, they were equally as beautiful."

The most rewarding thing to Wilson was working with the staff because, he says, it's really about the people you work with that make the job, and he was thankful to get to know the staff in San Diego. "Teaching the children about the importance of protecting the environment was also the most rewarding thing, because hey, it's up to them after we're old and gray."

If Wilson were to pick a job with the Service, it would have to be the one that

was outside. "I absolutely love nature. Growing up in southeastern Minnesota, there were a lot of forests around, and my older sister had always said she saw me being a hermit in the woods when I grew up. I just love the nature aspect part of the jobs here, and maybe the longer I progress in the future I could see myself being a supervisor for others."

As a child, his grandmother taught him how to grow plants in the garden. One day when the little green "weeds" were popping up, his grandma explained they were the vegetables he had planted. "That has always made me appreciate keeping the environment clean, managing what you put into the ground, and ultimately reaping what you sow at the end of the day."

Wilson not only had a great experience in his monthlong internship but also learned a lot and found healing after his military service. He also hoped that local commands would jump in on working as volunteers at the San Diego refuges to help those with post-traumatic stress disorder. "I would highly recommend this for volunteers, interns [and] future Operation Warfighter interns to come through here and get their hands dirty, if you know what I mean, and learn about what's out there, so the next generation can protect this as much as possible."

Wilson returned home after his month to the Winona, Minnesota, area where he grew up. He joins his wife and two kids and toy poodle. He plans to pursue careers in industrial manufacturing, wildlife conservation, or anything that involves being outside or working hard with his hands. □

LISA COX, San Diego National Wildlife Refuge Complex, Pacific Southwest Region



ANOTHER CENTURY *of* LIMITLESS OPPORTUNITIES



In talking about “Who is the Fish and Wildlife Service,” it is impossible not to discuss a key priority: helping develop a new generation of conservation professionals — one that reflects the increasing diversity of America itself. It is emphasizing outreach into urban areas, and a partnership with Phi Beta Sigma Fraternity, Inc., will help the Service engage more Americans in a meaningful way. **Dr. Mario Brown**, International Coordinator of Sigma Beta Clubs, the fraternity’s youth auxiliary, talks about the partnership, which turned 1 in April.



The Service and Phi Beta Sigma Fraternity, Inc., plant trees to commemorate their partnership at Bayou Sauvage National Wildlife Refuge in New Orleans.

On May 19, Phi Beta Sigma Fraternity, Inc., and the U.S. Fish and Wildlife Service took an important step in our partnership to engage urban youth in outdoor recreation and STEM education, that is, learning in science, technology, engineering and mathematics.

We established a local relationship at Bayou Sauvage National Wildlife Refuge in New Orleans that will stand as the model for increasing our broader partnership efforts.

With a model in place, let's now challenge ourselves to put it to good use.

The membership of Phi Beta Sigma Fraternity, Inc., a predominately African American organization, spans 10 decades and four continents, and includes members of all races, religions, ethnicities and nationalities. More than 150,000 men have become members of Phi Beta Sigma Fraternity, Inc., over the past 100 years, represented in more than 700 chapters across the world. And we have more than 120 Sigma Beta Clubs across the nation that have been making manhood training for young boys a priority for more than 60 years.

As we envision another century of service, we have heightened our focus on developing our nation's most valuable asset, the youth, and encourage the Fish and Wildlife Service to help us develop our nation's young men into people who will care for the nation's natural resources.

Of the overall partnership with the Fish and Wildlife Service, Jonathan Mason, our 34th International President, says: "We are excited for this amazing opportunity to continue our partnership with USFWS in engaging our youth through education and physical activity. We've aligned our focus with President Barack Obama's "My Brother's Keeper" initiative with Phi Beta Sigma's response initiative "I Am My Brother's Keeper," as we take this opportunity to teach our young men that food does not come from the box, but from the ground."

The joined forces of Service staff and Sigma members have forged an excitement among our Sigma Beta Club youth members to become environmental stewards already. These future leaders are looking forward to the engagement that

the Service will continue to provide for years to come. In keeping with the fraternity's mandate of "securing the future of our boys and young men of color," we are vigorously and vibrantly focused on making sure that youth are consistently engaged in outdoor recreation on public lands.

We hope that the combined efforts will continue to promote health through physical activity and oversee the pursuit of biological sciences careers through stewardship and STEM. We're also happy that Sigma Betas—as citizen scientists, land stewards and budding biologists—will now be an integral part of the conversation as the Service continues to develop national, regional and local conservation.

I am grateful for this unique opportunity. It will provide some necessary exposure to allow our boys, who rarely participate in such activities that the Service supports, to experience more of what nature has to teach us about life.

It is also a call to action to the Sigma Brotherhood to prepare the next generations of wildlife conservationists, following in the footsteps of American scientist and Sigma member George Washington Carver.

And it is a call to action to Service staff to work closely with us in this effort to better both serve and reflect the diversity, while continuing to fulfill its mission for the benefit of the American public.

It is up to us, though—Sigmas and Service members alike—to make it happen. Conserving the future depends on us all. □

MEET YOUR FISH *and* WILDLIFE SERVICE

Throughout the country, Fish and Wildlife Service workers are dedicated to both doing their jobs and to making sure everyone can connect with nature. Listen to just a few Service “voices”:



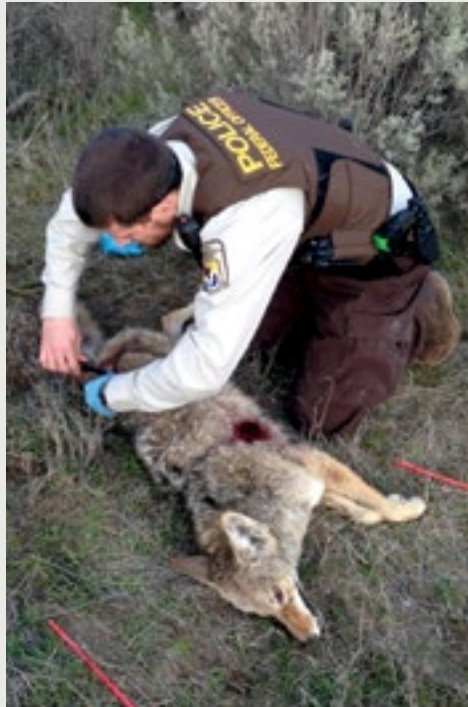
Angela Palacios James, a fish biologist with the New Mexico Fish and Wildlife Conservation Office, on the need to reach the next generation: “Youth today will be the ones fighting for the survival of our plethora of species and all our natural resources in the future. There is no easy answer to environmental issues; they cross generations. The youth will inherit the issues of today, and we need to ensure they are aware, [and] have empathy and the knowledge to take on these challenges.”



Katrina Mueller, a fisheries outreach coordinator in Alaska, on working with kids: “My favorite part is the unexpected moments of excitement. We took some Anchorage urban youth on a fish-focused field trip and the highlight of the trip happened as we pulled into a parking lot that overlooks a rocky beach. To my surprise, these Alaska kids had never put their feet in the ocean. They started screeching in excitement over the crashing waves and using bits of dead seaweed as pretend-mustaches. It wasn’t on our agenda and I think they’ll remember it for a long time.”



Tamara Johnson, an energy biologist in the Georgia Ecological Services Field Office in Athens, on urban outreach: "Someone once told me that 'wisdom begins with wonder.' When it comes to nature, anyone who has seen a beautiful sunrise or heard a bird sing has a chance to become an environmental steward...Creating open-ended opportunities for urban youth to go outdoors and explore on their own will give them an ownership over the natural resources they encounter (both in urban and more natural settings) that sinks deeper than just doing a presentation."



Federal Wildlife Officer **Christopher David**, the Pacific Region 2014 Federal Wildlife Officer of the Year, on his work: "Because of my love for the outdoors and fish and wildlife, it seemed natural to become a federal wildlife officer. When I can catch a poacher or help an injured bald eagle, I know I'm making a difference. Wildlife belongs to all of us and needs to be protected."



Silvio O. Conte National Wildlife Refuge Administrative Officer **Stacey Pacheco**, the first woman to receive certification as a heavy equipment safety instructor on her two hats: "I love the policy and procedures kind of work so I can support the guys on the ground, but also know how happy I am in the maintenance world. So, why not do both!" □



JIM RORABAUGH, USFWS

C O N S



(Top left) Non-native predators threaten the Chiricahua leopard frog. (Above) The Columbia spotted frog is losing wetlands used for feeding, breeding, hibernating and migrating. (Left) A Saratoga National Fish Hatchery biologist feeds captive Wyoming toads live worms. The hatchery was the first unit in the National Fish Hatchery System to become involved in rearing endangered amphibians.

USFWS

ERVING *amphibians*

Why disappearing frogs, salamanders and toads are important, and what's being done about it

By VALERIE FELLOWS

Amphibians worldwide, including frogs, toads and salamanders, are in decline. Research from 2004 showed that one third of amphibian species across the globe were threatened with extinction and approximately 43 percent were declining. In addition, amphibians on U.S. public lands disappeared from 3.7 percent of the places where they lived each year between 2000 and 2010. If that annual decline continues, the world would witness the disappearance of amphibians from half the places they live in about 30 years.

Amphibians are an old group of animals, existing before and alongside dinosaurs. As a group, amphibians have a 350 million-year track record of being fairly resilient to environmental changes. Thus, recent declines raise serious concerns—not only for amphibians but also for the environment.

Most amphibians use aquatic habitat for part of their lifecycle, with eggs and tadpoles that develop in water. Both amphibian eggs and skin are permeable, allowing water and oxygen to pass and be absorbed internally. And unlike birds or mammals, which develop protected in eggs or the mother's body, amphibians develop in streams and ponds, exposed to whatever is in these waters.

But most amphibians also need woods or open areas in the uplands, where adults complete their lifecycle, and they need to

safely travel between these areas. Therefore if a road or a parking lot gets in the way, it can spell trouble for frogs or salamanders.

The combination of these biological characteristics make amphibians sensitive indicators of water quality and general environmental health. It also makes them vulnerable to some of the changes humans have been making to the landscape, such as building roads and buildings and polluting water.

Current research shows that habitat loss, pollution, disease, climate change, competition with non-native species, parasites, predation, ultraviolet radiation, and combinations of these things are all contributing to the decline of amphibians.

Amphibians play essential roles, both as predators and prey, in both aquatic and

terrestrial ecosystems. Adult amphibians eat pest insects, including those that damage crops or bite humans and spread disease. Amphibians consume aquatic algae, as well as invertebrates and other vertebrates. In the absence of fish, amphibians are usually the top predators in freshwater systems. But amphibians are an important food source for numerous predators, including snakes, fish, birds, mammals, insects and other amphibians. Consequently, amphibians influence the populations of other species in their ecosystems.

What is the Service doing to conserve amphibians? Numerous research and conservation initiatives across the country and internationally are helping better understand the declines in amphibians and implement conservation actions to help them recover. Here are a few:

Researching amphibian abnormalities

In 2013, the Service announced the results of an unprecedented 10-year study on amphibian abnormalities on national wildlife refuges. The Service found that on average, less than 2 percent of frogs and toads sampled on 152 national wildlife refuges had physical abnormalities involving the skeleton and eyes—a lower rate than experts feared based on earlier reports. This indicated that the severe malformations such as missing or extra limbs extensively reported in the

media during the mid-1990s were rare on national wildlife refuges. However, there were a few hot-spot clusters that had higher rates of abnormalities. One of these hot spots was at Kenai National Wildlife Refuge in Alaska.

Following up on the hot spots, the Service worked with researchers from Alaska Pacific University and the University of California at Davis to understand how and why Kenai had higher rates of abnormalities. They found that dragonfly larvae attacked wood frog tadpoles 30 minutes sooner and three times more often in warm, slightly polluted water than in cooler, pollution-free environments. The experiment simulated the effects of degraded water quality due to road runoff and climate change. The tadpoles in the experiment spent more time at the surface of the water making it easier for dragonfly larvae to see and attack them. The increased predation supports previous research and could help explain the prevalence of malformed frogs in other national wildlife refuge hotspots.

Fighting invasive bullfrogs and fish to save the threatened Chiricahua leopard frog

The threatened Chiricahua leopard frog can be found in streams, ciénegas, cattle ponds and other wetlands in the high valleys and mountains of southeastern Arizona and southwestern New Mexico, and eastern Sonora and western Chihuahua, Mexico. Its main threat is the predation by non-native, introduced bullfrogs, fish and crayfish. As more southern Arizonans build homes closer to natural wetlands and mountain canyons, these non-native pests are escaping from garden ponds and golf course lakes and spreading to wild areas. Once these animals are established, it is very difficult and expensive to remove them from natural wetlands.

The Service has been working with a wide variety of private and public partners and stakeholders to implement recovery actions for Chiricahua leopard frog conservation. Great strides have been made through captive breeding and head-starting programs. Head-starting means



providing tadpoles with a safe, enclosed environment to grow before releasing them. To combat the nearly overwhelming impacts from non-native species on Chiricahua leopard frogs, biologists are working with numerous partners to inform and educate the public about non-native species and how to create habitat that protects the native frog.

Building safe new marshy homes for the Columbia spotted frog

The Great Basin population of Columbia spotted frogs, a candidate species for Endangered Species Act protection, is found in eastern Oregon, southwestern Idaho and the northern drainages of Nevada. Spotted frogs live in areas with abundant flooded vegetation. The largest known threat to the Columbia spotted frog is habitat change and loss, specifically the loss of wetlands used for feeding, breeding, hibernating and migrating. These original wetland homes were lost for many reasons, including drought, grazing, human development, even the loss of native beavers.

Service biologists are working with partners to monitor spotted frog populations to assess trends in how many there are and where they live. Research

(Top) The Service's Sue Cameron, flanked by employees of the N.C. Wildlife Resources Commission, scans for Eastern hellbenders. (Bottom) Ozark hellbender.

is also underway to increase the understanding of the species and improve or create new habitat to prevent the frog's further decline.

For example, a conservation agreement led to the creation of 36 ponds in central Nevada for the frogs. All ponds have spotted frogs, and 77 percent have breeding activity. In Idaho, a conservation agreement aims to improve breeding, foraging, hibernating habitat and migration corridors for Columbia spotted frogs at Sam Noble Springs, while allowing continued livestock use on these state lands. In addition, 41 ponds were built or enhanced on private lands in Idaho for the frogs.

Researching the breeding ability of Ozark hellbender

Can old hellbenders make new hellbenders? That's the question Service biologists are working with partners to answer. The federally endangered Ozark hellbender is a large salamander that lives under large rocks or in crevices in clear,

cool spring-fed streams. Populations of the Ozark hellbender have declined drastically since the 1970s, and experts are still working to understand the reasons.

One potential factor is the sperm health of male hellbenders. Endocrine-disrupting compounds, which have been shown to alter normal reproductive development in various aquatic species, have been detected in streams occupied by Ozark hellbenders. Although concentrations of these compounds were lower than EPA standards to protect aquatic life, biologists questioned whether the presence of these or other undetected compounds might interfere with successful fertilization of eggs.

To address this question, the Service's Columbia, Missouri, Ecological Services Field Office collaborated with the Missouri Department of Conservation to assess the sperm health of wild Ozark hellbenders. Since 2010, Service biologists have captured Ozark hellbenders during the breeding season and assessed the rates of motility (percentage of moving cells), viability (percentage of live cells) and concentration of sperm samples.

Preliminary results indicate that Ozark hellbenders are producing healthy sperm, with viability and motility rates approaching 100 percent in some instances. Although causes behind Ozark hellbender declines remain unclear, these results bode well for the species.

One tool to increase the population of hellbenders is a captive breeding program at the St. Louis Zoo.

Keeping burrow homes safe for dwindling crawfish frogs in Indiana

The crawfish frog needs a burrow. Handily, adult crawfish dig the burrows, then leave, passing on a cozy home to the crawfish frog. Once a crawfish frog finds a burrow it likes, it really moves in. Recent studies on how to conserve this drastically declining frog show that they spend almost their whole adult lives within a few feet of their home burrows, which keep them safe from predators. This species likes to live

in fields, which can be filled with vacant burrows, but plowing a field destroys the burrows.

Big Oaks National Wildlife Refuge in southeastern Indiana and its partners are working to understand the habitat requirements and breeding preference of crawfish frogs, a species that is rapidly declining throughout much of its range. While not federally listed as endangered or threatened, this species is susceptible to drastic population declines due to habitat loss and alterations (such as plowing over the burrows). This frog requires a combination of grassland habitat, ephemeral breeding wetlands and crawfish burrows, which limit the number and location of reestablishment sites.

In an effort to increase population levels at Big Oaks, refuge staff initiated a number of research projects between 2004 and 2015. Crawfish frogs can lay approximately 5,000 eggs per pair of breeding adults, so the opportunity to help these frogs make a comeback is tremendous. Initial modeling identified focus areas for breeding-pond construction where quality grassland habitat existed, but populations were absent. Combining this with the results from an early pilot project investigating how experimentally drained ponds increased crawfish frog use and reduced their predator and competitor communities, staff have been better able to design and construct breeding wetlands to improve the management of this species. To date, staff have restored and installed water level management devices in 16 new crawfish frog breeding wetlands in grassland focus areas. Initial monitoring of these breeding wetlands has shown newly established populations, increased breeding adult use and increased numbers of juvenile frogs.

Identifying the best sites for amphibians

There is a strong relationship between climate and the distribution of species that depend upon external sources of heat for survival, like amphibians. So it is reasonable to believe that climate change may have especially strong effects on these animals. Indeed this connection

has just been shown in recent research. The best defense against this threat is to pinpoint and manage sites that can offer the best habitat for the most vulnerable species even as temperature changes. By combining climate change projections with information on the natural history and distribution of a number of priority reptiles and amphibian species, the North Atlantic Landscape Conservation Cooperative-funded Priority Amphibian and Reptile Conservation Areas project is identifying geographic areas that offer the best opportunity to sustain these species now and in the future. The resulting maps will help guide long-term ecological planning and management to ensure that the North Atlantic region continues to offer a home for these species, and others, even if the climate changes.

Conserving frogs without borders

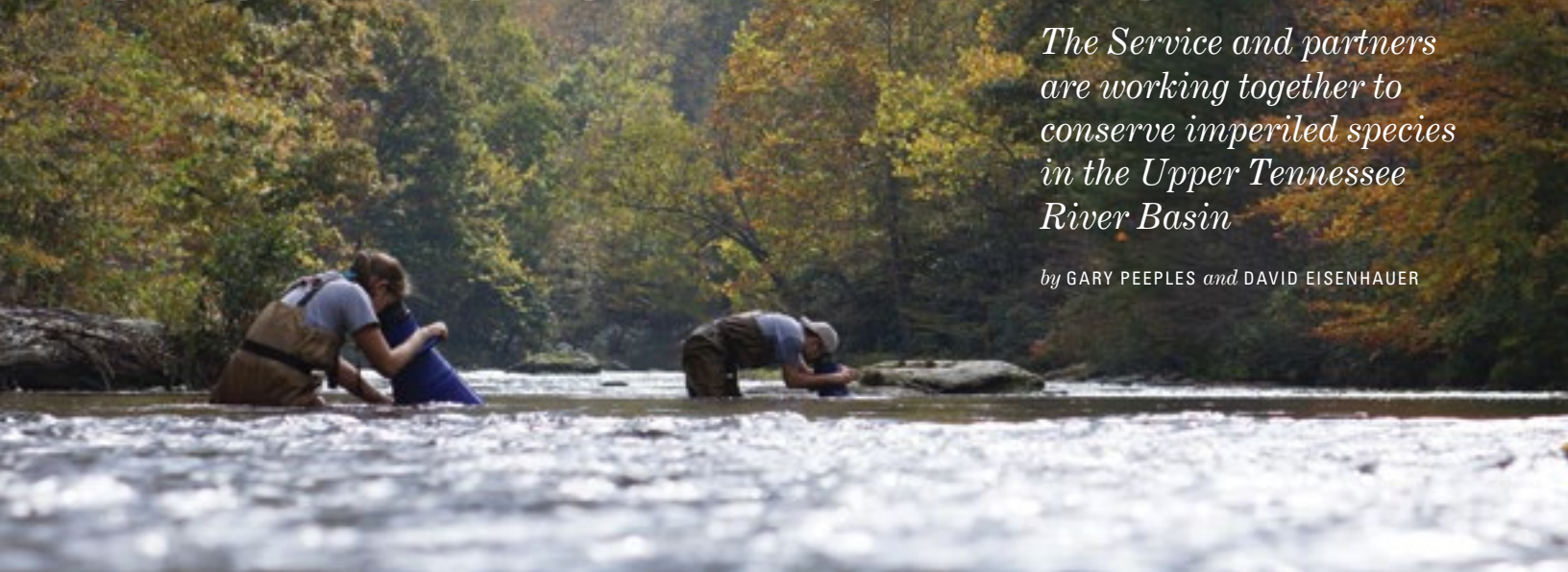
The Service also administers Amphibians in Decline, the only federal government program dedicated to funding research and conservation of amphibians around the world. Through this fund and other programs, the Service is actively involved in a number of projects specifically targeting amphibians. This includes research in the United States and overseas into the chytrid fungus, widely recognized as one of the most serious and widespread threats to frogs globally; protection of key habitat for threatened frog species such as the golden matilla in Madagascar; invasive species control for species such as the rough moss frog in South Africa; and community education programs.

In addition, April saw the dedication of the Smithsonian Gamboa Amphibian Rescue Center in Panama, the largest dedicated facility for amphibian conservation in Latin America. The Amphibians in Decline Fund has made three grants to support Smithsonian's efforts. The first grant was a catalyst that led to major funding from other sources. □

VALERIE FELLOWS, Ecological Services,
Headquarters



high-definition conservation



The Service and partners are working together to conserve imperiled species in the Upper Tennessee River Basin

by GARY PEEPLES and DAVID EISENHAUER

(Top) Oyster and Cumberlandian combshell mussels are set for release into the Clinch River. (Bottom) Searching for mussels in the South Toe River.

Casually wading the Clinch River in southwest Virginia, one can't help but look down and notice mussel after mussel dotting the stream bottom. To the south, in Tennessee's Citico River, tens of thousands of buffalo fish congregate each spring for spawning. And in the depths of the Tennessee River itself, lake sturgeon, a fish largely unchanged since the time of the dinosaurs, ply the river depths.

When we think of river life, for many of us a handful of animals may come to mind — trout, smallmouth bass, muskie. But the southeastern United States is a hotbed of species diversity. On that landscape, the Upper Tennessee River Basin (UTRB), covering much of the southern Appalachians, stands out with a whopping 255 species of fish and mussels known from the basin.

People do not live apart from the UTRB ecosystem; they are connected to it, says Roberta Hylton of the Service's Southwestern Virginia Field Office.

"Our local rivers and streams in the Upper Tennessee River Basin provide us with drinking water, fishing, swimming, boating, inspiration, and many other services and opportunities," Hylton says. "The health and well-being of people living within the UTRB depend upon water quality, as reflected in the area's aquatic biodiversity. Working to conserve aquatic biodiversity means we will also be working to protect water quality and the interests of citizens."

Unfortunately, though the basin has an incredible diversity of stream life, a disappointing number of stream animals there are imperiled — the result of dams, water contamination and sedimentation. Of the 172 fish species historically known from the basin, 13 are on the federal List of Endangered and Threatened Wildlife, as are 32 of the 83 historically known mussel species. That means 45 wildlife species are threatened or endangered in a river basin covering an area about the size of West Virginia.

Megan Bradley of the Virginia Department of Game and Inland Fisheries Aquatic Wildlife Conservation Center says the aquatic species of the UTRB are beset from all sides. Populations have declined for many reasons: historic impacts such as dam construction, pollution and development; aquatic habitat has been significantly changed and suitable habitat for many species is now patchy at best; populations have become more disconnected; and water chemistry has changed. If a species continues to persist in the UTRB, Bradley says, it is at continual risk of a catastrophic event wiping out an entire population.

“These are varied challenges yet have roots in the same garden; the failure of human empathy for our neighbors and nature,” she says. “The history of the region offers a telling story, with poverty punctuated by short bursts of resource development, followed by more poverty. This is a land of people who still understand the value of the resources around them because they depend on [those resources] for survival.”

For years, the Service and its partners have worked cooperatively to recover these rare animals and to conserve supporting habitats, employing a variety of strategies. Some efforts have been successful, while others have fallen short. In looking at how best to move forward, the Service decided to consider where and how it could use its limited resources to have the greatest impact on these rare animals. The result is the *Imperiled Aquatic Species Conservation Strategy for the Upper Tennessee River Basin*—a flexible tool to help Service biologists and managers decide where to focus their efforts and identify opportunities in coordination with partners.

Hylton, who helped develop the strategy with a team of Service scientists and managers, says that while both habitat and population management play key roles, the Service found that increasing emphasis on population management, with activities such as protecting and augmenting existing populations and

establishing new populations, will help recover species more effectively and efficiently. Taking it another step, the plan also prioritizes both species and locations within the basin where the Service should focus both habitat and population management activities.

To maximize recovery efforts in an efficient and cost-effective manner, emphasis will be on implementing population management activities for high-priority species in high-priority streams. Habitat management activities will be included as part of the approach

To imagine how this might work, consider the collection of globally rare freshwater mussels that reside in the rivers of the basin. Mussels help filter and clean river water, which make them important to people. Unfortunately, there are many stretches of river where mussels survive in very low numbers or have been extirpated due to past water quality problems that may have since been corrected. By focusing partner resources and collaborating on mussel propagation and augmentation programs, says Brad Kreps, Director of The Nature Conservancy’s Clinch Valley Program, partners can restore and expand mussel populations across the river system. Partners also can continue to address water quality problems and habitat issues wherever concerns still exist.

“This focused strategy, coupled with continued efforts to improve water quality, will have a cascading set of benefits that will make the river ecosystems healthier, more resilient, and more productive,” Kreps says. “This will be a huge win for people and wildlife.”

Hylton says the strategy outlines specific ways the Service hopes to bring partners together to discuss needed conservation actions and ensure the strategy can be adapted to consider new information and conservation goals. Each year, Service offices working in the river basin will work with partners to review past on-the-ground projects and look ahead to future projects. The strategy, considered a

“This is a land of people who still understand the value of the resources around them because they depend on them for survival.”

—Megan Bradley, Virginia Dept. of Game and Inland Fisheries Aquatic Wildlife Conservation Center

working document, will be reevaluated at least every four years or sooner if needed.

Architects of the strategy and supporting partners recognize that conservation doesn’t just benefit fish and wildlife; it benefits people, too. To that end, they insist it is imperative that the Service work cooperatively with a spectrum of federal, state and non-governmental partners, as well as industry.

But perhaps the most important partner in this effort will be the people who live in the UTRB and rely on its resources.

“For conservation to be effective in the Upper Tennessee River Basin, as elsewhere, it must be initiated and passionately supported by local people of many stripes over the long term,” says Paul Angermeier, assistant leader for Virginia’s Cooperative Fish and Wildlife Research Unit. “Conservation can be informed by scientists and enforced by governments, but without strong, enduring public support and insistence, it can’t succeed.”

Well more than 90 percent of the land base in the area is under private ownership, and conservation success will rely on the support of those landowners. □

GARY PEEPLES, External Affairs, Southeast Region, and DAVID EISENHAUER, External Affairs, Northeast Region



MORE INFORMATION

To read the full strategy, visit applcc.org/projects/trb/resources/imperiled-aquatic-species-conservation-strategy



A New Path Forward for Conservation in the Southwest Region

Emphasis Areas will steer future endeavors

by DR. BENJAMIN TUGGLE



USFWS



(Top) Albuquerque, New Mexico, students prepare to release fish they raised during the Native Fish in the Classroom project. (Left) Dr. Benjamin Tuggle

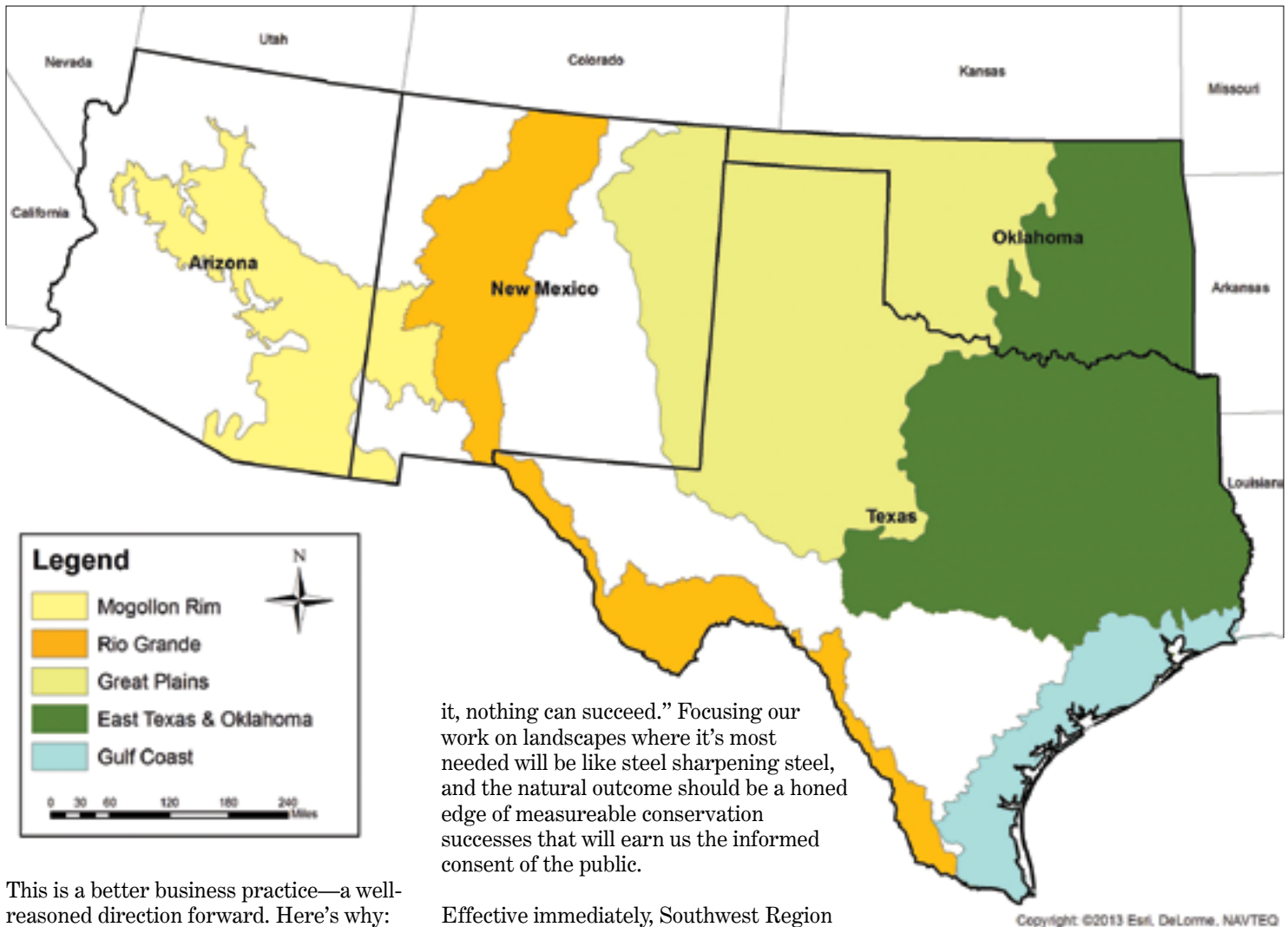
Strategic Habitat Conservation, landscape-level conservation and the idea of surrogate species, using one species to represent other species or even ecosystems, are ways that the Service is getting conservation done in an era of tight budgets. Director Dan Ashe has said that the Service will “do the best that we can possibly do with whatever resources are made available to us.” The Southwest Region has chosen to take landscape-level conservation a step further. Southwest Region Regional Director **Dr. Benjamin Tuggle** explains.

History repeats itself and I have lived long enough to see a few reenactments with my own eyes. As Regional Director of the Southwest Region I am charged with a large responsibility to steer conservation of myriad species in a multitude of ecosystems. The challenge inspires me daily.

The Southwest Region spans landscapes adorned with endemic fishes and salamanders, wintering waterfowl and nesting warblers. Pronghorn skitter over our prairies and rare trout swim in cold mountain streams that pour down sky islands that jut up from the desert floor. The people who have dedicated their lives to conservation are as diverse in talents and character and skills as are the landscapes in my region—lands that ascend from sandy beaches at sea level on the Gulf Coast up to Arctic tundra in the high headlands of the Rio Grande basin on the Colorado border.

As you can imagine, the conservation issues that persist or will arise are also varied and diverse. Our staff members are as likely to engage with urban youth in large metropolitan areas as they are with Native elders who descend from those who were here when time started ticking. With history as my guide, I have made an abiding commitment going forward to best serve our fish and wildlife resources and those dedicated to that purpose.

Through careful consideration by the regional leadership team representing every facet of our mission, the Southwest Region will concentrate conservation on geographies where we can most effectively achieve our greatest return on investment of our limited resources. We have identified five geographies or “Emphasis Areas” whereby we can best achieve meaningful and measurable outcomes for fish and wildlife conservation, without leaving behind our on-going work in areas outside these new Emphasis Areas.



it, nothing can succeed.” Focusing our work on landscapes where it’s most needed will be like steel sharpening steel, and the natural outcome should be a honed edge of measureable conservation successes that will earn us the informed consent of the public.

This is a better business practice—a well-reasoned direction forward. Here’s why: Over the last three years our regional operating budgets have steadily declined. And with that we have lost a fair amount of our most precious resource—people. We are down some 150 staff over the four-state region. We simply cannot, if you will pardon the bromide, do more with less. Species and landscapes continue to have conservation needs that demand our attention, and we must deliver. We will refine the work. We will put the skills we possess where those skills are most needed in Emphasis Areas. It’s a moral imperative—imperative for fish and wildlife and for the American public that we serve. Public support of sound conservation is essential. As Lincoln said, “Public sentiment is everything. With public sentiment, nothing can fail. Without

Effective immediately, Southwest Region employees are steering resources to five geographies that encompass much, but not the entire Region. Naturally, that leaves some “white space” on the map and nagging questions particularly from folks who work outside Emphasis Areas. Are we abandoning national wildlife refuges in southwest Arizona, imperiled fishes of the Colorado River or our present conservation endeavors on New Mexico’s Staked Plains or the Trans-Pecos of Texas? I offer you a resounding and emphatic no! It’s all work worth doing—every bit of it. But new project resources and endeavors will be steered to Emphasis Areas.

We all manage a household of some size for the long horizon. The house that is the Southwest Region has been built on solid

rock. We have to manage it for the future. Our people have the know-how, the grit and just plain pluck to perform under any circumstances. We own a history of success, and with this approach I expect more to come.

To borrow again from Lincoln, “Determine that the thing can and shall be done, and then we shall find the way.” We have—and we shall. □

DR. BENJAMIN TUGGLE writes from Albuquerque, New Mexico

MUSEUM OBJECTS COME TO LIFE

This is a series of curiosities of the Service's history from the National Conservation Training Center Museum. As the first and only curator of the museum, Jeanne M. Harold says the history surrounding the objects in the museum give them life.



The Capitan's Chair

On a tour of the NCTC museum storage area, visitors often comment on a chair located at the back of the space. It is large, high-backed, and upholstered in brown Naugahyde. It has large arms and lots of metal infrastructure. Inevitably, people snicker and ask if it is from the deck of the Starship Enterprise. It certainly looks like Captain Kirk controls the ship from that chair. Actually, it is from the Togue, a Service research vessel that was decommissioned a few years back. I sometimes expect to see the Historian barking orders from that chair when no one is looking. Beam us up, Scotty!

Sinking Feeling

Dave Hall, my great friend and an extraordinary Service special agent, often told a story about catching a group of duck hunters who way exceeded their limit. He, of course, cited them and confiscated the ducks. He loaded all the ducks into his pirogue, and then proceeded to fill out the citation. There were so many ducks that he and the pirogue slowly began to sink in front of everyone's amazed eyes.



Not So Safe

An interesting vitrine dating to 1896 sits on a shelf off to the side of the archives. It was confiscated after someone had attempted to bring it into the United States from the United Kingdom in violation of the Migratory Bird Treaty Act. These old displays were very popular in Victorian times in private residences. This one features a fox eating a duck. If you look really closely, there is a little mummified mouse between the back legs of the fox. I guess it crawled into the vitrine through a crack to find a nice, safe place to live. It evidently ate something inside, and succumbed to arsenic poisoning, as those old displays were usually treated with arsenic to discourage insect infestation. It discouraged rodent infestation also!

Helter Skelter in the Service

A memorandum from the Regional Director in Albuquerque dated September 29, 1975, recounts a phone call the Regional Director had with an FBI agent about members of the Manson family. A roommate of Lynette "Squeaky" Fromme told the FBI that she represented the International People's Court of Retribution to protect wildlife and our natural resources. This group listed prominent New Mexicans for "possible assassination," including nine Service supervisors, law enforcement officers, and refuge and fisheries managers. Those on the list were to be alert "because no one knows what a 'kook' may do."

Gun used by Fromme to try to assassinate President Ford.



GERALD R. FORD PRESIDENTIAL MUSEUM, GRAND RAPIDS, MI.

Transitions

Southwest

Beth Britt has been named the Assistant Regional Director for External Affairs for the Southwest Region, which consists of Arizona, New Mexico, Texas and Oklahoma. Beth served in the U.S. Army for more than 31 years, and most recently, she was assigned as Chief, Army Reserve Public Affairs. In this capacity, Beth had responsibility for strategic communication leadership in support of the Army Reserve's operational military force with a total of 200,000 soldiers and more than 12,000 civilians serving worldwide. She has also served as the command public affairs officer for the Army's largest command, U.S. Army Forces

Command. With the Army, she worked in public affairs, command, senior staff, force management and human resource positions. □

Midwest



In addition to his current duties, Midwest Region Regional Director **Tom Melius** has been

appointed to serve as the Service representative on the Monarch Joint Venture Steering Committee. The steering committee is made up of representatives from 10 partners who serve as the decision-making body for the Monarch Joint Venture, a partnership of federal

and state agencies, non-governmental organizations, and academic programs that are working together to support and coordinate efforts to protect the monarch migration across the lower-48 United States.

In this role, Melius and other committee members are responsible for guiding conservation implementation across the country through planning habitat conservation, education, research and monitoring priorities of the Joint Venture and its partners.

"We're excited to have Tom on our team. His leadership as the regional director of the U.S. Fish and Wildlife Service Midwest Region will be invaluable as we ramp up monarch conservation across the country," says Dr. Karen Oberhauser, Monarch Joint Venture Steering Committee Co-Chair.

The Midwest Region includes eight states in the heart of the monarch's range, including 1.29 million acres of national wildlife refuge system lands. Melius will now help rally ongoing Service monarch conservation efforts not only in the Midwest but across the country. □

Pacific Southwest



Jody Holzworth has been named the Assistant Regional Director of External Affairs in

the Pacific Southwest Region. As ARD, Jody will lead the External Affairs team as it tells the Service's many stories throughout California, Nevada and the Klamath Basin of Oregon.

Jody is new to the Service but has worked in conservation communications for 20-plus years.

She most recently worked as a writer for Point Blue Conservation Science in Petaluma, California. Previously, she served as the director of Communications for the Natural Resources Conservation Service in Washington, DC. Her career also includes field- and state-level Public Affairs stints with NRCS and The Nature Conservancy, as well as running a local watershed council and teaching college writing. □

Retirees Gather in Texas



Laura Bonneau, visitor services manager at Aransas National Wildlife Refuge in Austwell, Texas, gives retirees a tour of Aransas. On the all-day field trip to the refuge, the tour saw more than 90 whooping cranes. Retiree Phil Morgan, a former manager at Aransas, remembered that there were only 32 cranes on the refuge in 1962. The

latest population survey indicates more than 300. The Aransas tour was just one of many delights for the more than 80 Service retirees meeting in Corpus Christi, Texas, at the beginning of March. The FWS Retirees Association Reunion also included discussions on issues dealing with wildlife along the Texas border, a banquet, silent auction, conversations with old and new friends, and much more.



Cay Goude, assistant field supervisor for the Sacramento Fish and Wildlife Office, retired in

May after a long and distinguished career conserving endangered species in California and influencing the way conservation happens across the country.

Cay began her federal service with the Army Corps of Engineers as a GS-4 park ranger on Memorial Day weekend in 1978 where her first assignment was directing traffic. After that distinguished start, she became an environmental planner with the Sacramento District Corps of Engineers until 1984 when the Service hired her. She gave up a promotion and permanent status to work for the Service and says it was one of her better decisions.

Ending her career on a high note, Cay championed regional conservation plans and left the Service with standards and practices that honor the Endangered Species Act and the people working on the ground. She believed and acted on the premise that the Service can administer the ESA with integrity, pride and partnerships without ever compromising its foundations. And her career embodies the William James quotation: "The great use of a life is to spend it for something that will outlast it." □

Headquarters



Cynthia Martinez, a 21-year veteran of the Service, has been chosen as Chief of the National

Wildlife Refuge System. She has served as the Service's Deputy Chief of the Refuge System since 2012.

As Chief, Cynthia leads the management of the world's premier system of public lands and waters set aside to conserve America's fish, wildlife, and plants. The Refuge System comprises more than 150 million acres and 563 units. There is a national wildlife refuge in every state and U.S. territory.

"Cynthia is a great fit for this position," says Service Director Dan Ashe. "She possesses a diversity of experience working within the Service and National Wildlife Refuge System. Cynthia also demonstrates the strong leadership and innovation the Service needs as we continue to introduce new generations of Americans to conservation."

Cynthia previously managed Desert National Wildlife Refuge Complex in Nevada—one of the largest wildlife refuge complexes in the contiguous United States. She has also served as an assistant field supervisor working on endangered species issues and as a fish biologist. As Deputy Chief, she oversaw the devel-

opment of the Conserving the Future initiative, the Service's renewed vision for the growth and management of the Refuge System, and currently leads efforts on the Service's Urban Wildlife Initiative.

Cynthia began her career as a student trainee in the Service's Arizona State Office in Phoenix, Arizona. □

honors

Midwest



Nathan Eckert, a mussel biologist at Genoa National Fish Hatchery in Genoa,

Wisconsin, has won the 2014 Rachel Carson Award for Scientific Excellence. The award recognizes key scientific contributions that achieve extraordinary results in fish and wildlife conservation. Nathan was recognized for his creativity and tenacity in researching and implementing new techniques and rearing systems for imperiled freshwater mussels.

It is estimated that 43 percent of North America's 300 freshwater mussel species are in danger of extinction. Nathan's advances in freshwater mussel recovery include the discovery of alternate host fish species for endangered mussels, such as the sheepnose, and development of alternative rearing systems that have allowed previously uncultured mussels to be successfully cultured, such as the fawns foot and pistolgrip mussel.

Nathan is also contributing to a study testing a biocide that selectively kills invasive zebra mussels while not affecting native freshwater mussel populations.

Since arriving at the Genoa National Fish Hatchery, Nathan has helped produce nearly 15 million mussels of 17 species, including 4.7 million mussels of four federally listed species. □

Southeast



In September 1974, as **Steve Gard** (pictured at right) getting his 40-year plaque from David Viker, Southeast Region Refuges' Chief) began his Service career, the political and environmental landscapes of the nation were experiencing seismic shifts of such magnitude that there is no 21 century equivalent. Only a few weeks before, the President of the United States had resigned from office for the first time in history. The same president, Richard Nixon, had just signed the Endangered Species Act into law nine months earlier. In the previous two years, Congress had passed the Clean Water Act and the newly created Environmental Protection Agency had banned the pesticide, DDT, an action that would contribute to the recovery of many wildlife species on the brink of extinction. In the midst of this climate, somehow tumultuous and promising at the same

time, Steve walked into a field office in Mississippi and started work on a distinguished career of wildlife conservation that continues today, more than 40 years later.

Steve's first position with the Service was in Vicksburg, a town on the banks of the Mississippi River that is a strategic center for ecosystem management. He then spent time in Jackson, Mississippi, before heading to Florida. After years on America's Space Coast and other parts of Florida, Steve made his way back to where his career began, Mississippi.

As with so many other times in his career, when Steve first came to Grenada, Mississippi, in 1989, he was blazing new trails. Steve served as the first project leader of the Mississippi Wetland Management District, which became the North Mississippi Refuge Complex, consisting of Dahomey, Tallahatchie and Coldwater National Wildlife Refuges. With the assistance of his dedicated staff, Steve oversees the management of delta forests, moist soils, mudflats, agricultural lands, wetlands and other habitats. Steve has established strong partnerships through cooperative efforts to conserve fisheries and wildlife resources in the Delta.

Perhaps more than anything, though, Steve is known as someone who is always willing to lend a hand. He has served on numerous details to the Deepwater Horizon oil spill, to assist other refuge complexes with vacancies, and to the regional office in Atlanta. Whether it is sharing heavy equipment, his time or his staff to assist his colleagues, Steve

exemplifies the concept of One Service. After more than 40 years of public service, Steve Gard is still leaving a legacy of conservation and dedication to the people and natural resources that he serves every day. □

JEREME PHILLIPS and RICKY INGRAM, National Wildlife Refuge System, Southeast Region

Northeast



Walt Tegge, recently retired visitor services manager at Back Bay National Wildlife

Refuge in Virginia Beach, Virginia, has received the Legends Award for outstanding contributions in the field of outdoor recreation. Back Bay Refuge welcomes about 140,000 visitors a year. Walt developed a tram service that brings visitors through the refuge and to False Cape State Park, which is only accessible through the refuge. The tram program has grown from 1996 Olympics-surplus, tug-drawn carts to a 26-passenger open tram and a 28-passenger closed bus.

Walt also spearheaded collaboration with the City of Virginia Beach to identify how the public can get to the refuge without using private cars. The ongoing study is considering water access by canoe/kayak or water taxi; bicycle trails; and an expanded tram program.

He worked closely with two nonprofit Friends groups supporting Back Bay Refuge. □

Mountain-Prairie



The Kansas Wildlife, Parks & Tourism Commission recognized **Wayne Stancill**, fish passage engineer in the Mountain-Prairie Region, for his role in working with county governments to develop road-crossing alternatives and designs to benefit county infrastructure as well as the aquatic fish communities in eastern Kansas. In 2014 the Kansas fish passage effort was awarded the Service's National Fish Passage Program Partner of the Year Award. Wayne worked closely with Norm Bowers, a technical engineer employed by the Kansas Association of Counties, to develop and implement many of the Kansas projects. These projects have complemented the regional effort to identify and concentrate conservation efforts in areas identified as priorities such as the Flint Hills of eastern Kansas. The efforts resulted in 11 road-crossing and stream restoration projects that have benefited native aquatic species, many listed as threatened or endangered, and have increased the knowledge about the importance of stream connectivity to Kansas' fisheries. □

Alaska



Julian Fischer, project leader for the Migratory Bird Management

Waterfowl Division in Anchorage, Alaska, has won the 2014 Science Leadership Award, which recognizes a Service employee's exemplary practice and support of scientific activities that have lasting influence on the management of fish and wildlife resources.

Julian was honored for his outstanding science leadership in managing a diverse team, engaging in countless partnerships and collaborations, mentoring younger scientists, and demonstrating a selfless commitment to his staff and the long-term mission of his division and the Service.

Julian's holistic and long-term perspective prioritizes people and their talents, which results in a team that successfully implements complex missions and contributes invaluable data to the scientific community on a wide variety of avian conservation issues. "Julian is the kind of supervisor every employee should be lucky enough to work under at least once in their career," say team members. □

Pacific Southwest



The **Lahontan Cutthroat Trout Broodstock and Lake Reintroduction Team** has won the 2014 Rachel Carson Award for Scientific Excellence, which honors key scientific contributions that achieve extraordinary results in fish and wildlife conservation. The team consists of members from the Lahontan National Fish Hatchery in Gardnerville, Nevada (**Derek Bloomquist, Daniel Boone, Stephanie Byers, Melissa Conte, Alvin Duncan, Lisa Heki, Roy Hicks, Thomas Hogan, Erik Horgen, Corene Jones, Tim Loux, David Miller, Adam Nanninga, Roger Peka**); the University of Nevada, Reno (Mary Peacock); and the Pyramid Lake Paiute Tribe (Albert John, Denise Shaw, Nancy Vucinich). This team was recognized for their efforts to conserve the Lahontan cutthroat trout, the largest trout species on the planet.

The team's work includes a sophisticated mating protocol in the hatchery designed to maximize genetic diversity of the broodstock in order to preserve the species' unique traits. The team's impressive work with several partners has successfully reintroduced the species into lake and stream habitats where it once existed. Lahontan cutthroat trout reproduced naturally in the Tahoe

Basin in 2012 for the first time in more than 70 years and in the Truckee Basin in 2014 for the first time in 76 years. □



Ren Lohofener, Regional Director of the Pacific Southwest Region, and **Toni Deery** (pictured with Secretary of the Interior Sally Jewell), the Region's former Assistant Regional Director for Budget and Administration, were recognized by Secretary Jewell with Department of the Interior Distinguished Service Awards for their outstanding leadership and career contributions to the Department of the Interior during a ceremony May 7 in Washington, DC.

Dr. Lohofener's began his federal career as an ecologist for the National Marine Fisheries Service. He joined the Fish and Wildlife Service in 1989 as a field biologist. Over his 26-year Service career, Dr. Lohofener has served as Texas State Administrator and Assistant Regional Director in the Southwest Region; Assistant Director of the Endangered Species Program in Headquarters; and Regional Director of the Service's Pacific Region and Pacific Southwest Region. An Army veteran and accomplished artist, Dr. Lohofener actively encourages youth involvement in outdoors

through his support to the Junior Duck Stamp Program, Klamath Tribal Youth Program and other regional events that connect youth to Service careers.

Ms. Deery was recognized for her leadership and innovative approach to advance Service administrative operations. She was instrumental in creating the Service's first consolidated budget and finance organization, and later played a significant role in growing the nine-member California Nevada Office to a full-fledged Regional Office of more than 100 employees that oversee Service operations in California, Nevada and Klamath Basin of southern Oregon. To facilitate this growth, Ms. Deery established a model for administrative efficiencies that saved the Service more than \$5 million annually. She retired in 2014 after 26 years with the Service and now resides in southern Oregon. □



A park ranger at San Diego Bay National Wildlife Refuge Complex in California, Lisa manages recreational and educational programs on four refuges (Tijuana Slough, San Diego Bay, San Diego, Seal Beach). She built and maintains websites for each refuge and recruits volunteers and reaches non-traditional audiences through social media, including Facebook and Twitter. She

Lisa Cox has been honored with the Beacon Award for innovative use of technology.

frequently serves as a social media and web content instructor for Service programs.

According to the American Recreation Coalition, Lisa is a role model for girls in southern California; her activities with youth groups like the Girl Scouts and the "Hike with a Ranger" program reach numerous underserved communities in the San Diego area. □

Service-wide



Recognizing that current conservation challenges demand an agency that embraces diversity and inclusion, the Service has made a diverse and inclusive workforce a priority. But a vision can't produce results without the support and hard work of all employees. That's why the Service honors its **"Diversity Champions"** annually, people who help create a diverse and inclusive work environment, people who put the vision into practice.

Stewart Jacks (pictured with Service Director Dan Ashe, Southwest Region Deputy Regional Director Joy Nicholopoulos and Southwest Region Regional Director Dr. Ben Tuggle), Assistant Regional Director for Fisheries and Aquatic Conservation in the Southwest Region, and **Erin Holmes**, project leader for the

Tualatin River National Wildlife Refuge Complex in the Pacific Northwest Region, have been named 2014 Diversity Champions in the leadership category.

Stewart is a passionate mentor, a recruiter and a tireless advocate for diversity and inclusion every day. His work is not about reaching numbers. He reaches out to targeted schools, veterans, Native American tribes and urban youth, encouraging them to explore career opportunities in conservation, and he truly takes great pleasure in introducing youth and targeted groups to a world he has grown to know and love.

At a refuge just outside Portland, Oregon, Erin exemplifies the true spirit of an urban refuge manager, working with a wide array of partners to bring the excitement of the outdoors to young people who aren't always familiar with it. She has reached out to the Hispanic/Latino community to make members feel welcome at Tualatin River Refuge Complex. She has also sought to broaden the horizons of fellow Service members, holding several training opportunities at Tualatin.

The 2014 Diversity Champion Group Award goes to the members of the **Southwest Region's Diversity Advisory Committee**, whose seven members have a passion for cross-cultural education and communication.

Debbie Pike of the Northern New Mexico National Wildlife Refuge Complex, who serves as the Asian American/Pacific Islander Program coordinator;

Katie Wade-Matthews of the Southwest Region Migratory Birds Office, who serves as the Native American/Alaskan Native Program coordinator;

Sandra Coney-James of the Austin Ecological Services Field Office, who serves as the African American Program coordinator;

Gary Hutchison of the Office of Diversity and Civil Rights, the Region's Sexual Orientation Program coordinator;

Stacey Baca-Garcia of the Regional Director's Office, who serves as the Federal Women's Program coordinator;

Joseph Mojica of the Office of Refuge Law Enforcement, who is the Disability Employment Program coordinator; and

Frank Montoya of the Buenos Aires National Wildlife Refuge, who serves as the Hispanic Employment Program coordinator.

The committee played a pivotal role in planning and coordinating the 2014 Cultural Awareness Forum—an entire day focusing on diversity and EEO training that was attended by more than 100 participants. With a theme of "Inclusive Work Environment," discussion topics included Workplace Bullying, Generations in the Workplace and Disability Awareness. The committee also coordinated multiple other events to promote diversity and inclusion, including the International Food Expo, Supply Our Schools Campaign, European American Heritage Month Observance,

Martin Luther King Jr. National Holiday and Bring Your Child to Work Day.

Nominees for the Diversity Champion awards are also to be commended. They are:

Kenton Moos from the Alaska Region;

Janine Van Norman from Headquarters Ecological Services Program;

The **Pacific Region Diversity and Inclusion Workgroup**, consisting of Barry Stieglitz, Brian Lawler, Casey Risley, Cynthia Barry, Dave Irving, Emily Teachout, Jennifer Waipa, Rebecca Chuck, Steve Morey, Vicki Finn, and Viola Townsend;

The **Northeast Region Masonville Cove Partnership Team**, consisting of Genevieve LaRouche, Brad Knudsen, Chris Guy, Jennifer Hill, Devin Ray, Diana Ogilvie, Ebony Davis, Pete McGowan, Robbie Callahan, Janet Norman and Robert Colona;

Sharon Fuller-Barnes of the Southeast Region;

Elizabeth Pattinson of the Alaska Region;

Emily Weller of the Headquarters Ecological Services Program; and

Cade London of the Headquarters International Affairs Program. □

Headquarters



Ken Grannemann (pictured with Secretary of the Interior Sally Jewell), Chief of the Refuge System Division of Information Technology and Management, received a Department of the Interior Distinguished Service Award, the Department of the Interior's highest honor, during the 70th Departmental Honors Awards Convocation on May 7 in Washington, DC.

Ken, who is retiring this summer after 42 years of federal government service, was honored for his dedication to and exceptional leadership of the Refuge System. In the award citation, Secretary Jewel praises Ken for "a career highlighted by his innovative vision for the Refuge System's information, maintenance, and equipment management and training programs." The citation specifically recognizes his leadership role in heavy equipment and off-road utility vehicle safety training programs; his work in reducing the deferred maintenance backlog by more than \$1 billion; and his oversight of the implementation of the new Refuge System content management system, the Service's Service Asset Maintenance Management System, the Refuge Profiles data system and the Refuge Annual Performance Plan system. □

Fish & Wildlife *News*

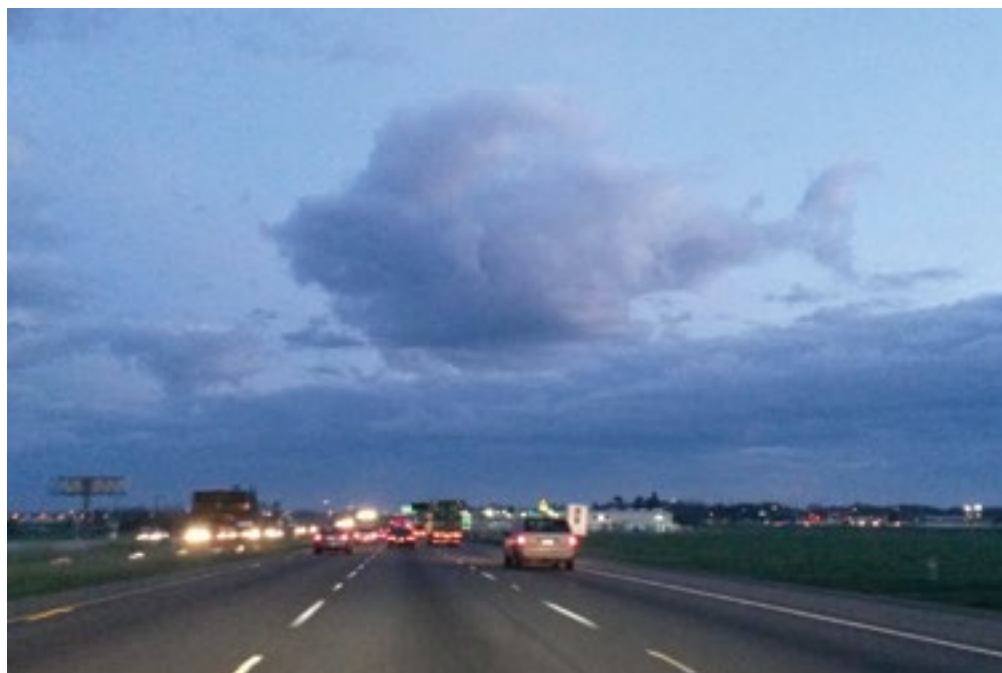
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A Good Sign

One day in March, Administrative Assistant Cindy Bottero was on her way to work at the Lodi Fish and Wildlife Office in Lodi, California, when she looked up to see this perfect Fish Cloud almost right in the middle of the road. As Cindy says: "See what happens when you think hard about working at Fish and Wildlife, a fish just pops up in front of you."



BRUCE BARTEL

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