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Jude Smith manages refuges as part of the landscape and makes sure to involve partners

Summer Corrections

On p. 12, a photo caption misidentified a red phalarope.

On p. 17, a story misidentified a Service grantee in Mexico's Arroyo del Tigre riverbed. The grantee is Pronatura Noreste.

On p. 38, a blurb said lions and tigers are not from the same continent. Asiatic lions and tigers both live in India.

Fish & Wildlife News regrets the errors. Send corrections to <matthew_trott@fws.gov>.



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Science-driven partnership efforts turning the tide for the endangered Wyoming toad

by TYLER ABBOTT, KIM VINCENT and RYAN MOEHRING



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by PEDRO "PETE" RAMIREZ JR.



Landscape Conservation Cooperatives— A Tried and True Partnership Model

The U.S. Fish and Wildlife Service has a proud legacy of working with partners and getting big things done for conservation. The greatest challenges are not solved by one organization, even one as noble as ours with a truly exceptional, passionate and dedicated workforce. They are instead solved through collaboration, by identifying shared priorities with states and many others and then working hand in hand to achieve them.

We have long known that we have to “think big” to get the results we cherish. To conserve waterfowl, for example, we knew that we needed a North American plan of action and worked with many partners to make it so. To conserve fisheries, we knew that

“To restore majestic ecosystems such as the Everglades, we knew that we needed a diverse array of organizations...

we needed colleagues of all stripes, and therefore helped build enduring relationships with a common purpose. To set

imperiled species on the road to recovery, we knew that we needed the wisdom of many people, and we have many success stories to share because of our recovery teams. To restore majestic ecosystems such as the Everglades, we knew that we needed a diverse array of organizations, even those with sometimes competing interests at times, and created a shared vision that has stood the test of time.

Collaboration is what Landscape Conservation Cooperatives are all about. LCCs now have a number of years under their belt and a growing record of success. Each LCC has evolved differently, reflecting the character and priorities of each place and its partners. While serving in Ecological Services, I had the pleasure of helping create the Peninsular Florida LCC. We already had a strong relationship with the state of Florida, private landowners and organizations of all kinds. Said another way, we had the trusting relationships that are an essential element of complex conservation problem-solving. This allowed us to get out of the gate quickly.

Other LCCs have more relationship complexity, spanning many states and often bringing new people together. Building these new partnerships took a real investment of time and energy, but the bonds they created are already clear and growing stronger. The diversity of conservation needs in these LCCs is ultimately a tremendous asset because it allows the partnerships to take a step back, hear from many different voices, and focus on what is most important. One fact is certain and transcends all LCCs: There are more conservation needs than we have resources to address, so setting priorities is more essential than ever.

Our Spotlight feature shows some of our work with partners and describes a small snippet of the priority work underway at LCCs, which are developing science that helps our partners and programs. For example, the landscape conservation designs now being created can help us target limited refuge acquisition dollars to the best of the best habitat. They can help us think about multi-species recovery planning, factoring in climate change realities. In some cases, LCC science can help us get ahead of ESA listing decisions, marshaling a broad interest to keep common species common.

The Service’s strength lies in our commitment to scientific principles and our boots on the ground. The relationships our people forge every day will continue to be the primary way we achieve our great mission. LCCs are one more tool that will help our people solve big conservation questions.

Paul Souza is the Assistant Director of Science Applications

Calling All Artists: Elephants, and the Service, Need Your Help



On November 14, 2013, the Service crushed six tons of

elephant ivory to raise awareness of the devastating impact of the illegal wildlife trade. To meet a growing demand for elephant ivory, poachers slaughtered about 100,000 elephants in Africa between 2010 and 2012.

The Service is committed to stopping wildlife trafficking and the greed-driven massacres of African elephants and all wildlife. To build on the momentum of the Ivory Crush, the Service launched the Crushed Ivory Design Challenge, which invites members of the public to design an educational exhibit that uses the crushed ivory to educate the world about the illegal wildlife trade. The winning design will convey the scourge of poaching, the devastating impacts it's having on elephants in the wild, and the need for everyone to do his or her part to educate potential consumers, stop the demand for ivory and end elephant poaching.

The winning entry will be produced and replicated for use in public spaces such as zoos, aquariums, airports and schools across the United States. The design concept will also be made available to other countries that have crushed their ivory stockpiles and want to send a similar message.

Since the Crush, there has been significant progress in efforts to stop the poaching and illegal trade of African elephants and other wildlife. The Service is leading the U.S. response to wildlife trafficking, and the administration's National Strategy for Combating Wildlife Trafficking outlines three strategic priorities to combat wildlife trafficking:

- Strengthen enforcement,
- Reduce demand for illegally traded wildlife, and
- Expand international cooperation and commitment.

In addition to a renewed domestic focus, governments such as Hong Kong, France and China destroyed some or all of their ivory stockpiles, and some major global retailers are vowing to stop selling ivory completely.

The Crushed Ivory Design Challenge is yet another way the Service is working to ensure the future of elephants. As Service Director Dan Ashe says: "Crushing the Service's stock of confiscated elephant ivory was a signal to the world that the senseless and brutal killing of elephants must stop. Now, the design challenge invites the public to use their creativity and ingenuity to reinforce that message. At the same time, the initiative underscores the important role the public can play in reducing consumer demand for elephant ivory and other illegal wildlife parts and products." □

More Information

The deadline for the challenge is 11:59 a.m. on March 31, 2015. <www.fws.gov/ivorychallenge>.

National Wildlife Refuges Offer Insights into How Native Peoples Managed Wildlife Resources

How much is too much to take from nature? The country's indigenous peoples faced that question, too, and traces of native culture on some national wildlife refuges offer clues to how they answered it and managed their wildlife resources.

At Washington's Ridgefield National Wildlife Refuge, you can still see patches of a wild wetland tuber called wapato. Along with salmon, the potato-like vegetable was a staple in local Chinookan people's diet.

"There is lots of evidence that Chinookan people intentionally managed the wetlands to support an abundance of wapato," says Sarah Hill, Cathlapotle Plankhouse director for the Friends of Ridgefield Refuge. The 78-foot-long plankhouse (a traditional Native American dwelling made from long cedar planks), is open to visitors on weekends April to October. The building is a reconstruction of a structure in the Cathlapotle village. The plankhouse will invite the public to help mark its 10th anniversary in spring 2015 when the refuge marks its 50th.

In 1805, explorers Lewis and Clark ate wapato many times and remarked on its profusion. It's common no more. In recent years, members of the Cowlitz Tribe and Chinook Nation have received permission to harvest it on the refuge; the harvests went poorly, says Hill. Invasion of local waters by vegetable-eating carp is one of several factors blamed.



At Tamarac National Wildlife Refuge in Minnesota, the fall wild rice harvest draws local Ojibwe people, as it has for generations. Before hundreds of ducks and geese arrive at Tamarac's 21 lakes to feast, the Ojibwe harvest rice, or *manoomin*, by hand from a canoe. While one person steers with a pole, another uses a pair of cedar sticks to guide rice stalks over the boat and gently shake the grain free.

The refuge permits rice harvesting—only by the Ojibwe—as a historic use at Tamarac; the refuge and tribe together limit the number of participants depending on how much wild rice is available. The Ojibwe have always adjusted their harvest in much the same way.

A canoe can hold up to 500 pounds of rice, and an industrious ricing party may gather as many as three loads a day. Yet the Ojibwe take only 15 percent of the total crop, leaving plenty for the birds that follow.

"They've always wanted to leave enough for wildlife...and enough for seeding the lake for next year," says Kelly Blackledge, visitor services manager at Tamarac Refuge. "The people I've visited with who harvest the rice have that on their mind. They're not striving to harvest 100 percent...They want to leave a seed bed, so they can have rice for a while."



Ken Sassaman shows a shard of a shell mound to visitors at Lower Suwannee Refuge in Florida.

Remnants of Native American culture can be instructive, too. At Lower Suwannee National Wildlife Refuge in Florida, prominent shell mounds—the largest, about 23 feet tall and two football fields long—offer clues into the lives of early native inhabitants. Dated layers of oyster shells, animal bones and pottery show large groups of people occupied, abandoned and reoccupied the site several times from about 2,000 B.C.E. to 800 C.E.

When fish and other local food resources dwindled because of overharvesting or natural causes the people moved. When food stocks replenished, they returned. “The key to resiliency for early Native American peoples was their ability to relocate quickly and effectively, without abandoning their culture or traditions,” says University of Florida archaeologist Ken Sassaman, currently leading research at the site.

These refuges contain either living Native American history or active archaeological research, but you can find Native American history at others, too. □

SUSAN MORSE, National Wildlife Refuge System, Headquarters

Pacific

Kootenai National Wildlife Refuge Opens Accessible Hunting Blind

With a new accessible hunting blind for people with disabilities, Kootenai National Wildlife Refuge (NWR) in northern Idaho hopes to provide better access to recreational opportunities.

Project Manager Dianna Ellis saw the need to provide opportunities to people with disabilities and worked diligently to see it through. Now, people such as veteran Frederick Brookings can view the migrating waterfowl, take photos of the local wildlife and even participate in the annual hunting season.

“I don’t need to take an animal to enjoy the hunt,” says Brookings, who uses a wheelchair. “I just like the opportunity to be out there and connect with nature.”

Located 20 miles from the Canadian border, Kootenai NWR is bordered by the rugged Selkirk Mountains to the west, the Kootenai River to the east and state lands to the south. The refuge’s diverse habitats contain wetlands with associated uplands, and hardwood/conifer forests. This location is ideal for foraging wildlife and for hunters who bring home the game.

Engineering Equipment Operator Wayne Wilkerson constructed the blind with help from a Youth Conservation Corps (YCC) crew. This project offered many benefits to the young people in this program: learning about habitat, species and how to construct facilities without power tools. That’s right. Power tools were not used by YCC students, thus giving them a history lesson on how to build a deck the old-fashioned way, with nails, hammers and levels. Sweat equity, along with good supervision, brought this fabulous structure to fruition and gave the students pride of ownership.

The blind’s popularity grew so fast that by mid-October, it was booked through mid-November. Because of the potential for snow and ice, the blind closed on November 20. It will reopen in the spring.

This project has created opportunities for hunters with disabilities to get outside and connect with fellow hunters and community members. Recreational opportunities such as hunting are not just an activity, but a social thing—something that you can do today and pass on to your children tomorrow.

“I didn’t think this little project would have such an impact,” Ellis says, “Seeing the smiles on their faces and hearing them tell us how appreciative they are, just made the effort so worthwhile.” □

JANE CHORAZY, External Affairs, Pacific Region

A hunter takes advantage of the new blind.



Service Agents Break Up International Wildlife Trafficking Ring



Gila monsters and other exotic reptiles from the United States are highly sought by exotic pet smugglers.

Nathaniel Swanson thought that he had it all figured out. His Everett, Washington, reptile store provided the perfect cover. His contacts in China were trustworthy and reliable. His customers were discreet. He had a system: a ring of effective black market animal traffickers that brought him hundreds of thousands of dollars in illegal profit for nearly four years, starting in 2008. But one turtle yearning to be free, one alert package handler and timely intervention by Service Special Agents brought his ring down. He was sentenced early this year to a year in prison and tens of thousands of dollars in fines and penalties.

Swanson's case is by no means unique. Many imperiled wildlife species are threatened by high demand as pets, status symbols, food or even in traditional "medicines."

"Any wildlife that can be profited from, legally or illegally, is in high demand all over the world," says Service Special Agent Manisa Kung.

This demand grows despite international treaties, such as the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and such U.S. laws as the Endangered Species Act.

The demand for turtles in China is particularly high. An unknown number are illegally smuggled there each year, where they are usually sold as food in open, poorly regulated markets. Swanson shipped many box turtles and North American wood turtles to Hong Kong. Many did not even survive the journey.

In the United States and Europe, pet and exotic animal collection, rather than food, generally fuel the demand for imperiled animals.

Swanson supplied such rare reptiles as Gila monsters, big-headed turtles, Fly River turtles and Chinese striped-neck turtles. He even managed to obtain an Arakan Forest turtle, so rare the species was long thought extinct in the wild, for a more discerning buyer.

All that is required to make illegal wildlife trafficking succeed are willing suppliers and willing buyers. Swanson supplied the

wildlife, and he had buyers in Hong Kong. The buyers often have "shippers," who they know and who live in the United States. These shippers work with the buyers in coordinating purchases of reptiles.

Swanson and the shippers took pains to ensure their captive reptiles were immobilized for shipping, stuffing turtles into socks and packing them tightly in cardboard boxes without access to food, water or even much air. This and other cruel methods of confinement are standard in the animal smuggling world.

Smugglers pack and disguise their shipments carefully, knowing that the sheer volume of uninspected cargo traveling between the United States and China will be their best ally in concealing illegal activity. But a lucky break and an alert delivery driver changed the fate for one package of turtles and Swanson.

"When a delivery service driver picked up the box destined for export to Hong Kong, she felt something moving inside. The box was opened and they found 20 turtles. The delivery service then reached out to our wildlife inspector," says Kung.

Package handlers are often the first people to discover illegally trafficked animals, often because of the animals themselves—a parrot frees itself and begins to shriek in terror, a venomous snake worms through a hole in a box and scuttles across a warehouse floor, or in Swanson's case, a loose turtle struggles and causes a box to move.

The Service's law enforcement agents maintain a good relationship with the international shipping industry. "Overnight shipping is how we see a lot of animals and trophies come into or leave the country. Most animals can survive being shipped overnight, so it's an easy thing to grab 30–40 small turtles, wrap them up in socks, and drop the box at a package delivery storefront," says Gary Young, Special Agent in Charge of Law Enforcement for the Pacific Region. "If half the turtles die, it's still a net gain for the smugglers."

According to the Department of Justice, the estimated total value of the animals Swanson smuggled was between \$120,000 and \$200,000. At the rate Swanson charged his American customers for a turtle, roughly \$100 each, that represents thousands of animals. Swanson's co-conspirators, who were Hong Kong citizens living in the United States, managed to sell turtles provided by Swanson for \$500 to \$1,500 apiece, "And those are conservative values," says Kung.

While this arrest is an important victory in the ongoing struggle against animal trafficking, Kung is pragmatic about the chances of stopping the Hong Kong-U.S. reptile connection for good. As she says, "I think that individuals who deal in this illicit market just consider it the cost of doing business." □

DYLAN KNAPP, External Affairs, Pacific Region



The population of Mount Graham Red Squirrels has fallen sharply.

Southwest

In Arizona, Mount Graham Red Squirrels Captured for Breeding Program

With a population decline of nearly 50 percent over the past 15 years to around 270 individuals in 2013, the Mount Graham red squirrel faces a critical extinction risk. To improve its chances, the Service has partnered with the Arizona Game and Fish Department, U.S. Forest Service, and Phoenix and Miller Park zoos to develop the Mount Graham Red Squirrel Captive Breeding Pilot Project to help establish management protocols for the species.

In late summer, Marit Alanen of the Service's Arizona Ecological Services Field Office (Tucson Sub-office) captured the last of six Mount Graham red squirrels (three males, three females) needed to begin this project. The three pairs of red squirrels will

establish the base population for the pilot breeding program at the Phoenix Zoo. Eventually the zoo will transfer one male and one female to Miller Park Zoo in Bloomington, Illinois, with the hope of establishing a breeding pair there.

The 10-year pilot project is part of the species' recovery effort and is designed to understand the squirrel's husbandry needs. This subspecies has been separated from other red squirrel populations for approximately 10,000 years (since the last ice age), and its only habitat is in the Pinaleño Mountains in the Coronado National Forest in Graham County, Arizona.

In recent years, the Pinaleño Mountains has suffered from two large wildfires (1996 and 2004) affecting approximately 35,000 acres of forested area, and the potential for large-scale fires in the species' only remaining habitat remains very high. Extended drought, especially in the higher-elevation forest types, and outbreaks of tree diseases have also negatively impacted their habitat.

Midwest

There's No Place like the Driftless Area

What is the first word that comes to mind when you think of the Midwest? Do you imagine cornfields, small towns or Great Lakes? In addition to these archetypal symbols, the Midwest is also home to one of the most unique and ecologically diverse landscapes in America, a landscape that is also severely imperiled.

The Paleozoic Plateau, or Driftless Area, expands across the Corn Belt of the upper Midwest through Minnesota, Wisconsin, Iowa and Illinois. The area is named after its distinct prehistory and ecological features. About 12,000 years ago, it was bypassed by the last continental glacier, which resulted in the absence or reduction in glacial till on the land, otherwise known as drift.

Red squirrels are territorial and must be housed separately while in captivity. The females are in estrus for only about eight hours each year, meaning determining the proper time to bring males and females together to breed is challenging. Phoenix Zoo staff have been studying the behavior and management of this subspecies since the zoo first received its Mount Graham red squirrels from the wild as part of an emergency action due to wildfires in 2011.

"This serves as a great example of how strong partnerships are necessary to achieve our mutual conservation goals," says Steve Spangle, supervisor for the Service's Arizona Ecological Services Field Office. "No one entity could have done this alone."

The Phoenix Zoo's Arthur L. and Elaine V. Johnson Center was established in 2007 to work specifically on priority issues related to native wildlife species recovery. "We have already learned a great deal about how to care for this critically endangered squirrel and will continue to develop the necessary husbandry, rearing, breeding and release protocols," says Stuart Wells, director of Conservation and Science at the Phoenix Zoo. □

MARIT ALANEN, Arizona Ecological Services Field Office (Tucson Sub-office), and TOM BUCKLEY, Ecological Services Public Affairs, Southwest Region



STEVE GIFFORD

Red-headed woodpeckers have declined severely in the past half-century because of open woodland loss and changes to its food supply.



Available habitat in the Driftless Area has been dramatically reduced over the past two centuries because of a combination of factors following European settlement, including fire suppression and agricultural expansion. Only 2 percent of the area's native savanna and 1 percent of the native prairie remain intact. To make matters worse, the remaining ecosystem is often fragmented and degraded by the invasion of non-native species.

This unique landscape, still largely privately owned, has made a great home for a diversity of animal and plant species. A large proportion of these species are listed as Species of Greatest Conservation Need in the Driftless Area states. In Minnesota, more than half of all state-listed Species of Greatest Conservation Need are in this region of the state, including 94 percent of listed reptiles, 55 percent of listed birds and 50 percent of listed amphibians. Many of these species are unique to this area of the world. At-risk critters include such species as cricket frogs, blue-spotted salamanders, painted turtles, American bullfrogs and red-headed woodpeckers.

The Service's Wildlife and Sport Fish Restoration Program, in partnership with state agencies and private landowners, has supported conservation in the Driftless Area through the federal State Wildlife Grants program.

The Driftless Area as seen at Mount Hosmer Mississippi River Outlook in Lansing, Iowa.

Mary Trewartha is one of the many landowners conserving the native habitat of this area. Trewartha owns a farm in Wisconsin's Iowa County, toward the south of the Driftless Area. Trewartha's work is in part supported through the Wisconsin Department of Natural Resources' (DNR) Landowner Incentive Program, which is primarily funded through State Wildlife Grants. But Trewartha's restoration work began well before participating in the DNR program. Trewartha has worked with the Service's Partners for Fish and Wildlife Program since 2000 to support prairie and savanna restoration on her farm.

Much of Trewartha's project focuses on restoration through removal of brush and invasive species, and controlled burns. According to Trewartha, "A photo of the farm from 1937 shows that the habitat was originally oak savanna, and with the support of these grants, I'm removing woody species and opening up the landscape to what it was."

Landowners are the life-force to the on-the-ground conservation work of the Driftless Area. It is estimated that at least 80 percent of state Species of Greatest Conservation Need throughout the Driftless Area live on private lands, and in Wisconsin, 97 percent live on private lands.

Trewartha purchased her farm in 1972 and became interested in conserving and restoring the land. "We're birders, and we found we had bobolinks and meadowlarks on the farm at a time when they were becoming rare in other areas. We decided we would manage our farm for birds." Her property now provides habitat for many grassland birds including field sparrows, Henslow's sparrows, red-headed woodpeckers and dozens of bobolinks. "Because I've opened up areas with oaks, I have more red-headed woodpeckers," Trewartha says.

Perhaps the most interesting angle of Trewartha's work is the why of it all: "It's doing something good for the environment. Even on a small scale, I can have a positive impact on prairies and grassland species. My son and his family moved back from New York and will be taking over the farm eventually. They are going to carry on the conservation work." Trewartha's land ethic will be handed down through generations, meaning those grassland birds can count on having habitat into the future.

The partnerships between private landowners and government agencies is what makes the light burn a little brighter for imperiled species in the Driftless Area, such as the red-headed woodpecker. Trewartha notes that "without the grants from the Landowner Incentive Program and the Service, this restoration work wouldn't have been possible." □

JOANNA GILKESON, External Affairs, Midwest Region

The Building Blocks of Women Scientists

What did you want to be when you grew up? A veterinarian? A *National Geographic* photographer? A biologist? Young girls are busily thinking up their own answers to this question right now, and the External Affairs team in the Midwest Region thought it might be fun to give them some ideas. You never know...they might become the next conservation hero! And playing with LEGOs is never a bad thing.

Inspired by LEGO's "Research Institute" set featuring female scientists at work, folks in the Midwest Region created "Women in Science: Connecting with the Future." The goal was to connect future female scientists with real Service employees, inspiring them to follow their dreams.

They featured a wildlife inspector, visitor services specialist and various biologists in the fun and informative series.

This is the profile of Wildlife Inspector and K-9 handler **Amanda Dickson**. Stationed at the nation's major international airports, ocean ports and border crossings, Wildlife Inspectors monitor all wildlife trade shipped through the United States. They stop illegal shipments, intercept smuggled wildlife and wildlife products, and help the United States fulfill its commitment to global wildlife conservation.



LEGO Amanda and Lancer inspect shipments for illegal wildlife trade.

How long have you been working with the Service?
3.5 years

When you were a kid, what did you want to be when you grew up?
A zoologist

What does a typical work day look like for you?
Get the dog, throw the ball to get him exercise, then take him to the Post Office to work mail until lunch. In the afternoon, the dog and I go to warehouses to search freight or we stay in the office to do paperwork. Then I drop the dog off at the kennel for the evening.

What is your favorite part about your job with the U.S. Fish and Wildlife Service?
Getting to work with my best friend!

What is the coolest plant or animal that you protect, conserve, restore or educate about?
I think the pangolin is the most interesting animal we work to protect. There is very little known about their lives, and they are endangered.

What advice would you give a young girl who dreams of working in a science field?
Work hard in school, especially math and science courses. Experience really helps, so seek out volunteer and job opportunities. Even volunteering or working in something seemingly unrelated can help you by showing how responsible and hard-working you can be. Networking can make a huge difference, especially if you're trying to get a really competitive position, so meet new people and treat everyone with respect. □

Find the rest of the profiles at
1.usa.gov/1purDfb

Southeast

Dam Removals Improve Water Quality in Alabama

The state of Alabama is one of the most aquatically diverse states in the nation. Fish, mussels, snails and other critters use the watersheds to spawn, grow and thrive. Unfortunately, many of those aquatic species are imperiled.

"Many people just don't realize that Alabama is a U.S. hub for freshwater aquatic biodiversity with more than 300 native fishes, 180 mussels, 160 snails and 85 species of crayfish. However, nearly 80 of these species, mainly mussels and snails, are protected under the Endangered Species Act," says Service biologist Jeff Powell.

Why are they so endangered? Habitat loss is the main culprit. Many of these imperiled species need clean, fast-moving water to survive. "When streams and rivers are dammed-up or blocked

by some other barrier, flows slow down and water quality can quickly deteriorate," says Powell.

One man-made structure that can prevent free-flowing water is a dam. Dams can slow the flow of water, reduce water quality, block fish passage and allow sediment to build up. Furthermore, many dams around the country are considered outdated and no longer useful. That's why Service biologists joined up with partners to remove two that were past their functional lifespan. "In addition to blocking movement of fish, dams can create deep pools that fill with sediment, reduce oxygen levels and raise the temperature of the water," says Partners for Fish and Wildlife Biologist Eric Spadgenske.

The first dam removal happened last October in the Upper Turkey Creek Watershed. Service biologists joined the Freshwater Land Trust to remove a dam built in the 1920s to form a swimming hole in Turkey Creek. Locals stopped using the swimming hole decades ago when the concrete structure proved dangerous. Biologists knew that removing the dam



A dam on Turkey Creek created a swimming hole but blocked fish passage.

ERIC SPADGENSKE/USFWS

would improve the habitat for the endangered vermilion darter, a beautiful, two-inch long fish only found in Turkey Creek. It didn't take long for a hydraulic hammer and hardworking biologists to re-open a free flowing section of Turkey Creek.

With that project complete, attentions switched to Big Canoe Creek. There, biologists focused on Goodwin's Mill Dam, which was constructed in the 1800s to power a grist mill. The mill was abandoned in the 1930s, but the dam continued to impound the water and create a fish passage barrier. "Recent surveys showed a dramatic disparity in fish species diversity above and below the dam, highlighting the dam's impact on water quality and habitat suitability," says Spadgenske.

Service biologists and heavy equipment crews joined The Nature Conservancy of Alabama and Friends of Big Canoe Creek to remove the dam. The goal was to restore fish passage, and benefit rare and federally protected mussels. One other benefit was to halt erosion of private land and to restore the stream bank downstream of the dam—efforts welcomed by the private landowner.

Both dam removal projects were years in the making and show the power of partnerships. □

Partnership Equals Success for Nesting Sea Turtles at Archie Carr National Wildlife Refuge

It was a great year for nesting sea turtles at Archie Carr National Wildlife Refuge in Florida, with a record 79 leatherback nests, and one of the best seasons for loggerheads (15,103 nests).

Archie Carr NWR stretches across 20.5 miles between Melbourne Beach and Wabasso Beach along Florida's east coast. In addition to leatherbacks and loggerheads, it provides nesting habitat for green sea turtles and the occasional Kemp's ridley (one this year, two last year).

The Endangered Species Act, and education and outreach from the refuge and partners—particularly the University of Central Florida (UCF) and the Friends of the Carr Refuge—are a big part of the increase in nesting numbers over the last few years.

The relationship with UCF dates back to the founding of the refuge, which used data collected by the university and Dr. Llewellyn Ehrhart to justify its establishment. It was Dr. Archie Carr who reached out to Ehrhart to survey the beaches, and they quickly realized the stretch of beach that later became Archie Carr National Wildlife Refuge was one of the most important sea turtle nesting beaches in the U.S. The 20.5-mile refuge accommodates 15 to 25 percent of Florida's nesting sea turtles!



A Service biologist tags an endangered loggerhead turtle at Archie Carr National Wildlife Refuge.

UCF's Marine Turtle Research Group tags and weighs female sea turtles, and takes tissue samples to provide information on where the turtles have been and what chemicals they've been exposed to. The group also inventories the nests and monitors the number of hatchlings emerging from each, providing information on female reproductive success.

"There's something really amazing about that stretch of beach. In one night we'll get more turtles nesting than some beaches get in one season," says UCF's Dr. Kate Mansfield.

Vincent Lamb is a board member and treasurer of the Friends of the Carr Refuge, which was established in 1991. In 2011, new members such as Lamb were recruited and the group was revived. The Friends group leads nighttime guided walks to view nesting loggerhead sea turtles during June and July, the peak of their nesting season.

These guided walks give attendees the opportunity to experience something few people ever get to witness. "Taking people out that have never seen sea turtles nesting on the beach and letting them have this up-close and personal experience is extremely gratifying," says Lamb.

The Friends group has begun doing morning turtle talks, taking attendees to hatched turtle nests and counting egg remains to see how many turtles hatched. These types of outreach are helping to communicate the importance of this sea turtle nesting beach and how to respect nesting sea turtles.

The continued work of Archie Carr National Wildlife Refuge and its outstanding partners is ensuring future generations the opportunity to witness these amazing creatures. □

KATHERINE TAYLOR, External Affairs, Southeast Region

Northeast

Service Establishes Partnerships in Philadelphia, Other Cities to Engage Youth and Residents

The Service recently expanded its urban conservation initiative with the announcement in late August of six new Urban Wildlife Refuge Partnerships in cities across the country.

The partnerships will engage communities, corporations and nonprofits, in an effort to help restore the natural environment and boost opportunities for residents to connect with nature.

One of the new partnerships, called Neighborhood Environmental Stewardship (NESt), is between John Heinz National Wildlife Refuge at Tinicum in Philadelphia and the National Audubon Society. It builds on existing conservation efforts in Philadelphia and aims to implement an expansive community-based conservation program that engages new and diverse audiences, increases quality habitat in Philadelphia for migrating birds and other wildlife, and supports the mission of the Service.

“While Philadelphia citizens have a unique opportunity to easily visit a national wildlife refuge within the city limits, this partnership will help break down the many barriers that still exist in connecting young people to the great outdoors. Partnering with Audubon Pennsylvania will create opportunities for youth to play, learn, serve and work outdoors while helping to spark a

passion to be lifelong stewards of nature,” says Mariana Bergerson, deputy refuge manager at John Heinz Refuge.

The program, in which FedEx is a key partner, includes an initiative to train local youth working with the Student Conservation Association, expand the native plant propagation program at the city’s Fairmount Park, implement a network of habitat restoration projects and conduct citizen science activities.

The 14 Urban Wildlife Refuge Partnerships, part of the Service’s Urban Wildlife Conservation Program, raise awareness and capacities to engage a new and more diverse constituency in wildlife conservation, both on and off urban refuges.

In addition to Philadelphia, the latest Urban Wildlife Refuge Partnerships are:

Condor Kids (California): A pilot education program will teach students in heavily Latino elementary schools in the Fillmore United School District of Ventura County about efforts to recover the endangered California condor. The program also will build their skills in science, technology, engineering and math. Students will make field trips to the condor nesting area at Hopper Mountain Refuge to meet with recovery biologists, learn about condor monitoring and look through nest cameras. Partners in the project include the Santa Barbara Zoo and the Cornell Lab of Ornithology.

Wallkill Connection: Fostering Urban River Stewards (New Jersey/New York): The project will involve youth and adults from a low-income Yonkers, New York, neighborhood in restoring land

near public housing along the Saw Mill River. Participants will visit Wallkill River Refuge to learn about riverside restoration; refuge staff will make return visits to Yonkers to lend their expertise. Partners include the Yonkers-based nonprofit Groundwork Hudson Valley. Youth participants are from Groundwork’s Green Team (a summer youth employment program).

Habitat Is Where It’s At (Louisiana): Underserved New Orleans students will help restore degraded wetland in Bayou Sauvage Refuge while learning about wetland habitat. Younger students will cultivate and grow marsh grass and trees in schoolyard nurseries. Older students will help with project planning, data collection and biological monitoring to assess restoration success. Partners include the University of New Orleans Coastal Education and Research Facility.

Community Greening and Restoration Project (Colorado): Working with the community and partners including Environmental Learning for Kids, the Service will help turn a degraded detention pond in an underserved Denver neighborhood into a local park that connects to nearby Rocky Mountain Arsenal Refuge. The park will offer expanded educational programming for youth and families in Montbello and Commerce City.

PSJA, Preserving for Future Generations (Texas): The cities of Pharr, San Juan and Alamo will work with Santa Ana Refuge and students and teachers to create natural habitats at three elementary school campuses. At community-led events, students, teachers and parents will learn about the region’s unique Tamaulipan Brushland ecosystem—found only in the four southernmost counties of the state—and about conservation in the Lower Rio Grande Valley. □



Through strong collaboration, the NESt partnership strives to help more Philadelphians enjoy and care for natural environments within their own community.

USFWS

Mountain-Prairie Region

Service Botanist Discovers Native Colorado Flower

“Look, but don’t touch the flowers,” is something Gina Glenne, a Service botanist, frequently reminds herself when working with certain native plants in Colorado.

Unfortunately for Glenne, the glandular hairs of some *phacelia*, a common flower genus of the western United States, give her an allergic reaction. The resulting rash for some people is more extreme than exposure to poison ivy or oak. In Glenne’s case, more than five years of handling *phacelia* species in Oregon, Nevada, Idaho and Colorado has resulted in heightened sensitivity to all species of *phacelia*.

So when Glenne observed an unusual plant growing in the midst of Penland, or Kremmling penstemon, during a 2009 *phacelia* taxonomy project, she kept her hands to herself.

“Does anyone know what this *phacelia* is?” Glenne asked her colleagues with the Colorado Rare Plant Conservation Initiative, who were surveying the area around Troublesome Creek, near Kremmling, Colorado. No one did.

She later returned as part of a taxonomic and genetic investigation of North Park *phacelia* populations funded by a Preventing Extinction grant administered by the Service.

Was this the discovery of an unnamed native Colorado flower? Glenne called upon the expertise and plant-handling abilities of



USFWS

Service botanist Gina Glenne enters GPS coordinates as Duane Atwood heads to a survey spot. Top: *Phacelia gina-glennae* still lacks a common name



USFWS

Duane Atwood, a botanist with Brigham Young University. Upon inspection, he indicated that it could be a distinct, hitherto undiscovered plant.

Fast forward a bit and the mystery plant received the name: *Phacelia gina-glennae* and was described in the journal *Western North American Naturalist*. Atwood deemed it biologically distinct from the North Park *phacelia* to which it’s presumed to be most closely related. However, the results of genetics testing, funded and performed by the Denver Botanic Gardens’ Colorado Rare Plant Research Program, are pending. This means *Phacelia gina-glennae* has been recognized as a distinct species and genetic tests will confirm or refute this.

“Our original goal involved resolving species identification questions between the North Park *phacelia* populations in Jackson and Larimer Counties. Once Gina found the Troublesome

Creek *phacelia* which looked different, we included it in our work. The publication of the name *P. gina-glennae* gives us a hypothesis to test with our data analysis,” says Jennifer Neale, the program’s director of research and conservation. “It’s really exciting to be able to examine this newly published species from a genetic perspective. We’re hoping to have our results by the end of 2014.”

Despite the pending genetic confirmation, it’s clear that *Phacelia gina-glennae* is a unique native flower at home in the white and tan-colored shale/clay substrates of Grand County, Colorado. Whereas North Park *phacelia* is a biennial, *Phacelia gina-glennae* is thought to be an annual. In addition, the new plant on the Colorado *phacelia* block is relatively small and appears to have evolved to thrive in the clay-rich soil type of Troublesome Creek.

The area around the creek is managed in part by the Bureau of Land Management’s Kremmling Field Office, which recognized the need to protect the habitat for the benefit of another plant, Kremmling penstemon, and in so doing, unknowingly conserved *Phacelia gina-glennae*. BLM staff even expanded the Area of Critical Environmental Concern near Troublesome Creek, which now ensures that neither native plant will disappear.

Thanks to the BLM and conservation partners, both native flowers welcome wildlife today. “All the pollinators love the big, purple flowers,” Glenne says of the native bees buzzing around the plants’ flowers.

Far from seeking out the limelight, Glenne believes the work of her colleagues—Ellen Mayo, also a Service botanist, and Alicia Langton, a Pathways student studying *phacelia* clay annuals—greatly aided her discovery and subsequent documentation of *Phacelia gina-glennae*.

Although *Phacelia gina-glennae* still lacks a common name pending the genetics results, Glenne is hoping either “Troublesome *phacelia*” or “Kremmling *phacelia*” will be selected by botanists in the state and the Colorado Natural Heritage Program.

Meanwhile, the search for new native plants in the unique soils of the Rocky Mountains continues.

“We don’t know if there are more out there, but we would sure like to find out,” she says, although she’ll be sure not to touch any she finds. □

LEITH EDGAR, External Affairs, Pacific Region

RYAN KINGSBERRY/USGS



Alaska

Massive Number of Walrus Haul Out on Shore as Sea Ice Melts

Declines in sea ice in late-summer in the Chukchi Sea over the last several years have meant that walrus that would normally rest on ice must “haul out” on land.

A haulout formed in September and October near the native village of Point Lay and garnered significant interest because of the number of walrus involved—tens of thousands.

Walrus occupying coastal haulouts are easily disturbed by people, and can rush back into the protection of the water en masse causing some younger walrus to get crushed in the stampede.

In 2009, a stampede killed 130 young walrus at Icy Cape, Alaska.

Thousands of walrus gathered to rest on the shore near the Alaskan coastal community of Point Lay during September 2013.

The Service, National Marine Fisheries Service and U.S. Geological Survey work to minimize the chance of a stampede by warning planes to keep away and similar actions. In the most-recent haulout, the people of Point Lay also worked to avoid a stampede.

It worked. The 2014 haulout saw no stampede.

Researchers are still trying to answer many questions about haulouts. Among them: How many walrus are using haulouts? How long do they remain on land? How often do they use a haulout site? How do they react to disturbances?

To get answers, the Service is supporting the Alaska SeaLife Center project to maintain weather-proof cameras at several walrus haulouts in Alaska, on and off national wildlife refuges. □

Pacific Southwest

Teen Honored by Earth Island Institute for Creating Refuge’s Junior Ranger Program

Lynnea Shuck, a 17-year-old volunteer who created the Junior Refuge Ranger program at Don Edwards San Francisco Bay National Wildlife Refuge, is one of six youth leaders in North America to receive the Earth Island Institute’s prestigious Brower Youth Award.

The awards, part of the Institute’s New Leaders Initiative, recognize environmental activists ages 13 to 22 for outstanding efforts to promote ecological sustainability and social justice.

Shuck, a senior at Mission San Jose High School in Fremont, California, has been volunteering with the refuge since 2010. She created her innovative Junior Refuge Ranger program in 2013, when she recognized an opportunity to more actively engage

young people who, in turn, can become advocates for wildlife protection and the refuge system.

Shuck says her experiences as a young volunteer at the refuge inspired her effort to reach out to other young students.

“I started volunteering when I was in seventh grade and became totally hooked on refuges. It opened up a whole world of environmental awareness for me—I’ve grown so much as a person here and am so appreciative of what the refuge has to offer. I want to give young children the opportunity to have the same experiences I’ve had.”

As part of her program, Shuck designed a 21-page activity book for 8-11 year olds. The youngsters earn wildlife collector’s cards for such activities as nature hikes, bird counts, wildlife art, and interviews with rangers, managers and educational staff at the refuge.

Lynnea Shuck teaches young people in the Don Edwards San Francisco Bay National Wildlife Refuge’s Junior Refuge Ranger program.



With completion of the activity booklet, youngsters receive a sticker and are certified as Junior Refuge Rangers.

Hands-on experience at the refuge is central to the program.

“It’s one thing to learn about marsh plants in a classroom,” Shuck says. “It’s another to be standing in the marsh, touching the plants, and even tasting the pickleweed.”

Besides being fun, the activities impart valuable lessons about refuges and the environment.

“I learned that no matter how old a kid is, they can learn really complicated concepts in environmental science if they are taught in the right way,” Shuck says. “This program demonstrates that environmental stewardship can be taught at any age.”

Shuck is now working to expand the Junior Refuge Ranger program to other refuges, including California’s Humboldt Bay National Wildlife Refuge and Sacramento National Wildlife Refuge Complex.

As part of her award, she and the other winners—who hail from Michigan, New York, Florida and Hawaii—will get a week of leadership training. Each will also receive \$3,000 funding for their programs. □

DOUG CORDELL, San Francisco Bay National Wildlife Refuge Complex, Pacific Southwest Region



MATT HAMMAN/USFWS

The vernal pool is home to the federally threatened Slender Orcutt grass.

Service Partners with Collins Pine Company to Protect Vernal Pool

Through the Partners for Fish and Wildlife Program, Sacramento National Wildlife Refuge Complex joined with Collins Pine Company to protect a mountain vernal pool. Vernal pools are seasonal wetlands, described by the California Department of Fish and Wildlife as “some of the most ecologically important and distinctive areas in California.”

Collins Pine Company is a family-owned timber company. It started out in Pennsylvania in 1855 and now also owns and manages timberlands in Southern Oregon and Northern California. One thing that stands out about Collins is a commitment to be good stewards of the land.

The now-protected mountain vernal pool is on timberland owned by Collins near the town of Chester, California. Collins allows public access to much of its land for outdoor recreation, which is great, but this access can sometimes result in destruction of habitat that the company so carefully manages.

The vernal pool is right next to a dirt access road that comes off a public highway, making it a popular spot for people to take their ATVs and four-wheel drive vehicles “mudding.” This was causing significant habitat damage and impacting slender Orcutt grass, a plant protected as threatened, that grows there.

The Partners for Fish and Wildlife Program was able to help out, providing funding to help build a split rail cedar fence to prohibit access by vehicles to the vernal pool. Collins provided cedar logs for the fence that were harvested from its timberlands. This greatly reduced costs and prevented the risk of insects or diseases being introduced to the area from lumber brought in from other regions. The Service’s primary contributions to the project were technical assistance with project design and funding for labor to install the fence.

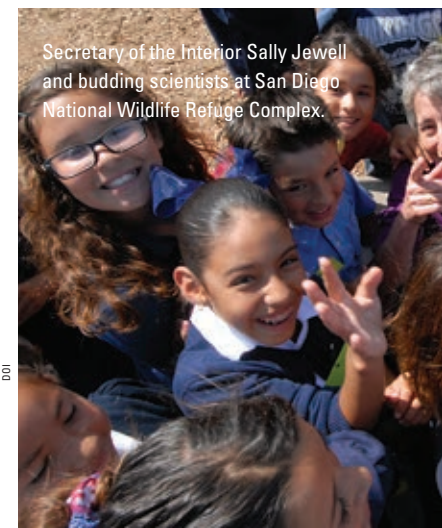
The greatest part of this project is that the vernal pool and the threatened slender Orcutt grass are protected while still allowing the public to enjoy the land. □

JACOB BYERS, Partners for Fish and Wildlife Program, Pacific Southwest Region

San Diego National Wildlife Refuge Complex Wins Funding to Expand Urban Outreach

The Service redirected \$1 million in funding to San Diego National Wildlife Refuge Complex to reach new audiences and engage Southern California urban communities and youth in conservation and outdoor recreation. The refuge is the first among the nation’s urban national wildlife refuges to receive this new award through a nationwide competition.

“From teaching urban youth about the magnificence of the California condor to unlocking opportunities to explore nature along the Los Angeles River, the San Diego National Wildlife Refuge Complex is a model of how we can leverage innovative partnerships to connect new and diverse audiences to the great outdoors,” Secretary of the Interior Sally Jewell said in making the announcement. “This dedicated funding will help engage the next generation of conservationists while also strengthening connections between the community and these public lands that belong to all Americans.



Secretary of the Interior Sally Jewell and budding scientists at San Diego National Wildlife Refuge Complex.

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“Helping kids feel welcome on public lands at a young age can help create the next generation of conservationists or spark a passion to be good stewards of nature that will last a lifetime,” she added.

The winning proposal, called the SoCal Urban Wildlife Refuge Project, incorporates outdoor learning, service and stewardship of natural habitats, and conservation-based projects for youth and young adults from diverse communities. It includes partnerships not only in San Diego but also at Hopper Mountain National Wildlife Refuge Complex and in Los Angeles through the Urban Wildlife Refuge Partnerships with the CondorKids and Friends of the Los Angeles River.

Some of the programs in the SoCal Project:

- Working with the Los Angeles Conservation Corps to develop job skills with inner city, low-income young adults to restore wildlife habitats along the Los Angeles River and to lead outdoor education activities;
- Expanding the partnership with Earth Discovery Institute to build a cadre of young, technology-savvy environmental stewards and to expand service opportunities for

volunteers and communities to connect with their wild lands;

- Growing the next generation of environmental scientists and developing skills in science, technology, engineering and mathematics with the Living Coast Discovery Center; and
- Training teachers and students on the use of cutting-edge science to solve conservation problems with the San Diego Zoo Institute for Conservation Research. □

Headquarters

Youth and Service Grow, Thanks to C4Y Program

The past two summers, you may have noticed them walking the hallways at Headquarters, attending meetings or asking other employees, even Service Director Dan Ashe, about their work. They all seemed to have some things in common...they're young, they're engaged, and they all wore navy blue vests with colorful Service pins. They were students from the Conservation4Youth (C4Y) Internship Program.

Just finished its second year, C4Y was envisioned by Denise Sheehan, the Assistant Director of Budget, Planning and Human Capital, and came together in partnership with Fairfax Families4Kids and the Educating Youth through Employment Program.

These local organizations provide mentor/guide training for participating Service staff, along with workplace training, transpor-

tation and funding for the students. The internship offers practical work experience in conservation biology and administrative support while giving participants a chance to gain confidence through on-the-job training, mentoring opportunities and shadowing assignments.

“This program gives the Service the opportunity to enhance our reputation as a socially responsible organization as we strive to develop the next generation of conservation professionals,” Sheehan says.

The first year, C4Y gave nine local people ages 15 to 21 in the Fairfax County foster care system the chance to learn about wildlife conservation while working in a professional setting.

The C4Y Pilot Program was honored with the coveted Fairfax County Gold Star Community Partner Award in recognition of the Service’s outstanding contributions to the residents of Fairfax County. This led to interest from other federal agencies and created a model program to help implement similar initiatives, which can provide local disadvantaged youth with useful and productive office skills, and improve their opportunities for successful employment and/or higher education. The program also received the Service Above Self award from a local Rotary Club.

One of the C4Y interns was also awarded a \$2,000 college scholarship from the Joyce and Thomas Moorehead Foundation.

This past summer’s C4Y Program welcomed nine interns, including five returning students, to the Service family for the seven-week program. Staff from



ALISA BALLEW-RAWLINS/USFWS

Conservation4Youth interns check out Patuxent Research Refuge in Maryland.

Migratory Birds, Information Resources and Technology, Law Enforcement, Business Management and Operations, Budget, Planning and Human Capital, International Affairs, Fisheries, Refuges, Wildlife and Sport Fish Restoration, and Science Applications gave of their time and talents as they mentored the interns.

Highlights of the program included a trip to the Smithsonian’s Natural History Museum; a visit from the Raptor Conservancy of Virginia to view a selection of local raptors up close; an interactive workshop with HR Officer Rebekah Giddings on job interviewing and resume writing; travel to Patuxent Research Refuge to experience the vital role that wildlife refuges play in preserving the diversity of wildlife and plant life; and a talk with a local marine biologist who brought along an array of live sea animals.

For more information about the C4Y Program, please contact Alisa Ballew Rawlins at <alisa_rawlins@fws.gov>. □

ANITA NOGUERA and ALISA BALLEW-RAWLINS, Budget, Planning and Human Capital, Headquarters



Partnerships to Conserve the Land

Sip of Success / 18

Science-driven partnership efforts turning the tide for the endangered Wyoming toad

A Snail's Journey to Recovery / 20

Service programs, partners join together to save Iowa pleistocene snail



THINKING

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Jude Smith looks at a spring that became active again only after the removal of salt cedars.

Jude Smith manages refuges as part of the landscape and makes sure to involve partners



Jude Smith is a fortunate man. At mid-career, he finds himself in his element—geographically, professionally and philosophically. A native of Clovis, New Mexico, Smith is the manager of a complex of national wildlife refuges in New Mexico and Texas—Buffalo Lake, Muleshoe and Grulla—just 37 miles east of his hometown.

“I have always loved this area,” Smith says. “I spent my youth hunting with old men and told them I was going to be a game warden when I grew up.” The job he does now, partnering with others to conserve a wide array of wildlife on public lands, is a dream fulfilled and then some. With a headquarters office 22 miles south of Muleshoe, Texas—population 5,158 at last count—Smith can still claim to be a “small-town boy.” But when it comes to his conservation philosophy, he thinks big.

“Whatever we are doing on the refuge complex,” he says, “I’m considering how we can take the benefits and knowledge we have gained to surrounding landowners on the larger landscape. This complex is too small to make the big difference for wildlife that we are after.” He is quick to add, “Whatever gets done, I don’t accomplish it by myself. I am working with Ecological Services, Refuges Inventory and Monitoring, the Natural Resources Conservation Service, USDA Animal and Plant Health Inspection Service, private landowners and others. It is our collective effort that makes the difference,” he emphasizes.

Smith’s orientation toward looking at the landscape and partnering is something he learned through powerful and effective mentoring, beginning early in his career. His first Service job was as a biological technician in what was then the Dexter, New Mexico, Fisheries Assistance Office, where project leader Jim Brooks taught Smith how to swim in troubled waters.

It was 1993, and they were monitoring threatened and endangered fish, including the Pecos bluntnose shiner, at various points along the Pecos River. Brooks had established good working relationships with private landowners, but they were skeptical about protecting the fish and protective of their own property rights—even as they granted him access to their lands for monitoring.

Through a series of unfortunate events, all the good will that Brooks had established was undone in a short period of his absence, and overnight, the Service was denied access to monitoring points on private lands all along the river. “My second week on the job, we started up and down the Pecos in Jim’s private vehicle—we didn’t dare use a government vehicle—and talked to landowners, one at a time,” Smith says. What Brooks demonstrated to him, Smith recalls, was courage—“we were afraid for our lives”—humility and respect for private property rights. “By the time we were done, people that had been threatening to shoot us were civil and offering us a glass of iced tea,” Smith remembers. Five months later, they had permission to access 80 percent of the lands they had been previously kicked off. “It was then that I realized it wasn’t all about the fish,” he says, “it was also about people and our approach to people.”

These are lessons Smith has never forgotten. He is applying them today to private landowner concerns about

the listing of the lesser prairie-chicken and the conservation of prairie dogs. “The great thing about a small community is people know you; you are not just a nameless face in the town. When folks have an issue with anything we are doing, they stop by the refuge complex and talk to me, and that’s a good thing,” Smith says.

Smith’s journey to the role of refuge complex manager came by way of time spent in the Service’s Ecological Services (ES) Program as well Fisheries. Working in three Service programs has driven home to him the necessity of collaborating across program lines. “In my jobs for Fisheries and later in ES, I needed to work hand-in-glove with Sevilleta and Bosque del Apache refuges along the Middle Rio Grande in conserving an endangered fish. The actions I took to conserve the silvery minnow could affect their efforts to protect migratory birds and other species; and what they did for migratory birds could affect water needed for the silvery minnow,” Smith says. There is no room for territorialism in conservation, he says.

One of their successful collaborations was dealing with the problem of salt cedars, a water-guzzling, non-native tree found on Sevilleta and other refuges that was affecting water quantity and species’ use of habitat. Smith used recovery dollars for the silvery minnow for the trees’ removal, which benefited the minnow, as well as riparian areas and spring rejuvenation.

That experience got Smith to thinking at the landscape scale. “The need to protect the silvery minnow became the catalyst for looking beyond a single species and beyond the refuge. To protect that fish, we needed to protect the river itself. We needed to get the landscape right,” Smith says. “I asked myself, ‘How do we

work with the landscape and with managers and landowners to strategically get flows back?’”

Smith has been appointed as a field representative to the national leadership team that is implementing Strategic Habitat Conservation (SHC), the Service’s conservation framework. In his mind, what the Service is aiming for is alignment around shared goals, internally and externally; the best science to drive conservation actions; and a way to assess whether the conservation is having a positive biological impact on the desired species.

Smith is able to share with the national team how he is enacting SHC at the field level. In the Southwest, for example, having enough water at the right times is a concern for both public and private land managers. Early on, as refuge complex manager, he experimented with the removal of salt cedars to bring back springs at Muleshoe Refuge. When that was successful, he began working with Service biologist Duane Lucia to expand the eradication program beyond the refuge to private landowners. By 2009, most of the salt cedars on the refuge and within a five-mile radius of the refuge had been removed, and the work to improve the landscape continues.

Smith also worked with the Southwest Refuges Inventory and Monitoring (I&M) Program to create a protocol for wildlife surveys. “We wanted to know whether our grazing and prescribed fire efforts were actually giving us improvements in biological outcomes. To get that, we needed a tighter protocol that goes on for a longer time period so that we can track population density and diversity through time and overlay it with our management actions,” Smith says. On his own, Smith had been conducting loose, baseline

studies of grassland health on the refuge complex, using three species of birds to represent the needs of other species and guide land management decisions. Smith knew he needed solid biological information that was replicable and comparable from year to year and that could be taken off the refuge and onto the surrounding landscape.

Smith and the I&M Program agreed to create a formal protocol to study grassland birds, mule deer, sandhill cranes and prairie dogs. I&M’s Bill Johnson says: “Jude knew what he wanted from the outset. He was looking well beyond his borders and fences at the landscape, and lining that up with the capacities and priorities presented by I&M and Landscape Conservation Cooperatives (LCCs) to achieve his goals. He’s a game-changer at Muleshoe, and he has the partnership skills needed to make good things happen.”

As they move forward, the grassland birds study will tell them the implications for prescribed fire and grazing, as well as provide data for taking management actions beyond the refuge complex. Studying mule deer will guide the refuge complex in allowing youth hunts of the animal.

Muleshoe, established in 1935 and the oldest national wildlife refuge in Texas, is famous for providing wintering habitat for 60,000 to 100,000 sandhill cranes, 5–10 percent of the species’ entire population. Today, with only one of the three lakes on the refuge complex wet most of the year and with drought as an ongoing issue, Smith says the need for solid data takes on even greater significance. “We need to know how the population is changing and how the birds are using the landscape in the face of drought so that we can be strategic in

protecting and managing them,” Smith says. Smith and Johnson are collaborating on gathering this data with an eye toward larger landscape studies, noting that the lesser sandhill crane and its grassland habitat are a priority species and habitat for the many partners in Great Plains LCC.

Prairie dogs are also a priority species for the Great Plains LCC. Other animals, including long-billed curlews, horn larks, burrowing owls, Swainson’s hawks, prairie falcons, pronghorn antelope, badgers and coyotes, share their preference for short grass; so what is learned about the prairie dog holds potential benefit in conserving those species as well.

“The prairie dog has no protection off the refuge, so we decided to manage for them, knowing that we can take what we learn out to private lands if we have the opportunity,” Smith says.

The bottom line for Smith is both philosophical and biological: “How do we know if we are doing good out there? We need to be able to answer whether we are seeing more lesser prairie-chickens, mule deer, Cassin’s sparrow, sandhill cranes or any other species we are devoting resources toward conserving,” he says. Some species take a long time to recover; he notes, “but we have to be able to show progress.” Smith says, “Seeing water come up in the springs and seeing birds come back—that’s the difference we are here to make. We can only do it if we take a landscape approach based on hard science and work together.”

SCIENCE APPLICATIONS TEAM, Southwest Region

Paul’s Lake and other saline lakes on Muleshoe National Wildlife Refuge once held water most of the year, but now are dry except after thunderstorms and during the winter.



USFWS

Enclosures help keep endangered Wyoming tadpoles safe.



USFWS

SIP OF SUCCESS

Science-driven partnership efforts turning the tide for the endangered Wyoming toad



BRIDGET FAHEY/USFWS

by TYLER ABBOTT, KIM VINCENT and RYAN MOEHRING

The Laramie Plains of south-central Wyoming aren't exactly what you would call prime amphibian habitat. At an elevation of more than 7,000 feet, the sun beats down ruthlessly on this arid highland. Blazing hot summers yield only to subzero winters. There are few trees for cover and the wind is as relentless as the endless hordes of hungry mosquitoes.

Yet this inhospitable land is the unlikely—and last—sanctuary of North America’s most endangered amphibian, the Wyoming toad.

The last-remaining wild Wyoming toad population survives in a tiny oasis at Mortenson Lake National Wildlife Refuge, which was established in 1993 specifically to protect the two-inch-long toad. Here the toad lives in isolation—hidden from view in the shortgrass prairie communities within the river basin, in the flood plain, and in the ponds, oxbows, wetland and riparian habitats on the refuge. No good can befall the tiny toad if it wanders too far from this secluded haven.

Unlike its limited habitat, there is no shortage of partners working on the Wyoming toad’s behalf. From 1985 to 1987, the species was presumed extinct; however, the discovery of a viable population in 1987 prompted the foundation of a robust Species Survival Plan. Today the program implementing that plan consists of a dozen zoos, Wyoming Game and Fish Department, University of Wyoming and other academia, private landowners, four Service programs and many other conservation organizations.

Despite these efforts, however, the 2011 annual survey counted only one toad in the wild.

Regardless of the cause of its decline, it was time for a new approach. In 2012, the Service launched a pilot study that used reptaria—a type of release pen for amphibians. The concept is simple: provide tadpoles with a safe, enclosed environment to grow and acclimate to the aquatic habitat in which you intend to introduce them. Provide them with cover and food until they morph into toadlets. Once they are large enough, transfer them to terrestrial reptaria that keep the toadlets in and predators out. Grow them into their next life stage and then release them into the wild. The theory is that this advanced growth stage stands a better chance of survival.

The results were promising, which led to the program receiving a major economic boost from the Cooperative Recovery Initiative (CRI), a competitive Service program designed to address current threats to imperiled species on and around national wildlife refuges.

With the \$800,000 in CRI funding, the program undertook a 900-foot expansion of Saratoga National Fish Hatchery, a Service facility that propagates the toads. That expansion will provide a substantially increased number of subadult toads for reintroduction. The remaining funds were set aside for expanding the soft releases that proved successful in 2012 and other conservation actions.

As they work to conserve the toad, the Service and partners follow Strategic Habitat Conservation (SHC), the Service’s conservation framework, which consists of four key components: 1) Conservation Planning, 2) Conservation Design, 3) Conservation Delivery, and 4) Monitoring. The CRI funds are designed to specifically aid in the implementation of the “Conservation Delivery” aspect of SHC: implementing on-the-ground-conservation actions based on research developed in Conservation Design.

SHC requires cooperation between multiple partners, and with all the partners previously mentioned, the toad team definitely meets that condition. SHC also supports conservation that will achieve the biggest return on the original investment.

Other actions to help the toad include:

Chytrid treatments: An anti-fungal drug has been successfully used on other amphibian species for the treatment of the deadly chytrid fungus. While an effective application method does not yet exist, CRI funding provides an opportunity to apply this treatment experimentally in a lab setting to the Wyoming toad. If lab testing is successful, biologists will use the treatment in the field.

Vegetation management: The toad needs open areas with shallow, warm water to survive. Cattle grazing and prescribed fire have proven effective tools to clear the thick stands of invasive bull rush and other vegetation surrounding currently occupied habitat, and will be useful for managing new sites identified for reintroduction.

Radio telemetry: Once the toads are in the wild, how is a biologist to keep track of them? Previous attempts at using the much-publicized “toad backpack” proved unwieldy, so biologists turned to internally placed transmitters. They tracked eight individuals in 2011, learning much about the toad’s use of habitat and its hibernation behavior. The biologists are always trying to minimize the impacts to the toads and continue to explore the use of re-designed backpacks and other non-surgical methods, such as ultra-small harmonic diodes that are currently used in insect studies.

The results have been remarkable. Last year’s survey counted 508 toads, up from 29 in 2012 and the one solitary toad in 2011. Tyler Abbott, deputy field supervisor at the Wyoming Ecological Services Office, says that the primary contributor to increasingly successful establishment of toads on the ground has been a combination of soft releases and vegetation management, both of which will be significantly expanded with the CRI funds.

While much remains to be done in conserving North America’s most endangered amphibian, there is hope that the tide is turning. Ten years ago, very few people knew that Wyoming toads existed at all. Now, at the end of a hot day chasing toads under the brutal Laramie sun, biologists can cool off with a Wyoming Toad IPA, a craft beer from a local brewery. The owner says it is his best seller. However brief, it is a refreshing reprieve from the daunting work of trying to bring back a species from the brink of extinction.

TYLER ABBOTT and KIM VINCENT, Wyoming Ecological Services Field Office, and RYAN MOEHRING, External Affairs, Mountain-Prairie Region

A SNAIL'S JOURNEY TO RECOVERY



LISA MAAS/USFWS

Service programs, partners join together to save Iowa pleistocene snail

by LISA MAAS, TAMRA LEWIS and DREW BECKER

Ready. Set. Search! The snail technicians begin a timed search, rifling through leaf litter in front of cold air vents on a steep hillside. Some wear gloves to protect fingers from stinging nettles and cold air blowing out of the vents. One dons a headlamp to get a better look inside a deep vent. "Found one!" another yells, excitedly.

They are on an ecological treasure hunt to find the elusive and federally protected Iowa Pleistocene snail. Their work is part of a cooperative recovery effort between the Rock Island Ecological Services Field Office and Driftless Area National Wildlife Refuge. Their goal: to recover the snail, a species reminiscent of another age.

Federally protected as endangered in 1978, the Iowa Pleistocene snail is a glacial relict with fossilized specimens dating back 400,000 years. Once assumed to be extinct, live snails were discovered in 1955, and now work continues to recover the species.

The snail needs the cold soil of the "algific talus" slopes of Northeast Iowa and Northwest Illinois. Algific (meaning cold-air producing) talus (meaning loose rock) slopes are a unique ecosystem occurring in the Driftless Area of the Upper Midwest, so named because the area remained free of glacial "drift" during the last ice age. The absence of glaciation is evidenced by the deeply carved topography and diverse habitats found in the area including cold water streams, bluffs, springs, sinkholes, caves, hill prairies and the algific talus slopes.

With vents on the slopes that blow out cold air throughout the summer, "You can go there on a 90 degree summer day and feel

40 degree air blowing on your face," says Service biologist, Lisa Maas. "It's natural air conditioning and is responsible for the cold-soil microclimate that has enabled the snail to persist for eons."

The recovery effort was made possible by the Service's Cooperative Recovery Initiative (CRI). With nearly 300 protected species in or around refuges, the Service uses the CRI to support a strategic approach to endangered species recovery on refuges and their surrounding ecosystems. The CRI builds on the Service's Strategic Habitat Conservation approach, and combines the resources of many Service programs to complete critical on-the-ground conservation projects that provide the greatest conservation benefits to the country's most imperiled species.

The snail is not the only unique species occurring on these slopes. Northern monkshood, a federally threatened plant, golden saxifrage, an Iowa State listed species, and species that typically occur



LISA MAAS/USFWS

Snail technician Amber Rodgers searches for Iowa Pleistocene snails. The snails need the cold soil of the algific talus slopes. Sinkholes (right) pull in air, which is cooled underground before blowing out of vents to cool the soil.



LISA MAAS/USFWS

farther north, such as Canada yew and yellow birch, are also found on the slopes. Monitoring and recovery efforts for the snail contribute to the conservation of these species and this unique ecosystem as well.

“We are close to meeting the recovery criteria for the snail,” says Drew Becker, another Service biologist. “Meeting the criteria for reclassifying to threatened status is definitely within our grasp.”

“To delist the snail, we must document stable or increasing populations at 24 permanently protected sites, and the protected sites must be geographically distributed across the snail’s range.” Maas adds. “To reclassify to threatened status, we must document stable populations on 16 permanently protected sites.”

The technicians have confirmed live snail presence at 11 permanently protected sites. They have found shells at an additional seven.

“We found over 30 old shells at two of the protected sites,” says Tamra Lewis, one of the snail technicians. “We’re confident live snails are there, we just haven’t found them, yet.”

By searching for new snail colonies on already protected algific talus slopes, the snail team hopes to find six new colonies, as well as find snails at the sites with shells, to achieve the 24 protected sites needed for delisting.

The team is also working to find snails on historically occupied sites. At one time, the snail occurred on 36 sites on 31 geographically discrete slopes. However, live snails have not been found on many of these sites for decades. Of these, 24 are permanently protected; the remaining 12 sites are on private property.

The technicians have searched 84 slopes for new colonies in addition to monitoring 34 of the historically occupied snail sites. Using monitoring protocols modeled after the plan for the Magazine Mountain shagreen (the first invertebrate to be delisted because of recovery), the technicians use timed, visual encounter surveys to quantify snail searches.

“We use a Trimble GPS unit to collect the data,” says snail technician, K.J. Passaro. “We measure vent temperature, soil moisture and time to first encounter of live and dead snails.”

Adds Amber Rodgers, another technician: “It’s been an adventure. We’ve canoed to sites, forded streams, climbed steep slopes, met with private landowners, and seen a hypomelanistic rat snake,” a rat snake with little black pigmentation.

Their adventures receive broad praise.

“We all agree that our technicians are superstars,” says Becker. “We only need to find live snails on five more protected sites in order to meet the recovery criteria for downlisting. Their work far exceeded initial expectations, allowing 2015 efforts to focus on areas where we’re most likely to encounter live snails,” such as the seven sites where shells but not live snails have been found.

The success of this recovery effort has also drawn on partnerships. The team worked with the Iowa Natural Heritage Foundation (INHF) to hire the four snail technicians. The foundation’s commitment to conservation, combined with its flexibility and passion for the Driftless Area of northeast Iowa, has paid dividends.

“The Iowa Natural Heritage Foundation and the Service share the common goal of endangered species recovery,” says Kraig McPeck, field supervisor of the the Rock Island Field Office. “They are a true friend to conservation, and we appreciate having them in our corner.”

The feeling is mutual.

“Our partnership with the USFWS, whether it is with the Iowa Pleistocene snail or Topeka shiners, furthers the USFWS’ mission and INHF’s mission to protect and restore Iowa’s land, water and wildlife. Overall, great conservation is happening in critical areas, and we’re proud to be part of USFWS projects,” says Erin Van Waus, land stewardship director at the foundation.

The Jo Daviess Conservation Foundation worked with a private landowner in Northwest Illinois on an easement for a key, historically occupied site. The permanent protection of this site achieves the sufficient geographical distribution requirement of the recovery criteria.

Kevin Roe, a researcher at Iowa State University, is conducting genetics research on the snail by extracting DNA from slime trails left by live snails on special paper. This research will determine effective population sizes of snail colonies, the genetic relatedness of snails within and across colonies, and will inform future management activities. The snail technicians collected some of the DNA samples.

“This project is a prime example of how significant progress can be made by talented, dedicated professionals through partnerships and a little extra funding,” says Driftless Area Refuge Manager Rich King.

If the delisting criteria is met, and the Service decides to move forward with a delisting package, the Iowa Pleistocene snail could be the second invertebrate species removed from the list of federally endangered species because of recovery. □

DREW BECKER, Rock Island Ecological Services Field Office, TAMRA LEWIS, and LISA MAAS, Driftless Area National Wildlife Refuge, Midwest Region

Conserving Landscapes for Fish and Wildlife in the 21st Century



The Western Alaska LCC supports a number of projects with refuges like Selawik National Wildlife Refuge.

STEVE HILLEBRAND/USFWS

When people hear the word “landscape,” they often think of planned plantings or gardens in backyards—at least according to research from The Nature Conservancy. For the Service, landscape conservation means conserving an entire area, not just Service lands, but state lands, private lands, tribal lands, etc. It means learning how the entire landscape operates as a system and determining the best way to achieve conservation success.

One way the Service provides leadership for landscape conservation is the Landscape Conservation Cooperative (LCC) Network, which works to ensure landscapes capable of sustaining natural and cultural resources for current and future generations. The 22 LCCs throughout the country are public-private partnerships composed of states, tribes, federal agencies, non-governmental organizations, universities, international jurisdictions, and others who work together to address landscape-conservation issues.

With the LCCs, Service employees work hand-in-hand with partners to use the best

available science to develop strategic conservation solutions. The Service has always done this, but tougher environmental challenges have raised the stakes and made LCCs invaluable.

To move the LCC Network’s vision forward, a strategic plan was developed in October, and over the next few months, partners will work toward implementing the plan.

A few examples illustrate how LCCs are making landscape (and waterscape) conservation gains for fish, wildlife and plants:

The Ecological Services team in Boqueron, Puerto Rico, is studying vulnerability of cays and islets around Puerto Rico and the U.S. Virgin Islands to sea-level rise, while the **Caribbean LCC** is helping elicit partner input to make it a multi-organizational effort.

The **Great Northern, Southern Rockies, Great Basin, and Plains & Prairie Potholes LCCs** are providing a forum for partners to collaborate and contribute to the science needed for an unprecedented and

tremendous conservation effort to conserve the greater sage-grouse.

The **Great Plains LCC** is coordinating with the Rainwater Basin and the Playa Lakes Joint Ventures to pilot a landscape conservation design for the southern High Plains area.

The **Sonoran Joint Venture, Desert LCC,** and **Point Blue Conservation Science** are identifying what to monitor in the deserts of the Southwest to better evaluate climate change impacts.

Wildlife refuge managers in California, Oregon and Washington use models from the **California** and **North Pacific LCCs** to predict how tidal wetlands may change over time from marshes to deeper water habitats.

The **Western Alaska LCC** supports a number of projects with refuges, especially with regional inventory and monitoring efforts such as freshwater temperature assessments in the Kodiak Archipelago.

The **Eastern Tallgrass Prairie and Big Rivers LCC** helped at Patoka River National Wildlife Refuge with turtle relocation and piloting improved relocation methods for about 60 Eastern box turtles to protect them from construction of an interstate.

The **Eastern Tallgrass Prairie and Big Rivers LCC** contributed funds for Service researchers to evaluate water sources for freshwater mussel propagation working with Genoa Fish Hatchery.

The **Upper Midwest and Great Lakes LCC** created a tool to prioritize fish passage projects.

Despite the growing challenges and the ever-increasing complexity of natural and cultural resource management issues, the technology, science and collaborative capacity to enact and monitor effective conservation strategies have never been stronger. To learn more about the LCC Network, visit <www.lccnetwork.org>. □

SERVICE HUNTERS & ANGLERS

on Hunting & Fishing

Sportsmen and -women were some of the earliest conservationists and remain among its most dependable supporters, so the Service is dedicated to encouraging fishing, trapping and hunting where and when these activities are compatible with smart wildlife management. These outdoor sports teach people to respect and value nature. They also generate billions of dollars for conservation through licensing fees, the self-imposed taxes collected by the Wildlife and Sport Fish Restoration Program and through the federal Duck Stamp. Sportswomen and-men are also a key source of revenue for our nation's economy—in 2011, they spent \$90 billion on their sports. Hunting is permitted on more than 335 wildlife refuges and fishing on nearly 300. □

KRISTA LUNDGREN/USFWS



ALISHA JOSEPHINE HAKEN

Wildlife Refuge Specialist, Minnesota Valley Wetland Management District, Midwest Region

"Hunting is more than filling the tag or bag limit. It's about the camaraderie with loved ones and dear friends, trying something new and challenging, the attempt to be invisible and motionless, and the anticipation and hope that you may get to see something spectacular and unique. I know I can garner these types of experiences and memories without a weapon in hand; however, there is something wholesome about consuming wild game and having to truly work for your own meal."



CLINT WIRICK (RIGHT)

Wildlife Biologist, Mountain-Prairie Region

"Hunting and fishing give you a sense of place and where we fit in the world."



MIKE PICCIRILLI

Chief of the Wildlife and Sport Fish Restoration Program, Southeast Region

"Hunting and fishing is a valuable and strong tradition that our ancestors believed so strongly in. And in many locations hunting and fishing is a culture that connects individuals socially."



PAM BIER

Public Affairs

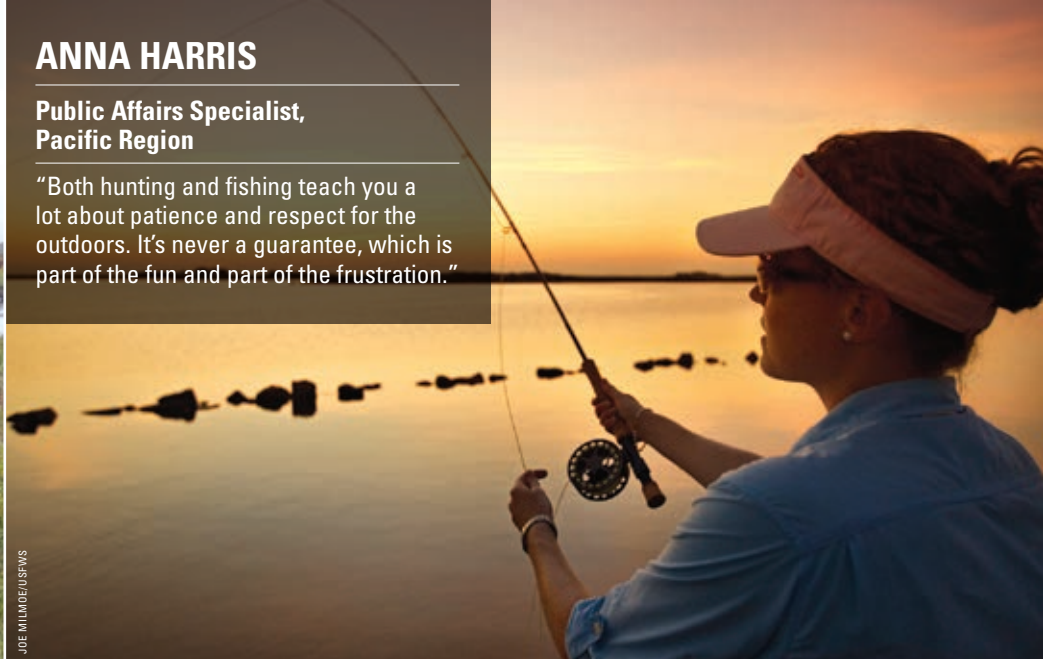
"I fish because nature, and be important bec food products environment a while helping t



STEVE KLEIN

Chief of the Wildlife and Sport Fish Restoration Program, Alaska Region

"As A. Willis Robertson stated, 'Hunting and fishing is the best nerve tonic I know!'"



ANNA HARRIS

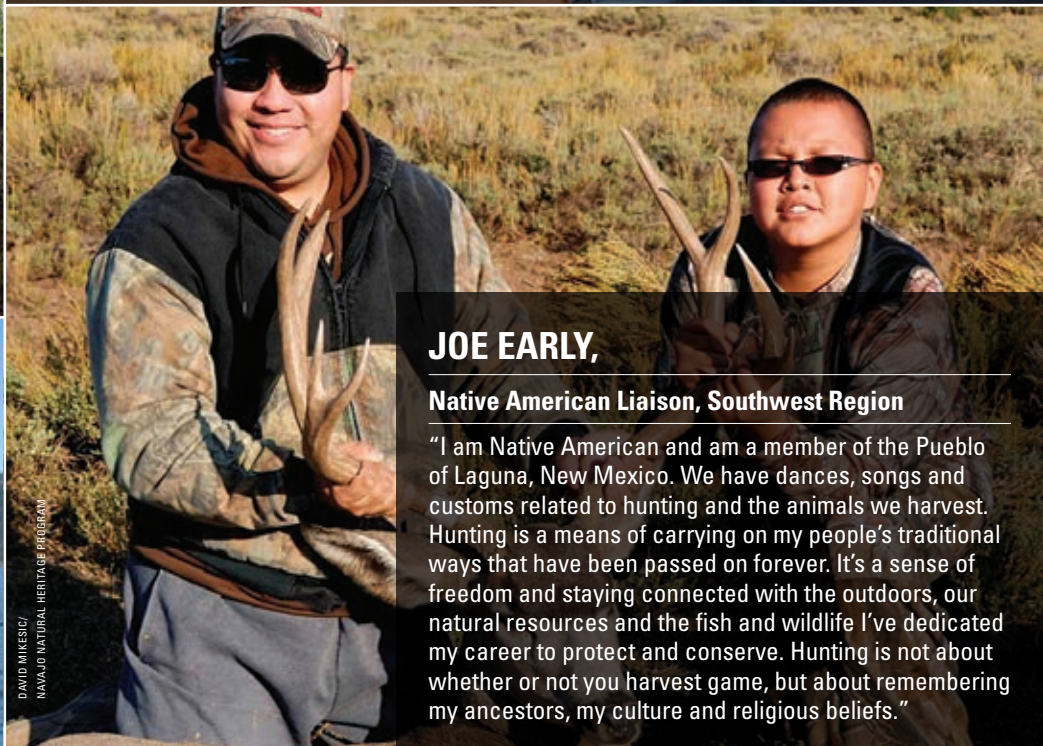
Public Affairs Specialist, Pacific Region

"Both hunting and fishing teach you a lot about patience and respect for the outdoors. It's never a guarantee, which is part of the fun and part of the frustration."



Officer, Pacific Southwest Region

"Even if it's a relaxing pastime, it gets me outside enjoying nature because I like knowing where my food comes from. It's important because we have relied too heavily on mass production of products which are proving to sometimes be detrimental to our environment and our health. If I can reduce impacts to the resource and the environment, I believe it's a win-win situation."



JOE EARLY,

Native American Liaison, Southwest Region

"I am Native American and am a member of the Pueblo of Laguna, New Mexico. We have dances, songs and customs related to hunting and the animals we harvest. Hunting is a means of carrying on my people's traditional ways that have been passed on forever. It's a sense of freedom and staying connected with the outdoors, our natural resources and the fish and wildlife I've dedicated my career to protect and conserve. Hunting is not about whether or not you harvest game, but about remembering my ancestors, my culture and religious beliefs."



HERB BERGQUIST

Ecological Services Decision Support Coordinator, Northeast Region

"Hunting, fishing and trapping intimately engage and connect citizens to the natural world in a way no other can come close to. It is literally a way of life and a connection to the natural world that cannot be fully described in words."



ON THE FRONT LINES

by PEDRO "PETE" RAMIREZ JR.

Above: Monique Slaughter checks out a facility in Texas.

Six refuge employees oversee all oil and gas activities on National Wildlife Refuge System lands

The wings of the Northern pintails grip the air as the small flock hurries to get airborne and then flies past an oil well pump jack. An approaching SUV had startled the ducks into flight from the water-filled marsh at Anahuac National Wildlife Refuge (NWR) in southeast Texas.

The driver of the SUV, refuge oil and gas specialist Monique Slaughter, skirts the marsh on a refuge road as she inspects the 10 wells on the 34,000-acre refuge. Slaughter is a member of a small cadre of refuge employees tasked with overseeing oil and gas activities on National Wildlife Refuge System (NWRS) lands. The vast majority of those oil and gas activities take place where the mineral rights are not federally owned but owned by private landowners or companies.

Six NWRS employees work full time as oil and gas specialists on refuges: Slaughter at Texas Chenier Plain Refuges Complex; Barret Fortier at Southeast Louisiana Refuge Complex; Romeo Garcia at Lower Rio Grande Valley NWR in Texas; Billy Leonard at Sabine NWR in Louisiana; Lynnnda Kahn at Kenai NWR in Alaska; and Mary Maddux at Hagerman NWR in Texas.

Three of these oil and gas specialists learned the “ins and outs” of the industry from previous jobs involving oversight of oil and gas environmental impacts or compliance. Fortier grew up in a family that worked in the oil and gas industry. He also worked as a wildlife biologist with an oil and gas service company after completing graduate school. Maddux transferred to the Service from the Bureau of Land Management in Buffalo,

Wyoming, where she worked as a natural resource specialist overseeing oil and gas development in the Powder River Basin. Kahn gained her oil and gas experience working on the Texas Gulf Coast with the Texas General Land Office, followed by a career with a private environmental consulting firm.

Two of the specialists started their professional careers with the oil and gas industry. Slaughter got a small taste while working a short stint with an oil well service company right after graduating college and training as a field engineer. Leonard began working in the oil and gas sector right after he graduated from high school. After working in offshore oil and gas production platforms in the Gulf of Mexico for 25 years, Leonard enrolled in a university to study wildlife biology to do something different and “get away from the oil industry.” Leonard adds, “I envisioned myself working with birds, mist netting, banding, contributing articles to wildlife journals and doing research.” Instead, his midlife career change landed him at Sabine NWR dealing with oil and gas activities on the refuge. His experience working offshore as an electrician, a trade he learned in the Navy, and as a pumper/gauger working on offshore platforms, has proven invaluable to Sabine NWR and the Service.



Billy Leonard inspects an oil and gas production facility at Sabine NWR in Louisiana.

Garcia actually began his Service career working on the eradication of exotic plants on the refuge. “I never thought I would be working on oil and gas projects, but after a couple of years I became aware of the huge oil and gas activity on the refuge complex, which covers four counties. That’s when I decided to get involved.” Garcia says when he started working as an oil and gas specialist, he had to learn a new “language.” He tapped the experience and knowledge of a refuge volunteer, a retiree from the oil and gas industry, to learn as much as he could about oil and gas exploration and production. “I am still learning a lot. Every project is different, so I ask a lot of questions to industry people involved on the project.”

All of the oil and gas specialists also received training through the National Conservation Training Center’s course “Management of Oil and Gas Activities on NWR Lands.”

A typical day for refuge oil and gas specialists depends on the location but usually involves inspections of existing oil and gas production facilities, on-site visits of proposed drilling sites or restoration projects with oil operators or their contractors, or requisite office work. Maddux inspects oil wells at Hagerman NWR every two days and says she covers 15 to 20 sites in a half day. More than three-quarters of the 175 wells on the refuge are active. During inspections the oil and gas specialists look for hazards to wildlife such as exposed oil, leaks, drips and spills as well as opportunities to improve the site for the protection of refuge resources. Recommendations on site improvements are provided to the oil operators.

Invariably, the oil and gas specialists have to respond to oil and brine spills. “The oil operators inform me about spills,” says Maddux. “The reports are usually over the phone, and I ask them what happened, what and how much was spilled, where the spill was and how they are going to clean it up.” She notes that if the pipeline



Mary Maddux checks an abandoned well at Hagerman NWR in Texas.

has a history of past leaks, she tries to persuade the oil operator to replace the line. Corrosion of small diameter pipelines or gathering lines transporting brine is usually the cause of most spills, according to Maddux.

As regional oil and gas specialists, Maddux and Fortier have the added tasks of providing assistance to other refuges with oil and gas activities in their region in addition to overseeing oil and gas activities within their refuges. Most refuges with oil and gas exploration and production do not have full-time oil and gas specialists on their staff and rely on Maddux and Fortier for assistance. Most of that work is done over the phone and through email.

The skills and experience that these oil and gas specialists have accumulated over the years have paid huge dividends for taxpayers, the Service and, most importantly, for the fish and wildlife resources inhabiting the refuges under their care. They work with oil operators to ensure that adverse impacts to refuges are avoided or minimized. The most gratifying aspect of Fortier’s job is “convincing an oil operator that it’s not very difficult or expensive to do the right thing for the betterment of habitat on refuges.”

Leonard points out that restoring oilfield roads and sites makes him feel he is contributing to the health of the planet in a positive way. “When I revisit a former well site and I see emergent marsh with wildlife using the site just as it was before oil and gas development, it’s very rewarding.” That sense of fulfillment is echoed by Garcia, “Every day I get to work out in the field trying to improve, or restore the habitat that was damaged by the footprint of oil and gas development. It takes time for a site to be completely restored, but once I see the vegetation coming back and signs of wildlife using the former well pad, I get a sense of accomplishment.”

No job is without its frustrations and the oil and gas specialist’s job is no different. Kahn says, “There are times when you think you’ve got everything under control and you assume the operator knows what is expected in order to operate on a national wildlife refuge. However, it seems something always comes up where you just shake your head and wonder where the ‘communication train’ ran off the track.” Leonard expresses frustration at “seeing viable wetlands turned into roads, well sites and flowline ditches, and feeling powerless to do anything about it.” Specific policy and regulatory tools are two items on oil and gas specialists’ wish list to help them oversee oil and gas on refuges.

Fortier is hopeful that working with oil operators day to day will build trust and a mutual respect and lead to improved conservation. “We both have jobs to do. I understand the importance of the oil and gas industry to our country’s energy needs and independence. We have proven in many cases that exploration and production can occur with minimal effect on refuge lands, if done right.”

PEDRO “PETE” RAMIREZ JR., Refuge System Environmental Contaminants, Headquarters

Service Teams With First Responders for Mock Oil Spill Recovery Exercise

Service staff joined other federal, state and local agencies, and private partners to test emergency response readiness in an oil spill exercise at La Crosse, Wisconsin, in early October.

The drill simulated a train derailment and 150,000-gallon oil spill along the Mississippi River into Upper Mississippi River National Fish and Wildlife Refuge. That day, the spill had the potential to impact 2,200 waterfowl, other wildlife and habitat. The river separates Minnesota from Wisconsin at the spill location, thus adding multiple state agencies and railroad representatives to the response mix.

“This exercise gave our many partners and Service staff the opportunity to practice and learn to complete major emergency response work as a cohesive team: protecting people, resources and wildlife,” says the Service’s Dave Warburton, Ecological Services biologist with the Twin Cities Ecological Services Field Office in Bloomington, Minnesota.

“Our Service team did an outstanding job with every scenario they were challenged with, showing the great and diverse skills they bring to this potentially daunting recovery effort, and developing additional knowledge and capabilities,” Warburton says.

As the hands-on portion of the exercise began in the early hours of October 3, responders organized the wide array of agencies under one chain of command. Participants also deployed booms in the river to contain any spill and facilitate its removal. They also demonstrated wildlife protection equipment and techniques to capture and rehabilitate impacted wildlife.

In the area of the simulated spill, the Service has responsibility for the management of refuge lands, migratory birds, endangered species and some fish on the Upper Mississippi River. “In the event of a hazardous substance spill of any kind, our biologists and managers advise emergency responders about which fish and wildlife are in the area and at risk, which habitat types might be most sensitive, and how cleanup should proceed to be



LARRY DEAN/USEWS

most protective and effective,” says Jim Nissen, the manager of the La Crosse District of Upper Mississippi River Refuge, who represented the Service in the unified command.

Potential impacts of a real-world spill are vast when you consider that the 261-mile Upper Mississippi River Refuge is a national treasure of river, backwaters, islands and forests framed by 500-foot high bluffs, and among the most important corridors for fish and wildlife habitat in the central United States.

“Up to 40 percent of the continent’s waterfowl use the Mississippi Flyway during migration, and thousands of waterfowl concentrate within two areas of [the refuge’s] Pool 8 alone,” says Nissen. Up to half of the world’s canvasback ducks stop there during migration, and 20 to 45 percent of the eastern United States populations of tundra swans stop there.

Beyond the more than 300 bird species affected, a spill near or on the refuge could have staggering impacts on more than 100 fish species, about 50 species of mammals and nearly 50 mussel species.

A member of the local media covering the event photographs crews retrieving booms that were deployed on the Mississippi River to simulate how a spill would be contained and then treated and removed.

The refuge is also designated a Globally Important Bird Area and one of the most heavily visited refuges each year. People can enjoy hunting, fishing, wildlife observation photography, environmental education and more.

Nissen adds: “Whether it be the tremendous array of wildlife, recreational use by local residents and visitors, commercial uses of the river or more, this exercise is important to prepare us to be able to successfully minimize any impacts of a potential spill.” □

LARRY DEAN, External Affairs, Midwest Region

It Beckons Me...

From the plaintive yodeling cries of a Common Loon on a northern shield lake,

to the melancholy 2-note Kloo woo of a distant Tundra Swan in a small wet depression on the northern coastal plain of Alaska...

From the deep Hronk-honk-honking of a Canada Goose pair startled from the water and a nearby Muskrat house perch,


to the guttural, resonating rattling-croak emitted from a flock of Sandhill Cranes flying low over the wheatfields of the Canadian prairie...

From the reverberating gobble of an eastern Wild Turkey perched in a large Burr Oak on a hillside in the Loess Hills of western Iowa,

to the distinctive, but seldom heard 4-note call of the Mexican Spotted Owl somewhere in a deep, cool, Douglas Fir-Ponderosa Pine canyon in northern Arizona...

It matters and it beckons, but why?





Signals and signs...maybe. An indicator of presence/absence and possibly abundance, a changing of the seasons, or an indicator of change; but much more. Calls, sounds; indicators of something that is wild and everything that is wild, almost primeval. I know not exactly why, but the effect is dramatic and real...

For those that do not recognize, they do not understand...a real shame indeed. For without recognition, there is a lack of understanding, comprehension, and willingness to compromise; a missed opportunity and a lost connection.

Sparking feelings and emotions of excitement and anticipation, from previous encounters and experiences, memories from the past? Hopes of future opportunities, a chance to finally visualize, to study? A chance to finally feel the weight in hand and admire at a distance not typically observed, the beauty and the ability to fly...evolution? A stirring not oft felt, but self-evident in the presence of those from above.

That may partially explain it, but it falls well short of adequately capturing all that it means...to me.

JEFF GLEASON, Southeast Region

*Reprinted with permission from
Society of Canadian Ornithologists*

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.

Sign Here

Talk about your changing technology! We have a small desk-sized hunk of metal called an auto sig. It uses a moon-shaped, 3-foot wide piece of Plexiglas template to propel a regular felt tipped pen onto paper to sign letters, etc. for the Service Director. It was used until just a few years ago. It is time consuming and cumbersome, but the signature is in pen, not copy ink. Now the good old computer does the task of fake signing!



Ready for a Zombie Apocalypse

Service Headquarters recently moved from Arlington, Virginia, to Falls Church. Since downsizing from offices to cubicles was involved, we received many old and important objects and documents from various departments. From a copy paper storage closet in the Law Enforcement Office, we received several "presentation pieces" given to U.S. diplomats by foreign governments that included endangered species components. One is an emerald, ruby and diamond encrusted solid gold Janbiya (curved blade dagger) with an ivory handle presented to President George Bush by a foreign shah. I have designs on it as my weapon of choice if a zombie apocalypse ever becomes a reality while I am at work!



My Least Favorite Object

While I have my most favorite objects in the museum, I certainly have my least favorite ones as well. We have an early 20th century canvas canoe, which was made by a very good company, and is painted with nice decorations. We purchased it at a business that supplies restaurants with antiques and vintage objects. It was put on display at NCTC in our early days, before we had acquired numerous boats that were used on refuges. This one was probably used at an Adirondack or Poconos Camp (sort of like that one in *Dirty Dancing*). When giving tours, I am often asked about the canoe, and I always say, "it was formerly on display at Applebee's."

What's That Badge?

A new Fish and Wildlife Service Badge Chronology poster is now available at the NCTC Museum. This is the second edition of the poster, and has nearly double the number of badges. The 13" by 18" poster is available for free by e-mailing <jeanne_harold@fws.gov>. Jerry Olmstead (pictured) is one of the generous folks who helped with photos and dates for the poster.



TODD HARLESS/USFWS

transitions

Service-wide

Reunion 2015



Find your field glasses, get out your party hats, whet your appetites and start packing. The next Retirees Reunion will be held at the Holiday Inn at the Marina in Corpus Christi, Texas, the first week of March 2015. The weather should be good, the birds have been ordered to cooperate, and many old friends from your working days will be there to help you celebrate retirement at Reunion 2015

The “core” dates for the reunion are March 1 through March 5, but plan to come early or stay late.

Reunion 2015 will feature discussions on interesting Texas/Gulf Coast wildlife issues and on topics of concern to retirees sandwiched in with great tours and lots of free time. There’ll be the usual Icebreaker Social, Retiree Banquet with an entertaining dinner speaker and Silent Auction. The association is also hoping to put together a Texas-style BBQ and a boat trip to view whoopers and other birds.

Anyone who has worked for the Service at some point can be a member. Visit the website for more info: <www.fwsretirees.org>. □

Southwest

After 26 years with the Division of Migratory Bird Management, **William “Bill” Howe** retired in September from the Southwest Region’s Migratory Bird Program.

As the non-game coordinator, Bill led an exemplary professional scientific career in support of migratory bird conservation activities at regional and hemispheric scales. His humble and respectful demeanor, great sense of humor and extensive knowledge of migratory birds will be greatly missed by the Service and his colleagues within and outside of the Service. □

Pacific



Dr. Loyal Mehrhoff, former Field Supervisor for the Pacific Islands Fish and Wildlife

Office, retired from federal service September 30 after a 26-plus-year career with the Service, U.S. Army, National Park Service (NPS) and U.S. Geological Survey (USGS). Upon announcing his retirement, Loyal said: “I will always have great memories of my friends and colleagues in the Fish and Wildlife Service, National Park Service and U.S. Geological Survey, as well as many others from various agencies, NGOs, the Army, the state and congressional offices that have made conservation happen.”

Loyal is the son of Arch Mehrhoff, a former employee of the National Wildlife Refuge System, and his career shows that dreams do come true—his “life ambition,” 11-year-old Loyal told a local newspaper, was “to work for the wild life service in a capacity that would help to preserve endangered species.”

He has worked on endangered species issues in Hawaii since 1991, when he worked for the Bishop Museum as a research botanist studying extinction rates and patterns on island ecosystems. In 1993, Loyal started his career with the Service in Hawaii, and went on to work for the NPS and USGS in Hawaii and the mainland. He returned to the Service, and before retirement, he was responsible for overseeing programs involved with the Endangered Species Act, environmental contaminants, habitat restoration and review of federally funded projects for impacts to fish and wildlife in Hawaii, Guam, American Samoa and the other U.S. affiliated Pacific Island nations.

Loyal has a B.A. in Botany from the University of Montana, an M.A. in Botany from the University of North Carolina at Chapel Hill, and a Ph.D. in Botany from the University of British Columbia.

He and wife Peggy plan on enjoying their retirement and haven’t decided whether to remain in Hawaii or return to the mainland. □

Northeast



Bill Peterson took over as refuge manager at Parker River National Wildlife Refuge in

Massachusetts in September. He was refuge manager at Wapanocca National Wildlife Refuge in Arkansas. He began working for the Service in 1994 as a summer intern at Sherburne National Wildlife Refuge in Minnesota. He later worked as a wildlife biologist and a refuge operations specialist at Necedah National Wildlife Refuge in Wisconsin and a biologist for the Partners for Fish and Wildlife Program.

He brings great partnership expertise to this new position and is looking forward to working with groups and surrounding communities to make sure Parker River National Wildlife Refuge benefits wildlife and is enjoyable to visitors. His main goal is to complete the Parker River National Wildlife Refuge Comprehensive Conservation Plan, the refuge’s management plan for the next 15 years. □

Alaska

Sara Boario has accepted the position of Assistant Regional Director for External Affairs in Alaska.

Sara came to the Service from the Forest Service where she was the Public Affairs and Partnership Staff Officer for the Chugach National Forest, the most northern national forest in the country and backyard to half of Alaska's population. She was responsible for strategic communications, government and tribal relations, and partnership development with nonprofit and private sector organizations. Sara arrived on the Chugach in 2006 as a Presidential Management Fellow with the task of guiding community outreach and engagement efforts. In her tenure there, she has focused on collaborative stewardship, partnership initiatives, and integrated marketing communications including guiding public participation for the forest plan revision; managing its effort to develop the Chugach Children's Forest with nonprofit partner Alaska Geographic; and, co-leading the "Alaska's Forests: More Than A Place to Visit, It's Where We Live" campaign.

Before joining the Forest Service, Sara served as Chief of Staff for Alaska State Senator Georgianna Lincoln, representing the largest geographical state senate district in the

country encompassing more than 100 rural communities and Alaska native villages. She holds a B.A. in History from Lewis and Clark College and a Master's of Public Administration, with a dual focus in nonprofit management and community development, from the Hatfield School of Government at Portland State University. Sara was raised in communities across Alaska—from Wrangell to Yakutat, Sand Point to Fairbanks—where she grew up fishing, hunting and enjoying the outdoors. □

Headquarters



Deputy Director for Operations **Dr. Rowan Gould**, a 38-year veteran of the Service,

is retiring January 3.

Rowan began in 1976, as a research microbiologist at the Seattle National Research Center and worked his way up, twice serving as Acting Director of the Service. In an email announcing the retirement, Service Director Dan Ashe said: "Rowan has been a leader for so long, and in so many places since, that it's hard to keep track. But there has always been one constant: When times were tough, Rowan went where he was needed and

made things better; not by magic, or intimidation or charisma, but by engineering teamwork and helping others perform at their best."

Rowan coordinated the Service's activities in response to the Exxon Valdez oil spill in 1989, and that experience served the country well as he led the Department of the Interior's environmental oversight of operational responses to the Deepwater Horizon oil spill in 2010.

Most recently, he has poured his passion into diversity and inclusion, making the Service a model for other agencies.

Throughout his career, Rowan has received numerous awards and accolades for his commitment to excellence in public service, and his personal dedication to fish and wildlife conservation. He was honored by President Obama and Secretary of the Interior Salazar, in 2011, with the Presidential Rank Distinguished Service Award (the highest honor for career senior executives). The award recognizes senior federal executives for their strong achievements and the examples they set by their "strength, integrity, industry and a relentless commitment to excellence in public service." □



Public affairs specialist **Claire Cassel**, who started with the Service in 1992, retired in September.

After working at the EPA and spending nearly 10 years as a stay-at-home mom, Claire began her career with the Service as an environmental education specialist for the National Education and Training Center, which became the National Conservation Training Center. She was later hired as the Chief for the Division of Partnerships and Outreach in the Endangered Species Program before moving to External Affairs.

In External Affairs she provided leadership on many of the Service's most difficult communications issues, including the Service's recent efforts to combat wildlife trafficking and the illegal trade of elephant ivory. She also handled much of the communications required under the Endangered Species Act.

Among the highlights of her Service career, at the top was the teamwork. She says she will miss the people and the work—"its purpose has kept me at it these many years."

Also on her list was her work with Earth Stewards, an environmental education and leadership program; helping to get out the message of partnering and working together in implementing the Endangered Species Act; and the Saving Endangered Species Youth Art Contest, a partnership effort inspired by young artist Meredith Graf, which brought together the Service, the Association of Zoos and Aquariums and the Endangered Species Coalition.

One of her brightest moments came in 1994, at the ninth Conference of the Parties (CoP) for CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, where students participated for the first time. At a student mock conference a week before the CoP, about 550 students from area schools developed and discussed resolutions similar to those considered at the CoP9. They then presented some of those to the 1,600 delegates at the CoP.

Claire's list of those who guided, supported and inspired her is long and includes such well-known names as Mollie Beattie, Gary Frazer, Beth Stevens and Gloria Bell as well as lesser-known Service employees such as Joe Piehuta.

She is excited to move on to the next chapter of her life, which will include taking time for family, travel and cooking. □

honors

Service-wide

The Director has announced the winners of the Service's Environmental Leadership Awards for FY 2013. These awards are given to Service employees, organizations and contractors to recognize their contributions to the Service's conservation mission. These award recipients are outstanding leaders in environmental protection and management.

Hatchery of the Year Award: **Bozeman Fish Technology Center** in Montana. Bozeman reduced energy consumption through careful conservation measures by reprogramming climate control and having water pumps operate only during working hours.

Refuge of the Year Award: **Great Dismal Swamp National Wildlife Refuge** in Virginia. The refuge reclaimed 9,500 acres to help reestablish the vitality of the Great Dismal Swamp.

Individual Environmental Leadership Award: **Craig Nibbe**, Midwest Region Engineering and Safety Office. Craig recognized a need to better manage hazardous materials that were due to lose their viability and become hazardous wastes. The Chemical Exchange Program he developed helps significantly reduce the probability of generating hazardous wastes and saves money by identifying facilities that can utilize materials that are nearing expiration and allowing material to be shipped to them to be used for their intended purpose.



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Facility/Office Environmental Leadership Awards went to:

Lead in Soil Remediation at **Midway Atoll National Wildlife Refuge** in Hawaii. **MaryAnn Amann** and **Carlton Morris's** efforts allowed for additional cleanup of soil contaminated with lead to be completed while the endangered Laysan Albatross was off the refuge.

Upper Mississippi River National Wildlife and Fish Refuge—Savanna District—Lost Mound Unit in Illinois. The refuge developed a plan to manage recyclable materials from buildings dating back to World War II that were no longer needed. As the buildings were being dismantled, **Alan Anderson**, **Bill Davison**, and **John Kilburg** developed an effective recycling program and used the funds from the recycling to implement a renewable energy program at the facility.

Camp Garcia Renewable Energy System at Vieques National Wildlife Refuge in Puerto Rico. The refuge replaced an aging traditional power delivery system that had been maintained by the U. S. Navy. The new photovoltaic system meets demand as well as removes the facility from the grid of the main island of Puerto Rico, providing an estimated savings of more than \$18,000 during 2013.

Great Dismal Swamp National Wildlife Refuge reclaimed 9,500 acres.

The **Visitor Center at Iroquois National Wildlife Refuge** in New York was renovated rather than replaced, thereby generating less solid waste, utilizing less new material and creating a LEED-Certified Gold building.

The **James River Ecology School at Presquile National Wildlife Refuge** in Virginia is an innovative partnership with a nonprofit organization to develop a contact and staging area for exploring the refuge. The project comprised the renovation of an existing building and the construction of a new "green" bunkhouse for students.

The **Virginia Ecological Services Field Office** supported the voluntary Partners for Fish and Wildlife Program that provides technical and financial assistance to private landowners to restore and enhance habitat on their property.

Lake Alice Relocation Team, Lake Alice National Wildlife Refuge in North Dakota. **Brian Vose**, **Chris Roed**, **Mark Cornyn**, and **Steve Gess** determined that it was less expensive to relocate five buildings six miles to a new site to avoid continuing rising waters from Lake Alice. The relocation efforts saved \$1.2 million over new construction. □

Northeast

The Federal Executive Association of Western Massachusetts recognized six Northeast Region employees at the 2014 Excellence in Government awards ceremony in September. Award winners include: **Janith Taylor**, Natural Resources Division Chief for the Refuge System in the region, Professional Employee of the Year—Technical and Scientific; **Glenn Davis**, human resources specialist,

Professional Employee of the Year—Administrative; **Kristin Anderson**, human resources assistant, Outstanding Customer Service Effort; and **Laura Barrick**, human resources assistant, Outstanding Support Employee. Also recognized were **Julie Kycia**, executive assistant to the Chief of Refuges, Outstanding Support Employee; and **Greg Thompson**, Chief of multimedia and broadcast, Outstanding Creativity and Innovation. □



Winners: From left, Glenn Davis, Julie Kycia, Greg Thompson, Kristin Anderson, Laura Barrick, Janith Taylor.

Headquarters



Noemi Perez, the Service's nontraditional stakeholders and media director, received a

2014 Perspective Award from Urban American Outdoors for her work to raise the visibility of diverse stakeholders among the outdoor industry and to spread the Service's conservation message to nontraditional stakeholders and diversity media. The Perspective Award honors those who believe that "Outdoors for Everyone" and work passionately toward this goal.

Other winners were **Keith Bell**, diversity and inclusion specialist of Bell & Associates; **Mark Bowland**, assistant to the director of Kansas City Parks & Recreation Department; **S. Elwood York**, director of wilderness of the U.S. Forest Service; and the **Missouri Department of Conservation**. □



At its Protectors of African Parks benefit, the African Parks Foundation of America

presented the Service's **Richard Ruggiero** a bronze elephant sculpture to honor his lifetime commitment to Africa's wildlife and his support of African Parks on behalf of the Service.

Richard, the Chief of the Division of International Conservation,

has been with the Service for 16 years. Before joining the Service, he spent 17 years gaining on-the-ground experience in Kenya, Zimbabwe, Republic of Congo, Gabon and the Central African Republic. He completed his Ph.D. in 1989 with a dissertation on the Behavioral Ecology of the African Elephant in Northcentral Africa. □

in memoriam

Southeast

"**Barney Cone** was one of the last true, sure enough, swamper game wardens," says Doug Nuss, a former biological technician at the Okefenokee National Wildlife Refuge, who was hired in Cone's position after his retirement.

Present and former refuge staff members, members of the Service Honor Guard and Georgia Department of Natural Resources officers joined his family and friends to honor and remember the 96-year-old Cone at his funeral August 9. He died August 6.

A native of Fargo, Georgia, Cone began working at Okefenokee in January 1950, as a biological technician and patrolman. He retired on August 29, 1977.

People swapped stories about Cone's efforts to save American alligators and capture poachers.

Historically, American alligators were depleted from many parts of their range as a result of market-hunting and habitat loss. Market-hunting, or hunting without laws or regulations, became an easy way for hunters and poachers to make a quick buck on alligator hides.



"It was nothing to see 70 or 80 dead gators left skinned for their hides. There was money to be made. Hunters would come from Florida to poach gators in the Okefenokee," says Jim Shelton, a former Service Law Enforcement Officer. "Barney Cone was very influential in saving the alligators."

In 1962, Cone and his partner, Jewett V. Hall, were awarded a Special Act Award by then Refuge Manager Joe Morton. The award was presented for their persistent work in apprehending alligator hunters. Refuge records contain photos of guns, camping equipment and supplies that were confiscated by Cone. Although he was a go-getter as a game warden, Cone would care for the criminals he captured.

"Barney and his partner were good at their jobs. They would capture the poachers and handcuff them to trees at night, waiting for daylight. Then Barney would then take them home and feed them breakfast before taking them to the courthouse in Waycross," Shelton says.

Nuss was trained by Cone for four months before Cone retired.

"Barney actually got bit by an alligator while working on the refuge," Nuss remembers. "One day, we had to cross water that was about waist deep. Barney pointed out an old cypress tree that had two markings in it. He told me that those two markings were from when he got bit in the butt by an alligator. I told

The Service Honor Guard and Georgia Department of Natural Resources officers attended Cone's funeral.

him that I didn't believe him, and we crossed to the other side. I teased Barney about his storytelling, and next thing I knew, Barney was bent over, pulling his britches down to his ankles, saying "You see that!? You see that!?"

Nuss shared the story of Cone and his partner spending two or three weeks camping in the swamp in pursuit of poachers and hunters. They would travel great distances, up to 35 miles by boat, with no motors, just poling, as old swamper did. Cone and his partner would sleep during the day and move at night, listening and watching for gator poachers.

After meeting Cone and learning of his job, Nuss mentioned that he knew he wanted to do what Cone did for a living. "I said that's the job I want right there... and I got that job," Nuss says.

It is no doubt that Cone influenced many people who met him. With a career that encompassed nearly three decades, Cone was a pioneer in wildlife law enforcement. From his dangerous pursuit of alligator poachers and other wilderness outlaws, Cone left his mark on the virtually untamed and lawless Okefenokee Swamp. □

SARAH WYATT, Okefenokee National Wildlife Refuge, Southeast Region

Headquarters



David Goad, Deputy Assistant Director of the Wildlife and Sport Fish Restoration

Program (WSFR), died October 31 in a one-vehicle accident in his native Faulkner County, Arkansas. David, 56, was a man of good will and a positive spirit. While his time at the Service was only a short four months, his upbeat attitude, energetic spirit, funny jokes and loving soul were felt by all. He will truly be missed—but his dedicated work will have an impact on wildlife conservation and habitat restoration for years to come.

"The WSFR Program was honored to have worked with such a champion of conservation," says Hannibal Bolton, Assistant Director of WSFR. "David appreciated the value of family, friends and conservation. His steadfast efforts had a tremendous impact on WSFR Program initiatives and nationwide planning and development. We are grateful to have had him in our working family."

David came to the Service after 25 years in building and leading conservation and management programs for the Arkansas Game and Fish Commission. He started as a field biologist and progressed through multiple levels to the No. 2 position within the agency, managing biological, social and political aspects of conservation for the people of Arkansas. He received a degree

in Biology and Fish & Wildlife Management, with a minor in Criminal Justice, from the University of Arkansas. He was also an alumnus of the inaugural class of the prestigious National Conservation Leadership Institute.

"Each day, the load was lifted with a simple, 'come on in, how are you doing today?'" says Administrative Officer Andrea Johnson. "It was a treat to hear him speak of his family and his devotion for his hometown in Arkansas. Although his work at the Service was but a brief moment, it felt like it was a lifetime. He had vision to do remarkable things for WSFR, to bring a new sense of camaraderie and to aid in each staff member's growth and success," she says.

"David was a success because he knew how to communicate and motivate people around him," says Special Assistant Lori Bennett. "Immediately, we could sense David had a passion for the effective use of resources. He didn't simply focus on the obvious environmental resources that so many dedicate their careers to enhancing; he also was quick to stress the importance of our human resources."

David is survived by his loving wife of 18 years, Wendy Barnes Goad, two daughters; Megan Goad and Mattie Goad; one son, Ethan Goad, and a host of family members and friends. □

KIM BETTON, Wildlife and Sport Fish Restoration Program, Headquarters

Fish & Wildlife News

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Help Needed. A Monarch butterfly rests on a purple coneflower. Monarch butterflies are struggling. Counts of the familiar orange-and-black insects, admired for their flights of up to 5,000 miles a year, are trending down so sharply that their migration is now under threat. That means fewer monarchs to pollinate crops, spread seeds and feed birds.



RICK HANSEN/USFWS

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