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Fish & Wildlife News

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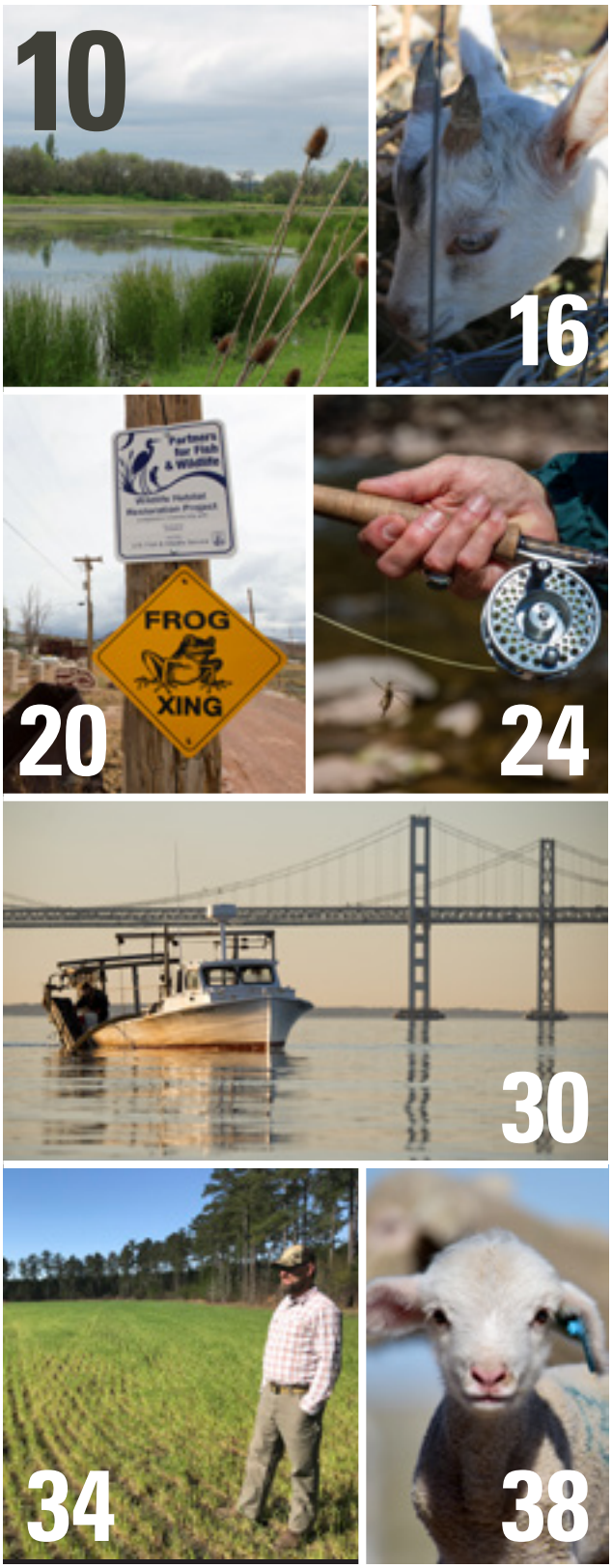
SPOTLIGHT

what's inside

features

On the cover: Rick Spring and one of his accessible blinds.
BRENT LAWRENCE/USFWS



departments

Helping 'Nature's Good Neighbors'

One of our greatest imperatives as a public agency is to fully engage the American people in the work we do.

We won't be successful in achieving our mission unless the public understands how conservation is relevant to them—and how they have a personal stake in its success. Sharing the stories of our efforts and accomplishments helps bridge this gap.

Fortunately, across the country, we have great stories about dedicated employees working with ordinary citizens to do great things for wildlife in innovative, exciting ways.

And we have some great writers to bring these stories to life for you.

Our Nature's Good Neighbors series—you can read a small sample of the articles in this issue of *Fish & Wildlife News*—showcases some of our most dynamic and creative partnership-driven conservation work.

Our efforts are ensuring the future of wildlife, but as any steward of the land knows, conservation can—indeed, often does—benefit both wildlife and the economy.

And those benefits aren't just for fly fishing guide Gary Lang (p. 24) and others like him who depend on a vibrant environment to do their jobs.

You'll meet Chuda Dhaurali (p. 16), a Vermont farmer, who cares both for his Nubian goats and for the silver maple floodplains that run through Pine Island. Our Lake Champlain office helped Chuda create a vegetative buffer that filters waste while also providing quality wildlife habitat.

Jason Ruth (p. 30) of the Harris Seafood Company has been working with our Coastal Program and other partners to recover oysters in the Chesapeake Bay. It's important work for the Chesapeake—one oyster can filter 50 gallons of water each day. Thriving oysters means cleaner water. The bivalve's comeback is also good news for Jason's business, the only full-time oyster-shucking house left in Maryland.

In Nevada, landowner David Spicer (p. 20) gets the value of conservation, too. He decided to help the imperiled Amargosa toad on his ranch. The entrepreneur then found people—bikers, runners, other outdoor recreationalists—who would pay to use his lands, and he used the profits on the toad's conservation.

The Nature's Good Neighbors stories reveal an engaging tapestry of American life, work and persistence in landscapes shared by people and wildlife.

You'll meet more conservationists who are getting help from the Service and others to keep working lands working while managing the land, waters and wildlife we all value.

In the real world, we cannot build a lasting future focusing solely on wildlife or only on the economy. We must help more people become "Nature's Good Neighbors."

I hope you'll enjoy these stories as much as I do—and perhaps even get inspired for your next conservation project. □

Greg Sheehan was the Principal Deputy Director of the U.S. Fish and Wildlife Service throughout the Nature's Good Neighbors campaign. He resigned to return to Utah in August (see p. 48).

Not Even a Burglary Can Spoil Hunt at Salt Plains National Wildlife Refuge

The festive air that surrounds preparation for a hunt are part and parcel of the ritual. That ritual was crushed for Colin Berg and his son, Preston, when they arrived at their home near Tulsa, Oklahoma, last November to find their entire house ransacked by a burglar.

There is, of course, no good time to be a victim of a crime. But this event was particularly unwelcome; Preston was due at Salt Plains National Wildlife Refuge early the next morning.

He had a coveted white-tailed deer tag in a youth hunt—a tag is essentially a license for a type of game. But now his rifle and all the accoutrements of the coming hunt were gone. All of it: from his license and paperwork to his rifle and ammunition. The thieves ransacked the house, and then stole the truck from the garage that was loaded up with all the Bergs would need for the next two days at the national wildlife refuge.

"You feel violated when someone kicks in your front door," says the senior Berg. "But when bad things happen to you, you find out how many great friends you have out there." Berg had several offers from friends to take Preston hunting if his dad had to stay behind and tend to matters of the crime. The Bergs got from friends most of what they needed to make the hunt.

Investigating police officers left the Bergs' home at 1 a.m., and on little shut-eye, the two made the two-hour drive to Salt Plains—but without the check-in paperwork and licensing.

"Shelby Finney, a federal wildlife officer, helped clear up the paperwork and licensing concerns," says Berg. "The refuge staff was very accommodating to get my son checked in; they even loaned us binoculars and some other essential gear, last-minute."

Says Finney: "We wanted to make sure the young man had a means to hunt following the terrible ordeal. We weren't going to let anything spoil the hunt—and this was probably one of the more memorable outdoor experiences the young man will ever have considering the circumstances and outcome."

The refuge's hunting regulations require a hunter to harvest a doe before taking a buck. Preston did both. After taking a doe on the first day, the young man, 13 years old and seven years a hunter, was able to fill his license—he rattled and grunted up a nice buck for the freezer on day two, and learned more about conservation in the process.

The senior Berg learned something himself. "The hunt was a success on many levels," he says. "Being outdoors with my son cleansed my mind of the awful event at home. The only thing I got back was my truck, but really what I got in return is faith in humanity." □

CRAIG SPRINGER, External Affairs, Southwest Region

COURTESY OF COLIN BERG

Preston Berg harvested a buck on the second day of the hunt.

Driving Home, Service Fire Crew Comes Across and Helps Fight Five Small Fires

A fire crew from San Luis National Wildlife Refuge Complex in California was traveling home from a three-day "skills and drills" workshop in June when the firefighters encountered not one but five vegetation fires burning in the median of Interstate 5 just outside Maxwell, California. The crew—including two new seasonal firefighters—sprang into action, putting their training to work. Working with local firefighters, they soon put the fires out.

"Dense smoke was impacting visibility on the interstate, and slowing traffic was creating a dangerous situation. It was clear that this was an emergency in the making," says fire management officer Peter Kelly.

Even though the fires were relatively small, the crew used the same methods employed in any fire to control the burn. There on the side of I-5, they conducted a safety briefing, "sized up" the situation and assigned roles.

They built firelines with hand tools to impede the expansion of the fire and conducted a mobile attack, which involves an engine traveling at slow speed while a firefighter advances on the ground with a hose to apply water to the flames. They also used a stationary hose lay, applying water from an engine that was not moving.

At one point, members of the fire crew were deployed across five separate fires along five miles of freeway.

"The Service's firefighters are trained to deal with vegetation fires, traffic control and safety given the number of major roadways, highways and freeways that intersect national wildlife refuges across the country," says Kelly.

Shortly after getting to work, the crew was joined by a motorist who had seen the smoke and stopped to help. That random person turned out to be a CAL-Fire deputy chief, who joined the crew in extinguishing the fires.

Local firefighters arrived on the scene, and after about an hour and a half, the fires were out.

Jumping into action is not unusual for those in the Service's Fire Management Program. In addition to protecting and managing fires on national wildlife refuges, the program provides mutual aid to other federal, state and local fire management agencies.

The San Luis fire crew is just one of several that attended the Fire Preparedness Review at the Sacramento National Wildlife Refuge Complex. Participants focused on "skills and drills" to assess the abilities and readiness of each crew. These skills include the ability to size up wildfires, conduct fire suppression planning, fire engine operations, hose lays, mop up and control in emergency situations. The workshop and others like it ensure that Service fire crews are prepared to go at a moment's notice.

Kelly reflects on the crew's decision to refill the engine with water before leaving Sacramento Refuge.

"We did it for this exact reason," he says. "And after the fires were out, the local fire crew asked us if we needed anything. We said, 'Yes! Our truck refilled for the long ride home.'" □

MADELINE YANCEY, San Luis National Wildlife Refuge Complex, Pacific Southwest Region

At one point, members of the San Luis National Wildlife Refuge Complex fire crew were deployed across five separate fires along five miles of freeway.

JACK SPARKS/USFWS

‘Botany Safari’ Uncovers Endangered Chafseed Population

ALAN CRESSLER

FLORIDA FORESTRY COMMISSION

Two or three times a year, Grace Howell, land management specialist for the Alachua Conservation Trust in Florida, and native plant enthusiast, amateur botanist, fire ecology advocate and certified prescribed burn manager, goes on extended explorations of forests and other natural areas, always ready to learn something new. She had never been to Blackwater River State Forest, so this May, she embarked on her self-proclaimed “botany safari,” setting her sights on the forest.

“It was so beautiful and so well-managed—I was blown away! It was a treat to see such vast expanses of well-managed longleaf pine—makes me hopeful—seeing such a large continuous forest.”

Nestled along the western edge of Florida’s panhandle, Blackwater River State Forest is indeed vast, encompassing more than 211,000 acres in the counties of Santa Rosa and Okaloosa. Together with Conecuh National Forest to the north and Eglin Air Force Base to the south, Blackwater River helps to form one of the largest contiguous tracts of the dwindling longleaf pine/wiregrass ecosystem. Once covering more than 60 million acres in the Southeast, less than 5 percent of the longleaf pine ecosystem’s original acreage now remains.

(Top) American chaffseed is endangered. (Bottom) Firefighters watch a prescribed burn at Blackwater River State Forest.

As the forests began to disappear, so did its associated plants and animals. Species once common in the Southeast were silenced. Or forgotten. Species such as American chaffseed.

When American chaffseed was protected as endangered in 1992, it had disappeared from more than half of its range. A highly fire-adapted species of the longleaf pine ecosystem, it is still imperiled today and continuing to decline. The greatest threats to American chaffseed are fire suppression and destruction or modification of habitat. Limitations on burning activities further imperil the species. Historically, it once ranged from Massachusetts to Louisiana and inland to Kentucky and Tennessee. It is now only known from New Jersey, North Carolina, South Carolina, Georgia, Florida, Alabama and Louisiana.

On her botanical mission, Howell got a map of the forest from the visitor center. Staff there pointed out where she could see pitcher plants—one of her target species. As she drove along forest roads, she encountered a beautiful bog where milkweeds and orchids were in bloom—a photographer’s delight. Then something caught her eye—a plant she’d never seen before.

Howell snapped several pictures and continued on her “botany safari.” Back home, she looked through her photos from the trip and realized she’d forgotten about the interesting new plant she had encountered. Howell posted her pictures on the Florida Flora and Ecosystematics

SHOOG MCDANIEL

Grace Howell, land management specialist, Alachua Conservation Trust

Facebook group page to get help with identification. The first one to weigh in was Alan Weakley, noted botanist, author, professor and director of the University of North Carolina's Herbarium. Howell had found some American chaffseed.

Howell's find was no ordinary one. She had just helped to discover one of now only three confirmed locations of chaffseed in Florida. In 2008, Florida had 10 known populations. Today, there are only 39 total populations throughout the species' range.

After the positive identification of chaffseed, botanists from Tall Timbers Research Station and the Florida Forest Service inventoried the site and notified April Punsalan, a botanist in the Service's South Carolina Ecological Services Field Office and national recovery lead for the species. The site that Howell found had almost 300 plants, which was considered a recovery population.

"Grace's discovery brings us one step closer to recovering the species since the population occurs on well-managed lands at Blackwater River State Forest," Punsalan says. "The recovery of imperiled fire-adapted species like American chaffseed depends on us getting fire back on the landscape. This new population is a testament to their hard work at the forest in doing just that."

Despite its declines, American chaffseed has a high potential for recovery. Effective management techniques, such as prescribed fire, and chafseed's ability to grow in wide-ranging habitats (longleaf pine savannas and flatwoods) can help achieve restoration of chaffseed to the southeastern landscape.

Howell continues to say that she is "beyond thrilled" about the discovery. "I'm delighted to know that there are so many people who care deeply and are working hard to protect these and other imperiled species" admits Howell.

With a wealth of wonders to be discovered in the longleaf pine forests of the Southeast, those therapeutic botanical safaris are no plain old walks in the woods. Howell, and other curiosity seekers like her, just might help us find a few more rare species. □

JENNIFER KOCHES, External Affairs, Southeast Region

Fishingenuity: Biologists Bolster the Brood Stock of Apache Trout

The biological clock never ceases ticking, and all living things die. But that clock can sometimes be frozen, and decay ceased indefinitely. The implications to fish conservation are large.

Williams Creek National Fish Hatchery, situated amid the ponderosa pine-studded hills of the White Mountains of eastern Arizona, harbors gold: the only captive Apache trout brood stock in existence.

This hatchery, one of 70 other national fish hatcheries, turns 80 years old this year. It's built on Apache lands under the auspices of the White Mountain Apache Tribe for the express purpose of raising trout for fishing. Trout fishing, then as now, helps fuel a rural and tourism-based economy in the White Mountains.

The Apache trout is a fairly recent arrival to the hatchery. Recognizing the trout swimming in their streams as something special, the tribe closed off reservation waters to fishing approximately 30 years before the Endangered Species Act became law in 1973. The tribe was the first conservator of Apache trout.

Though this rare trout wasn't described for science until 1972, hatchery biologists made early attempts at creating an Apache trout brood stock. Getting wild fish accustomed to captivity is difficult. Those attempts fell flat until 1983, by which time commercial fish food had become more refined so captive wild

RUSS WOOD/USFWS

Jennifer Johnson of the Arizona Fish and Wildlife Conservation Office shocks Apache trout while White Mountain Apache Game and Fish staff net the fish.

fish took to it easier. The existing Apache trout brood stock turns 35 this year. Those captive fish descend from the original fish brought on station more than three decades ago.

To bolster the brood stock, the biologists, have turned to what sounds like science-fiction: "cryopreservation." It's a big word for this: They collected sperm from wild Apache trout and froze it.

It's science-fact. Hatchery biologists, along with staff from the Service's Arizona Fish and Wildlife Conservation Office and White Mountain Apache Tribe, collected and froze sperm from wild Apache trout from the East Fork White River.

Gathered and stored in clear straws the approximate size of a coffee stirrer, the sperm now reside in vats of liquid nitrogen at -321 degrees Fahrenheit in permanent storage in the Service's Warm Springs Fish Technology Center in Georgia. And there they will be stored until they're needed for spawning at the hatchery in November.

"We expect cryopreservation to boost our brood stock," says hatchery manager Bruce Thompson. "Cryopreservation reduces the likelihood of spreading disease that comes with having live fish brought in from the wild, not to mention the savings—a savings in space, in time and in money—by not having to keep wild male trout alive on the hatchery."

JENNIFER JOHNSON/USFWS

Williams Creek National Fish Hatchery biologist Russ Wood preps Apache trout milt for freezing.

The hatchery stock originated from the East Fork White River—it's a rare lineage of a rare trout, says Service geneticist Dr. Wade Wilson. Wilson has expert knowledge of trout, having worked with two other species native to the American Southwest, the Rio Grande cutthroat trout and Gila trout.

"Cryopreservation at least preserves the genetic diversity of the males, and the main advantage is that we can infuse wild genetics into the captive fish with great ease," says Wilson. And the approach will be disciplined, as Wilson has developed a plan for the hatchery staff to ensure that each pairing yields genetically robust Apache trout offspring that exemplify the East Fork lineage. Having collected the genetics from the wild male fish and the captive female Apache trout, Wilson's shop will steer captive spawning this autumn. Those offspring will be future brood stock.

The whole idea of freezing and thawing a living organism gives flight to the imagination, even if it is a single cell. Cryopreservation hasn't been used yet for Apache trout brood stock management, but the concept isn't new. The method is common in the livestock industry and has been used for decades.

For rare, native trout, "it's like backing up your data" says Thompson. "You store off-site what's precious, and we're confident that this is good for Apache trout conservation." □

CRAIG SPRINGER, External Affairs, Southwest Region

Texas DOT Credited as Partner in Downlisting of Tiny Tobusch Cactus

The Service has downlisted a species of cactus native to Texas from endangered to threatened status, thanks in part to partnerships with organizations and agencies including the Texas Department of Transportation (TxDOT).

In a May 15 final rule, the Service announced its decision to reclassify the Tobusch fishhook cactus as threatened, noting that many previously unidentified populations now have been documented. The species, a small cactus with curved spines, is known to exist only on the Edwards Plateau of west-central Texas.

The number of known plants has increased from fewer than 200 in 1979, to more than 3,300 in 2018, thanks in part to TxDOT's efforts to survey the species on highway rights-of-way, the Service said in a May 15 release. The Service also credited efforts from agencies and groups including the Texas Parks and Wildlife Department, Texas Land Conservancy, Lady Bird Johnson Wildflower Center and The Nature Conservancy, as well as private landowners in the state.

Service botanist Chris Best noted that the reclassification to threatened status is due both to the increased knowledge of the abundance and distribution of the species, as well as the protection of a number of populations on lands owned or managed by the partner organizations and private landowners.

"This increased knowledge and conservation came about because the species was listed. If we had only the evidence of greater abundance, without protection and conservation of some representative populations, then the reclassification would have been much more difficult to justify," Best said.

Noting that much of the land in Texas is privately owned, Best said the cooperative relationship with TxDOT has allowed the Service to sample vegetation across a broad area that transects private lands. Data on species occurrence that are gathered by the transportation agency as part of building and maintaining the transportation system have been useful in understanding species distribution, Best said.

Best said the tiny cactus grows to about two inches in diameter and about two to three inches tall, with stubby branches and clusters of curved "fish hook" spines. They often grow nestled among limestone rocks and are difficult to see. Surveys typically are done from January through March, when the plant is blooming and its yellow flowers are visible.

Half of the 200 known plants in the initial survey were destroyed in a flood, Best said. Over the years, the Service determined that the riparian habitat identified early on was atypical and the majority of populations documented since have been found in upland sites. A number of the known populations were found from surveys of highway rights-of-way as well as protected natural areas, linear surveys and power line surveys.

CHRIS BEST/USFWS

The Tobusch fishhook cactus grows to about two inches in diameter and about two to three inches tall.

Jodi Bechtel, TxDOT's natural resource management section director, said TxDOT doesn't have a formal monitoring process for the cactus, but conducts surveys ahead of its work that it shares with the Service. TxDOT also employs avoidance methods including no-mow zones and conducting work outside the blooming season.

The downlisting is not likely to have a direct effect on TxDOT projects as consultations are still required for threatened species.

Although the species is no longer in danger of extinction, the Service said it is "likely to become endangered within the foreseeable future" due to a variety of factors. These include changes in vegetation and wildfire frequency—in particular encroachment of Juniper trees—as well as insect parasites, feral hog rooting, and the demographic and genetic consequences of small population sizes and densities.

"While the Tobusch fishhook cactus isn't completely out of the woods yet, the signs are very encouraging," Amy Lueders, the Service's Southwest Regional Director, said. The decision to downlist the cactus "is a victory for the collaborative model of conservation that engages states, private landowners and conservation groups to play a central role in a species' recovery."

Service officials said efforts to address species protections in Texas have been enhanced through TxDOT's funding of a dedicated liaison position at the Service to work on transportation projects.

Adam Zerrenner, a field supervisor with the Service, described several benefits of the TxDOT-funded biologist position, including consistency and understanding of road projects, predictability, expedited project delivery and better conservation outcomes.

TxDOT officials agreed.

Bechtel pointed to data showing a significant decrease in the timeframes for Endangered Species Act consultation during the years in which TxDOT funded a dedicated position at the Service. From 2005 to 2011, prior to the having the liaison position, informal consultations averaged 148 days and formal consultations averaged 68 days. But in the years with a funded liaison—from 2012 to 2016—average days in informal consultations ranged from 18 to 30 days, and during 2016, formal consultations were cut to an average of 34 days. □

Abuzz with Possibilities

On April 26, the Service's Headquarters was humming with excitement and energy as Service staff and their children came together for the fourth annual "Bring Your Children to Work Day," hosted by the Office of Budget, Planning and Human Capital (BPHC).

"This program is a special opportunity to plant 'conservation-related' seeds in many young minds and celebrate the interesting and challenging jobs of the Service," says Rebekah Giddings, Deputy Assistant Director for BPHC.

This year's program showcased the work of the Service in conserving pollinators and introduced participants to the array of careers the Service has to offer.

More than 60 visiting youth ages 5-17, had the opportunity to engage in learning through a series of fun activities. A select cohort of older participants (many returning for their fourth year in a row) donned blue vests and became junior volunteers for the day, assisting staff members in running activities for budding conservationists. Among other things, participants literally got their hands dirty, working to create a better world for pollinators by crafting "milkweed milk duds" from clay, soil and locally sourced seeds to plant at home. And animals from the Leesburg Animal Park enlivened a discussion of survival strategies and the importance of pollinators around the world.

The Service was proud to "pollinate a brighter future" for all. □

USFWS

(Above) A youngster shows off some of her art. (Below) This year's theme was pollinators.

USFWS

East Fork Greenbrier Restoration Brings Anglers Out in Droves

In the eastern part of West Virginia, a remarkable change is underway on the East Fork of the Greenbrier River. A coordinated push to restore the river's waterways to a more natural state is allowing fish to move more freely and improving conditions for all wildlife.

"It's beautiful Appalachian forest land, and with so many species in this one area it's a really valuable place for us to do conservation work with our partners," says Callie McMunigal, regional Fish Habitat Partnership coordinator for the Service at the Appalachian Fish and Wildlife Conservation Office.

For the last five years, the Service, Trout Unlimited and the U. S. Forest Service have been working together to restore the Greenbrier River Watershed. The Greenbrier River is the longest free-flowing river in West Virginia with no dams and a watershed where the land is so green and thickly forested that the water takes its color from the reflected trees. The river and its tributaries, however, have long been constricted by aging culverts and road-stream crossings, which have impeded fish from moving upstream and could be hazardous in the event of a flood. This makes the watershed one of the Forest Service's highest-priority areas for restoration.

Mike Owen, aquatic ecologist with the Forest Service, compares the pipe culvert design to the middle of an hourglass, restricting anything trying to pass through. "It can make things really hard for passing fish, particularly brook trout as they tend to travel quite a bit within the watershed."

Most of the projects included replacing culverts with wider ones, installing new bridges and clearing other obstructions so the river could flow naturally. To date, the collaboration has improved some 50 miles of the East Fork for native species such as brook trout and bass, transforming the area into a hotspot for local anglers.

In addition, Trout Unlimited oversaw extensive tree planting, which will help provide shade and maintain cooler water, which the brook trout need. "We're restoring a great deal of the diverse ecosystems of West Virginia," says Gary Berti, Eastern Home Rivers Initiative director for Trout Unlimited, "and we are committed to doing what needs to be done in the long term."

Crews eliminated more than 100 miles of unused roads and trails. They also contoured slopes beside the river to reduce erosion and promote proper water drainage on approximately 85,000 acres of land. The planting and reshaping will also provide natural flood resistance during storms and even help guard against drought.

"If we do these things right, then nature does the work for us," says Owen. "The system should largely sustain itself and continue to improve as time goes on."

And nature has not disappointed. Mere weeks after projects were completed, brook trout and other fish were found both above and below the work sites; areas where their populations had previously been sparse or nonexistent. While the Greenbrier has always been a popular area for locals to fish and hunt in the surrounding woods, the projects' effects have been dramatic enough to bring anglers out in droves.

"Every time we go into the field, we get claps on the back," says Berti. "People have started bragging about the number of fish they caught. I've met folks who told me they caught 80 fish in a weekend."

"But brook trout are more than a great recreational fish,"adds Owen, "the strength of their population provides an indication of the health of the whole ecosystem. And where brook trout are abundant, the entire river system and the life it supports—including people—reap the benefits."

Partners planned the entire restoration more than five years in advance, looking at the Greenbrier on a watershed scale, rather than trying to restore the river piece by piece. And as with anything bought in bulk, funding the projects in a large batch made them much less expensive, saving the Service and partners thousands of dollars.

Angler experiences have shown the restoration efforts are already working, but work remains. Several more projects are planned, which will open other sections of the Greenbrier. "It's a huge undertaking, but we believe it's worth the effort," Owen says.

"If there's nothing else you take away from this, it's that these partnerships work. And this would not have been possible without so many of us coming to the table," Berti says. □

ISAAC BURKE, External Affairs, Northeast Region

C. MCMUNIGAL/USFWS

D. WICHTERMAN/ TROUT UNLIMITED

(Top) East Fork Greenbrier River. (Bottom) Young brook trout indicate the fishery is growing and the habitat is healthy.

NATURE'S GOOD NEIGHBORS

JENNIFER STRICKLAND/USFWS

JONATHAN SNAPP-COOK/USFWS

Making natural resources stewardship work for people and wildlife.

Throughout the country, countless people depend on the land as much as the land depends on them.

They are entrepreneurs who manage forests, farms, ranches and fisheries.

They are private landowners, land managers, tribal members, recreational guides, and individuals in the energy, agriculture and timber industries.

With support from the Service, which provides expertise, assistance, funding, and tools to conserve and restore wildlife habitat for future generations, these stewards are working with nature to make a home for people and wildlife.

SWEET PRESENT RICH PAST

Berry grower embraces conservation, history.

by JOANNA GILKESON

(Top) Carolyn Read looks toward the freshly translocated coastal sage scrub plants in the restoration area on her property. (Bottom) Boysenberries from Read's farm, which became organically certified in April 2018.

JONATHAN SNAPP-COOK/USFWS

COURTESY OF CAROLYN READ

It would be easy to call Carolyn Read a preservationist and leave it at that. How many people would settle in a ranch house built 130 years ago and raise a family there?

Some might call her a conservationist. Read has made sure native plants that were in danger of getting choked out by other invasives are again thriving in the arid reaches of her San Diego-area ranch.

Make sure you give Read credit for her business sense, too. She started a horse-themed magazine more than 30 years ago that remains an award-winning publication on the West Coast.

She's also raising and selling boysenberries.

Read is a rancher, an active community member, an equestrian advocate, a conservationist, a historian, an entrepreneur, a grower, a mother and a grandmother—all of which stem from her opportunity to build a life on the land.

She's worked with others to ensure that a ranch started in the 1800s remains viable, even as devel-opment nears its borders. Among her collaborators: the Service, which advised her as she restored a hillside with coastal sage scrub. From that collaboration came a friendship with a Service biologist. That connection has roots as hearty as the sage scrub growing on the hills.

Read, 86, is just happy to remain on the land that she has tended so carefully for more than five decades.

"I am grateful for the opportunity to acquire and raise my family in this home," she says, "and for the living heritage the area has given us."

A Blessing

In 1874, an Arkansan by the name of Reynold Bascomb Borden traveled cross-county in a covered wagon. He settled in a valley blanketed by coastal sage scrub and sunshine. In 1882, he built one of the first homesteads in this remote valley, now present-day San Marcos, in San Diego County.

The family kept the clapboard house until 1929. It went through more owners until 1963, when it was put up for sale. Three parties expressed interest in it. One was a young woman who needed space for a growing family.

CARMEN WILSON

Service biologist Jonathan Snapp-Cook translocates California sagebrush to the restoration site.

"At the time, I was a single mom with four children," Read says. "For some reason the family who owned the property at the time chose me."

It was a blessing. "I was able to establish roots, a chance to make a home."

Today, the property also is home to California quail, hummingbirds, pollinators, lizards, rattlesnakes and birds of prey.

She points to a hawk's nest in the top of a eucalyptus tree.

"That's the 12th generation of this pair of hawks," Read says. "They just had their babies. The small sparrows torment them." ››

COURTESY OF CAROLYN READ

The Borden family homestead in the 1920s.

JOANNA GILKESON/USFWS

Monkey flower ranges in color from light orange to deep red and is native to California.

'Strong Connection'

In 2012, Read decided she needed help to restore wildlife habitat on her land. She worried that the native flora was getting overwhelmed by invasive plants.

Jonathan Snapp-Cook, a Service biologist, visited her ranch. He knew right away that they shared an appreciation of land stewardship.

"It was obvious she had a strong connection to the historical and cultural aspects of her property and wanted to conserve wildlife," says Snapp-Cook. "I knew it was going to be the beginning of a good partnership."

Snapp-Cook and Read embarked on a restoration project to benefit native wildlife. A portion of the hillside behind Read's house was chock-full of invasive plants, while native coastal sage scrub voluntarily grew on the property's dirt roads.

The idea: transplant the coastal native sage scrub in the roadway to the tract where invasives grew. It was best, they decided, to use the plants they already had to make the restoration take root.

As Read described it: "If the plants are able to make it on their own, then that's who survives. They are the survivors."

So far, the native plants are winning. Snapp-Cook and Read have completed three small, flourishing sections of restoration—but they didn't do it alone; farm hands and Read's children and grandchildren helped restore the hillside, one plant at time.

The restoration project has been a lesson for Read and her family; they see the sage scrub as a valuable member of the ranch ecosystem.

"Jonathan has been quite an inspiration to me, to walk across the property with a biologist…he points out all these things happening at my feet," she says. "It's become a very enlightening friendship."

Horses and Berries

The view from Read's front porch has changed since she moved in. Over the years, she has watched development slowly creep toward her ranch. The 14-acre property is flanked by rows of white-and-beige houses on one side. An open space soon to be developed shares a property line on another. A hillside of coastal sage shrub touches a third.

Even as San Marcos extends its borders toward her, Read remains determined to protect the land and the creatures that live there.

Every inch of the 14-acre ranch, which includes seven acres of preserved habitat, continues to be productive. Read has four horses on site, with pastures to match. Three years ago, she turned her attention to a local delicacy.

Read began growing boysenberries—a move driven in equal parts by an appreciation of history as well as the bottom line.

The boysenberry enjoys historic importance in Southern California. In 1932, Knott's Berry Farm in Buena Park, California, created a new kind of produce — a cross between red raspberries, blackberries and loganberries. The Knott family dubbed it the boysenberry.

The new berry was a tough thing to cultivate, its bushes riddled with thorns, but the payoff was good, too. Consumers loved the boysenberry. So does Read.

"I started selling my berries to the neighbors, and I've gotten so much good feedback from the community," she says. "I've connected with my neighbors because of the berries and they're wonderful people."

The berries also have made their way into local high-end restaurants through a contract with a San Diego produce distributor. "I don't even know how it all happened," Read says, "but I'm grateful."

Growing and sharing California's homegrown classic fruit is the way Read has chosen to share the living heritage of the homestead with the greater community.

JOANNA GILKESON/USFWS

California quail find refuge on Read's property.

For Read, the boysenberry provides a tangible, tasty link to the area's rich history.

"Without the places that keep our stories alive…we lose some of the most profound parts of our local history," she says.

She feels that way about her ranch, too.

"It is part of who I am," she says. "I would like to see some of that lifestyle preserved for future generations." □

JOANNA GILKESON, External Affairs, Pacific Southwest Region

(Left) Narrow-leaved milkweed on Read's property. (Right) Flowers from her narrow-leaved milkweed.

JOANNA GILKESON/USFWS

JONATHAN SNAPP-COOK/USFWS

Partners

The Service supported this Nature's Good Neighbor and many of the others through our Partners for Fish and Wildlife Program, the Service's main conservation tool for private landowners. A phone call or email to one of our 250 private lands biologists is all it takes. For more Nature's Good Neighbors stories, visit <www.fws.gov/natures-good-neighbors>.

BRIDGET MACDONALD/USFWS

A New American Dream

Vermont farmer Chuda Dhaurali helps sustain a landscape and a community.

by BRIDGET MACDONALD

A three-month old Nubian goat looking for attention.

PAUL E. RICHARDSON/VERMONT LAND TRUST

Goat farmer Chuda Dhaurali holds a buckling at Pine Island Farm in Colchester, Vermont.

There was an unmistakable smell in the air at Pine Island Community Farm in early March—unmistakable, but unexpected.

"We made an arrangement so that people could drop off their Christmas trees here," explains farmer Chuda Dhaurali, as he approached a pen containing a few dozen 3-month-old Nubian goats munching on balsam firs.

After the holidays, the farm in northwestern Vermont collected nearly 300 trees from as many families. It was an event designed to be as fun as it was utilitarian.

"We had hot cocoa and candies for the kids, and they all wanted to see the goats," Dhaurali says. With their soft coats dappled white and chestnut brown, doe eyes and characteristic lop ears framing long muzzles, it's easy to understand why.

"They are so friendly with people, but they are quite noisy," he adds as they bleat for attention.

Recycling Christmas trees is just one way Pine Island helps give back to the local community and the lands and waters that sustain it. The farm embraces solid conservation with business sense and is proof that it's possible to make a living on the land while looking after it. It's also host to newcomers to this nation—immigrants eager to embrace their new home but wanting to keep reminders of their old one, too.

Born out of a partnership between the Vermont Goat Collaborative, the Association of Africans Living in Vermont and the Vermont Land Trust (VLT), Pine Island Community Farm was established in response to a pronounced need for a source of livestock and produce for the growing population of new Americans who have been resettled in communities around Burlington through the United Nations Refugee Agency.

Located in the delta of the Winooski River, the largest tributary to Lake Champlain, the farm also created an opportunity to protect vital wetland habitat through a partnership with the Service's Partners for Fish and Wildlife Program.

"The Pine Island area contains some of the best wetland habitat Vermont has to offer, including silver maple floodplain forest and the oxbow wetlands," says Chris Smith, supervisory fish and wildlife biologist at the Lake Champlain Fish and Wildlife Conservation Office in Vermont.

Given that the site is also at the heart of the largest population center in the state, Smith says, "the ability to do restoration work in this area is very, very important."

A New Vision for the Farm

Dhaurali, a native of Bhutan who spent 18 years in a refugee camp in Nepal before moving to Vermont, has helped realize a new vision for the farm. Pine Island is a former cow dairy purchased by VLT in 2012.

Cows made way for goats. For cultural and religious reasons, goat is a dietary staple for many new Americans coming from countries in Africa and Asia. But not only is it harder to find goat meat in the United States, it's difficult to know much about the source.

"If you buy meat from a store, you don't know what part of the body it came from, or if it was a male or a female," which can be important factors for some holidays and celebrations, Dhaurali says.

KATIE KAIN/USFWS

Goats on the heels of farmer Chuda Dhaurali at feeding time.

"I think what they are doing is about as creative and needed a service as you could possibly think up."

—Miles Hooper, goat farmer

Dissatisfied with the packaged meat available in stores, many people were going to great lengths to purchase live goats to slaughter themselves. "We used to have to go all the way to Massachusetts to find a goat, wasting six hours in the car, plus the cost of gas," Dhaurali says.

The farm serves its customers with custom slaughter facilities for goats and chickens. It also serves the local agricultural community by taking in livestock that have no production value.

Theogene and Hyacinthe Mohoro, a couple from Rwanda who run the farm's poultry operation, purchase spent laying hens from egg producers in addition to raising chicks on site. Many of the young male goats—called bucklings—that Dhaurali raises are bought from Vermont goat dairies that have no practical use for males.

"It was serendipitous," says Miles Hooper, the farm manager for Ayers Brook Goat Dairy, established right around the same time as Pine Island. "Here we are starting this goat farm, and we find an outlet for our bucklings."

Hooper sells goats to Dhaurali when they are about three months old, after they have been weaned. While his costs are covered by the transaction, it's not a profitable arrangement; it's an ethical choice in light of the typical fate of young males.

"If not for Chuda, I would have to figure out another way to make it work," he says, adding that he is glad to be able to support Pine Island. "I think what they are doing is about as creative and needed a service as you could possibly think up."

Giving Back to the Land

Addressing a range of cultural, economic and environmental needs in the community was fundamental to the vision for the farm. "It was important to figure out how we could fill a gap by doing something that was needed and didn't already exist," says Siobhan Smith, vice president for conservation and stewardship for VLT.

"Whenever feasible, we are trying to figure out: How can we draw from the waste stream to help close the loop environmentally?"

From the outset, the partners were intent on keeping the land in farming because of the rich history (and soil) at the site. They were also committed to implementing agricultural practices that would allow nature to take its course in the adjacent wetlands. The farmers agreed to give up seven acres of potential grazing land along the Winooski River to plant a riparian buffer.

The buffer project was funded primarily by a U.S. Department of Agricultural Service program, but the Fish and Wildlife Service covered the remaining expense to make the project cost nothing for the landowner. The Service also provided technical assistance to ensure that the project reflected habitat goals for migratory birds, at-risk species and priority aquatic species.

"Some of the best opportunities for restoration are in agricultural areas, and we want it to be as easy as possible for farmers to participate in habitat restoration programs and projects," says Smith.

At Pine Island, that relationship has evolved to be about more than just restoration.

"It is such a representative project," says Katie Kain, a Service biologist in the Partners Program. "The farm viability component, the riparian buffer, the innovative farming operation and partners who are really engaged in management."

It's also permanent. Kain explains that the area where they did the restoration work has been designated a special-treatment area that has to be protected in perpetuity.

"The buffer can't be cut down or hayed or have any agricultural activities," she says. "But the farmers are still able to graze the goats up next to it, and it's working well for them."

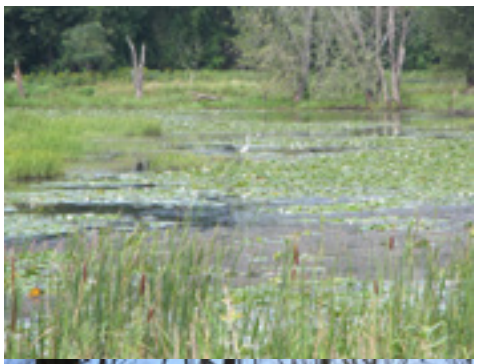
Dhaurali, for one, is accustomed to adapting to his circumstances. His father had been a farmer in their homeland of Bhutan, and when they moved to the refugee camp in Nepal, he says, "We couldn't raise animals because it was very densely populated, so my father would buy goats from outside and sell them to other families."

Now he has 230 acres to raise goats, in a place that reminds him of his homeland.

"When I moved here it felt similar—a lot of space on the landscape, the river, the animals, and it's a very quiet place," he says.

Seeing all of Vermont's open farmland upon his arrival, he recognized the possibilities it held, but never dreamed he would find himself at the center of a new farming enterprise. "When we moved here, we know the United States is a land of opportunity," he says, "But I never thought I'd be a farmer in a place like this." □

BRIDGET MACDONALD, External Affairs, Northeast Region



KATIE KAIN/USFWS

BRIDGET MACDONALD/USFWS

(Top) The oxbow wetland on the edge of Pine Island Farm. (Bottom) From the farmhouse, one can look across flooded hayfields toward the Winooski River.

Toads and Trails

Restoring habitat and reviving the local economy in Beatty, Nevada.

by JOE MILMOE

(Top) Las Vegas Tough Mudder on Spicer Ranch. (Bottom) Amargosa toad in Beatty, Nevada.

TOAD: JOE MILMOE/USFWS. RACE: © SIMON WILLIAMS, THE NATURE CONSERVANCY

Landowner David Spicer decided to help a species of toad unique to the Oasis Valley of Nevada, where he lives. In the process, he's also helped something else—the local economy.

The species: the Amargosa toad. It lives along a 10-mile stretch of the Amargosa River and its upland springs. The Service considers the toad at risk due to habitat loss, water diversion and non-native predators.

The economy: Beatty, a former mining town, calls itself "The Gateway to Death Valley." It is poised to enjoy a revival, thanks in part to Spicer's decision to open part of his ranch to recreational use. The influx of outdoor enthusiasts is helping move a town with a mining past to one with a tourism future.

The toad prompted a businessman to become a conservationist, too. In his efforts to save a local species, he turned to people who'd pay to use his lands—money that he used to improve the toad's habitat. It's a lesson in how commerce and conservation can work together.

Spicer and his nonprofit organization, Saving Toads thru Off-Road Racing, Ranching & Mining in Oasis Valley (STORM-OV), have brought land users to the conservation table, stressing fun in the outdoors while doing some good for the environment.

The Service pitched in to help, too. Working with The Nature Conservancy, Natural Resources Conservation Service, Nevada Department of Wildlife and Bureau of Land Management (BLM), the Service headed up three habitat restoration projects on the Spicer Ranch. Using heavy machinery, workers dug up springs, re-established headwaters and redirected water into selected lowland areas—creating ponds that made ideal toad habitats.

The projects bore fruit: The toad's breeding population has increased.

In 2010, the Service determined that the toad was not warranted for inclusion in the federal Endangered Species Act—due, in part, to Spicer's willingness to protect the toad's environment.

An entrepreneur at heart, Spicer has opened the doors to his 320-acre ranch to host a wide variety of events: Tough Mudder races, regional "Burning Man" events, Boy Scouts of America retreats, 24-hour endurance races and more.

He made a discovery, too.

"It's all about seizing the opportunity," says Spicer. "The more we get disconnected from nature as a society, the more we crave it."

Now, Spicer and STORM-OV have a new plan, the Oasis Valley Recreation Enhancement Project. It aims to create a

JOE MILMOE/USFWS

Amargosa toad breeding habitat and tadpoles on the Spicer Ranch.

JOE MILMOE/USFWS

Habitat sign at the Spicer Ranch.

CHRISTOPHER SMITH, DESERT COMPANION MAGAZINE.

Beatty offers fun and challenging mountain biking trails. (Used with permission. Originally published in the May 2015 issue of *Desert Companion.)*

"We hope to have things like a bike shop, brewery, burrito place and recreational pond that mountain bikers can enjoy during their stay here," says Spicer.

network of trails for mountain biking, trail running, equestrian use and rock climbing.

The Spicer Ranch and surrounding BLM tracts feature approximately 50 miles of public trails for biking, running and horseback riding. His goal: 300 miles of new trails, redeveloped businesses and a packed calendar of events throughout the year.

If that works out, Beatty could be in line for an economic jump-start. Spicer thinks that will happen.

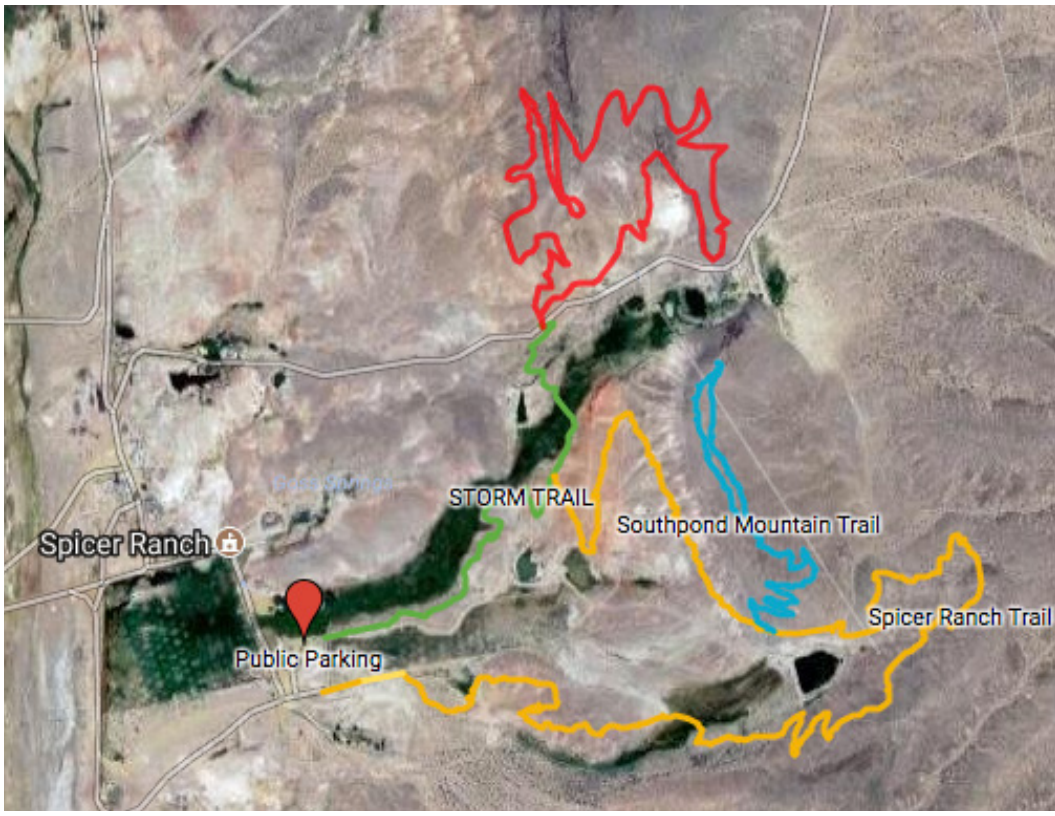
"I want day-to-day business—150 people a day coming here to ride bikes," Spicer says. "We want friends, couples, families, co-workers to come out, connect with nature, explore our trails and have a life-changing experience out here."

Moab and St. George, Utah, as well as Fruita, Colorado, have developed trail systems that are attracting eco-tourists seeking thrills—spending cash, too, Spicer notes. He calls his plan a "Cinderella window of opportunity."

Beatty, he notes, is located between Reno and Las Vegas, and Death Valley is nearby. That means Beatty is close to tourists, outdoor enthusiasts and others eager to get outside in the desert.

Spicer recently hired professional consultants to determine whether his plans to make Beatty a biking destination had promise. He liked their assessment.

JOE MILMOE/USFWS



COURTESY OF TRAILS OV

(Left) Landowner David Spicer meets with Service biologist Christiana Manville to monitor toad habitat. (Right) Spicer Ranch trail map.

"They drove the existing trails," he says, "and they said it absolutely can and will work."

STORM-OV is working with BLM to conduct surveys of the proposed trail areas and is looking for like-minded people who will invest in the future of Beatty.

Beatty, population 1,000 or so, appreciates Spicer's efforts.

"He's helping bring people into town," says Annie Latham, who works at the Beatty Chamber of Commerce. STORM-OV is one of its members. "We welcome that."

Spicer, she says, has always been active in luring people to Beatty. His bike-trail plans "are gaining momentum," she says. "He's bringing in a lot of biking groups."

Those cyclists will want to eat, fix their bikes and generally hang out.

"We hope to have things like a bike shop, brewery, burrito place and recreational pond that mountain bikers can enjoy during their stay here," says Spicer.

Interest in redefining Beatty as a recreational destination is as high as it can be right now; the question is whether the interest will translate into action.

"Our roots are in the land," says Spicer. "We want to put it back, get the kids involved, bring a new level of integrity to our community and demonstrate the potential of what Nevada can bring forward for phenomenal recreation."

And, no doubt, the Amargosa toad is all for that, too. □

JOE MILMOE, Partners for Fish and Wildlife Program, Headquarters

Walking the River

Fly fishing guide Gary Lang wades in on conservation and his passion for angling.

by ISAAC BURKE

(Top) John Schmidt, field supervisor for the Service's West Virginia Field Office, stands with a stalk of Japanese knotweed. (Bottom) Each tie makes a different fly, and each of these mimics an insect at a specific life stage.

FLIES: RYAN HAGERTY/USFWS. TOP: USFWS

Gary Lang wades into the cold water of the Upper Elk River, steadying himself on the slippery rocks in the riverbed. It's morning, just after breakfast. The pale March sun shines overhead, lighting up Lang's blue eyes as he brings his fishing rod around and makes his first cast of the day.

This is how his work day begins. Lang is a fly fishing guide, meaning he will spend his day accompanying his customers from a local lodge to the best trout fishing spots on streams near the small Appalachian town of Elkins, West Virginia, showing them how to tie on the correct fly patterns and teaching them proper casting techniques.

Lang, 65, is no novice at this. He began fly fishing about 40 years ago and has been hooked ever since. It's become a lifelong love not only for fishing but also for the natural beauty of the crystal-clear trout streams and the tall greenery surrounding Elkins.

He's proof, too, that conservation and commerce aren't mutually exclusive. In making a living in the streams of West Virginia, Lang also is helping look after them. While serving as president of the local Trout Unlimited (TU) chapter, Lang worked with the Service on several habitat improvement projects, many of them conducted on the streams where he guides.

"There is nothing better than spending your day outside in beautiful surroundings, in a country you know and appreciate," he says.

Birthplace of Rivers

Lang got into guiding in 1988 because of a friend who wanted him to show a fishing company representative the local surroundings. Lang agreed to lead a tour of the Elkins area.

Elkins is located at the confluence of the Tygart Valley River and Leading Creek, a stone's throw from the Monongahela National Forest. It is in a group of West Virginia counties sometimes referred to as "The Birthplace of Rivers," making it a perfect haven for fly fishers—a rare find in the Northeast, Lang notes.

From that first tour, Lang would continue guiding in-season as a side job—perhaps one of the best side jobs one can get.

"I'm just here to have a good time," he says. "This is just my thing."

There's more to fly fishing than there might seem; watching from afar, it looks like you just whip the line into the water and hope a fish snags it at the surface. Not so, according to Lang: Fly fishing is more about knowing your surroundings, knowing the season and knowing your flies. And depending on a person's physical ability, it can also mean scrambling down into the uneven footing of a river for several hours at a time.

"We walk the river," says Lang. "You might walk a couple of miles in a day."

But it's the patterns—or "ties"—for the flies that are really key; each mimics a different kind of insect at a specific stage of its life cycle. The fish are looking for this—they know what time of year it is and what they should be feeding on, and will only chase certain flies. This makes the preparation before casting essential, as the flies and their life stages are seasonal, and are different in certain areas as well.

"There is nothing better than spending your day outside in beautiful surroundings, in a country you know and appreciate."—Gary Lang.

RYAN HAGERTY/USFWS

"Recreation is really important here," says Schmidt. "We have great trout fishing, and it's a big tourist attraction. The streams are really, really important to people making a living off them."

Brook trout are a popular native catch for fly fishers in West Virginia.

RYAN HAGERTY/USFWS

"You have to know what's happening," says Lang. "It could be the difference between catching zero and catching 50."

It's this extensive knowledge that has won Lang many customers over the years. One of those customers, Beau Beasley of Virginia, has used Lang's expertise on a number of occasions. Though Beasley, too, is a seasoned fly fisher and outdoor writer in his home state, he leaned on Lang's innate familiarity with Elkins' rivers while writing a guidebook on fishing in the mid-Atlantic United States.

"Gary knows the rivers like only a local can, and not only knows how to approach the stream but what flies to use and when," Beasley says.

'30-mile Culvert'

Anglers need the cold, clear water that native brook and other trout use as their habitat. Over the years, Lang has worked with a number of groups, including TU and the Service, to protect that habitat.

Lang credits his involvement with TU to a West Virginia's infamous "Election Day Flood" of November 1985, an event he says "may have been the highest water ever" for that area. The flood waters were so intense that year that they washed away much of Elkins' riverbanks and even overran a nearby archaeological site.

Statewide, the flooding cost nearly $700 million in damage and claimed 38 lives. When the rivers finally receded, the region's riverbanks were very unstable, prompting a number of local landowners to try to straighten the river using bulldozers. Hardest hit was the North Fork South Branch Potomac River.

"Seventy-six bulldozers took what was once a beautiful river, and when they got done, it was basically a 30-mile culvert," Lang says.

The crumbling banks lit a fire under Lang, who couldn't bear to see the rivers he fished and guided on fall into disrepair. Encouraged by a friend, he began working with Elkins' TU chapter, going on to serve there for 10 years, rising quickly to president, and working to restore the rivers to their natural splendor. Lang's restoration work would eventually lead him to partner with the Service on a number of projects, including removing invasive species and excluding cattle from West Virginia riverbanks.

Getting into the Weeds

Since 2010, the Service has partnered with local landowners, TU and The Nature Conservancy to eradicate knotweed, a pernicious perennial plant that has threatened to destabilize riverbanks all across West Virginia.

Knotweed's root system emits a poison so strong that it can kill its own seedlings—and any other plant that dares to seat itself too close. Knotweed also outcompetes most other plants with its ability to steady itself on even the most loosely packed riverbanks. This means it takes the place of native, shade-giving plants that trout in the stream need to keep the water cool—and to feed the flies they eat.

Removing knotweed and keeping native vegetation in place not only preserves the shade-giving plants required to keep the water cold, but also provides leaves as food for flies. More flies plus cold water generally means more trout—which can mean more customers for Lang.

"Needless to say, it's a pretty dangerous invasive to have growing nearby," says John Schmidt, Field Supervisor for the Service's West Virginia Field Office in Elkins, which has coordinated much of the habitat work. "It can overtake any plant community on the riparian area."

To fight the invasive, the Service and partners have carried out a number of treatments along Seneca Creek, Thorn Creek, Slaty Fork and the Upper Elk River—all places where Lang guides.

"Recreation is really important here," says Schmidt. "We have great trout fishing, and it's a big tourist attraction. The streams are really, really important to people making a living off them."

In addition, the Service has worked with farmers in the state to secure nearly 2 million feet of cattle-exclusion and field division fencing. Not only does this allow the farmers to increase grazing efficiency and improve their bottom line, but it helps prevent grazing cows from further destabilizing the riverbanks, keeps cows' excrement out of the stream, and keeps the water clean and clear for the fish—and for those who try to catch them.

"Our work is definitely helping to protect and boost trout populations," Schmidt says.

Schmidt himself guides occasionally on these rivers, having learned how to fly fish from Lang. The two have become friends over the years, bonding over their conservation efforts (and the occasional poker night). To both men, preserving the rivers isn't just about keeping them native; it's about preserving them for future generations of wildlife and people alike to enjoy.

"Fishing gets way better when the water is cleaner," Schmidt says.

The conservation work has gone a long way in keeping them pristine.

"Most people aren't about the numbers or the big fish—they care about the stream and the experience," he says.

For him, it's just another reason to keep going out there.

"This still fascinates me," Lang says, reaching back for another cast into the cold swirling water. "I still care about it, and I still want to do it as long as I can." □

ISAAC BURKE, External Affairs, Northeast Region

BRENT LAWRENCE/USFWS

(Top) Veteran Rick Spring pours his passion for accessibility to the outdoors into building hunting and bird-watching blinds on federal and state lands that are compliant with Americans with Disabilities Act guidelines. A Spring-made blind, for example, is big enough to accommodate two wheelchairs. (Bottom) A pair of Canada geese spotted through Rick Spring's accessible blind at Ridgefield National Wildlife Refuge.

Building Blinds, Building Lives

Disabled veteran crafts accessible hunting blinds.

by BRENT LAWRENCE

Rick Spring smiles even as the cold wind and rain blow across his face in the waterfowl blind at Willapa National Wildlife Refuge in Washington state. The call of cackling geese overhead and the sight of wildlife relax him as he pets Max, his yellow Labrador retriever who doubles as his certified therapy dog.

Being in the outdoors is where Spring finds peace. For many people, however, there are barriers to finding that outdoor enjoyment. A disabled Navy veteran himself, Spring knows that spending time hunting, fishing and hiking isn't always a given for injured veterans or other people with disabilities.

That's why Spring pours his passion for accessibility to the outdoors into building

hunting and bird-watching blinds on federal and state lands that are compliant with Americans with Disabilities Act (ADA) guidelines. A Spring-made blind, for example, is big enough to accommodate two wheelchairs.

He does it as a volunteer, donating countless hours to the cause.

"Before they were disabled, veterans were usually very active people," says Spring, a Boeing retiree who also served as an E4 3rd Class Petty Officer for three years in the U.S. Navy, running ship-to-shore teletypes and crypto aircraft identification. "Then they get injured and they feel like their time in the field isn't available anymore. Knowing that these blinds are available, it will help veterans move on and have prosperous lives. They want and need this experience."

Spring is one of conservation's good neighbors, creating opportunities that open the door to nature for people who otherwise wouldn't get to see a flock of mallards coming in to land or even hear the wind whistle through the Douglas firs. Whether they hold a shotgun or a camera, those aiming to connect with nature need access to enjoy the outdoors. That's why Spring hopes to expand the use of his custom-designed blinds to Oregon and then to the national level so more people with disabilities can have access to the outdoors.

It's impossible to quantify the impact ADA-compliant access has on disabled veterans, says Heath Gunns, outreach manager with Honored American Veterans Afield. The impact on an individual, however, is easy to see when you witness it first-hand.

"You're a 19-year-old kid and you go to boot camp, where they build you up to think you can do anything. Then you get hurt and the first thing doctors do is tell you the things you'll no longer be able to do.…That is wrong," Gunns says.

"Disabled veterans just have to learn to do it differently and that's where ADA-compliant blinds and other access opportunities come in. The outdoors can't give them their legs back, but it can give them hope."

Spring is determined to keep that hope alive for people with disabilities. He pulls in partners such as the Service, Washington Department of Fish and Wildlife, Vancouver Wildlife League, Washington Waterfowl Association, Northwest Steelheaders and numerous businesses to make it all happen.

In addition to the blind at Willapa Refuge, two of his custom ADA-compliant blinds can be found at Ridgefield National Wildlife Refuge, and another at Vancouver Lake. Spring is a member of Washington's Fish and Wildlife Commission ADA Advisory Committee, and he's finalizing a proposal to build ADA-compliant blinds in each of the commission's six state regions.

The importance of Spring's work is underscored by a surprising statistic: 60 percent of requests for Washington's reduced-fee or special-use permits come from disabled veterans. Overall, there's a high level of public interest in ADA-compliant facilities, according to Sam Taylor, the Washington Department of Fish and Wildlife's liaison to the seven-member ADA advisory committee.

"This is an amazing volunteer advisory group," Taylor says. "They're having a real impact on hunting and fishing opportunities in the state. Rick is doing some great work, and not only with the blinds. He's also working on a shooting range that is ADA compliant and looking at some other opportunities for fishing piers."

That access-for-all-people policy plays an important role in public lands recreation. A recent Service report shows the outdoors has a strong allure. In 2016, an estimated 101.6 million Americans—40 percent of the U.S. population 16 years old and older—participated in hunting, fishing, wildlife-watching and related activities. The findings reflect a continued interest in engaging in the outdoors. These activities are drivers behind an economic powerhouse, where participants spent $156 billion in 2016.

Spring reached out to Jackie Ferrier, project leader at Willapa Refuge Complex, last year to discuss opportunities for adding a new blind. They had never met before the call, but Ferrier quickly seized the opportunity to improve recreational opportunities for the public.

"We had a discussion about some of his work at Ridgefield National Wildlife Refuge, and we had an instant rapport. I realized we had an amazing opportunity to partner with him on this," Ferrier says. "He and his team of volunteers were amazing."

Willapa Refuge plans to add another ADA-compliant blind once some habitat restoration is complete on a different part of the refuge.

"Access is a priority for us, and Rick will make sure it happens. He gets things done," Ferrier says. Spring, she notes, is a part of the refuge's hunter working group that provides input on hunting opportunities. "He's an incredibly dedicated, positive and inspirational person to work with."

When not helping veterans get into the field, Spring and Max bring that inspiration to the Veterans Affairs hospital in Vancouver, Washington. Two days a week they spend time with veterans and their families at the hospital, often devoting hours to patients in hospice care.

Just like he does in the hunting blind, Max will gently nudge his big yellow head alongside the hand of a veteran.

Spring watches as they slowly rub Max's head, hoping it brings them the same peace, hope and memories of the outdoors.

BRENT LAWRENCE, External Affairs, Pacific Region

Note: Anyone interested in Rick Spring's blinds may contact the author at <brent_lawrence@fws.gov>.

Pearl in the Making

Programs bolster oysters in the Chesapeake.

by CHRIS ENG

(Top) The Service is helping ensure oysters continue to thrive in the bay. (Bottom) An oyster reef.

COURTESY OF HARRIS SEAFOOD COMPANY

Jason Ruth knows about the old days, the really old days, when the Chesapeake Bay surrendered a bounty of oysters so vast that words could hardly describe it.

That's when Capt. John Smith crossed an ocean to settle the colony of Jamestown in the New World. When the 17th century English explorer saw the Chesapeake Bay, he described oysters lying "thick as stones" atop each other.

Ruth, who grew up on and near the bay, knows that story—knows, too, that those days are long gone. Development, pollution and commerce have guaranteed that oysters no longer lie thick as stones in the nation's largest estuary.

But the tasty bivalve remains and may be staging a small comeback in a segment of the bay—thanks, in part, to the Service. For several years, it has been helping local communities create new oyster beds as well as restore some stretches of shoreline.

That's good economic news for Ruth and the other people who make their living on the bay. Conservation, they know, can be good for business.

Restoring Oysters, Shoreline

Ruth comes from a waterman family, the latest in a line of folks who have made their living on the Chesapeake. When he was a boy, Ruth's parents urged him to consider another way to make a living. A waterman's lot, Ruth recalls them saying, "was a tough life without a lot of consistency."

But the boy and bay were linked. When he was 13, Ruth got a job at Harris Seafood Company. It had struggled through bust, surged through boom. Founded decades ago, the seafood packer once shucked 1,900 gallons of oysters in one day.

He started, literally, on the ground floor: young Ruth shoveled and packed oysters.

Over time, he assumed other responsibilities, learning the seafood business. In 2004, he bought the company.

His time at the packing house gave Ruth a firsthand look at how closely oysters and the environment are linked. An industry already under pressure from over-harvesting and pollution suffered another large setback in the 1980s when two diseases, dermo and MSX, struck, decimating oyster populations.

One by one, the seafood-packing houses on Kent Island closed until only Ruth's remained. Today, it's the sole full-time oyster-shucking house left in Maryland, employing 57 people while supporting 250 watermen. The year-round business generates between $25 million and $30 million annually—no small drop in an economic bucket that has shrunk along with the oyster industry's fortunes.

The value of oysters wasn't lost on David Sutherland, a biologist in the Service's Coastal Program. For the last few years, he has been working with the Chesapeake Bay Environmental Center (CBEC) to recover oysters and restore shoreline on Kent Island and the surrounding area.

It's important work. Having healthy oysters has profound implications for the environment as well as the wallet: One oyster can filter 50 gallons of water each day. Thriving oysters means cleaner water.

One oyster restoration project: placing reef balls in a 287-acre stretch of the bay to promote the bivalves' growth. Calling the structures "balls" is a bit misleading: Each is shaped vaguely like a pine cone, with an opening at the top and along the sides that allow water to whoosh through.

Built of concrete, the balls vary from 2 to 6 feet tall. Some "definitely need to be moved by crane," Sutherland says.

Volunteers place large mesh bags full of oyster shells near the shoreline in an effort to establish an oyster reef.

CHESAPEAKE BAY ENVIRONMENTAL CENTER

"The Fish and Wildlife Service, for us, has been the easiest to work with," Paulas says.

The Service helped prepare reef balls that were placed in an oyster sanctuary adjacent to CBEC. Scientists soaked them in containers filled with water and spat, or oyster larvae. The larvae attach to the concrete balls, which are placed in the bay. As successive generations of spat mature into adult oysters, they form oyster reefs.

The prognosis so far? "They're doing great," Sutherland says.

Another benefit of oysters: They help keep shorelines intact. Oyster beds, scientists know, can reduce the force of waves hitting shore. The increase in sea levels, storm surges, and even shipping vessels in the bay have eroded some areas of shoreline. A thriving oyster population, Sutherland says, lessens that impact.

Oyster beds also provide habitat for fish, crabs and other aquatic species. Foraging ducks, cormorants and other waterbirds thrive alongside oysters.

Sutherland has a more personal reason for wanting a healthy oyster population, too.

"I love them," he says. "I think they're delicious."

COURTESY OF HARRIS SEAFOOD

(Top) Founded decades ago, Harris Seafood Company once shucked 1,900 gallons of oysters in one day. (Bottom) The Chester River watershed including Kent Narrows is ecologically important because of the abundant submerged aquatic vegetation, which provides habitat for American eels, American shad, striped bass, alewife, blueback herring and birds along the Atlantic Flyway.

'Easiest to Work with'

Vicki Paulas isn't as enthusiastic about eating the bivalve as Sutherland. A native of northeast-Pennsylvania, she grew up eating pierogies, potato-filled dumplings—not shelled delicacies. But that hardly lessens her appreciation for oysters.

She's assistant director of CBEC, the nonprofit dedicated to improving the water quality and reducing habitat loss in the Chesapeake Bay watershed. Paulas has worked closely with the Service—Sutherland in particular—to improve oyster populations in the upper bay.

Over the years, they've planted more than 10 million spat. The Maryland Department of Natural Resources, Maryland Artificial Reef Initiative and the Coastal Conservation Association have helped.

She's enjoyed the time she's spent with Sutherland.

"The Fish and Wildlife Service, for us, has been the easiest to work with," Paulas says.

In 2013, Paulas was looking for new funding sources. She came up with the idea to establish an oyster lease and commercially grow oysters. From this sprung a partnership: a group comprising the CBEC, Harris Seafood, local watermen and the Service.

CBEC had the spot—a site in its oyster sanctuary. Harris Seafood had the spat—Ruth, the owner, bought 600,000 growing on oyster shells. Watermen had the muscle—they planted the spat-laden shells. The Service offered its coastal expertise.

Ruth says he was happy to participate, as were the watermen who planted the spat.

"Today's watermen have a better understanding of their stewardship role," Ruth says, "and we are taking action to make things better."

CBEC

Children take part in an oyster education program by CBEC.

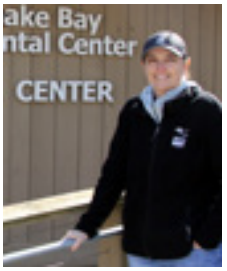
The oysters have grown up nicely and are almost ready for harvest, Paulas says. She predicts a harvest this fall—not the bounty that a long-ago visitor to the New World saw, but something to pique an oyster lover's interest…and appetite.

CHRIS ENG, Coastal Program, Headquarters

Special thanks to Vicki Paulas, Chesapeake Bay Environmental Center and Jason Ruth, Harris Seafood Company.

Protecting our Coasts

The Service supported this Nature's Good Neighbor through our Coastal Program, a voluntary conservation initiative that works with communities to restore and protect land and water resources important to them.



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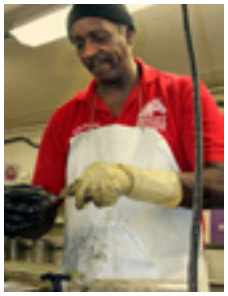
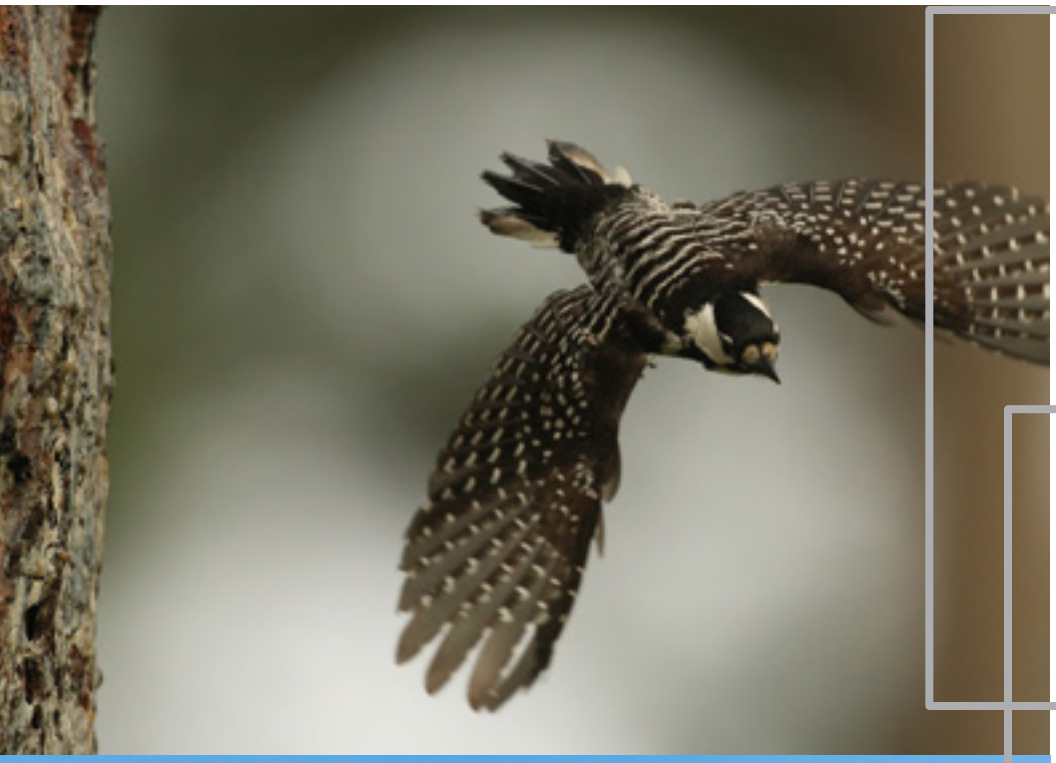


(Top left) David Sutherland, Coastal Program biologist for the Chesapeake Bay Field Office in Annapolis, Maryland. (Top right) Vicki Paulas, assistant director of the Chesapeake Bay Environmental Center. (Left) Oyster shucker Ben Jones at Harris Seafood Company.



Double Duty

South Carolina forester big on conservation, business.

by DAN CHAPMAN

(Top) A red-cockaded woodpecker flies from its natural nest cavity on the Francis Marion National Forest. (Bottom) Pine, wiregrass and swamp habitat at Oak Grove Plantation.

TREES: DAN CHAPMAN/USFWS. BIRD: MART-JAN LAMMERTINK/U.S. FOREST SERVICE

Scott Rhodes plants longleaf pine trees prized by federally endangered red-cockaded woodpeckers. He thins sweet gum, red maple and other hardwoods to create welcoming wetlands for ring-necked ducks, blue herons and wood storks. And he burns his woodlands to create ideal habitat for numerous species including, one day perhaps, at-risk gopher tortoises.

Rhodes, though, also harvests acres of loblolly pines for mills in nearby Estill and Savannah. He's a forestry consultant advising Lowcountry landowners on ways to profit from their land. His family's plantation, Oak Grove, is also a favorite quail, turkey and deer hunting preserve for well-heeled hunters.

And there is no inherent contradiction between the conservationist Rhodes and the capitalist Rhodes. The two benefit each other. Wiregrass, for example, is prime habitat for bobwhite, as well as tortoises and woodpeckers.

Rhodes exemplifies the maxim of doing well by doing good. And, increasingly—particularly in the South where 85 percent of the land is privately owned—farmers, ranchers, foresters and other landowners hold the keys to conservation. They'll often take advantage of federal programs, offered by the Service and other agencies, to help finance wetlands or habitat work—proof that business and conservation don't have to be at odds.

"Our goal here is to make the land work for us, so we can live off it," Rhodes says while touring the plantation in his heavy-duty Chevy truck on a cool morning. "But we also want to be good stewards of the land for the non-game species, too."

'An Obsession'

South Carolina's Lowcountry, beyond the beaches and the old-world flair of Charleston, is all swamps, pine trees and rivers. Hedgerows and magnolias hide the corn, cattle and gentleman farms along twisty, two-lane blacktops. Hunting abounds on the private "plantations"—Red Bluff, Duck Bottom, Deerfield—that cater to Charlestonians, Savannahians and Atlantans with appetites for bobwhite, wild turkey and whitetail deer.

An old coach road runs through Oak Grove Plantation and ends at the Savannah River eight miles away. A no trespassing sign keeps the uninvited from the 4,300-acre tapestry of corn, rice, loblolly and longleaf fields.

Rhodes, 46, grew up in Estill as his father, Tommy, also a forester, cobbled together the family cattle and tree farm. His mother, Sandy, is an artist who depicts Lowcountry wildlife in oils, watercolors and pastels.

An ornithology class at the University of Georgia piqued the younger Rhodes' interest in conservation. A degree from the Warnell School of Forestry cemented his passion for working lands.

"I knew that I wanted to represent landowners," says Rhodes, a registered forester. "I like to manipulate land and grow trees."

He manages the farm with his brother-in-law. He's also a forestry consultant advising landowners in South Carolina and Georgia on timber and land sales. Hunting, though, marries his business acumen with love of the outdoors.

Corporate groups spend $4,500 to quail hunt for two days. Three-day deer and turkey hunts run as much as $2,000 per person. A 35-acre pond stocked with bluegill, shellcracker and largemouth bass beckons out back.

Rhodes and his guides ferry hunters across the plantation by Jeep or horseback. More than 200 covered deer stands dot the landscape. Hunters can choose from 75 agricultural fields or wildlife food plots, as well as swamps and longleaf habitats.

"At Oak Grove," its website says, "intensive habitat management has become an obsession for the Rhodes family."

Fields and trees are carefully managed to maximize the plantation's three main objectives: hunting, logging and conservation. About 1,500 acres are dedicated quail habitat with wiregrass, broom straw and bluestem along with corn and rice fields. Rhodes put in a weir to control a creek's flow and keep an adjoining wetlands wet enough for waterfowl, egrets and wood storks.

DAN CHAPMAN/USFWS

The entrance to Oak Grove Plantation in Brunson, South Carolina.

He fenced part of a duck pond to keep out deer. Nearly 200 ring-necked ducks took flight from the pond one recent morning. Nearby, a family of whitetail deer meandered into the woods. Fox squirrels scurried up pines. Three quail hurriedly quit the old coach road, unaware that their hunting season ended a few days earlier.

"It was a great year," Rhodes says. "We harvested in hand 700 quail."

Enter the Tortoise?

Oak Grove gets high marks for land stewardship.

"They're committed to a rural, sustainable South Carolina lifestyle where you can cut timber, hunt deer and turkey and generate a living off the land that benefits wildlife habitat and produces clean air and water," says Robert Abernethy, president of The Longleaf Alliance. The nonprofit works with public and private landowners to boost longleaf acreage across the South.

The celebrated tree led Rhodes to the Service. In 2006, Oak Grove received (and matched) a $25,000 Service grant. In return, a host of at-risk, threatened and endangered species received added protection.

Rhodes agreed to turn 208 acres of farm fields and loblolly stands into longleaf and wiregrass that the Service helped plant. Rhodes also assented to burning his longleaf forest every few years.

Longleaf proponents extol the many habitat benefits—open canopy, fire resistant, woodpecker-friendly—of longleaf. The sturdy, long-living tree once covered 90 million acres from Virginia to Texas. Today, after decades of logging, turpentining, ag development and urban sprawl, roughly 5 million acres remain. The Alliance and the Service are aiming for 8 million acres by 2024.

Rhodes, the Service and the U.S. Department of Agriculture next turned to water. In 2012, Rhodes received $10,000 from the Service to boost wildlife—waterfowl, wading birds, migratory birds—on 105 acres of wetlands. Sweetgums and red maples were harvested; an aquatic herbicide rid the sites of unwanted vegetation. More than 2,500 acres is under conservation easement with the Agriculture Department and The Nature Conservancy.

Keeping the tortoise off the endangered species list is one of the Service's top wildlife priorities in the Southeast.

"Combining longleaf pine with isolated wetlands is so important because it benefits so many species, including Carolina gopher frogs and salamanders, that spend part of their lifecycle in wetlands and part in nearby longleaf pine," says Joe Cockrell, a wildlife biologist who runs the Service's Partners program in South Carolina. "Most of the people we work with are more interested in trees than declining species.

'Scott is in the minority. He understands the wildlife benefits of longleaf pine."

And gopher tortoises.

Rhodes says he's "open" to welcoming the lumbering species, whose eastern range runs from southwestern Alabama to the sandy ridges of the Savannah River near Oak Grove. The Service, Longleaf Alliance, South Carolina Department of Natural Resources and other agencies are in the midst of a two-year tortoise capture-breed-and-release program along eight South Carolina counties bordering the Savannah.

Keeping the tortoise off the endangered species list is one of the Service's top wildlife priorities in the Southeast. A so-called keystone species, whose deep burrows offer shelter to roughly 350 other animals—snakes, frogs, opossums, quail, lizards, burrowing owls—the tortoise is most at home in a longleaf-wiregrass environment that's frequently burned.

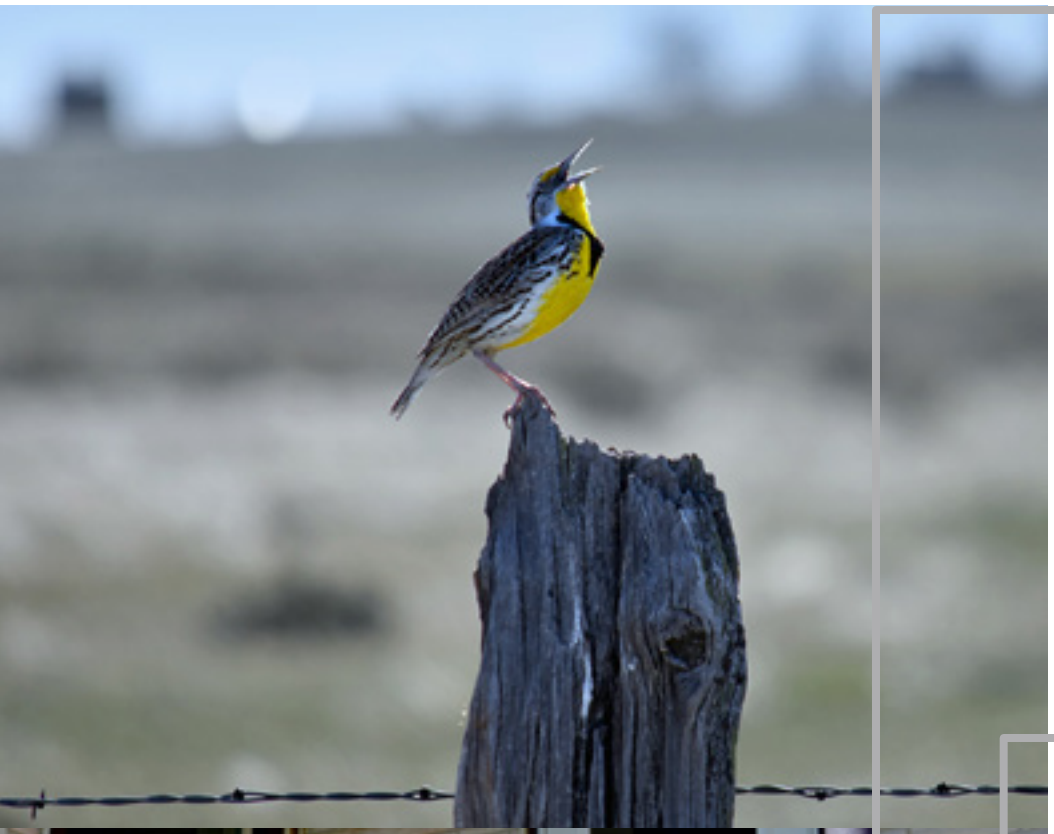
"Rhodes has perfect habitat, he manages his land well and he's a private landowner who does not view this state-listed endangered species as a detriment to his operation," Abernethy says. Federal conservation money will likely be coupled with private grants to ready Rhodes' land for tortoises.

"It's such a unique species and it fits in well with our management here, in the right places," Rhodes says. "I want to see species like the gopher tortoise and red-cockaded woodpecker thrive." □

DAN CHAPMAN, External Affairs, Southeast Region

(Top) Scott Rhodes looks out over his well-maintained quail, turkey and deer plots. (Bottom) Keeping the gopher tortoise off the endangered species list is one of the Service's top wildlife priorities in the Southeast.

TORTOISE: FWC. FIELD: DAN CHAPMAN/USFWS



What the Eyes Don't See, the Heart Doesn't Feel

Family-owned and -operated Reed Ranch builds a legacy beyond livestock.

by JENNIFER STRICKLAND

(Top) A Western meadowlark sings on a fence post near Jewell's home. Reed Ranch is certified by the Audubon Society as "bird friendly."(Bottom) Four generations of Reeds sit on the front stoop of Jewell's home.

JENNIFER STRICKLAND/USFWS

Jewell Reed stands in her kitchen as she puts the finishing touches on lunch: roasted lamb with a side of green beans, salad, scalloped potatoes, bread with homemade jam and a strawberry tart for dessert. She's wearing a pink sweatshirt adorned with cartoon sheep. All of them have white wool, black faces and red hearts on their side, with the exception of one, classic black sheep. Behind her on a wooden shelf by the refrigerator, sits a collection of songbird figurines, paintings and felt art portraits. In the living room, metal artwork of songbirds on a power line sits above felt art of chickadees and a photo of a mountain bluebird.

Would this art collection signal that Jewell is a big fan of birds?

"Well yes, why wouldn't I be?" she laughs.

The Beginning of Something Big

Reed Ranch is located in Wyoming's Thunder Basin, where the rugged sagebrush sea collides with the shortgrass prairie. Known for its economic prowess in both agricultural and energy production, the basin's unique habitat conditions also support a wealth of native wildlife including songbirds, mule deer, prairie dogs and greater sage-grouse.

Although Reed Ranch is a sheep and cattle operation, wildlife conservation is part of the business model. All of their ranch is certified as "bird friendly" by the National Audubon Society. In addition, Reed Ranch is one of more than 20 ranches participating in the largest voluntary conservation agreement in Service history. In the American West, ranchers are crucial partners in wildlife conservation efforts because successful ranches and healthy wildlife populations often go hand-in-hand: Acres of open pasture with lush grass or patches of healthy sagebrush, minimal human development, and easy access to water is just as appealing to livestock as it is to wildlife.

But sometimes, broad appeal can lead to conflict. Back in 1999, the conflict was with prairie dogs.

"There was such an explosion of prairie dogs at that time that everybody was getting pretty worried," Reed recalls. "Of course … there were also people thinking that prairie dogs were endangered and we couldn't see any way at all that they were endangered—we were endangered. So we looked into the idea to be protected in some way, and that if we ranched as we ordinarily do, we would not be harming them."

Recognizing the need to balance healthy populations of wildlife and livestock along with economic development over the long term, Reed's late sister-in-law, Betty, formed the Thunder Basin Grasslands Prairie Ecosystem Association. Composed of a coalition of land stewards from local ranches, mines, and an oil and gas company, the association was founded in 1999 and Reed has served as treasurer ever since. Betty's son, Dave, is the organization's executive director.

Over the course of many years, the association spearheaded the development of a voluntary conservation strategy with the Service and other partners across the Thunder Basin's patchwork of public and private lands. Finalized in summer 2017, the strategy uses a combination of proactive conservation tools, including a Candidate Conservation Agreement and Candidate Conservation Agreement with Assurances, to contribute to the conservation of 13.2 million acres. Within that expanse are two distinct ecosystems and eight species of wildlife in-need, including the sagebrush sparrow, Brewer's sparrow, sage thrasher, black-tailed prairie dog, mountain plover, burrowing owl, ferruginous hawk and greater sage-grouse.

"Nobody else had done this. We're the first ones who had covered more than one species at a time," Reed recalls. "Fish and Wildlife Service worked really hard to get it for us."

Another beneficiary of the arrangement? Meadowlarks, Reed's favorite bird. "Oh, they've such a cheerful song," she says, her face lighting up. Although meadowlarks are not formally covered under the agreement, the Reed's bird-friendly ranching practices help to conserve meadowlarks as well.

A Lifelong Connection to the Land

Born and raised in rural Wyoming, Jewell Reed has called America's sagebrush country her home for her entire life.

"This area started being homesteaded around 1916. A lot of them were soldiers coming from World War I, and there was free land," she explains. "My mother took a team and a wagon into Douglas to get the lumber for her homestead. She probably would have been 21 when she came and built a house that was about 12 by 14 feet."

Reed, the youngest of five children, lived a self-sustaining lifestyle alongside a diversity of animals both wild and domestic. Since the family could get everything they needed from the land, trips into town were infrequent. "There were times when it would be over a year before we would go into town. It was big and scary, probably had 1,900 people in it."

JENNIFER STRICKLAND/USFWS

A young lamb visits with Jewell during her inspection.

Today, Reed Ranch raises hundreds of Rambouillet sheep, a French breed partly descended from Spain's treasured Merino flocks. Their fine wool has softer texture and is used to make articles of clothing such as sweaters, whereas coarse wool is used to create rugs or heavy coats. The Rambouillet are also prized for their meat, most of which makes it way to restaurants in New York City, where the demand for lamb is higher than in other parts of the country, and international markets.

Raising a healthy flock requires constant care and attention. Every day at 4 p.m., Reed heads to the barn to check on the lambs. "She has a knack for seeing things the rest of us might miss," says her grandson, Monte.

When Reed makes her way through the stalls, she carefully eyes every ewe and lamb, nudging any snoozing youngsters with her iconic wooden shepherd's crook. If anyone shows signs of a problem, she flags their pen with a piece of colored cloth, each color representing a different concern to be addressed.

This concern that Reed and ranchers like her show for their livestock can spill over into other areas of life.

"There is a saying that, 'what the eyes don't see, the heart doesn't feel,'" Reed shares. "Most of us care quite a bit about the wildlife—we like them, so we do try to do whatever we can do to help them, or at least not to harm them.

The sign outside Reed Ranch.

"It's the same way you ranch. Most people aren't ever going to get rich ranching. You care about your livestock, and I guess people that care about wildlife and livestock probably care about other people too, when you get right down to it. It's a way of life that we like," she says with a smile.

Lunch is ready and the table is set. Reed buzzes the barn on the intercom to summon the assemblage of children, in-laws, nieces, nephews, grandchildren and great-grandchildren on duty.

Over in the barn made of wooden floorboards salvaged from an old veterans building, baby lambs are bleating and nursing. Late April is lambing season, the busiest time of year at Reed Ranch, and all hands are on deck. Ewes are giving birth to singles, twins and triplets in wooden pens under the watchful eyes of Beverly and Tonya, Reed's daughter- and granddaughter-in-law.

Outside, lambs and ewes are temporarily separated while Corrine and Garrison, Reed's great-grand-niece and nephew, and great-grandson Ben, form an assembly line. They present the lambs one-by-one to Reed's son, Tom, who, despite having a freshly broken shoulder, vaccinates and tags them. Later, Tom will take the lambs and their mothers out to pasture for the summer.

Jewell Reed's way of life reflects what she believes is important—her family, her values, the ranching way of life and the preservation of her home in the Thunder Basin grasslands. And even if you've never smelled the sagebrush in Wyoming or spent time over lunch with a rancher, Reed believes that you and she likely have something in common.

"I don't think people are really a lot different wherever they are," she says thoughtfully. "When you get right down to it, there's probably more that's the same than there is different. We all want good things for our kids, we want a decent living, and I'm sure in some cases, people just want to be warm and have enough to eat. That's what we all want. And most of us hope that you can trust other people."

As sunset closes in on Reed Ranch, another day is almost done. But before the sun takes its leave, it illuminates something moving: a bird, lighting on a fence post. It lifts its head and begins to sing.

It's a meadowlark.

JENNIFER STRICKLAND, External Affairs, Mountain-Prairie Region

REFUGE TO BATTLEFIELD & BACK

Service, partners commemorate the Battle of Attu and valor in the Aleutians.

by STEVE DELEHANTY *photos* LISA HUPP

(Top) Marston matting twists in the tundra of Attu. These perforated steel strips were used throughout the Aleutians to construct quick, temporary landing strips during and after the war. (Above) Alaska Maritime National Wildlife Refuge Manager Steve Delehanty greets veteran Robert Brocklehurst. (Above left) The Battle of Attu was the second deadliest battle in the Pacific Theater, just behind Iwo Jima. A titanium monument from Japan honors all those who died in the Aleutian Campaign. (Left) U.S. veterans of the Aleutian campaign pose with descendants of Japanese soldiers, and survivors and descendants of Attu Village.

War at the End of the World

What were you doing when you were 20? Seventy-five years ago, in May 1943, Joseph Sasser was wading, gun in hand, onto a beach on remote Attu, the westernmost island in Alaska's thousand-mile chain of Aleutian Islands. Sasser took part in the only World War II land battle fought on North American soil, the struggle to wrest Attu back from Japanese occupying forces.

Honoring Sacrifice

For Sasser, the war is almost a lifetime ago, but is most certainly not forgotten. He and several fellow veterans were honored in Anchorage, Alaska, in May 2018 as part of a yearlong series of activities by the Service and partners commemorating the 75th anniversary of the Battle of Attu and World War II in the Aleutians, and the sacrifices of the Alaska Native Unangax people, whose lives and lands were forever altered by the war.

U.S. veterans weren't the only guests at the ceremony.

Also present were descendants of the Japanese soldiers who died on Attu and survivors and descendants of the Unangax Village of Attu.

The ceremony began with a message of peace given in three languages—in English by Bob Brocklehurst, a U.S. veteran; in Japanese by Nobuyuki Yamazaki, the grandson of Colonel Yasuyo Yamazaki, who commanded Japanese forces during the Battle of Attu; and in Unangam Tunuu by Sally Swetzof, a Unangan elder.

And peace echoed throughout the events, perhaps nowhere as visible as the island itself—a wildlife refuge torn apart by war but now returned to the wild.

A memorial plaque on an anti-aircraft gun above Massacre Bay, Attu.

From Refuge to Battlefield…

Attu Island and another Aleutian island, Kiska, share a unique history. These islands, both part of Alaska Maritime National Wildlife Refuge, were refuge lands dedicated to wildlife before being captured by enemy forces during the war.

Key battlefield areas of Attu and Kiska, along with a portion of Atka Island, are part of the World War II Valor in the Pacific National Monument established by President George W. Bush in 2008 to recognize the sacrifice of soldiers and civilians affected by the Aleutian Campaign.

People of the Sea: A Return to Attu

The lands hold memories far older than the war or the Refuge System. Along with birdsong, rushing streams and crashing waves, on Attu one can hear echoes of the People of the Sea, the Unangax, who occupied these lands for some 3,000 years.

Unangax (later dubbed "Aleut" by Russian explorers) lived throughout the Aleutians, hunting sea mammals, fishing, and harvesting seabirds, waterfowl and other wildlife as they developed a rich maritime culture. Despite disease, violence and other difficulties associated with both the Russian and American exploration and fur harvest periods, a small thriving Unangax community remained on Attu until June 1942 when Japanese invaders forever changed the villagers' lives.

Following the war, survivors could not return home to resettle Attu. In 2017, 11 descendants of Attu Village returned to the island aboard the Service's research vessel Tiglax, as part of the 75th anniversary commemoration. It was their first visit to the place their parents and grandparents called home. The descendants placed a memorial to their lost ancestors and gathered grass to craft baskets in the style for which Attu was famed.

Remembering "The Forgotten War"

The Aleutian Campaign, sometimes called "The Forgotten War," forever marks a chapter in the world's history, in Alaska Maritime Refuge's history, and in the lives and legacies of the people who lived and died on a remote and rugged island that rises out of fog as far west as one can journey in North America. American forces suffered more than 3,000 casualties on Attu, including 549 dead. Nearly 2,400 Japanese soldiers died; only 28 survived the Battle of Attu. Nearly half of the Unangax residents of Attu, taken as prisoners to Japan, died during their captivity.

At the ceremony, Greg Sheehan, former Principal Deputy Director of the Service, explained our role on Attu: "to make sure what took place on this island is never forgotten and to continue to ensure that Attu remains a refuge for wildlife for generations ahead."

The people who lived on the island, the soldiers on both sides who fought there, and the descendants of all of these citizens and warriors will forever bear marks of battle. Today, while Attu still bears those scars, it also shows the soothing grace of reconciliation and healing. So too the people. □

STEVE DELEHANTY, Alaska Maritime National Wildlife Refuge, Alaska Region

MUSEUM OBJECTS COME TO LIFE

This is a series of curiosities of the Service's history from the U.S. Fish and Wildlife Service Museum and Archives. As the first and only curator of the museum, Jeanne M. Harold says the history surrounding the objects in the museum give them life.

Wolverines!

I have been previewing conservation films for NCTC's annual Conservation Film Festival, and I just watched one about wolverines. I heard some very interesting facts about those critters. They are called *gulo gulo* as their genus and species because they are gluttons. Researchers have been catching them in spring traps baited with beaver meat, and the traps e-mail the biologists when they are sprung. That is pretty handy! Wolverines are often called little doomsday preppers because they hide food for when times are tough. If you just listen and investigate, you can always find out fascinating things about the world of wildlife around us! No wonder the high schoolers in the movie *Red Dawn* are the wolverines (their school mascot), they are small, resourceful and prepped for doomsday. In addition to the wolverine film, you can watch more than 30 conservation films from around the world on topics ranging from agriculture to climate change to wildlife. The festival takes place October 12–14 and October 19–21. You can also visit some of the museum. I just wish we had some wolverine paraphernalia in our collection to show you. Learn more about the festival at <conservationfilmfest.org>. (Photo by National Park Service)

William Finley and His Condor Friend

One of the great conservationists that influenced the National Wildlife Refuge System was William Lovell Finley, whose body of work was done in Oregon. He was instrumental in the formation of Three Arch Rocks, Klamath and Malheur National Wildlife Refuges. Obviously, William Finley National Wildlife Refuge was named after him. He was a great wildlife photographer, and we have a large collection of glass plate negatives from his prolific career. He was the president of the Oregon Audubon Society in 1906, and he made great strides in protecting the birds of Oregon, including the California condor. One of the best photos of Finley is of him sawing wood, with his trusty pet condor standing on a log next to him. He named the bird General, such a great name! If General was a father, the names Colonel and Captain would have been great for the offspring. He could have had an army of condors.

Zebras and Body Heat, Who Knew?

We have a really fascinating zebra skin ottoman that visitors love. It was confiscated at the port of entry from South Africa because it is a Hartmann's Mountain zebra, which is endangered. I wrote about the ottoman before, because the fact that the wildlife inspector could observe and analyze that information never ceases to amaze me. Just from the partial pelt, the inspector could tell it was not the common Burchell's zebra because it has broader stripes on the hindquarters and no "shadow stripes," where the stripes fade to gray as they move down the body. No one knows for sure why zebras have stripes. In addition to older theories of camouflage, confusion of predators and disease protection, the newest theory is that it helps them regulate body heat. Light and dark areas heat up at different rates, so the theory goes, and cause micro-breezes to move across the animal's skin. This idea was sparked by an observation that northern, more equatorial zebras (like the Hartmann's) have more defined stripes, and the southern, cooler climate zebras have less defined stripes. Whatever the reason for the zebra's stripes, it's certainly a cool creature. (Photo of Burchell's zebra by Yathin S Krishnappa)

Retirement Bucket List—Put a Tiger in the Tank!

After 35 wonderful years with the Service, I retired going on five years ago. Now, traveling the world in search of rare wildlife is one thing that keeps my wife, Shannon, and I busy.

We have seen a bat falcon flying over ancient Mayan ruins in Belize, kiwis in New Zealand, koalas and kangaroos in Australia, polar bears in northern Manitoba waiting for Hudson Bay to freeze, and countless wonderful creatures in Africa.

As we began to check items off the bucket list, Shannon added Bengal tigers to the list.

Along with snow leopards, jaguars and pandas, tigers are one of the most difficult large mammals to see in the wild because of their habits, habitats and rarity. We knew our trip to India might not produce our desired result, but we spent more than a year planning the adventure to ensure the best possible opportunity for a sighting.

We scheduled most of our time in Ranthambhore and Jim Corbett National Parks (and undertook 12 jeep safaris to search for tigers) but we also scheduled a birding trip into Bharatpur National Park and the obligatory (and highly recommended) visits to the Amber fort in Jaipur and the Taj Mahal in Agra.

We traveled in May, a time that most tourists avoid because it is hot in India then—very hot! No days were under 100 degrees, but this is a time when tiger behavior is a bit more predictable. Focusing our searches around water sources was a primary strategy, but so was driving long distances over dusty trails looking for fresh tracks. When we felt like we may be in the vicinity of a tiger, we spent a lot of time listening for the telltale alarm barks of deer. As tigers creep quietly through the jungle, a chorus of alarms ring out from sambar, spotted (axis) deer, and Indian muntjac (barking deer). It was amazing how using this technique allowed us to successfully position ourselves in front of the path of an approaching tiger on more than one occasion.

We saw 13 Bengal tigers in the wild—two very close (one of which was maybe too close—a young male popped out of native *Cannabis* on a riverbank less than 30 feet from where I sat in an open Jeep). The trip was like an experience right out of *The Jungle Book* as we toured ancient temples and forts, rode an elephant, and not only saw our desired quarry but also two leopards, many Asian elephants, monkeys and more than 100 new (to us) species of birds.

India is a very populous country and has many threats to its natural resources, but the good news is that Bengal tigers are protected and slightly increasing, with an estimated 2,500 still in the wild. Success in turning the tide for this rare species is shared by the Indian people who cherish their heritage, work by organizations and agencies such as the World Wildlife Fund and the Service's own International Affairs Program, and the general religious tenets of a culture that makes poaching an anomaly (this is important for the availability of prey as much as direct take of tigers).

The world is full of wonders waiting to be witnessed and retirement is the ticket for the ride!

COURTESY ROBIN WEST

Retiree and adventurer Robin West.

Robin West worked for Ecological Services, Fisheries, Migratory Birds and the National Wildlife Refuge System, spending 30 of his 35 years with the Service in Alaska. He and Shannon are off to Argentina next.

All folks who at one time worked for the Service or were members of a Friends group are automatically members of the nonprofit Association of Retired Fish and Wildlife Service Employees (FWS Retirees Association). They can become active members who stay up-to-date with their former agency and its issues, and connect with former colleagues.

The FWS Retirees Association aims to foster camaraderie among retirees and active employees; recognize and preserve the rich history of the Service and the many contributions of employees; foster the preservation and use of objects and information relating to the Service's unique history; and involve present and past employees in the history and heritage of the Service.

Our members and their families and friends enjoy reminiscing at reunions, traveling, gathering stories, conducting oral history interviews and mentoring.

Find out more about us at our website, <fwsretirees.org>.

The Sky's the Limit

Pacific Region is using unmanned aircraft to provide superior science, safety and savings

by BRENT LAWRENCE

By adjusting my perspective a bit, I was able to see the future.

My viewpoint changed, both literally and figuratively, as I maneuvered a 3DR Solo unmanned aircraft system (UAS) above a sagebrush-filled field in Idaho. Hovering 83 feet above the ground and 472 feet away from me, the GoPro camera on the aircraft transmitted video to the tablet on the controller and gave me a real-time look at the field below…and the future.

That future is now for the Service as we integrate this safe tool into our regular conservation work. Eleven of the Service's 34 remote aircraft pilots are in the Pacific Region, which consists of Idaho, Oregon, Washington, Hawaii and the remote Pacific Islands.

The Pacific Region is putting this state-of-the-art tool in the hands of our professionals in the field for use in activities such as bird counts, salmon monitoring and fighting wildfires.

"By getting this cost-effective tool into the hands of our professionals in the field, they can be more efficient in their work while increasing staff safety, says Robyn Thorson, Regional Director of the Pacific Region. "Incorporating this new technology is a win-win for our staff, the Service and the resources we manage."

Across the country, the Service has used unmanned aircraft to count terns in Alaska, support disaster response after last year's hurricanes and much more. The potential uses of UAS, says federal wildlife officer and qualified UAS pilot Jeff Lucas, include "things we haven't even thought of yet."

These aren't the "drones" of military lore. My aircraft is a small, battery-powered quadcopter with limited flight time (about 12 minutes per battery), a range of about a half mile and an even more limited payload capacity of just under a pound. Carrying a GoPro camera, infrared camera or something similar uses up that payload.

The small size and limited payload almost make it seem like a toy, but it's a tool that requires serious training.

Instructor Steven Ramaekers shows students the capabilities of a unmanned aircraft system during training in Boise, Idaho.

USFWS

An aerial view of a prescribed burn on Conboy Lake National Wildlife Refuge taken by unmanned aircraft system pilot Sara McFall.

Before flying a remote aircraft, I had to pass the Federal Aviation Administration remote pilot licensing test. Next, all remote pilots for the Service must pass a five-day training course from the Department of the Interior. That's where I got my first hands-on experience, and it wasn't a lot of fun. I was handed a $1,500 piece of technology and told to try flying it in gusty 15-mile-per-hour winds. No pressure there!

Despite my hands being as jittery as a 12-year-old after eight cups of coffee, my first flight went well. I quickly got used to the controls and relaxed. The aircraft performed flawlessly as I flew practice patterns in the sky.

However, I didn't quite stick the landing. Fighting wind gusts while hovering over the landing pad, I landed on uneven ground and the aircraft fell on its side. The only damage was a couple of broken propellers. (That's why you leave training with a bunch of extras.)

I learned a lot more over the next few days from some fantastic instructors. They patiently coached me through manual mode, which means the aircraft doesn't automatically compensate for wind speed and gusts.

Now, the sky's the limit for me and the Service.

Sara McFall, a biologist at Conboy National Wildlife Refuge in Washington, is already putting her UAS into use on a variety of tasks, including prescribed burns.

"When we do a pre-burn flight, we're looking for hazards we can't see from ground. We're also looking at the fire lines for safety," McFall says. "After the fire, you get a nice view of what was burned. It's so much more effective because there are things you just can't see from ground level."

She has also used the UAS for nesting surveys of sandhill cranes, which used to be done by helicopter.

"Using a (remote aircraft) is not nearly as expensive or potentially dangerous," McFall says. "When we use a helicopter, it's scheduled for a specific day. If we have bad weather, we have to put it off until we can get the helicopter rescheduled. With a UAS, when we get an opening of a few hours to fly, we can immediately use that time effectively."

In the Hawaiian Islands, the Service uses two biologists who double as certified UAS pilots: Kauaoa Fraiola and Susan "Allie" Hunter.

An early project involved conducting a sample survey to test the feasibility of using a remote aircraft and associated software for monitoring bird populations. Within a few hours, Fraiola and Hunter captured high-resolution images of the albatross colony at Kaena Point State Park. The test was a resounding success, resulting in no disturbance to the nesting albatrosses and zero bird collisions in the air, while providing the high-quality video needed to perform bird counts.

They are now moving on to a major bird population survey at Midway Atoll National Wildlife Refuge. The refuge has millions of ground-nesting birds, so ground surveys almost always mean nest disturbances. However, armed with their newest conversation tool, the team expects to reduce the overall time needed to conduct the survey and the overall impact to the bird colony. The bird's-eye view will also provide a better picture of the habitat work that's benefiting the birds.

"It really shows the good things we are doing on the ground," Hunter says.

Personally, I'm ready for my career as a UAS pilot to lift off.

My first flight will be at Wapato Lake National Wildlife Refuge in Oregon. I'm planning to video the refuge, which could soon receive significant updates to its pumps and bridges. In addition to creating compelling video for the public, our biologists will be able to use the footage to get a different look at the refuge. The new perspective could influence future updates.

One thing is for sure: As I fly the 3DR Solo above the fields at Wapato Lake Refuge and take in the wild spaces we work to protect, I know I'll be looking at the future of conservation. □

BRENT LAWRENCE, External Affairs, Pacific Region

transitions

Principal Deputy Director Sheehan Leaves

Greg Sheehan, the U.S. Fish and Wildlife Service Principal Deputy Director whom Secretary of the Interior Ryan Zinke appointed in June 2017, resigned from the Service in August.

His family remained in Utah while he served, and he was eager to rejoin them.

Even though his time at the Service was short, Sheehan says, "I have seen some incredible places and projects, met some remarkable people and experienced what few ever will."

Those experiences include:

- helping preserve large vipers for study at the U.S. Fish and Wildlife Service Forensics Laboratory in Ashland, Oregon. The dedicated staff with its innovative techniques for law enforcement detection (and the vipers) made Sheehan's time there "quite memorable to experience."

- Announcing the winner of the 2017 Federal Duck Stamp Art Contest, one of Sheehan's favorite programs.

- Taking part in the Attu 75 ceremony commemorating the veterans of the Battle of Attu and World War II in the Aleutians, and the sacrifices of the Alaska Native Unangax people (see p. 42).

- Experiencing last year's full solar eclipse at Cape Romain National Wildlife Refuge in South Carolina. The eclipse, he says, was "more captivating than I expected."

- Witnessing the bird movements just before dark at Bosque Del Apache National Wildlife Refuge in New Mexico. "The sky is darkened each evening by the tens of thousands of birds that stage throughout the mosaic of managed fields and water impoundments," Sheehan says.

BRIAN ELKINGTON/USFWS

Greg Sheehan learns about the sticking power of sea lampreys.

He wants more people to have those types of opportunities because he worries that "our urbanizing society is losing a connection to wildlife and their habitats, and I fear that a generation from now there will be few to help promote what we care so much about."

That disconnect feeds into what Sheehan feels is conservation's biggest challenge: "Complacency about the natural world around us."

To fight complacency and make more opportunities available, Sheehan believes strongly "that public lands should be open to the public. Additionally, when managed sustainably, I believe that hunting and fishing opportunities should be available on those lands."

He is proud of working with Service land managers to open more than 380,000 acres of the National Wildlife Refuge System to new hunting, fishing and recreational uses.

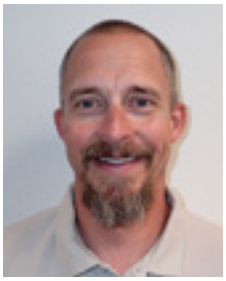
As for other successes, Sheehan mostly praises the Service staff—from the sacrifice and heroism of Service personnel during the wildfires and hurricanes last summer to the often thankless work of the Joint Administrative Operations team and many in between. "There are few words that can express my appreciation for those dedicated public servants who we are so blessed to have here at the FWS."

He wishes he had met more of them. In fact, one of his biggest regrets is not "visiting with more employees and learning of their successes and finding ways to help further their efforts."

Sheehan hopes to be involved with fish and wildlife management again soon, but he is not sure where. "There are many conservation organizations within Utah and across the country that I would like to work with."
He ends his interview with a simple "Thank you all again for letting me share time with you all at the U.S. Fish and Wildlife Service."

Thank you, Greg. □

Southwest Region



Jason Davis has been named Deputy Assistant Regional Director of Fish and Aquatic Conservation for the Southwest Region. Davis will help oversee 16 fisheries field stations in a four-state area that are immersed in a gamut of conservation concerns, from rare mussels and minnows to sport fishes sought by ardent anglers.

Davis started his conservation career after graduating in 1996 with a bachelor of science degree in fishery science at New Mexico State University. He held positions with the New Mexico Department of Game and Fish and the University of New Mexico.

He joined the Service as a biological science technician for the New Mexico Fish and Wildlife Conservation Office in 2000. Davis has since held various positions there, including the last eight years as the assistant project leader. In that role he supervised projects related to threatened and endangered fish recovery on the San Juan, Rio Grande, Pecos and Gila River basins. Davis was the lead biologist on several projects related to the recovery of Colorado pikeminnow and razorback sucker in the San Juan River Basin.

He has represented the Southwest Region on the San Juan River Basin Recovery Implementation Program's Biology Committee since 2006 and was recently elected committee chair.

He attributes his success in conservation to the dedication and commitment of the teams that he has had the privilege to serve.

"I welcome the challenges in this new supervisory role," Davis says. "With it come expanded opportunities to work with a spectrum of others in fisheries conservation, and I look forward to that."

Davis is an Albuquerque, New Mexico, native and makes his home with his wife and two children in Albuquerque's South Valley. □

Headquarters

Joe-Riley Epps has filled a new Service position as national liaison to the U.S. Air Force (USAF) Wildland Fire Branch, headquartered in San Antonio, Texas. Under a national agreement with USAF, he is managing administrative and operational support for Service fire staff located on USAF bases in multiple regions.

He has 27 years of federal land management experience with two agencies in three states, most recently as Bureau of Land Management national fire planner. He served three years in the U.S. Army as an airborne ranger, earned a bachelor of science degree from Texas A&M University, and is a native of Texas. □

Reflections of a Pilot-Biologist by Jim Bredy

As I stepped out the front door of my home in Cody, Wyoming, this April, I was greeted by the welcoming sound of sandhill cranes and Canada geese as they made their morning rounds of the neighborhood. Deer are grazing in the yard, and robins, doves and killdeer are pecking at the dirt in the field by my house, searching for a morning morsel. Yes, it's about time for another Waterfowl Breeding Population and Habitat Survey in Canada, my last one as a Service employee.

As my Service career nears an end, my thoughts have been drifting back to the glory years of my youth and infancy with this wonderful agency. When I first arrived, I was the new guy, the skinny-necked kid with fire in his wild eyes, sometimes crazy ideas and visions of grandeur. I'm now the old guy, the grey-hair.

I have been fortunate to travel to most of North America in my job, to places that most folks can only dream of. My aerial survey travels have taken me to 49 of the states—excluding Hawaii—Mexico and Canada, from British Columbia and Quebec to northern Canada and the high arctic islands.

I still vividly recall my first trip to Alberta, Canada, in 1988—the jagged peaks of the Canadian Rockies ending abruptly at the gently rolling hills near Pincher Creek and slowly merging into the short-grass prairie region of the southeast part of the province. The northern part of the province showcases a transition to open aspen-parkland habitats, which at last gives way to boreal forest. It is truly a special part of North America, and quite the introduction to the beauty I would continually encounter over the years.

Wildlife awed me in countless ways, whether watching beluga whales swimming in a river near Churchill, Manitoba, or flying over herds of caribou on the Yukon Coast as they slowly moved and twisted like a large amoeba across the landscape, constantly changing form. A diving gyrfalcon even swooped by my plane once, apparently on a survey of its own!

I will miss many things, but none more than the people I've worked with. I have forged lifelong friendships with folks I may never see again, yet as the old adage goes, when and if I see them again, they will still be old friends.

I hope the coming years bring friends to your firesides, peace to your pathways and good health. Get outside when you can. And when you can't get outside, do it anyway! Our life on this earth is way too short to stay inside and look at the walls of a house. Yes, my life and career have truly been one heck of a ride, but it really is time to go. Until we meet again.

Jim Bredy of the Migratory Bird Program retired in July. □

Waterfowl Breeding Population and Habitat Survey

Since 1955, the Waterfowl Breeding Population and Habitat Survey has taken place each spring. The survey estimates the size of breeding waterfowl populations across North America and evaluates habitat conditions on the breeding grounds. Airplane, helicopter and ground crew routes cover over 2 million square miles in parts of Alaska, Canada, and the north-central U.S., as well as New York and Maine. The data are used for the management of North American waterfowl.

Southeast Region

Robert Trincado is the new director of the inter-agency Pre-scribed Fire Training Center (PFTC) in Tallahassee, Florida. He replaces Mike Dueitt, in a position hosted by the Service. The national center provides hands-on field training for firefighters and teaches agency administrators how to manage prescribed fire programs.

He has more than 16 years of wildland fire experience with Florida Forest Service, Everglades National Park, Florida Panther National Wildlife Refuge, and FWS fire staff based at Avon Park Air Force Range. He also serves as an operations branch director for a Southern Area incident management team. □

Midwest Region

After 34 years of public service, 20 with the Service, Midwest Regional Director **Tom Melius** has retired to spend more time with grandkids, family and friends in the Prairie Pothole Region of northwestern Minnesota.

"My career with the U.S. Fish and Wildlife Service has provided a wonderful opportunity to see the dedication and passion of Service employees. Over the last 20 years, I have had the privilege of overseeing the largest national wildlife refuge (Arctic National Wildlife Refuge) and the smallest (Mille Lacs National Wildlife Refuge); managing threatened and endangered species listings from polar bears to mussels, bats and butterflies; supporting our fisheries operations from salmon to lake trout, sturgeon, sea lamprey and carp; and watching our migratory bird program soar from emperor geese to mallards, wood ducks and warblers, and all while knowing that our decisions are based on the best science available," Melius said in a farewell note.

Melius became Midwest Regional Director in 2008. Before arriving in the Midwest, he held watch over the vast, rugged expanse of the Alaska Region. He also served as Assistant Director for External Affairs in Headquarters. He also provided oversight to the Service's National Conservation Training Center in Shepherdstown, West Virginia. Prior to that, Melius served as Assistant Director for Migratory Birds and State Programs.

Before his time with the Service, Melius was the Director of Conservation Policy and Senior Adviser at the National Fish and Wildlife Foundation and a senior professional staff member on the U.S. Senate's Committee on Commerce, Science and Transportation. He was also a professional staff member on the Committee on Merchant Marine and Fisheries in the U.S. House of Representatives.

In 1973 and 1975 respectively, Melius earned his bachelor's degree in wildlife biology and a master's degree in fish and wildlife science from South Dakota State University.

Aside from his duties as Regional Director, Melius helped steward natural resources in several other capacities. He led the Service's national effort to conserve the monarch butterfly, which became a flagship species for other pollinators and wildlife species. He partnered with the National Fish and Wildlife Foundation to initiate the Monarch Butterfly and Pollinator Conservation Fund, which results in more than $30 million supporting pollinator and grassland habitat projects. He also served as a U.S. commissioner on The Great Lakes Fishery Commission. As one of eight commissioners (four from the United States and four from Canada), Melius advised the sea lamprey control program, one of the most successful invasive species programs in the history of international conservation.

"Going into my retirement, I know that the work of the U.S. Fish and Wildlife Service is in good hands. Thank you for all that you do," he said. □

honors

Headquarters

The American Recreation Coalition honored **Danielle Brigida**, the Service's digital strategy manager, as the Service's recipient of the 2018 Beacon Award. The Beacon Awards recognize outstanding efforts by federal agencies and partners in harnessing the power of technology to improve public recreation experiences and federal recreation program management.

Already a celebrated social media conservationist, Danielle has built a thriving digital media community at the Service, including more than 170 employees dedicated to innovation, creativity and connecting people to wildlife.

It is these people, particularly her core team, who deserve the award, Danielle says. "I'm honored to work with them."

But it is not just within the Service. Under her leadership, the agency's overall social-media audience has tripled. The Service across Twitter, Facebook and Instagram now is followed by more than 735,000 accounts.

Her nomination specifically mentions a pun war she started with the National Park Service, NOAA and the public that even engaged the Secretary of the Interior Ryan Zinke.

A quote atop the nomination explains Danielle's success: "She listens to the people and then speaks for the trees, bees, birds and beasts."

Among many others, her team includes A**shley Suarez-Burgos, Courtney Celley, Lisa Cox, Kristen Gilbert, Lisa Hupp, Danielle Kessler, Katrina Liebiech, Susan Morse, Levi Novey, Bill O'Brian, Keith Shannon, Tina Shaw, Jen Strickland** and **Abra Zobel**. □

Northeast Region

Denise Clay, fish biologist with the Lower Great Lakes Fish and Wildlife Conservation Office in Basom, New York, was selected as the Service's recipient of the American Recreation Coalition's 2018 Legends Award. The Legends Award recognizes outstanding federal employees for their contributions toward enhancing our nation's outdoor recreation programs, connecting people—especially children—and the outdoors, through innovative programs based upon public/private partnerships.

Denise started her career with the Service through the Student Career Experience Program when she was a graduate student at Buffalo State College. After completing her master's degree, Denise was hired to a full-time position, and spent several years working to prevent the spread of aquatic invasive species. During this time she developed a strong interest and skill in conducting outreach—connecting youth to nature and helping them better understand the natural world. She also explained scientific and ecological principles to adults, helping them understand the mission of the Service and the benefits of conservation and good stewardship to the American public.

For the past eight years, Denise has shown tremendous passion for connecting people of all ages and backgrounds with nature, often bringing the Service's fish and aquatic conservation programs and nature to those who see it the least. She has worked tirelessly to develop partnerships with others in both the private and public sectors of society to help reach more youth and conduct more conservation for the Great Lakes Region. At last count she has worked with at least 50 organizations to bring science and the outdoors to youth.

In 2017, Denise coordinated 43 events of varying sizes, engaging with more than 28,000 people in the western New York region. One program in particular that Denise has brought to a new level is the office's Students, Nature and Photography (SNAP!). She is the powerhouse behind this program, reaching area schools in both urban and rural settings. Most recently, students from Buffalo's Riverside Academy featured their photography and inspiration—from their SNAP! program led by Denise at Iroquois National Wildlife Refuge—at an art exhibit at Buffalo State College. Many of the students commented that the trip to Iroquois was the first time they had been out in the woods, and they loved it. They found nature to be very peaceful. Since 2012, Denise has coordinated 24 SNAP! events reaching 1,270 students from grades 3–12. □

Northeast Region

Jed Wright, the former project leader of the Gulf of Maine Coastal Program office, has received two post-humous awards. He died this past October, and many partners and staff have been looking for ways to honor his incredible leadership.

Deb Rocque, the Northeast Region's Deputy Regional Director, pre- sented to his wife a Department of the Interior Superior Service Award in June. His wife also received on his behalf a Lifetime Achievement Award from the Gulf of Maine Council that same month. □

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parting shot

Time to Climb

A small family of black bears shelters in a tree at Pocosin Lakes National Wildlife Refuge in North Carolina. When black bears feel threatened, one option they take is going up a tree.

JACKIE ORSULAK

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