U.S. Fish & Wildlife Service Winter 2018

Fish & Wildlife *News*

Join us online
fws.gov/home/fwn

SPOTLIGHT

Disaster Response / 12

Soaring Past Danger / 16

Always Prepared / 24

what's inside

features

SPOTLIGHT: *Disaster Response* / 12

A Tiny Town Hit Hard by Irma / 13
A Service task force wades into the gray mud to help families in Everglades City, Florida
story and photos by PHIL KLOER

Soaring Past Danger / 16
Puerto Rican parrots weather Hurricane Maria
by MARK DAVIS

Getting Things Going / 18
Service responds to help stricken island near Puerto Rico | *by* MARK DAVIS

After Hurricane Harvey / 20
Rapid assessment leverages technology, diversity and teamwork to appraise storm damage
by KEENAN ADAMS

Not-So-Great Balls of Fire Ants / 22
Red imported fire ants plague endangered Attwater's prairie-chickens even after flooding | *by* AL BARRUS

Always Prepared / 24
From wildfires to hurricanes, firefighters are disaster-ready | *by* KAREN MIRANDA

Oh Baby! / 28
Refuge caretakers face raging Columbia Gorge Fire | *by* BRENT LAWRENCE

MORE FEATURES

Tag, You're It / 30
Premium hunting opportunities abound on national wildlife refuges | *By* BRENT LAWRENCE

A River Runs Free in Rhode Island / 32
Returning the Pawcatuck River to its natural state helps wildlife and people | *by* ISAAC BURKE *and* LAURI MUNROE-HULTMAN

On the cover: A black-billed magpie soaks up some sun on a cold morning at Seedskadee National Wildlife Refuge in Wyoming.

TOM KOERNER/USFWS

departments

From the Directorate / 1

News / 2

Curator's Corner / 36

Life After the Service / 37

Our People / 38

Greg Sheehan, Principal Deputy Director of the U.S. Fish and Wildlife Service

When Conditions Are at their Worst, Our Employees Are at Their Best

As our nation coped with devastating wildfires in the West and multiple hurricanes in Puerto Rico, the Southeast and Gulf Coast, hundreds of Fish and Wildlife Service employees deployed to crisis spots to assist with preparation, response and recovery efforts.

In the face of these tragedies, we witnessed incredible acts of courage, sacrifice and strength from responders and ordinary people alike. And from my perspective, the hundreds of Service employees who have answered the call and deployed to help with rescue, recovery and firefighting efforts embody the best of what we expect from ourselves as public servants.

I was so impressed and humbled as I watched the Service team rise to the occasion. In the midst of these crises, I talked with our team members assisting with wildfires in Montana and the first responders and refuge managers in Texas, Florida and Puerto Rico. In every case the professionalism and commitment of the Service team have been absolutely outstanding.

Hurricane Response

Our people provided the basics to residents struggling in Texas, Florida and Puerto Rico: clean water, cleared roads and more.

They developed a better way to survey damage after Hurricane Harvey, helped clean homes in Florida after Hurricane Irma, helped provide law enforcement in Puerto Rico after Hurricane Maria.

And this was just the assistance to the human communities.

Our Service team members also watched over Attwater's prairie-chickens, Key deer, Puerto Rican parrots and a host of other species affected by the storms. These dedicated Service staffers came to work when their own homes and family members were left behind without power, water and other personal needs. And for these efforts I am particularly thankful.

The Service remains in many of the areas hit by hurricanes as the rebuilding continues. Not because it is our job. These communities are our homes, too, and many of us have deep roots in the affected communities, sharing schools, churches, friendships and more.

Fighting Wildfires

Throughout the year, as areas were hammered by a longer-than-usual, more destructive fire season, Service firefighters worked tirelessly to keep the public safe and staff often took the extra step to help manage any losses.

Montana ranchers experienced this additional support over the summer when Charles M. Russell National Wildlife Refuge opened its gates to neighboring ranchers who lost grazing land to a fire.

How, you may ask, is the Service able to accomplish so much?

Certainly, the strength and dedication of the people who deployed on the ground is truly astonishing.

There's another key ingredient, though: the people who don't go out to disaster sites. These unheralded staffers happily shoulder extra work, so a co-worker can deploy to an affected area.

Pulling together with federal, state and local agencies, we had a positive impact on thousands of people. An impact that goes far beyond what we could hope to achieve alone.

I couldn't be prouder of the Fish and Wildlife Service professionals who enabled us to do so much good in the face of tragedy. This issue of *Fish & Wildlife News* gives just a glimpse of the amazing work we accomplished. □

A Decade Fighting a Deadly Bat Disease

RYAN VON LINDEN/NEW YORK DEPARTMENT OF ENVIRONMENTAL CONSERVATION

A little brown bat with white-nose syndrome.

You can hear the desperation in Christina Kocer's voice, as she describes how it felt to find bats mysteriously dying in the winter of 2007. She and other scientists watched helplessly as bats in the Northeast succumbed to what would become known as white-nose syndrome, a disease that has decimated bat populations.

"Bats weren't behaving normally. In the middle of winter, when they should have been hibernating, we were finding them flying around outside their caves," says Kocer, white-nose syndrome coordinator for the Service's Northeast Region. "By 2009, it looked as though all bats would be gone."

Fortunately, 10 years on, all bats are not gone. But neither is the threat. While we've learned a lot, biologists such as Kocer continue to race the clock, looking for ways to detect, treat and reduce the spread of the disease. The Service, along with federal, state and private partners, has completed a national response plan for managing white-nose syndrome and is carrying it out.

You don't need to be a scientist to be concerned. Bats are important not only from an ecological standpoint but also from an economic one. They eat tons of insects nightly, providing a natural benefit to farmers and foresters, not to mention those who enjoy the outdoors. Some research suggests that bats can save agriculture more than $3 billion in pest control every year simply by eating insects.

Since its discovery, white-nose syndrome has spread rapidly throughout the eastern United States and Canada, and is now found in 31 states and five provinces. More than 6 million bats have been killed by white-nose syndrome, with mortality rates exceeding 90 percent for many sites and species. It has been confirmed in nine species, two of which are protected under the federal Endangered Species Act, one as endangered and another as threatened.

White-nose syndrome is caused by a fungus—*Pseudogymnoascus destructans*, or Pd for short—which is primarily spread among bats as they hibernate in caves and abandoned mines. Pd disrupts bats' hibernation, causing them to rouse more frequently and for longer periods of time during the winter, burning up their stores of fat. Some even leave their caves and mines during the winter and early spring and become victims of hypothermia, predation or starvation.

We've learned that some species, such as the little brown bat, tri-colored bat and northern long-eared bat, are more susceptible to the disease, while others show resistance.

Scientists today have new ways of detecting the fungus, including using ultraviolet light. Field research on treatment has begun, and work on vaccines and molecular and genetic tools to improve bat survival is underway.

There have been some promising developments.

A study published in January showing that ultraviolet light can kill Pd is just one example.

Another: People who enter places where bats hibernate, whether for work or recreation, can pick up the Pd fungus on their clothes, shoes and gear, and spread it to the next site they visit. The Service and its partners have created decontamination protocols that have reduced the spread of the disease by humans.

And: Little brown bats have survived multiple years of infection, and some bat colonies that were nearly wiped out are gradually growing in numbers, bringing hope for recovery.

When asked about the outlook now, Kocer seems cautiously optimistic.

"There is evidence of little brown bats surviving white-nose syndrome and reproducing," she says. "

And while a decade may seem like a long time, Kocer notes, "Ten years is roughly the lifespan of a little brown bat, so we've seen only one generation since the disease was discovered."

In that generation, we've learned a lot about white-nose syndrome and the importance of communication and collaboration in fighting wildlife diseases. While the situation remains dire, the knowledge and experience gained will guide the Service and its partners in the fight to stop white-nose syndrome in the next generation and address mysterious illnesses in the future. □

LAURI MUNROE-HULTMAN, External Affairs, Northeast Region

? MORE INFORMATION

Learn more about white-nose syndrome at <whitenosesyndrome.org>. Visit our bat conservation story map at <fws.gov/home/batconservation> to echolocate your favorite bat story and to learn more about these amazing creatures.

Beach Restoration Project in Texas Provides Protection During Hurricane Harvey

A beach renourishment project at McFaddin National Wildlife Refuge in Jefferson County, Texas, which rebuilt a three-mile stretch of dunes, withstood the pounding of Tropical Storm Cindy about a month after it was finished in May and then the howling force of Hurricane Harvey in late August.

Perhaps taking notice, the Texas Trustee Implementation Group, which is responsible for a fund established to restore natural resources injured during the 2010 Deepwater Horizon oil spill, has allocated $15.8 million for the restoration of an additional 17 miles of beach and dunes at the refuge, part of the Salt Bayou watershed. This covers approximately one-third of the estimated cost of the McFaddin Beach and Dune Restoration Project.

And in October, the Texas Commission on Environmental Quality (TCEQ) released its Multi-year Implementation Plan for another Deepwater Horizon-related fund that included an additional $10 million to help fund the project.

Beaches and dunes provide needed protection along coastal areas, keeping seawater out of the local salt marshes during all but the heaviest tides. Salt marshes in turn serve as buffers against storms — soaking up waves, taking the pounding and diminishing it, and more — but it starts with beaches and dunes.

Behind the dunes and marshes of McFaddin sit the city of Beaumont and more than 30 oil refineries (including Motiva, the largest refinery in the United States and second largest in the world), the busiest section of the Intracoastal Waterway (by tonnage), and the Port of Beaumont, the world's busiest military port, as well as neighboring communities and other infrastructure.

Dozers work on the restoration.

USFWS

In addition to the infrastructure they protect, the marshes are extremely important for commercial and recreational fisheries and wintering and migratory birds.

"You have the best mix of environmental and economic co-benefits of any place in the Gulf of Mexico, I think," project consultant Tim Richardson tells *The Examiner* of Southeast Texas. "If you stack up these co-benefits, a dollar spent in Jefferson County brings you more multiple benefits than a dollar spent anywhere else in the Gulf."

Adds Toby Baker of TCEQ: "As a Beaumont native, I realize the importance of the Salt Bayou watershed's role in safeguarding people and industry as well as a world class wildlife habitat area."

The beaches and dunes naturally erode, but the sediment that has historically allowed them to rebuild no longer flows down rivers to the Gulf of Mexico — it is blocked by dams and other structures.

That means seawater is able to flow into the marshes, killing off plants that are not adapted to salty water. The loss of vegetation leads to more erosion because plants are no longer there to trap sand and dirt, and the former marsh eventually just becomes part of the Gulf, providing no protection whatsoever from storms. Fewer plants also mean fewer birds and fishes.

Jefferson County Judge Jeff R. Branick, a leading proponent of the renourishment project, admits in a column in the *Beaumont Enterprise*, that until he became a county judge, he didn't realize how important the beach and dunes are.

He soon found out, and he writes, "This ribbon of beach and marsh grasses has existed for millennia but now it is under threat."

So the Service and partners, including Jefferson County, the Texas General Land Office, Texas Parks and Wildlife, and Ducks Unlimited, began work to restore the beach to how it was 100 years ago and protect the marshes.

The pilot project included dredging sand from about one mile out into the Gulf and creating an 8-foot dune system over three miles of coastline, a section considered the most vulnerable and subject to the most saltwater intrusion.

Hurricane Harvey showed that the pilot project worked.

Deepwater Horizon-related restoration funds will enable the start of the last phase of the project, which will, as Judge Branick says in his column, "ensure all the benefits of this critical marsh to future generations." □

MATT TROTT, External Affairs, Headquarters

The Long Road to Recovery

Resilience is a common word in disaster recovery. Ecosystems need to be resilient to natural disturbance, such as wildfires, floods and oil spills. First responders speak of mental and emotional resilience to stressful work. Survivors develop resiliency skills and often resilient spirits as they rebuild their disaster-impacted lives. An organization demonstrates resilience when it recovers and learns from both natural disaster and human tragedy it has faced. The Service's fire program has its roots in such resilience.

By all accounts, Beau Sauselei n and Scott Maness had independent spirits and were dedicated to wildlife management. Sauselein was an outgoing U.S. Air Force veteran and accomplished pilot, one of the best refuge law enforcement officers, adept with machines of all kinds and a gifted instructor, a Southern gentleman with a loving wife and a passion for fishing and sailing. Maness was a bachelor from California, who had worked with the Peace Corps for three years as a research zoologist and become fluent in Spanish, a true academic intent on tracking alligators and making discoveries. Both 32, Maness was Sauselein's student-for-a-day on June 8, 1981, as Sauselein drove a John Deere 550 tractor outfitted with a plow for building a fire line at Merritt Island National Wildlife Refuge, where they both worked as biologists.

They were a tractor plow team, responding to one of the many wildfires that commonly erupt within this lightning belt that crosses central Florida. They began plowing around the easternmost side of the fire near Ransom Road, while co-workers downwind set backfires to impede the fire spread and others on pumper trucks sprayed water to cool the flames. While plowing the fireline, a thunderstorm approached; winds picked up and suddenly switched direction, pushing the fire toward them. Sauselein evidently began driving them away from the fire, but the plow became stuck on a stump hidden from view. The men abandoned the tractor to try to outrun the flames, one of them making a consequential error in leaving behind his fire shelter. The thick brush and 8-foot high palmetto made their effort to escape futile. They were overrun by the fire, both suffering third-degree burns as they shared a fire shelter meant for only one.

Their story continued as events were repeatedly studied. One investigator concluded, "Two lives were lost due to a lack of training."

The Ransom Road accident led to increased funding for the refuge and professional fire training for its employees, which has continued and expanded to other refuges. The events of that single day were the biggest catalyst to the Service developing a safe and effective wildland fire program, after decades of biologists routinely conducting controlled burns and attempting to put out wildfires. To date, the Service has not lost another firefighter in the line of duty.

The more recent chapter of this story unfolded in early November, when Service officials and fire staff gathered with the men's families and former co-workers to honor the pivotal lessons of their deaths, which linger in the minds of refuge firefighters, these decades later. Sometimes recovery takes a long time, and in this case, more than 36 years passed before the refuge erected a small monument to the landmark contribution of the two men's deaths. Members of the Service's uniformed national honor guard were on hand to raise the American flag and place ceremonial pulaskis, a common fire tool, at the monument before a crowd of 50 people.

During the ceremony, Sauselein's widow — herself recently retired from the Service — sat next to her brother in the front row with a smile, remarking later how proud she is of her late husband. After the dedication, Michael Good, the refuge's assistant fire management officer, took Maness' younger siblings to the nearby Canaveral seashore. They had been so young when their brother died that their parents had not included them in his funeral and they asked to see where his ashes had been scattered on the beach.

Members of the Service National Honor Guard at the firefighter monument with (at center, left to right) Chris Wilcox, Chief of Fire Management; Jim Kurth, Deputy Director of the Service; Cynthia Martinez, Chief of the National Wildlife Refuge System; and Shane MacDonald, Deputy Chief of Fire Management.

USFWS/JOSH O'CONNOR

The day after the monument dedication, the refuge's fire operation specialist, Ryan Sharpe, hosted the Service's first-ever leadership "staff ride," an intense field study and visit to the site of a firefighting tragedy, to better appreciate circumstances and decisions made at the time. Former co-workers of Sauselein's and Maness' joined about two dozen Service fire staff, walking in the same places and imagining the sights, sounds and emotions the two men experienced in those pivotal moments.

These two days of events offered the opportunity for those in attendance to share long-awaited healing moments.

The closure, Good says, was a long time coming for the Service. He hopes the Ransom Road Staff Ride becomes an established training activity to benefit more wildland firefighters who may be fighting wildfire in southeastern vegetation.

With other refuge fire staff, Good helped design and install the monument in front of the refuge headquarters building, close to the fire office.

"We wanted to put [the monument] near our work station, where we would see it and be reminded of them every day," says Good. It is clear that at Merritt Island and throughout the Service that, these two men — simply referred to locally as Beau and Scott — will never be forgotten. □

Technology Speeds Safer Response

Whether building a better fire shelter, using smartphone apps to speed hurricane respond or surveilling damage with a drone, Service employees and volunteers are using, and developing, technology to respond more quickly and safely to disasters.

Last May, Service firefighters on the Madison Wetland Management District in eastern South Dakota worked with researchers from North Carolina State University to field test a new fire shelter prototype. Fire shelters, carried by all wildland firefighters in the United States and Canada, are foil tents used as a last resort to trap breathable air and shield the body from radiant heat. While they have saved hundreds of lives, they are not fail-safe. After 19 members of the Granite Mountain Hotshot Crews died under fire shelters during Arizona's 2013 Yarnell Hill Fire, N.C. State's College of Textiles and Department of Forestry and Environmental Resources teamed up using a FEMA grant to research and develop new fabric technology for the protective tents. The new prototype is being tested in both laboratory and outdoor environments. Native tallgrass prairie on the wetland district is one of many vegetation types that can fuel dangerous wildfires.

"The whole project is extremely important because it can save lives across the nation," N.C. State professor Joe Roise says. "That's the bottom line: saving lives."

USFWS/LORI IVERSON

Service Burn Boss Blake Stewart, assistant fire management officer at Balcones Canyonlands National Wildlife Refuge in Texas, stands by to call for fire ignition once the area is cleared, while graduate student Bobby Williams (left) and Professor Joe Roise from North Carolina State University set up a prototype fire shelter for testing during on a prescribed burn at Madison Wetland Management District in South Dakota.

During its response to Hurricane Harvey, the Service's Southwest Region used the Rapid Hurricane Assessment Tool (R-HAT), an ArcGIS-based smartphone app, to collect Service asset damage information and share it with others in real-time (See p. 20). Meanwhile, fire specialist Josh O'Connor from the Southeast Region built an innovative tool to tell searchers in murky waters where they are and what utility infrastructure may be submerged beneath them.

"I can't say enough about how much we appreciate everything that the U.S. Fish and Wildlife Service has done and continues to do with its people, technology and equipment to help us save lives," said Hardin County Judge Wayne McDaniel shortly after Harvey.

The Service has also begun using Unmanned Aerial Systems (UAS), commonly known as drones, for emergency response. This past year, with the help »

BRITTA SCHROEDER/NPS

IT Specialist Scott Bishaw (left) from Florida Panther National Wildlife Refuge in Florida listens for incoming air traffic on an aviation radio, while volunteer aerospace engineer Garrett Bryl with the City of Joshua Public Safety UAS Response Team programs a UAS for a mapping/damage assessment mission over Nome, Texas.

of NASA, refuge staff at Great Dismal Swamp National Wildlife Refuge in Virginia tested a UAS with infrared and video cameras to detect smoke and heat and deliver real-time data to fire personnel. One Service-owned UAS and pilot, information technology specialist Scott Bishaw from Florida Panther National Wildlife Refuge, was dispatched during Hurricane Harvey. He joined a 10-person Department of the Interior team of UAS remote pilots to assist the North Texas Public Safety UAS Response Team in Nome and southwest Houston. The team processed high-resolution imagery into ortho-mosaic maps; created a 3-D model of a levee to inspect for signs of damage; and surveilled Big Thicket National Preserve, using GoPro live video to show park staff the condition of their facilities. The team was also asked to fly over a chemical plant outside of Houston, which had been evacuated for safety reasons, but the plant exploded before they arrived. To date, the Service has trained 19 UAS pilots, with two serving on regional Incident Management Teams. Another remote pilot training is scheduled in March. □

Partnership Promotes Latino Engagement in Wildlife Conservation

To help ensure that all Americans engage in outdoor recreation and wildlife conservation, the Service partnered last year with the Hispanic Access Foundation (HAF) to support and promote Latino Conservation Week (LCW).

LCW was established by HAF to recognize and encourage Latino participation in outdoor recreation and wildlife conservation. During the week, Latinos engage in recreational activities such as hiking, bird watching and fishing, as well as conservation activities such as removing garbage from natural areas, banding migratory birds and removing invasive plants.

Since its inception in 2014, LCW has grown both in number of events and participants. Last year, between July 15 and 23, more than 125 events engaged approximately 6,500 Latinos on public lands.

"We are pleased to have partnered with the Hispanic Access Foundation to help increase awareness of public lands as welcoming places for all Americans to enjoy nature as well as to learn about and engage in conservation," says Service Deputy Director Jim Kurth.

"As different cultures engage with the outdoors in different ways, our partnership is helping increase awareness of and expand access to outdoor recreation and conservation," adds Maite Arce, president and CEO of HAF.

In support of LCW, the Service placed Latino youth in summer internships at 10 national wildlife refuges in the Northeast. Among other duties, the interns helped plan and execute LCW events to engage Latinos and other stakeholders at national wildlife refuges. In total, the interns hosted approximately 20 events that engaged more than 650 Latinos.

One of the HAF interns working at a refuge last summer was Ariel Martinez from Hamden, Connecticut. A student at Smith College studying environmental science and policy, Martinez was assigned to Iroquois Natural Wildlife Refuge in New York. As an intern she partnered with nearby Boys and Girls Clubs and community centers to engage approximately 150 disadvantaged kids in age-appropriate environmental education programs.

"Interning with the U.S. Fish and Wildlife Service was an amazing experience for me. I worked hard and had fun doing so. Most of all I am proud to have been able to help the U.S. Fish and Wildlife Service and other organizations to connect youth with nature," says Martinez.

In addition to helping strengthen connections between refuges and their surrounding communities, Martinez and other interns gained valuable work experience and served as role models for other Latino youth thus helping contribute to the development of the next generation of conservationists.

The Service and HAF are working through LCW and the internship program to help ensure that conservation remains relevant

USFWS

Through a partnership with the Hispanic Access Foundation, Ariel Martinez served as an intern at Iroquois National Wildlife Refuge connecting youth with nature.

into the future. Today, three out of every five American children under the age of 5 are from minority communities. So, as the population continues to age and becomes increasingly more diverse, the Service must continue to build a conservation constituency reflective of that diversity to help conserve, protect and enhance wildlife and their habitats for the benefit of everyone. □

EDWARD STOKER, External Affairs, Headquarters

? MORE INFORMATION

To learn more about the HAF internship program or how you might get involved in and support LCW in 2018, email Edward Stoker at <Edward_Stoker@fws.gov> or Jill Wheeler at <jill@hispanicaccess.org>.

Public Lands: Hagerman National Wildlife Refuge Consistently Produces Quality Deer

Daybreak on November 17 didn't show great promise for deer hunter Kyle Walker. It was going to be exceedingly warm — and windy. Wind blows scent around and to a deer the world is a smell, not to mention it hampers a hunter's hearing.

Walker was lucky to be drawn in a lottery for a chance to hunt white-tailed deer at Hagerman National Wildlife Refuge in north Texas, an 11,320-acre refuge known for quality deer hunting.

He had done his homework. Walker scouted the refuge for three days in July for places that he knew from experience might harbor deer. Walker also took a required bow hunter education course and passed an archery shooting proficiency test to enter the lottery draw at Hagerman. Come opening day, Walker was secured in his stand in a choice spot in the hardwoods that, and it paid dividends.

"I took the best buck I have ever harvested on public lands," says Walker. "It was the hunt of a lifetime."

Walker, who makes a living as an administrator and a professor at a seminary in Fort Worth, Texas, relies on public lands for his hunting opportunities. "I hunt public land exclusively; I live in the metroplex where there are a lot of people and lots of concrete — public lands have been my only place to hunt in Texas — and I am very grateful."

Walker and his family enjoy the bounty of the harvest: free-range organic meat. He is even able to share the harvest, too. This deer went into his freezer and that of a graduate student where he works, who has a family of teenagers.

Hagerman Refuge has earned its reputation, says its manager, Kathy Whaley. "I've worked the deer check stations for nine years, and have seen a lot of harvested deer and many trophy bucks," says Whaley. The refuge has been open to deer hunting since 1984. Over the last 15 years hunters have harvested an average of 40 deer each year. The refuge has six units from 800 to 3,300 acres, of which only three are open to deer hunting on a given year. The deer hunts are managed for safety and quality experience.

"It's affordable, too," says Whaley. "Successful applicants pay only $50 to hunt on the refuge, in addition to state hunting license fees." And it's one that Walker is willing to pay again — he has every intention of hunting at the refuge in the future.

Hagerman is located near Sherman, Texas. In addition to deer, it's open to hunting turkey and feral hog by lottery draw and dove, rabbit and squirrel in accordance with regulations with the Texas Parks and Wildlife Department. □

CRAIG SPRINGER, External Affairs, Southwest Region

Scouting paid off for public lands hunter Kyle Walker.

PAUL BALKENBUSH/USFWS

Boise Community Digs in to Conserve Monarch Butterflies, Pollinators

Boise community members began a long-term effort in October to establish a major pollinator habitat project on the Boise River in Idaho.

Volunteers turned up the rocky soil of the former pasture along the Boise River downstream of downtown Boise. Pick axes, shovels and trowels clanked against the numerous rocks that the volunteers cleared to make holes for a variety of pollinator-friendly plants, including more than 300 native milkweed seedlings to benefit monarch butterflies.

Monarch butterfly caterpillars eat only milkweed, but native milkweed and other needed habitat have declined and fragmented due to loss from urban and agricultural development. Not so good for the monarch. The Service is working with partners to help increase monarch populations by working with agricultural producers, transportation agencies, government agencies and the public to create wildlife-friendly pollinator gardens and monarch habitat.

"This project originated through a partnership we have with the Land Trust of the Treasure Valley. We grew a bunch of milkweeds for propagation experiments, and we're now placing those milkweeds on this unused pasture land with our community partners, and one of those community partners is the Boise WaterShed," says Dusty Perkins, a biology professor at the College of Western Idaho.

Adam Hanson, a teacher from Boise School District's Dennis Technical Education Center, tosses unearthed rocks aside during planting.

LEITH EDGAR/USFWS

Other partners were the Service, the Boise Parks and Recreation Department, Boise Public Works Department, Golden Eagle Audubon Society, University of Idaho, Boise State University, Idaho Fish and Game, Bureau of Land Management and other Boiseans.

"This is a fabulous partnership, where many people are coming together to create pollinator habitat in an area that is full of invasive weeds and is a City of Boise property that is kind of a buffer zone between our water renewal facility and adjacent neighborhoods," says Cindy Busche, Boise WaterShed education manager.

The partners and volunteers planted native milkweed and other flowering plants to create habitat for monarch butterflies passing through and breeding within the City of Trees. The planting will also benefit other pollinator species such as native bees and flies.

By the end of the day, a portion of the once weed-riddled field was transformed by the volunteers and partners into a budding bastion of hundreds of native plants that will ideally take to the soil over the winter before offering many pollinators new nectar sources in the coming years. □

LEITH EDGAR, External Affairs, Pacific Region

Eureka! Mussel Discovery Made in a Tub

Tucked away just off the shore of Lake Pepin in Minnesota, the Center for Aquatic Mollusk Programs' (CAMP) facility is staffed and equipped for an overarching mission: conserving native mussels. Tubs, tanks and tubes fill the research facility with the sound of running water. A variety of fish gaze at you from shelves, while tubs filled with tiny specks are washed with the constant flow of water. If you look closely, those specks are small mussels, which will live at CAMP until they are large enough to be released into the wild. Larger circular tubs hold either adult mussels or fish. It's in one of those tubs that the enigma of the spectaclecase mussel host species was finally solved.

Mussels have a fascinating life cycle; mussel larvae attach to the gills of their host fish, which serves as a mussel nursery, protecting mussel larvae until they transform into juveniles that are ready to strike out on their own. Researchers have been looking for the host species for the endangered spectaclecase mussel for decades, long before it was added to the endangered species list in 2012. More than 90 species of mussels are protected as federally threatened or endangered, and 29 species have gone extinct. Threats facing mussels include dams, pollution, habitat loss, invasive species and loss of host species. »

MELISSA A. CLARK/USFWS

COURTESY OF BERNARD SIETMAN/MINNESOTA DEPARTMENT OF NATURAL RESOURCES.

(Left) Tricia Anderson, natural resource technician, checks the growth of juvenile mussels. (Right) Spectaclecase mussels

The extensive search for the spectaclecase host species included more than 50 species of fish. Biologists even questioned if the host was not a fish at all, and tested amphibians and crayfish to no avail.

"We had already tested common species that could be easily held in captivity," says Bernard Sietman, a CAMP mussel biologist. "We suspected the host was either hard to catch or hard to keep alive in captivity."

Ironically, a clue in finding the host was one of the threats facing mussels: a dam. Spectaclecase populations above St. Croix Falls Dam were disappearing, while populations below were doing well, suggesting that the host was now absent above the dam. Mooneye and goldeye fish both looked like promising candidates because they were extirpated above St. Croix Falls Dam. Unfortunately, both species were difficult to keep alive in the lab. Mooneye and goldeye were exposed to spectaclecase mussel larvae and placed in the circular tubs, where they swam along the edges, scratching their bulbous eyes and dying from the subsequent infection.

"It was a problem we had to overcome," says Sietman. "So we got larger tanks, improved filtration and consulted experts, including our partners at the Minnesota Zoo. Ben Meinrich, a zoo aquarist, suggested installing a bubble curtain so fish could more easily detect the tank walls. It worked; long enough at least for spectaclecase larvae to fully transform into juveniles."

In June 2017, Sietman and the CAMP team had laboratory proof that spectaclecase larvae successfully transform into juvenile mussels on a goldeye. A few weeks later, mooneye was also confirmed as a host in the laboratory. But to confirm these fish were hosts in nature, Sietman and the CAMP crew worked with longtime collaborator Mark Hove at the University of Minnesota. The team captured mooneye near spectaclecase colonies on the St. Croix River, held them in tanks at the CAMP facility, and within a few days, recovered juvenile Spectaclecase mussels—eureka!

Although the mystery of the spectaclecase host species is finally solved, research continues to move this species toward recovery. The hundreds of resulting juvenile spectaclecase mussels were sent to expert mussel biologists at the Service's Genoa National Fish Hatchery and Missouri State University to find the best conditions to raise these tiny mussels until they are ready to be released into the wild.

Protecting mussels means protecting ecosystem engineers that keep our water systems healthy for their host fish, other aquatic organisms and us.

"Mussels are nature's water filter," said Nate Eckert, mussel biologist from Genoa Hatchery. "Some populations need more help to recover in a timely fashion. Many of these species have benefited from additional research, such as host fish requirements, that have been paid for largely by funding made available because of federal or state endangered status."

The Service is one source of funds through the State Wildlife Grant Program. CAMP uses these grant funds to establish protocols to propagate endangered and threatened mussels, identify suitable host fish and identify reintroduction sites. These grants further state priority conservation research, monitoring and management. □

MELISSA A. CLARK, External Affairs, Midwest Region

Oil Spill Exercise Tests Interagency Emergency Response Plans

Visitors at Potawatomi State Park and George K. Pinney County Park in Sturgeon Bay, Wisconsin, watched in late September as a floating oil containment boom was stretched across the bay, duck decoys were pulled from the water, and unfamiliar equipment was unloaded on shore. Several people asked, what is going on?

The Service, with federal, state and local partners, was participating in the Door Peninsula Preparedness for Response Exercise Program to test emergency response plans, improve preparedness and increase interagency cooperation.

More than 100 people from 16 organizations practiced their roles in the event of an oil spill. The exercise simulated a barge grounding on a reef outside Sturgeon Bay, resulting in a diesel fuel spill. This area, which includes the Green Bay National Wildlife Refuge islands, is home to important fish spawning reefs, migratory birds, and threatened and endangered species, such as the piping plover and pitcher's thistle.

MELISSA A. CLARK/USFWS

Agencies work together to learn how to deal with an oil spill.

The purpose of the exercise was to learn how different agencies work together to protect people, resources and wildlife in the event of a real emergency. The exercise was led by the U.S. Coast Guard, which established an Incident Command Post and Joint Information Center at Sturgeon Bay City Hall. Service staff from the Ecological Services, External Affairs and Fisheries programs participated in the Unified Command, Joint Information Center and injured wildlife rescue activities.

"We hope a disaster like this never happens, but this exercise is helping protect the waters and lands of Green Bay," says Green Bay Ecological Services fish and wildlife biologist Betsy Galbraith. "Working with federal, state and local partners builds relationships to respond effectively in the event of a real spill."

While park visitors may not have been able to tell the difference between representatives from different agencies, they all had the same feedback for exercise participants—thank you for working together to keep the Green Bay safe and healthy! □

MELISSA A. CLARK, External Affairs, Midwest Region

Firefighters Join Service Honor Guard

For the first time since the Service's uniformed Honor Guard was established in 2010, two firefighters have succeeded in completing its rigorous acceptance requirements and joined this exclusive group.

Regional Fire Management Coordinator Jason Riggins from the Midwest Region and Zone Fire Management Officer Rob Wood from Alligator River National Wildlife Refuge in North Carolina graduated from the 80-hour Honor Guard training course at the end of January.

To join this specially trained, uniquely decorated and highly disciplined unit, the firefighters met demanding physical and appearance standards that exceed those already in place for Service personnel. Honor Guard members are required to exhibit the most polished appearance and perform with the finest discipline at a moment's notice.

The primary duty of the Honor Guard is to render final honors for fallen comrades. The Honor Guard remembers and renders honors to fallen Service employees and provides comfort and support to survivors of those who have died. Twenty-one officers and three active alternates are chosen based on their skills and dedication to the core values of the Service.

"This is a proud moment for the Fire Management Program," says Fire Management Branch Chief Chris Wilcox, who attended the graduation ceremony along with Deputy Branch Chief Shane McDonald. "When one of our own perishes, there is only one chance to do it right when it comes to paying our final respects. The standards of the Honor Guard reflect and uphold these important Service values."

Adds Richard Johnston, Chief of Refuge Law Enforcement, who supervises the Guard: "With the addition of Service Firefighters to the team, we are very proud to have an Honor Guard that is truly representative of some of the very best of the Service."

The Honor Guard, formerly just law enforcement officers, has incorporated the presentation of crossed pulaskis—the common and iconic tool of wildland firefighters—to honor firefighters who have died in the line of duty.

In addition to honoring employees who have died in the line duty, the Honor Guard rendered final honors for lifelong firefighter Shane Del Grosso before more than 200 mourners in 2016 and dedicated a memorial to biologist-firefighters Scott Maness and Beau Sauselein in 2017 along with 140 other guests (see p. 4).

Firefighters and law enforcement officers share much in common given their arduous and highly skilled professions that entail elements of duty and personal risk. Many law enforcement officers are among those Service personnel qualified to support large wildfires and other emergency incident response.

The Service Honor Guard is authorized by the Service Director. Its first official function was to represent the agency at the dedication of land and a memorial honoring the passengers and crew of United Airlines Flight 93, one of four airliners hijacked on September 11, 2001. The actions of refuge manager Richard Guadagno and other passengers and crew on board, all of whom perished, are credited with thwarting the hijackers' planned attack on the nation's capital.

USFWS

Newest members of the Service Honor Guard at the 2018 graduation ceremony (left to right): Federal Wildlife Officer Sam Sain, Firefighter Jason Riggins, Firefighter Rob Wood, Federal Wildlife Officer Josh Frazier and Federal Wildlife Officer Heather Sharp.

The Honor Guard performs at a variety of special events, including annual Police Week ceremonies in Washington, DC, and whenever the Service's Fallen Comrades Memorial adds a name.

"We are learning and growing and evolving over time," says Honor Guard Commander Deborah Goeb, who has been with the group since its inception and was named its Commander last July. "It is our honor and privilege to be present for families and the Service at these events." □

We're There When Disaster Strikes

Service works to keep communities safe

The U.S. Fish & Wildlife Service is very much a part of our local communities. As disasters strike across the country, our first obligation is to the health and safety of our employees and the public. Then it is time to help local communities—human and wildlife—recover.

Read some of what we did last year in the face of wildfires and hurricanes.

A Tiny Town Hit Hard by Irma

A Service task force wades into the gray mud to help families in Everglades City, Florida

story and photos by PHIL KLOER

Everglades City, Florida, resident Billy Snyder stood in mud-caked boots in his mud-caked living room, or what used to be his living room before Hurricane Irma roared in.

"If we can save the stuff that's important to us, we can just close the doors and never come back in," he told the workers who had gathered around him. "We're just gonna demolish the whole house and rebuild, this time on stilts."

Half a dozen Service personnel waited for his instructions: What to save, what to dump. It was actually pretty easy. Anything below three feet off the ground was a smelly, sodden mess, because that was the level at which Irma's storm surge dumped a deluge of stinky gray mud and swamp water that ran through and ruined his family's house.

But there was plenty to salvage that had survived above the storm surge mark: dishes, wine glasses, wife Shannon's macramé hangings, a son's Little League trophies.

At Big Cypress National Preserve, U.S. Fish and Wildlife Service workers helped out their partners, the U.S. National Park Service, by nailing tarps down on three damaged roofs.

The Service personnel got busy, saving what they could, carrying the family's possessions to a safe, dry garage in the backyard, where it would wait for the Snyders to rebuild. What could not be saved, they loaded into big black trash bags and hauled them to the curb.

"Thanks a ton," Snyder told the crew. "I don't know how we would have done it without you."

The sun got hotter. The trips got repetitious. The day had just started.

'It's the right thing to do'

Everglades City is a tiny town of 400-plus, south of Naples on the southern Gulf Coast of Florida. Irma blasted through here on September 10, with 140 mph winds and a storm surge that was reported between six and 10 feet high. According to news reports, Everglades City was one of the places that suffered the most from Irma's fury; most of the town was underwater at one point. Then the storm surge receded and left the residents with the mother of all clean-up projects.

Not all that much blew away in Hurricane Irma. Instead, Irma made the residents do the work themselves, hauling their ruined possessions out into their front yards and dumping them next to the street.

Even before Irma hit, the Service had set up an Incident Command team, a structure used to more effectively coordinate efforts in an emergency, and decided to send three task forces to Florida as soon as it was safe. Service coordinator David McCaghren helped assemble the Central Louisiana Task Force; the majority of its 14 members hailed from that state. They mustered at Mississippi Sandhill Crane National Wildlife Refuge, then set off in a convoy for south Florida, hauling lots of chain-saws and heavy equipment. They got to Everglades City, more than 750 miles away, five days after Irma and got to work. ››

"Whole neighborhoods were trashed," says McCaghren. "Incident Command said we've got to help these people. We've got all these assets; let's put them to work for the public.

"It's the right thing to do."

Kayla Kimmel's day job is as a biologist in the Service's Baton Rouge, Louisiana, conservation office. She volunteered to join the task force, and was the only woman working alongside 13 men.

"We were in this situation a year ago in Baton Rouge," she says. "We had what they called a 1,000-year flood, and my mom's house got four and a half feet of water. College friends came down from different states and we cleaned out my mom's house, and then we just continued working, going house to house for eight days."

Like all the task force members, she was spattered from head to toe with the foul-smelling gray mud that became ubiquitous in Everglades City. "I'd like to be able to pay it forward," she continues. "This is a long process, and this is just the start. It's totally overwhelming for these people. But having people come in who can get big parts of it done takes a lot of the stress off."

'I just walked down the street with a chainsaw'

The task force split up into several smaller groups. Their first priority was clearing roads so that residents could move freely.

One narrow road was blocked by a battered old boat that had seen better days even before Irma. The wall of water had lifted it out of a nearby yard and deposited it in the middle of a road.

"We were gonna just push it off the road to open the road, but the guy had some attachment to that boat and asked if we could put it on its trailer, so myself, Rod Cobb and John Dickson took a little time and loaded it onto his trailer for him," said Chris Nothstine, a supervisory forestry technician at Sandhill Crane Refuge. "It meant a lot to him."

Nothstine had a busy summer. He deployed in Utah for two weeks fighting the Western wildfires in a separate Incident Command. He returned home for one week, then left for a two-week stint in Florida.

"When we finished up with that street, pushing debris out of the road," he continues: "we met a guy named Chris Richards, whose family had stayed on the island during the storm. We followed him to his house and his whole family was out there working. We started taking a lot of the work off them that they had been doing for three, four, five days.

"When they saw they had people to help, his wife went straight over to the neighbors' house and started helping them. When we finished with Chris's house, we went over to the neighbors' house where his wife was working and started helping them. We took a tree off a shed.

"At one point," he adds, "I just walked down the street with a chainsaw, cutting down trees that were leaning on houses or blocking roads. The big thing is just being out here. Three people on a crew can go a long way."

Another group of task force members headed to Big Cypress National Preserve in Ochopee, Florida, a few miles from Everglades City. The U.S. National Park Service manages Big Cypress, and some buildings there had suffered wind damage to their roofs. A crew of four Fish and Wildlife staffers nailed down tarps on three buildings to protect them. It was hot work, but at least there was no gray mud.

'They're just amazing, covered in dirt'

"This community has deep roots; it's more than 100 years old, which is amazing in Florida, where everything is so new," says

(Top) Kayla Kimmel, a Service biologist, talks to homeowner Billy Snyder in his ruined living room in Everglades City. "Having people come in who can get big parts of [the job] done takes a lot of the stress off," she says.

(Bottom) Most houses in Everglades City stood up to Hurricane Irma's winds, but the storm surge flooded many of them and ruined almost everything inside. Residents hauled their sodden belongings out to the street, and most neighborhood roads were lined with piles like this.

Jim Ragusa, principal of Everglades City School, which educates pre-kindergarten through 12th grade in one building. "Many of these people, their great-grandparents and grandparents grew up here."

The school was already the center of this community in many ways, and Ragusa made it more so in the days after Irma, turning the cafeteria into a staging area to store supplies and a free lunch program for first responders and anyone else who just needed a free lunch. He took his turn grilling hot dogs and hamburgers along with his many volunteers, but spent a lot of time on his cell phone managing disaster response logistics by the seat of his pants.

"The Fish and Wildlife people have just been tremendous," he says. "They've been working their butts off. They're just amazing, covered in dirt, busting their ass."

As he was speaking, the Central Louisiana Task Force, most of them covered in slimy gray mud, lined up for hot dogs and hamburgers, apples and bottles of ice-cold Gatorade. Volunteers greeted them and thanked them.

"When I ate lunch with the crew," task force leader McCaghren says, "they were grinning. I told them, 'It's a good feeling, helping like this, isn't it? There ain't nothing like it.'"

'We're gonna get you back in shape'

As the Service personnel continued to salvage what they could from Billy Snyder's little turquoise bungalow, he paused for a minute.

"Three generations of people have lived in this house. This house has been passed around," he says. "But I think it's run its course."

When Irma was approaching, Snyder, a biologist with the U.S. National Park Service, and Shannon, took their sons, Henry, 9, and Jack, 7, and evacuated to Enterprise, Alabama.

"When we went to leave, we explained to them why we were leaving," he remembers. "We showed them the television. Let them express their feelings. There was no crying, no fussing. We are not feeling sorry for ourselves. We are counting our blessings and consider ourselves extremely fortunate. Nobody died.

"The real story is the way the townsfolk have come together and really pulled together to help one another," he continued.

"And how the Fish and Wildlife Service just rolled up out of nowhere and said. 'Hey, we're gonna get you back in shape.' "

By Sunday morning, the task force had new orders. Incident Command wanted them to take their heavy equipment to the Florida Keys, where it was needed. They were on the road before sunrise. Pretty much all of them took a little gray mud with them.

PHIL KLOER, External Affairs, Southeast Region

Endangered Key Deer Withstand Hurricanes

Key deer, a popular and very endangered species in Florida, rolled with the punches that the hurricane season brought to Florida, especially Hurricane Irma, which did substantial damage to the Florida Keys.

The Service completed post-Irma Key deer surveys in their core habitats on Big Pine and No Name keys. The driving surveys began immediately upon the return of refuge staff from mandatory evacuation and continued for several weeks.

"These Key deer and the natural habitat they depend on are pretty resilient. First, they made it through the New World screwworm infestation last year and now through the direct hit of a category four hurricane. We are happy to report Key deer population numbers are well within the range we observed before Irma," says Dan Clark, project leader for the Florida Keys National Wildlife Refuges Complex.

Increased numbers of surveys were conducted after Irma to ensure an accurate estimate of the population because of the increased number of response and recovery vehicles on the roads as well as piles of debris. The most recent estimate collected before Hurricane Irma determined approximately 1,100 Key deer occupied the core range on Big Pine and No Name keys. Survey estimates post-Hurricane Irma suggest 949 Key deer live in these same areas.

A key problem after the hurricane: Irma's waves and salt-infused rains ruined many of the Key deer's watering holes and left them dehydrated. Rarely before, according to refuge biologists, have so many water sources turned so salty. To solve this, thirsty Key deer got a helping hand in the form of fresh water from Service and the public. □

(Above) A thirsty key deer drinks water provided by the Service at National Key Deer Refuge on Big Pine Key.

DAN CHAPMAN/USFWS

Soaring Past Danger

Puerto Rican parrots weather Hurricane Maria

By MARK DAVIS

MARK DAVIS/USFWS

Puerto Rican parrots rode out Hurricane Maria in their aviary in El Yunque National Forest. In the '70s only about 13 parrots were known to exist; last year more than 100 hatched.

El Yunque National Forest, Puerto Rico—They're old, parenthood behind them, but that hardly means the two senior citizens serve no purpose.

They like to talk. Others, sometimes, show up to listen. People here call them *Egida*, literally, a "house for the elderly." The Spanish-to-English translation describing their function is not precise, but it's close enough. The Puerto Rican parrots sit in a cage and call to their wild peers. It's one way scientists assess how well the endangered species survived Hurricane Maria.

The couple is among about 240 birds that weathered the tempest when it struck Puerto Rico in September. Most of them stayed in a reinforced-concrete building at an aviary owned and operated by the Service.

While 150 mph winds ripped the jungle apart, two Service workers remained at the aviary to await the storm's passage. With them were parrots in cages, brought inside before hell came howling.

The birds did well. None died during the storm, though nine succumbed to heat and stress afterward.

For that, Jafet Velez is grateful—pleasantly surprised, too.

"I was amazed," says Velez, a Service biologist with nearly 30 years' experience working with the parrots. "I thought they would have been more stressed."

Maybe the birds knew they were in the right hands. Service biologists have been working for decades to propagate a species that perched on the edge of extinction 50 years ago.

Though the bird is still endangered under the Endangered Species Act, it shows small signs of recovery with each clutch of chicks.

Still, Maria—and, before it, Hurricane Irma—tested the species as it hadn't been tested in years.

Tested Service workers, too. The aviary here has been without power from the grid since the hurricane made landfall September 20; a generator powers a refrigerator and freezer that keep bird food and other essentials chilled. Cell phones cannot find a signal. The only cool air comes from breezes off fog-shrouded peaks.

No one is sure when the aviary will be fully functional again.

No regrets

He began working for the Service as a young man wanting to set aside cash to pay for medical school. But something about the birds called to him. Velez, now 49, delayed med school for a year, then another, then a third.

"And now, it's 28 years later!" he says. "I don't regret it!"

He may be Puerto Rico's No. 1 parrot cheerleader. Velez sometimes wanders among the cages, thinking: *Is that bird ready for mating? Should I change this one's diet?* Other times he's a torrent of facts—that parrots can live to be 40, that they're territorial, that they mate for life.

Well, not always for life. One couple recently had "marital difficulties," Velez says. "I separated them for counseling,"

That doesn't always work. He takes some feuding birds to a community cage where parrots get acquainted with others. Velez calls it the "love shack."

That shack must be working. Breeding operations have grown from one chick, born in 1979, to more than 100 hatched last year. They were born here and at three other aviaries in Puerto Rico. The Service is a partner with Puerto Rico's Department of Natural and Environmental Resources in helping the species recover.

It's a small step in a long journey to replenish a species that once numbered 1 million. That was 500 years ago, before humans began carving Puerto Rico's fertile hillsides and valleys into plantations, ruining the parrots' habitat.

In 1975, biologists counted 13 Puerto Rican parrots in the wild.

Now? "We are confident we will have an awesome 2018 breeding season."

'Like magic'

Caa-caa-caaa! The cry echoed from "condo" cages erected side-by-side to large mesh enclosures where scores of birds rested on perches, occasionally flying from one end of the Quonset-hut-style cages to the other, a 60-foot jaunt.

Velez didn't flinch. He'd heard it before. The loud bird, he says, was acting as a lookout. If something unusual were to appear—a snake, perhaps, or an unfamiliar human tromping all about—*Caa*! The bird would alerts its peers. It's how they've survived.

MARK DAVIS/USFWS

MARK DAVIS/USFWS

(Above) Damaged cages at the Puerto Rican parrot aviary in El Yunque National Forest, Puerto Rico. (Left) Crews affixed ribbons to bird cages warning that the trees around them could fall.

They've also made it from year to year with some critical human help. The aviary here has a hospital, with medicine and enclosures for ailing birds. On a day after the hurricane, a veterinarian visited the aviary and fixed a broken wing, then stitched an injury.

The Service also is repairing other enclosures to give the birds extra room. Falling trees rendered many cages uninhabitable. Even now, some are branded with ribbons whose warning is hard to ignore:
KILLER TREE.

Yes, it's a lot of work, says Velez, but the parrot deserves it. The species was fine, he says, until another animal began taking its habitat.

Now, he says, that species—*Homo sapiens*—owes it to *Amazona vittata* to give the parrots a chance to survive.

It's a matter of national pride. Along with the coqui, the tiny frog that peeps every night, the parrot is one of the territory's signature animals. "You see it painted on walls…everywhere around here."

Velez remembers visiting El Yunque years ago. He was 16, unfamiliar with the forested folds of the rain forest.

He took it all in—the shadows, the mist, the feeling that he stood in a special place where something rare flitted in the green heights. "It was like magic, like wow!" he says. "It was like the answer to a prayer."

So plans for a medical career made way for a life saving birds. For what it's worth: His daughter is attending med school.

And the *Egida*, those two old parrots?

Perhaps they're talking about that. □

MARK DAVIS, External Affairs, Southeast Region

Getting Things Going

Service responds to help stricken island near Puerto Rico

By MARK DAVIS

Vieques, Puerto Rico—What was that? Mitsuka Bermudez recognized the sound—but no, that wasn't possible. Chainsaws? Already?

Hurricane Maria had hardly passed over the small island of Vieques, which is about 10 miles east of Puerto Rico. The land, normally in the full green of early fall, was brown, trees stripped of leaves. The town of Vieques was dark, the houses in the hills just as dark.

And the trees! Everywhere, trees that had stood for decades, some for centuries, lay in huge tangles. Roads were impassable, houses damaged or destroyed.

Bermudez knew that help would come—towns on the edge of the sea are accustomed to nature's cruelty—but it wouldn't come immediately.

Then she heard the rasp of metal against wood, the high-revving whine of chainsaws. It was, she thought, almost a miracle.

MARK DAVIS/USFWS

Mitsuka Bermudez heard the chainsaws and knew help was on the way. Crews from the Service sawed their way through fallen trees in her native Vieques, Puerto Rico.

It was a crew from the Service, dispatched as soon as possible to take the first steps in what will be a long journey for Vieques and the rest of Puerto Rico. The island was one of the first items on a long checklist the Service compiled to help Puerto Rico and the U.S. Virgin Islands, both U.S. territories and the homes of wildlife refuges and national forests.

A task that couldn't be delayed: clearing roads. Trucks with water and food needed them to reach people cut off from aid. Bermudez marveled as guys with chainsaws cleared the pavement, shoving fallen trees aside.

"It was a funny thing," says Bermudez, who was born here 51 years ago. "They were the only ones here clearing the paths."

Among the first, too, to bring water, food and hope to a region sorely lacking in all three.

Maria arrived, the Service followed

Puerto Rico absorbed a category 4 blow to its midsection when Maria made landfall September 20. Like an overmatched boxer, it staggered, reeled and fell.

Since then, Puerto Rico has risen a little bit each day. An estimated 30 Service workers, staffers from here and from the states, concentrated on communities in Puerto Rico and the U.S Virgin Islands, another American territory.

Service law enforcement got here first, arriving on government planes on September 23, before commercial flights resumed. Officers came from South Florida to check on Service workers, their families and communities. They also turned their attention to other residents, keeping order at a tenuous time.

USFWS

(Top) Washed-out road. (Bottom) Bruce Butler, a Service law enforcement officer, prepares a pallet of water for delivery.

Other Service workers weren't far behind. With satellite-phone and chainsaw, with truck and machete, they got things going with the stuff of life: water and MREs (military meals ready to eat), a reassuring smile saying, yes, things will get better.

They came across an 8-year-old girl needing leukemia treatments—her hospital had closed—and got her help.

One officer saw women on the road, loading a car with a daughter's few possessions. They needed water. He had it. They got it.

A town needed help, some extra cops. The Service helped make that happen.

A bonus: A Service electrician came. If anyone is more popular than an electrician on an island in the dark, let him/her step forward.

'We needed help; they gave it'

Hurricane Maria accomplished what the U.S. Navy never could. For decades, the Navy shelled parts of Vieques in training exercises. To this day, unexploded ordnance makes some segments of the island too dangerous to enter. Vieques served as a stand-in for Grenada in the 1986 Clint Eastwood film *Heartbreak Ridge*.

Vieques endured all that—artillery, landings, even actors—and life went on. But it wasn't equal to Maria. In just a few hours, the tempest did what decades of assaults could not: It brought everything to a standstill.

In the days immediately following the hurricane, the deputy mayor of Vieques realized the island was in peril. Thieves had taken all the diesel fuel from the municipal water plant, stopping its pumps, as well as from the local hospital. Without the fuel, the plant and hospital's generators soon went silent. A grim situation threatened to get worse.

The mayor turned to the Service. Some extra police, he said, would keep the island safe.

The Service, which had dispatched its own law enforcement officers from Miami a few days earlier, passed the word. Working with other agencies, the Service helped get more police on the streets. The thefts diminished.

But police and road crews are only two actors in a drama that will play out for a long time.

Vieques still has a long way to go—but the distance is shorter than it was.

For Bermudez, the chainsaw gang signaled that life would get better. "We needed help," she says. "They gave it." □

MARK DAVIS, External Affairs, Southeast Region

After Hurricane Harvey

Rapid assessment leverages technology, diversity and teamwork to appraise storm damage

By KEENAN ADAMS

JEFF ADAMS/USFWS

Kathryn Sebes collects information on Hurricane Harvey damage.

Scott Bearer began his job as a landscape ecologist with the Service last spring. His work took him to Chenier Plains National Wildlife Refuge Complex along the Texas Gulf Coast to assess prescribed burning opportunities for the management of vital wildlife habitats.

While there, endangered whooping cranes from the eastern population landed for the first time in the nearby marshlands. With Bearer's background in managing Appalachian habitats for resilience, he quickly appreciated the role Gulf Coast refuge marshlands play as magnets for hundreds of thousands of migratory waterfowl, neotropical birds as well as their critical environmental role.

These marshlands provide an essential service: ecological resilience to environmental disasters. They serve as buffers and filters to hurricanes and oil spills, protecting not only the ecosystems but also the people living in the interspersed coastal communities behind them.

On August 25, Hurricane Harvey made landfall in Texas near Aransas National Wildlife Refuge and then moved northward—at a tortuously slow pace. The storm bore down on many other Service personnel and facilities, raising an urgent need to perform rapid damage assessments to account for people and resources. These assessments are vital for estimating costs after such incidents as fires, hurricanes and floods.

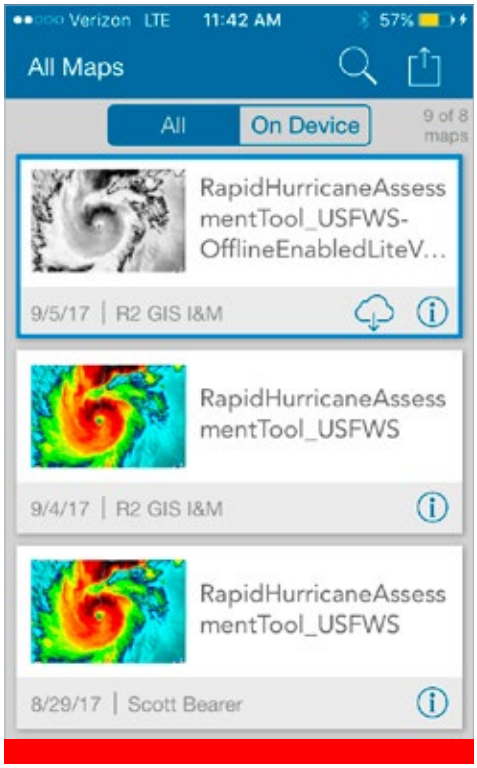
Bearer found himself in the middle of the Service's Hurricane Harvey Response using his mapping skills to efficiently track employees and families hit by the hurricane. He also determined the status of refuge buildings, other infrastructure and employees' homes.

With hurricanes Rita and Ike in 2005 and 2008 respectively, refuge staff in the Southwest Region determined they needed to employ the most advanced technologies. While Harvey wasn't a perfect storm, a perfect team came together to support the response and recovery.

Bearer coordinated that team, which used the latest technology to quickly assess hurricane damage to Service assets in real-time and to communicate that information to the appropriate level of the organization.

Bearer's team included Jeffery Adams, prescribed fire specialist and incident commander of the response team, and the Southwest Region geographic information system (GIS) team: Cinthia Eichhorn, acting regional GIS coordinator/inventory and monitoring (I&M) data manager, and Philip Marley, I&M Gulf Coast GIS specialist and data manager. The team members brought a diversity of skills and experiences to deploy a Rapid Hurricane Assessment Tool they called "R-HAT." Training and buy-in from the field is often a challenge with new technology, but Adams' leadership helped quickly overcome that obstacle.

JEFF ADAMS/USFWS



(Top) Greg Birkenfeld (left) and Andrew Stetter survey Hurricane Harvey damage to the San Antonio Bay shoreline at Aransas National Wildlife Refuge. (Right) A view of the R-HAT Collector application on an IPhone used by the Incident Management Teams across the Texas Coast during Hurricane Harvey. The colored tool was used by teams that had Internet capabilities, the black and white tool was used by teams with no connectivity.

"This is a leadership example of applying the latest technology to account for our greatest asset: our people," says Loren DeRosear the regional fire coordinator. "We are saving money and maximizing safety of emergency responders using remote technology to assess damages, so informed decisions can be made to recover our lands and communities."

The R-HAT tool is composed of two interacting system products. First, a smartphone application allowed field personnel to report damage information with photo documentation, while also providing immediate environmental hazard information to other responders. The Southwest Region GIS team set up an Operations Dashboard associated with R-HAT that provided leadership with live, instant updates of survey progress, on-the-ground descriptions and photos to help further assess future needs. These applications were developed using ESRI's ArcGIS online platform. This system also allowed the Southwest Region's GIS team to make real-time changes, when the first-responders or leadership had suggestions or needed different information. Those updates were developed within hours of requests.

In this way, the response team assessed all 485 assets in the Hurricane Harvey-affected zone. Traditionally, this would have been performed with pencil and paper, over the phone, many emails, and then transcribed to a database. R-HAT saved the government significant time and resources by providing an efficient and effective way to assess personnel, lands and structures. It kept responders safe by providing real-time intelligence of local hazards. Through ongoing hurricane response coordination with the Southeast Region, the Southwest GIS team rapidly worked to update the application so it could be deployed in time for Hurricane Irma before it fell on Florida. □

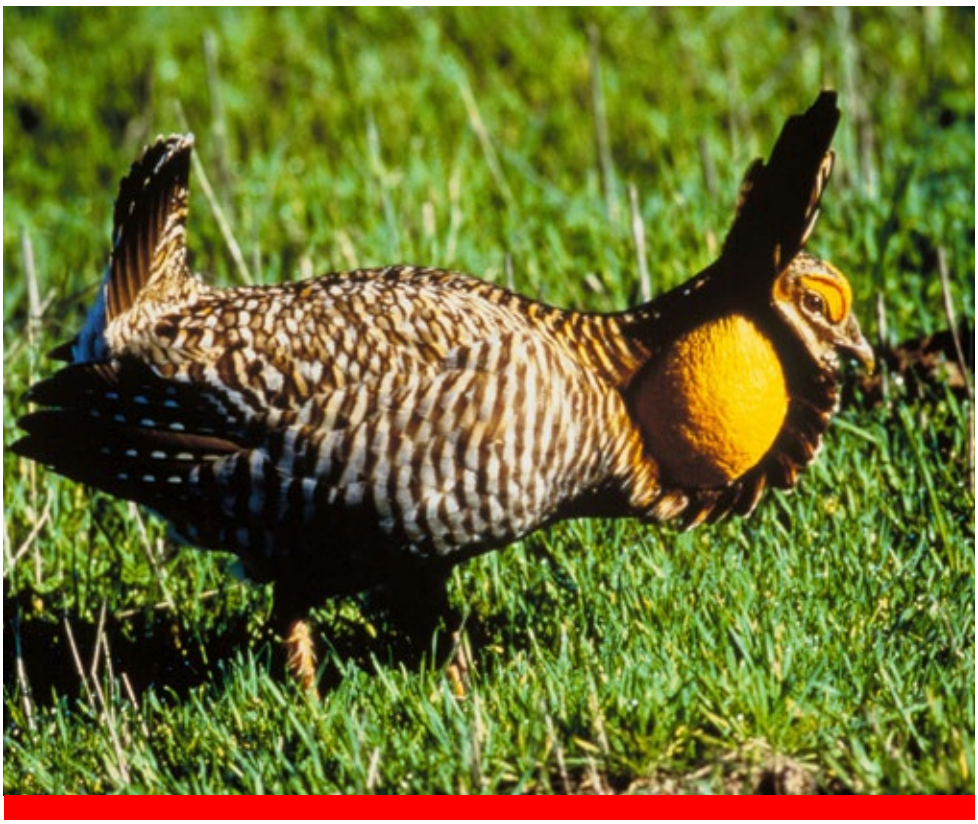
KEENAN ADAMS, External Affairs, Southwest Region

Not-So-Great Balls of Fire Ants

Red imported fire ants plague endangered Attwater's prairie-chickens even after flooding

By AL BARRUS

Attwater's prairie-chicken



GEORGE LAVENDOWSKI/USFWS

In addition to widespread suffering and devastation, Hurricane Harvey brought a plague of floating fire ants to the Houston region.

Whole colonies of the noxious biting red insects—including eggs and larvae—can survive floods. Ants emerge from their earthen lair and daisy chain together to form a gelatinous insect blob. The spaces between individuals are so small that the ants don't break the water's surface tension, allowing the colony to float. The ant raft follows the water's flow. Once it reaches a dry, solid object (or person), individual ants break away and crawl aboard. This is a dangerous prospect for people and animals in flooded areas, as the ants' stings can be fatal.

In a flood situation, the floating ants must be dispatched immediately. This is best achieved by spraying them with a dish soap solution. The soapy water lowers the surface tension, drowning the ants.

The invasive fire ants developed their floating mechanism to survive in the floodplains in South America. Sometimes called ginger ants, they were inadvertently brought to Mobile, Alabama, in the 1930s. The economic impact associated with red imported fire ants to the Texas' economy is about $1.2 billion each year.

One native animal that's been especially affected by the ants is the endangered Attwater's prairie-chicken. Found only in the coastal prairies of Texas and Louisiana, this grouse species, known for its elaborate mating dance, once numbered up to 1 million birds. As farms, towns and cities sprung up, the population diminished. By 1988, fewer than 1,000 remained in the wild.

It was the proliferation of the red imported fire ants that nearly dealt a final blow to the wild prairie-chicken population. Because the wild bird's lifespan is short, successful reproduction annually is critical. Not only do the ants prey directly on the birds, but they also eat native insects, impacting the diet of young chicks. Due to this competition for

food, many die of starvation.

The greatest gains in improving wild Attwater's populations have come in the form of controlling the ants. Attwater Prairie Chicken National Wildlife Refuge was established in 1972 just west of Houston. After intensive study, refuge personnel began treating for fire ants in 2014, which has led to an increase in native insect populations along with an increase in the survival rate for young Attwater's chicks. Between 2012 and 2016, population numbers increased 170 percent, from 48 to 130 individuals.

Because the population is so small, great efforts are made to protect individuals from harm. When Hurricane Harvey threatened the Texas Gulf Coast, 20 captive-bred birds scheduled for release on the refuge were returned to the Houston Zoo. Those birds are doing well and gaining weight. More good news is that the Houston Zoo was spared the worst of Harvey's effects.

While fire ants are well adapted for flood survival, the remaining wild Attwater's prairie-chicken population isn't so resilient. Just last year, in April 2016, the refuge faced similar flooding, which hampered the reproduction of the 130 birds in the wild. Floodwaters negatively impacted their nests on the ground.

Adult Attwater's are strong flyers, and they seek out dry land when floodwaters pour into low lying areas. Their habitat is limited to the pristine coastal prairie of southeast Texas, less than 1 percent of which remains. During flooding, their area is further limited to what's still dry.

Unfortunately, the Attwater's predators such as coyotes, bobcats, raccoons and snakes, are also flushed to the same slivers of dry land. Two years in a row now, the wild Attwater's have been driven into small dry areas enriched with predators who take advantage of the circumstance to feed.

These threats took a heavy toll on the Attwater's prairie-chickens at the refuge. Of 29 individuals being tracked before the storm (generally hens only), only five are confirmed alive. An additional three have gone missing since the storm. Refuge staff is working with partners to release more prairie-chickens and take other steps for this very rare dancing bird. □

USFWS

BRANT KELLY/FLICKR CREATIVE COMMONS

(Top) Newly hatched chicks depend on small insects for their survival. (Bottom) A fire ant raft in Pearland, Texas, after Hurricane Harvey. The invasive fire ants developed their floating mechanism to survive in the floodplains in South America.

AL BARRUS, External Affairs, Southwest Region

Always Prepared

From wildfires to hurricanes, firefighters are disaster-ready

By KAREN MIRANDA

Wildland firefighters are prepared for disaster.

They are familiar with the year-round process of prevention and mitigation, preparedness, and response and recovery from wildfire. Like other emergency responders, they spend most of their time preparing, with disasters being the exception rather than the rule. While an average 385 wildfires burn an average of 387,246 acres on Service lands every year, you never hear about most of them, for good reason.

Service firefighters, like those in other land management agencies, are able to respond and extinguish about 95 percent or more of all wildfire starts within 48 hours, keeping them relatively small (less than 300 acres, or about half a square mile). In addition, aggressive management of overgrown vegetation on refuge lands has helped keep wildfires small in both number and size.

More than 350 full-time Service fire staff, along with about 100 seasonal and temporary firefighters, complete annual training and physical fitness testing, using interagency standards that are common to all federal and state wildland fire personnel. Being trained and qualified using the same equipment and procedures allows personnel from different organizations to seamlessly interact when a disaster response occurs, and interagency cooperation with federal, state and local partners is critical to the Service's success in every aspect of fire management, from training to fuels management. Beyond fire staff, employees fill a variety of support roles for emergency incidents, ranging from finance and administration to boat and aircraft operations. About 1,800 Service employees are qualified for some role.

MARK DAVIS/USFWS.

Soon after Hurricane Maria passed, Service Assistant Fire Management Officer Robert Trincado from Florida helps install equipment to establish telephone and Internet service in Vieques, Puerto Rico.

In the wildland fire arena, the primary means of preventing and mitigating risk is thinning and reducing so-called "hazardous fuels," the overgrown, flammable vegetation that can fuel a dangerous wildfire. In the Service, most "fuels management" work involves the regular use of prescribed fire. Even mechanical and chemical removal of trees, brush and invasive weeds is often followed up with "pile burning" to safely remove any potential fuel source.

"All fire isn't bad, but it has to be managed," says Robert Eaton, Deputy Branch Chief for the Service's Fire Management Program. "The use of fire, whether wildfire or prescribed fire, is very important for us to maintain plant communities and provide good habitat."

Some lands are particularly prone to wildfire. Drought, heat, disease and invasive species can heighten the risk.

On refuges, the use of prescribed fire—the foundation of our efforts to reduce wildfire risk—began after a 1926 finding by bird biologist Herbert Stoddard that frequent fire led to increased quail populations, which were good for hunters. The Service has used prescribed fire since the 1930s to both improve habitats and reduce risk, and currently burns on average about 300,000 acres a year on refuge lands.

In September, after a sustained month of wildfires taxing firefighters to the highest level, Secretary of the Interior Ryan Zinke called upon all Department of the Interior (DOI) employees to adopt more aggressive fuels management to prevent and combat the spread of catastrophic wildfires. During 2017, fire staff conducted 839 prescribed fires on Service lands—more than any other DOI agency—safely burning 276,780 acres.

The 2017 fire season began two months earlier than usual, with a record-breaking 2 million acres burned by mid-March. More than 58,500 wildfires burned more than 9.4 million acres before year's end, destroying more than 14,000 residential and commercial buildings and minor structures. While 10 percent below average in number of wildfires, the acreage burned last year was 150 percent above average, indicating larger, more destructive wildfires of longer duration.

A helicopter on the West Mims Fire supports a strategic firing operation along GA 177 on the west side of Okefenokee National Wildlife Refuge.

JOSH O'CONNOR/USFWS

Lightning started one of those damaging fires in April at Okefenokee National Wildlife Refuge in Georgia, and it was one of the 5 percent of wildfires the Service could not easily contain. It lasted for more than three months and burned more than 152,515 acres, about 75 percent of all Service lands burned in 2017. ››

The West Mims Fire, as it was called, required more than 1,000 firefighters from across the country to contain and manage.

Besides highlighting the importance of cooperation, the West Mims Fire offers an example of another critical part of the discipline of wildland firefighting—conducting after action reviews and applying lessons learned from challenging circumstances and serious accidents.

The Greater Okefenokee Association of Landowners (GOAL) in Georgia was formed a few years after the pivotal 1990 Shorts Fire at Okefenokee Refuge threatened high-value neighboring timberlands, cost an alarming amount of money to fight and raised safety concerns for exhausted firefighters. It ultimately changed the refuge's fire suppression strategy. Together, the GOAL consortium of private, county, state and federal partners coordinates fuels management, wildfire preparedness and response to wildfires in the entire Okefenokee Swamp ecosystem, including the refuge and surrounding lands. Even as the West Mims Fire escaped the swamp and burned some private lands, the cooperative efforts of GOAL helped limit the damage and quickly recover merchantable timber, while continuing to support the benefits of wildfire to the natural area.

At the height of last year's national fire activity (August–October), the Southeast and Southwest also faced three destructive hurricanes—Harvey, Irma and Maria—while four states were still dealing with recovery from Hurricane Matthew from the previous fall. Service fire staff helped organize and operate numerous incident management teams responding to these events.

(Top) Part of San Pablo Bay National Wildlife Refuge in California after a very early-morning burn-out operation by firefighters. The refuge was threatened by wildfire approaching from Cougar Mountain. (Bottom) Secretary of the Interior, Ryan Zinke (right) on the Lolo Fire in Montana thanks Gerald Vickers, a fire management specialist with the Service Northeast Region.

For example, when Hurricane Harvey made landfall at Aransas National Wildlife Refuge in Texas with sustained winds of more than 100 mph, the Service's Southwest Region had already activated its hurricane response plan developed with the leadership of regional fire managers. A hurricane response team at Balcones Canyonlands National Wildlife Refuge was in place to oversee operations at impacted refuges to ensure personnel safety and access, and to provide initial damage assessments of Service facilities and resources. With numerous facilities and lands on Texas coastal field stations were impacted by high winds and flooding, the response team helped ensure all Service employees at affected stations accounted for and in safe locations, then helped all displaced staff relocate to temporary housing, get back to work and transition smoothly to refuge recovery operations.

Never Impeding

As the administrator of the Endangered Species Act, the Service has a unique role during natural disasters. The Service never impedes emergency response efforts, regardless of potential effects to threatened and endangered fish, wildlife and plants. Service biologists sometimes provide recommendations to minimize impacts to at-risk species, but those recommendations are voluntary and may not be appropriate if performing them would increase risk to human safety.

For example, during California's Thomas Fire in December, the Service's field coordinator for the endangered California condor monitored a fledging in a nest not far from the fire. The chick was ready to fly, but too young to go very far. The coordinator advised the fire team about the nest's location, and a plan was put in place to keep it safe from fire.

The chick has been seen flying since the fire, the very tips of the chick's wing feathers a bit tattered, likely singed from the heat of the fire.

The Southwest Region's Hurricane Response Team and trailer mobilized for Hurricane Harvey from Balcones Canyonlands National Wildlife Refuge in Texas.

The team also stabilized affected facilities and lands to prevent further damage, provided law enforcement security and assisted with damage assessments, indicating more than $60 million in damage to infrastructure, equipment, coastal marshlands and prairie habitats. Service fire staff continued to provide organizational skills, incident management expertise and on-the-ground field support during Hurricanes Irma and Maria that quickly followed.

"Our wildland firefighters and support staff continue to maintain high standards of professionalism and an excellent safety record during what has been a very challenging season, " says Eaton." This highly skilled professional workforce is a value-added asset to the Service and our partners during wildfires, hurricanes and other natural disasters."

In October, historically the end of fire season, multiple wildfires ignited in northern California, where thousands of homes fueled wind-driven flames that jumped from house to house. Service lands were mostly spared, except for when the 37 Fire swept over 222 acres of San Pablo Bay National Wildlife Refuge, requiring firefighters to conduct a burn-out around a five-acre compound to save refuge assets.

By December, a few large wildfires were still burning in South Dakota, Colorado and Oklahoma, and dozens of wildfires again rolled through California, this time displacing thousands of the state's southern residents. As the year ended, Service firefighters with specialized skills in wildland firing operations, wilderness tactics and public information were still being called by partner agencies to respond. □

KAREN MIRANDA, Branch of Fire Management, Headquarters

Helping Neighbors Recover

On July 29, after ranchers in Jordan, Montana, lost grazing land for their cows during the Lodgepole Complex fires, the nearby Charles M. Russell (CMR) National Wildlife Refuge opened retired grazing allotments to provide their neighbors emergency grazing relief.

"This is a difficult time for many families in Montana and we are eager to get to work as neighbors do and help people impacted by this fire disaster. We stand ready to welcome our neighbors in need," Charles M. Russell Refuge manager Paul Santavy said at the time.

Secretary of the Interior Ryan Zinke and Montana Congressman Greg Gianforte praised the move.

"We have a saying that Montana is one small town with really long roads, and as a neighbor in that small town, the Department is dedicated to providing disaster relief and resources where possible," said Secretary Zinke. "I applaud the quick work and flexibility of the team at the CMR for getting this done for the community."

Managed grazing makes sense not just for the local ranching economy but also for managing wildlife habitat on this big game and bird-hunting refuge. The northern Great Plains, including much of the landscape in and around the refuge, evolved over thousands of years through a complex ecological interaction between fire and grazing. The demise of the freely roaming wild bison in 1881, along with the development of ranches, fences and livestock, altered the natural fire–grazing interaction that maintained the prairie habitat. Since 1986, the refuge has gradually been making the transition to prescriptive grazing, in an effort to mimic historical conditions.

Prescriptive livestock grazing is grazing planned for a specified season, duration and intensity designed to meet habitat and wildlife goals. It can be an effective long-term tool to control invasive species and develop a mosaic of habitats that support a variety of wildlife species, while providing recreational opportunities and benefits to the local economy.

Oh Baby!

Refuge caretakers face raging Columbia Gorge fire

By BRENT LAWRENCE

Nine months pregnant, Nicole Strawderman watched from her home as the Eagle Creek Fire in the Columbia Gorge engulfed tree after tree, acre after acre.

Nicole and husband Jared, caretakers and full-time residents of Pierce National Wildlife Refuge, tracked the blaze anxiously in early September as it burned across the Columbia River. High winds were fueling the blaze and sending red-hot embers floating through the sky.

"It was scary because I was due so soon; I was actually late already," Nicole says. "It was crazy to just watch because the fire was moving so fast. Sometimes it felt like the refuge was already on fire because we could see the fire from everywhere. We were constantly seeing the smoke, even before it got really big. Fire was imminent daily."

The 329-acre Pierce National Wildlife Refuge is on the Washington side of the river between Beacon Rock State Park and Bonneville Dam. In the role of caretakers, the Strawdermans live in refuge housing as part of Jared's job as volunteer coordinator with the refuge's Friends Group, Columbia Gorge Refuge Stewards.

Jared regularly patrolled the refuge looking for signs of problems while the fire raged in the Columbia Gorge.

"We were lucky it didn't catch fire. But in our minds was a constant question of when was it going to light us up," Jared says. "It's incredible to see some of the embers that did come across the river. Huge pieces of bark floated in the air across the river, and it was scary to see them landing in dry fields on the refuge and around our house."

The embers did eventually catch fire in another spot across the river—causing a comparatively small 260-acre burn at Archer Mountain, but it posed yet another problem for Nicole and Jared. It was between their home and their birthing center, potentially cutting off their path if Nicole went into labor.

"We had all our bags packed and ready to go if that fire got worse," Nicole says.

On the morning of September 11, Nicole went into labor and gave birth to Simon on September 12.

Much has changed since then. The fire that started on September 2 was finally

(Left) Jared, Simon and Nicole Strawderman. (Right) Nicole Strawderman watches the Eagle Creek Fire.

JARED STRAWDERMAN

100 percent contained on November 30 after burning 48,831 acres. For Jared and Nicole, high school sweethearts from Virginia who moved to the Pacific Northwest four years ago, their life has found a new normal.

"Simon is all good, and we're all good," Nicole says.

Adds Jared: "He's a lot of fun. In November, we got in 34 miles of hiking in the Gorge with Simon. We're staying active and hiking as much as we can."

The stunning photo of Nicole watching the fire was taken by Jared during a walk about the refuge on September 4. Nicole was on doctor's orders to take walks to help induce labor.

"I was amazed how well that picture came out," Jared says. "It was a pretty scary time, as you would imagine. I kept thinking: 'When is the wind going to die down?' The fire was probably two miles away, but you could watch it move across the mountain. One of the benefits of the wind, however, was that it was blowing all the smoke west. There wasn't much smoke here so we didn't have any problems with that."

In between regular baby duties and hikes with Nicole and Simon, Jared's work life has gotten back to normal. He works closely with Service staff in the coordination of volunteers who help maintain and improve public use facilities and habitat at Steigerwald Lake, Franz Lake and Pierce National Wildlife Refuges in the Columbia Gorge.

"I get our volunteers out to do habitat work, maintenance on trails, mowing and removal of invasive plants," Jared says. "We have 13 active trail stewards that walk the trails at Steigerwald and talk to people about the refuge, wildlife and conservation. I also coordinate offsite events."

Steigerwald Lake Refuge, which is near Camas, Washington, is open to the public, but Franz Lake and Pierce are closed with the exception of special events.

Eric Anderson, the deputy project leader for Ridgefield National Wildlife Complex, which encompasses Ridgefield, Steigerwald Lake, Franz Lake and Pierce refuges, calls Jared invaluable in his position as coordinator for the Columbia Gorge Refuge Stewards and caretaker at Pierce.

"Our challenge is that Pierce is the furthest from our administration headquarters in Ridgefield, so it is inherently the most difficult to get to and care for by U.S. Fish and Wildlife Service staff. To have someone there as dedicated and passionate as Jared is tremendous," Anderson says. "Before Jared became the coordinator in the Gorge, the Friends group was adrift from not having daily guidance. We were worried everything the Friends group had done there would unravel without someone there to guide them. Having him come on revived that." □

BRENT LAWRENCE, External Affairs, Pacific Region

Fish Rescued from Oregon Fire Safe at Service Hatcheries

JOHN ORLANDA/USFWS

In September, Leavenworth and Willard National Fish Hatcheries, both in Washington, helped Oregon's Cascade Salmon Hatchery and the Yakama Nation Fisheries save a million baby salmon from the Eagle Creek fire in Oregon.

It was an appropriate assist because in August 2015, Yakama Nation Fisheries helped rescue Chinook salmon from Leavenworth, moved due to high summer heat.

Workers at Cascade Salmon Hatchery were evacuated during the fire. Flames burned all the underbrush upstream near the water intake, creating conditions so ripe for mudslides that not even firefighters were allowed in the ravine.

The fish needed to move. Rain would sweep ash into the water at Cascade Hatchery, raising pH levels. Fish thrive in neutral pH, and suffer when water becomes more basic.

Dubbed the "Liberation Team," rescuers had to act fast when rain was predicted. Two large tankers from Oregon Department of Fish and Wildlife worked with Department of Transportation officials in both Oregon and Washington, rushing the fish out of danger.

The departments of transportation in the two states opened the highways to the tankers, so the rescuers could transport 665,000 Yakama Nation coho to Willard and 310,000 to Leavenworth. Yakama Nation coho normally arrive at Leavenworth in February for a short stay to acclimate before release into Icicle Creek and the Wenatchee River. Instead, they overwintered there.

Coho managed by the Nez Perce and Umatilla were also housed at Cascade, and were rapidly moved to Oregon's Leaburg Fish Hatchery.

With all the fish safely removed, staff were able to concentrate on cleaning up once they're returned.

Greg Wolfe, Upper Columbia Hatchery Complex manager for Yakama Nation Fisheries, said, "Hats off to Oregon and hats off to the Liberation Team. They are very dedicated." □

JULIA PINNIX, Fish and Aquatic Conservation, Pacific Region

TAG, YOU'RE IT

Premium hunting opportunities abound on national wildlife refuges | BY BRENT LAWRENCE

Across your public lands, opportunities abound to learn the addictive hobby of hunting and improve your skills. But that doesn't mean that hunting on public lands is just for beginners.

Some of the top hunts in the West are on national wildlife refuges, and competition for a spot is so stiff people wait years for them. Ric Shirrod of Tieton, Washington, had been after one of these once-in-a-lifetime opportunities since reading a hunting book by Dwight Schuh in the 1980s.

"I was reading his book, and he talked a lot about Hart Mountain," Shirrod says. "It always intrigued me. I started [applying] for hunts there in the early 1990s. I kept putting in and thought anything could happen. I put in for it again this year and checked my email on Father's Day weekend. It said I had drawn the Hart Mountain antelope tag, and I couldn't believe it." A tag is essentially a license for a type of game.

The hunts on Hart Mountain National Antelope Refuge in Oregon are legendary.

"The Hart Mountain tags for antelope and bighorn sheep, Umatilla mule deer tags and several others are some of the most sought-after hunting tags in the state of Oregon," says Kevin Foerster, the Service's Pacific Region Chief for the National Wildlife Refuge System. "Thousands of applicants try for years to draw those tags, which combine fantastic hunting with the premium wildlife habitat on our refuges. We're excited that we've been able to work with our state, federal and tribal partners across the Pacific Region to provide high-quality hunting and fishing experiences on our public lands."

Shirrod, who also guides bighorn sheep hunters in the Yakima Canyon for free, had to learn quickly about the 270,966-acre Hart Mountain Refuge. Created on

December 20, 1936, by President Franklin D. Roosevelt as a range for remnant herds of pronghorn antelope, the refuge is a rich mix of habitat types, home to more than 300 species of wildlife including California bighorn sheep, mule deer, greater sage-grouse and redband trout. Hart Mountain is also one of the most expansive wildlife habitats in the arid West free of domestic livestock.

Shirrod and Garric, his 12-year-old son, immediately started researching.

"We started by talking to biologists with the refuge and [Oregon Department of Fish and Wildlife]," Shirrod says. "It turns out there has never been a better year for antelope. The fawn [reproduction] was phenomenal, the population was at an all-time high, and moisture was good. There was a ton of water down there."

As a bow hunter, that abundance of water actually created a challenge for Shirrod. Archery hunting for pronghorn—which have keen eyes and exceptionally fleet feet—is usually done over watering holes. But with so much water, it meant the pronghorn were scattered, and Shirrod had to adapt.

"My son and I sat 12 hours per day at watering holes, and the only thing we saw close was a doe and fawn," Shirrod says. "It's only an eight-day season, and I was starting to panic a bit. I told my son that for the last three and a half days were going to have to cover a lot of country. We were going to look for spot-and-stalk situations, which are extremely difficult" in archery hunting for pronghorn.

Finally, Shirrod and Garric spotted a buck with 14 does hundreds of yards away. He had to close the distance to less than 50 yards.

"I just had to hope for the best. I got on the backside of the ridge to sneak as close as possible. As I was getting to the top, I looked up to see the buck looking over the top of my head at my son 500 yards away. I took three steps up and got a clear shot on him. I didn't go up to the antelope until my son got there because we had so much invested together. We were hugging and crying."

Shirrod credited Hart Mountain wildlife refuge specialist Laurel Kullerud with steering him toward a successful hunt.

"Laurel was just phenomenal. She wanted to make sure we had the best time, and she had great information for us," Shirrod says. "Her help and the refuge meant everything to us. Without public land, hunting as we know it now is will cease to exist.…Without public land, you could kiss hunting goodbye."

Shirrod, who owns All That's Wild Taxidermy in Washington, says many of his clients use public lands.

"Looking at my customer base, 25 percent of them are extremely wealthy," Shirrod says. "The rest are blue-collar, over-the-counter tag buyers. They don't go out of state to hunt. Without public land, they wouldn't be able to go hunting. They rely on this meat for their freezers to feed their families for much of the year."

Greg Sheehan, the Service's Principal Deputy Director, says that providing public access to national wildlife refuges and other public lands is an important goal for the Department of the Interior.

"Our public lands play an essential role in outdoor recreation, and our team at the U.S. Fish and Wildlife Service is accelerating efforts to expand hunting, fishing and other opportunities when compatible with wildlife management goals," Sheehan says. "Sportsmen and anglers play a huge role in the conservation of wildlife and their habitat, so it only makes sense that refuges provide opportunities for folks to get outside to hunt, fish and enjoy many other wildlife-related activities. I'm proud of the fact that our national wildlife refuges provide some of the finest big game and waterfowl hunting in the nation." □

BRENT LAWRENCE, External Affairs, Pacific Region

COURTESY OF RIC SHIRROD

(Top) Two Army graves mark the spot of the original Camp Warner at Hart Mountain National Antelope Refuge in Oregon. There is virtually nothing else left to mark the camp, which existed from 1866 to 1874. (Middle) Ric Shirrod and son Garric with their pronghorn harvest. (Above) Ric Shirrod and Garric at Hart Mountain Refuge.

A River Runs Free in Rhode Island

Returning the Pawcatuck River to its natural state helps wildlife and people

by ISAAC BURKE *and* LAURI MUNROE-HULTMAN

An excavator builds one of the rock weirs in the nature-like fishway that replaced the Bradford Dam on the Pawcatuck River in Rhode Island.

AYLA FOX

As the summer sun burns brightly overhead, Rhode Island's Pawcatuck River pours over the rocky ledges of the crumbling Bradford Dam, leaving behind white swirls of foam as it drifts toward Little Narragansett Bay. Suzanne Paton, a biologist with the Service, looks on as water passes the decaying mill on the opposite bank.

In a matter of weeks, the water would be diverted into a newly dug channel and the riverbed would temporarily run dry, making way for construction crews to remove what was left of the centuries-old structure. The project, which replaced the dam with a nature-like design, concluded in late December.

The rumble and bustle of dam removals has become commonplace here in the last decade, as conservation partners such as the Service, The Nature Conservancy, the Wood-Pawcatuck Watershed Association and the Rhode Island Department of Environmental Management have embraced the goal of returning the Pawcatuck to its natural state.

Not so long ago, mills, such as the one at Bradford, were the lifeblood of their communities, harnessing the currents of the Northeast's rivers to produce lumber, flour, and cotton and woolen goods. Rhode Island was home to many of the early textile mills that brought the Industrial Revolution to New England, with dozens of dams built in the Wood-Pawcatuck Watershed alone.

Only a few generations have passed since the mills were in use. But today many of these dams are no longer gateways to prosperity; they have aged into perilous barriers, blocking migratory fish runs and presenting potential liabilities to the communities they once served. Like Bradford, many sit unattended and unmaintained, slowly collapsing into the water they once held back, while their mills have become ivy-covered relics of a bygone era.

"A lot of these dams have been in place for hundreds, sometimes 200 or even more years, and many of them had a really important function when they were first built," says Paton. "Now many of them are not only obsolete and not being used anymore, but they are beginning to fail. During each major storm event, the pressure of the water on them is causing them to fall apart, and so there's a risk that having them in place will potentially lead to a catastrophic failure and impact downstream communities."

A River Divided

A divided river also wreaks havoc on its wildlife. Since the first dams spanned the Pawcatuck in the late 1600s, fish species such as blueback herring, alewife and American shad have been unable to make the journey upriver in sustainable numbers, instead becoming stranded far from their historical spawning habitat. American eel have also found their path blocked as they travel upstream as juveniles, after spawning in the Sargasso Sea. These barriers, coupled with overfishing and chemical pollution from the old mills, have driven fish populations throughout the 300-square-mile watershed dangerously low, weakening an ecosystem that stretches from its rivers all the way to the sea.

"A lot of things depend on these migrating fish species," says Denise Poyer, a 23-year veteran of the Wood-Pawcatuck Watershed Association, noting that the small fish of the Pawcatuck are a vital food source for larger fish, migratory birds and even more species in the ocean.

"They're a key aspect of the whole ecological foundation of the watershed," she says. ››

Since the 1970s, conservation groups have tried to aid these species through a number of means. Until the 1990s, the most common approach was to retrofit old dams with "fish ladders"—enclosed, slatted ramps with water flowing through them, basically meant as staircases for fish to swim and jump to the top of a dam. These structures were instrumental in stabilizing migratory fish populations, and a few still remain on the Pawcatuck.

While fish ladders were efficient for moving larger fish such as salmon and striped bass upriver, smaller species such as shad, alewife and blueback herring—fish that, Paton points out, "don't really jump"—still struggled to reach their spawning habitat.

Today, removing dams and restoring the river channel to a more natural state has become the preferred method of reestablishing fish passage. While more expensive than building a fish ladder, the benefits are far greater. Removing the barrier from the river completely eliminates the risk of dam failure and the need for paddlers to portage, and once it's gone, engineers can redesign the riverbed to accommodate all the species that need to migrate upriver.

AYLA FOX

The step-pool design of the fishway allows migratory fish to reach their upstream spawning grounds. The bypass channel on the left has since been closed, returning the river to its natural channel and creating resting pools behind the rock weirs. The idle mill on the right will be protected as part of the local historic district.

"We're really trying to step back and look at a landscape scale," says Paton. "Everything is connected."

Since 2009, the Service and partners have removed or replaced more than 507 barriers to fish passage from Maine to West Virginia, reconnecting more than 4,000 miles of rivers and streams and 19,300 acres of wetlands. While some of this work has been supported by federal funding for Hurricane Sandy recovery, partners across the Northeast have matched the Service's contribution at nearly five to one, contributing $56.1 million to the Service's $12.5 million to restore aquatic connectivity for wildlife and protect communities.

The benefits of these fish passage projects extend beyond the watershed. Because many of the species are anadromous (migrating from the sea to spawn in freshwater), much of their life is spent in the ocean, where they become food for commercial fish. A 2011 Service study found that every mile of river opened so that fish can move freely can contribute more than $500,000 in social and economic benefits once fish populations are at their full productivity. This is particularly important in states such as Rhode Island, where commercial fishing and water-related recreation contribute billions of dollars to the local economy.

"By improving anadromous fish pop-ulations, we're providing food for important species in the ocean, such as whales and large fish that are commercially and ecologically valuable," says Poyer. "It's not just the effect that it has in this watershed but more of a global effect."

Seven major dams have been removed from the Pawcatuck by the Service, Wood-Pawcatuck Watershed Association, and other state and local organizations just in the last decade. While some have been replaced by nature-like rock fishways to maintain upstream water levels—such as Bradford—others have been removed entirely, returning the river to its natural flow.

In 2015, the Service joined The Nature Conservancy and Fuss and O'Neill engineering to remove the White Rock Dam, near the mouth of the river. A concrete and rock barrier much like Bradford, White Rock had also been crumbling into the river a few chunks at a time since it was breached by a storm in 1960. The flooded nearby mill race became stagnant, creating a barrier to migrating fish.

Today, however, there is little trace of a dam at the White Rock site. The concrete foundations are gone, allowing the river to flow freely and fish to pass through. The old mill race sits dry, empty and overgrown with lush knee-high plants, shaded by trees rooted in the riverbank. The river flows by with hardly a sound.

"We're really trying to step back and look at a landscape scale," says Service biologist Suzanne Paton. "Everything is connected."

This recent wave of restorations has also included revamping some of the fish ladders on dams that can't be removed yet. At Potter Hill, the fish ladder was repaired to improve passage in 2012, leading to the highest fish count in 15 years this past summer.

The goal is to one day remove all the dams on the river. Bradford is one of the last to come down, leaving Potter Hill, Horseshoe Falls and a U.S. Geological Survey gage dam as the only remaining obstructions.

Returning to Life

Even with a few projects still waiting in the wings, the river is already coming back to life. This year, surveys found shad, blueback herring and alewife above the site of the former White Rock Dam, which was once all but impassable.

Locals such as David Smith, an avid paddler and wildlife enthusiast, have seen the change in the river firsthand. Smith notes that osprey, otters, snakes and raccoons have thrived since several of the dams were removed.

"I have been paddling the Pawcatuck River for about 52 years," he says. "Back in the 1960s and 1970s, the river would run red, purple or yellow, depending on the color of dye being discharged by the mill."

"Now along the river I can see to the bottom and view crawfish and mussels, surely a sign that the water is clean and oxygenated."

As a paddler, Smith has also found the new nature-like fishways to be a major improvement. Experienced paddlers are able to "run" the fishways instead of portaging around the old dams, making their passage almost as easy as it is for migrating fish.

"I will be paddling the river summer, spring, fall and winter until someone pries the paddle from my hand," Smith says. "Instead of looking at dams with nostalgia, I would rather see the river and the wildlife it supports endure so that my grandkids can hopefully share my love for it. That's all the nostalgia I need."

As dams disappear and the river flows more freely, communities along its banks are looking to the future. The Wood-Pawcatuck Watershed Association has spearheaded an effort to add the Pawcatuck and its tributaries to the National Wild and Scenic Rivers System, administered by the National Park Service. Wild and Scenic designation would preserve the Pawcatuck, banning new dam construction and supplying federal funds to implement a stewardship plan for the river.

"I like the river the way nature intended," Smith says. "I understand the Industrial Revolution was necessary to our development, but like the river changes, so should our thinking. I believe future generations will thank us for advocating for the river." □

ISAAC BURKE and LAURI MUNROE-HULTMAN,
External Affairs Northeast 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.

Googly Eyes

We recently received an original Bob Hines oil painting from the Southwest Regional Office in Albuquerque, New Mexico. Bob Hines was the only Service employee hired specifically and exclusively as a wildlife artist. He was a prolific artist, and he did the illustrations for some of friend Rachel Carson's books, as well as a few early Duck Stamps. The painting is a very large depiction of a man fishing in a stream. If you look closely, the man has solid black eyes. It looks absolutely demonic! Our historian, Mark Madison put a photo of the painting up on the Service's History and Museum Facebook page, and he received several comments on it. The Service's Al Barrus commented that the reason the eyes were solid black was because Bob Hines had glued little plastic googly eyes on it. These have since been removed. I guess Bob had a pretty wicked sense of humor!

Kent Olson—Artist Extraordinaire

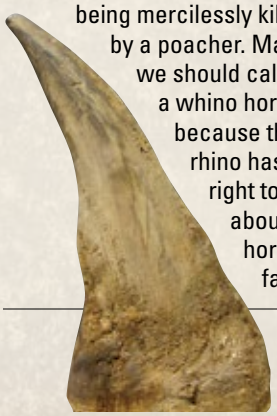
Everyone who has been with the Service for a few decades has seen posters or cartoons drawn by artist Kent Olson. Kent was a career field biologist, and he drew many iconic posters and artworks, including the famous "Smack Smack" cartoon with all the animals around the Service sign and a mallard holding onto the sign and kissing it. He even drew his own obituary cartoon. Kent was a beloved person here in the archives. He donated many of his original artworks to us, and he won the FWS Heritage award in 2006. He sent me a story he wrote for his granddaughter about Caleb the Cottontail explaining how he got a bite mark out of his ear, because Kent knew of my affinity for rabbits! Caleb was in many of his drawings, and he always had that ear bite! Kent is now surely in heaven surrounded by all the critters he loved and drew so well! We miss you, Kent! (see p. 44)

Last Word on Fake Uniforms

In an earlier issue, we wrote about John "Dopey" Perry and our exhibit on law enforcement in the Service, which includes two mannequins that depict Perry in his disguise and in uniform. Our first incursion into fake uniform mannequins came with our depiction of Paul Kroegel, who, in 1903, became the first refuge manager at Pelican Island in Florida—the first migratory bird refuge, which would later be renamed Pelican Island National Wildlife Refuge. From old pictures of Kroegel, we studied the shirts, sweater, shoes, hat, etc., he typically wore to do his job as the protector of the brown pelicans at the bird sanctuary, which paid a whopping $1 a month (honestly, we have copies of the paperwork). We had to guess at the color scheme because the glass negatives were all in black and white. In the end, we settled on green, determined by the green sweater I bought online. I know we did a very good job because I cannot count the times I have been asked, "Is that his original outfit?" Funny how this first "uniform" was determined by what Paul wore on the one day when we happen to have lots of photographs of him doing his job.

Weeping Rhino

We recently put an entire rhino horn on display in our new Endangered Species and Law Enforcement exhibit. Lo and behold, a month later, a puddle of oil was oozing out of the horn onto the ledge it is perched on. The horn is lighter colored at the top, so it seems the natural fats and oils from the horn are draining out from the force of gravity and natural drying processes. I cannot help but think the rhino is weeping from being mercilessly killed by a poacher. Maybe we should call it a whino horn because the rhino has every right to whine about its horrible fate!



Retirement Can Be Busy… and Exciting

If you think that retirement means you have to slow down and give up on all the activities that passionately defined your work career, think again. Just check out the post-retirement life of Matt Perry.

Matt enjoyed a 40-plus-year wildlife career that began as a temporary GS-7 biologist at Lake Woodruff National Wildlife Refuge in Florida and ended as a research stalwart with USGS at the Patuxent Wildlife Research Center in Maryland, using telemetry to track canvasbacks and sea ducks.

When he turned in his papers in 2011, still a young man at 70 years of age, he wasn't quite ready to stop working on all things wildlife. In fact, what he did was ditch all the mundane, bureaucratic duties that careers almost always entail and spend the bulk of his time on the enjoyable, exciting and interesting parts. He found a way to pick the cherries and leave the pits. Same man, same interests, but a lot more freedom….and fun.

Matt, a native of Rhode Island and a Navy veteran, spent his career on waterfowl and wetlands, and when he retired from Patuxent, he maintained a desk there (and still does). For three years after his retirement, he worked on projects of his own choosing involving waterfowl and wetlands. He took up a project tracking long-tailed ducks (oldsquaws) in Manitoba and another on a private ranch in Argentina, the later funded by the billionaire landowner from the United States.

Matt also continued traveling about the world bird watching and leading tours of exotic places. Since 1999, Matt has traveled as a leader of groups to Iceland, the Galapagos, Peru, Bolivia, Costa Rica, Tobago (twice), Puerto Rico, Cuba, Churchill on Hudson Bay in Canada and South Africa. He just returned from a 12-day trip to Belize and Guatemala with a group that included several other Service retirees. The group lived aboard a shallow-draft ship (the Grande Mariner) and visited several cays for snorkeling along coral reefs. The ship also ventured up the Rio Dulce, where they spent their days exploring and communing with the tremendous diversity of wildlife that Belize and Guatemala offer.

And just to add some variety to his life, Matt will travel to New Brunswick, Canada, in July for 10 days aboard the same ship to explore other natural areas including breeding grounds of puffins.

Not all of Matt's overseas ventures are eco-tours. He also spends time in Japan for something more personal.

As his name might suggest, Matt is a descendent of Commodore Matthew C. Perry, a great-great-great uncle, who is widely acclaimed as the American naval officer who first ended Japan's policy of isolation from the Western world and opened that country to commerce with the United States in 1854. Matt periodically visits Japan to participate in a cultural exchange at the Japan-American Grassroots Summit, which celebrates the friendship that has developed between the two countries. The summit has been held alternately in the United States and Japan for the past 28 years, and Matt has participated nine times and made many Japanese friends. He lectures on these trips and at other invited conferences in Japan about his relative, who is very well-known there.

In case you think Matt hasn't been busy enough with all that, Matt has found time to serve on the Retirees Association's Board of Directors for six years and is a member of the FWS Heritage Committee. He also serves on the Board of the Friends of Patuxent and writes extensively about the history of Patuxent Wildlife Research Center. In 2016, he completed a 255-page book on the subject <https://pubs.er.usgs.gov/publication/cir1422>.

In his spare time, he enjoys writing on the family history, gardening, taking part in the local Christmas Bird Counts and some occasional hunting with his sons. He and his wife, Georgia, live in Mitchellville, Maryland, just a short jaunt from Patuxent. Together, they work to restore and maintain the Perry family home in Rhode Island, which was built in 1793. Georgia sometimes accompanies him on his travels.

Retirement certainly hasn't diminished Matt's interest in and ability to enjoy our natural world. □

JIM MCKEVITT, Secretary/Scribe, Association of Retired Fish and Wildlife Service Employees

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.

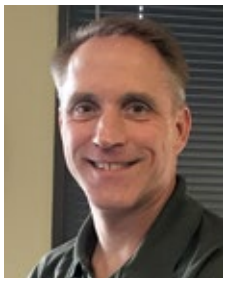
The FWS Retirees Association aims to foster camaraderie among retirees and active employees; recognize and preserve the rich history of the Service and the many contributions of employees; foster the preservation and use of objects and information relating to the Service's unique history; and involve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

transitions

Mountain-Prairie Region



After a distinguished career, Assistant Special Agent in Charge **Dan Rolince** retired December 31. It's a little unclear exactly what he intends to do in retirement, but working the family farm in upstate New York and spending more quality time with wife Christine are both on the agenda.

Dan's career was varied and unique. He attended Cornell University and obtained a degree in natural resources in 1988 and was commissioned as an officer in the Navy upon graduation. After completing flight training for the Navy, Dan flew an SH-60B Seahawk deploying on frigates, cruisers and destroyers. During this time, he deployed to the North Red Sea in support of the Gulf War. His second tour was flying a UH-1N Huey in support of the National Science Foundation's Antarctic research program. For this tour, Dan deployed to Antarctica twice.

After eight and a half years of active duty in the Navy, in 1997 Dan became a special agent for the FBI. After four months of training in Quantico, Virginia, Dan was assigned to the Macon, Georgia, office. He primarily investigated white-collar crime, but also worked violent crimes, fugitives and foreign counterintelligence cases. After seven years with the FBI, Dan decided to use his skills and training to make a difference in our natural world, so he applied for and was hired into a special agent position for the Service. He was assigned to the Richmond, Virginia, office as a field agent for six years and a first line supervisor for three. In 2014, he was promoted to his current position as the Assistant Special Agent in Charge for the Mountain-Prairie Region, where he oversees the Office of Law Enforcement's operations in eight states. □

Larry Gamble, Fish and Aquatic Conservation program supervisor in the Mountain-Prairie Region, retired after 33 years of service. Larry started his career in 1984 in the Clear Lake Ecological Services Field Office in Texas working on federal projects and Section 7 consultations. He then worked in the Albuquerque and Corpus Christi ES Field Offices, working as an environmental contaminants specialist. In 1991, he moved to the Mountain-Prairie Regional Office to serve as the biomonitoring, damage assessment and oil spill coordinator. After a two and-a-half year sabbatical with the National Biological Survey headquarters staff, Larry returned to the Service and the Ecological Services Program in 1995 as the regional environmental contaminants coordinator for the Mountain-Prairie Region, a position he served in for 12 years. Larry is particularly proud of the work of the Environmental Contaminants Program during this time, dealing with contaminant issues on national wildlife refuges, working with partners to clean up hard rock mining sites and reducing risks to listed species and migratory birds from agricultural pesticides. With the opportunity to provide leadership in a different program, he made a switch to the Fish and Aquatic Conservation Program in 2009. He says that it has been especially gratifying working with the dedicated project leaders, staff and many partners to help conserve the fish and aquatic resources in the region. He will miss working with all fellow Service employees whose dedication and passion are endless. □

Lori Robinson retired January 3 after almost 37 years of federal service, the last five-plus years as the Budget and Finance Officer in the Service's Mountain-Prairie Region. Lori began her federal career in 1981 at the Fitzsimmons Army Medical Center and spent the next 26 years with the Department of Defense. Before coming to the Service, Lori also worked with Veterans Affairs, Bureau of Reclamation and the Small Business Administration. For the time being, Lori will be staying in Denver with husband Joe and daughter Sophie. She hopes to travel as much as possible with Joe, and may chase Sophie to her chosen college location in a couple of years—as long as it is warm! □

Special Agent **Kenny Kessler** decided to hang up his sidearm and handcuffs, and pick up his fishing pole December 31. After starting his career as a Refuge Officer on Chincoteague National Wildlife Refuge in Virginia in 1987, Kenny became a special agent with the Office of Law Enforcement in 1994. Kenny was originally stationed in Lawrence, New York, before transferring to Albuquerque, New Mexico, in 1995 and eventually to Topeka, Kansas, in 2000.

Kenny has had a long and fruitful career with the Office of Law Enforcement, working several complex, high profile cases including Airborne Hunting Act cases where planes were seized, Lacey Act cases involving the unlawful take of nearly 100 deer, and Migratory Bird Treaty Act cases too numerous to mention. Kenny was also instrumental in working with nearly all Kansas power companies to develop and implement Avian Protection Plans, apprehended subjects shooting whooping cranes, and made numerous eagle shooting cases.

Congratulations to Kenny for his dedication to protecting the nation's wildlife resources and a well-deserved retirement! □

Alaska Region

At the end of October, **Steve Ebbert**, invasive species biologist at Alaska Maritime National Wildlife Refuge, retired and passed on his mission of removing human-introduced species from the Aleutian Islands.

Eighteen islands are now free of Arctic foxes thanks to the work of Ebbert and his teams of professional trappers. That helped bring the birds back.

Steve told the Geophysical Institute at the University of Alaska at Fairbanks that his timing for retirement was good, in part because he had trapped himself out of a job. □

A Man Who Teaches Lessons Worth Knowing

With the retirement of **Mike Spindler** as 2018 began, the Service lost a consummate professional, an inspiring mentor and an extraordinary storyteller.

From his early days on the marine research vessel Aleutian Tern to his most recent work as Kanuti National Wildlife Refuge manager and co-chair of the Northwest Boreal Landscape Conservation Cooperative, Mike has profoundly shaped conservation in Alaska — a legacy that will continue far into the future.

When the Aleutian Tern was delayed, sometimes for weeks, the small crew on remote Agattu Island — now part of Alaska Maritime National Wildlife Refuge — survived by eating from the seashore. With no radio communications and difficult logistics, the crew still successfully worked to make the island nearly fox free, enabling the recovery of several bird species not long afterward. Mike was on that crew in 1976– it was his first Service job.

He went on to become the first wildlife biologist at Arctic National Wildlife Refuge. There he helped shape techniques for shorebird, sheep and moose surveys. He also spent more than 400 hours with pilot and mentor Don Ross. When fog made it impossible to land where they wanted to and fuel was low, Ross found a clearing and landed in the hills, where they simply made camp for the night. This taught Mike that you can stop when it's too risky to continue and that you must be prepared for anything. Mike didn't know then that he would become a skilled instructor-pilot and mentor in his own right for more than two decades.

In 1984, Mike flew Selawik National Wildlife Refuge's first plane, making connections between inland waterfowl nesting areas and coastal estuaries, then moved to Koyukuk and Nowitna National Wildlife Refuges, where he discovered a significant decline in white-fronted geese. Mike worked hard to reverse the decline, but he didn't know those efforts were truly successful until years later — when former chief of the village of Allakaket, P.J. Simon, pointed to Mike and said, "You, you brought back the geese — thank you."

Those efforts led to a radio show. The show, *Raven's Story*, co-created by Mike, encouraged elders' to tell what they know — to benefit present and future generations. The late Catherine Attla, once told Mike on the show, "I used to feel different. I used to hide with my belief because I was ashamed...but so many people tell me, 'Your knowledge is as good as or better than what we know.' " She went on to become a respected author of traditional Koyukon Athabaskan stories.

Mentors like Mike help us learn the lessons worth knowing, and they inspire us to act on those lessons. I have worked with Mike at Kanuti Refuge for more than a decade. His greatest lesson and greatest conservation accomplishment might be these three words: "Share our story."

Mike taught me that stories, once shared, are infinitely and profoundly powerful. They can, and do, change minds, hearts, circumstances and the future. □

KRISTIN REAKOFF, Interpretive Park Ranger, Kanuti National Wildlife Refuge, Alaska Region

honors

Northeast Region

Albert Spells (pictured at left with Jamie Brunkow, James River Association's Lower James Riverkeeper), project leader of the Service's Virginia Fish and Wildlife Conservation Office, has been honored as a James River Hero by the James River Association.

During Albert's time with the Service, which spans more than 30 years, he has worked to restore migratory fish species, such as Atlantic sturgeon, American shad, Alewife, Blueback herring and American eel. He has also improved habitat for Virginia's aquatic species — removing dams and culverts that create barriers to trout or river herring migration.

Albert was the only one back in 2004 at a summit of experts who believed that sturgeon still existed in the James River and that they could be restored over time. By 2012 scientists were seeing sturgeon return to the James. Albert is not only exceptionally knowledgeable and experienced, but he also knows how to inspire people to be good stewards of the environment and to build effective partnerships that can accomplish big goals. □

Headquarters

Former Chief of the Office of Law Enforcement **William Woody** (pictured between Cindy Williams (left) and Melanie Steinkamp) was awarded the 2017 Ira Gabrielson Award. The award was presented to him on November 3 at the National Conservation Training Center by Cindy Williams and Melanie Steinkamp on behalf of Cohort 15 of the Advanced Leadership Development Program. The Ira Gabrielson Award recognizes a Service employee who best exemplifies all the essential elements of leadership in his or her conservation work. Named for the first director of the Service, it is considered the highest internal award one can achieve because candidates are selected by their colleagues.

Woody was selected for his contributions to protecting wildlife and enhancing the international law enforcement community. For more than 35 years Woody has protected the country's, and the world's, most vulnerable plants and animals from illegal trafficking. Beyond his positive impact to the natural resources he has dedicated his professional career to protecting, he has also nurtured and guided the development of the next generation of wardens and conservation officers. □

Service-wide

The Service has announced the winners of the FY 2017 Environmental Leadership Awards, which honor individuals, organizations and contractors who have demonstrated environmental leadership on behalf of the Service. The Individual, Refuge and Hatchery of the Year receive traveling trophies for exceptional actions. In addition, awards are given to winners in several categories

For FY2017, the winners are:

Individual of the Year: *Kim Lambert*, Environmental Justice, Headquarters External Affairs. Kim Lambert is being recognized as the "Individual of the Year" because of her role as the Service's Environmental Justice Program (now Policy) Coordinator. In addition to promoting environmental justice, Kim introduced the Summer Food Service Program that ensures at-risk children receive nutritious meals when schools are not in session. Kim has been instrumental in bringing diverse groups together, such as the Service, community organizations, municipalities and nonprofit organizations to advance environmental justice and environmental conservation.

Hatchery of the Year: *Mammoth Spring National Fish Hatchery*, Environmental Stewardship, Arkansas. Mammoth Spring Hatchery is being recognized as the "Hatchery of the Year" for constructing the energy-efficient Aquatic Conservation Center that includes interactive exhibits that educate and promote aquatic conservation, environmental awareness and sustainable building practices. Features include an innovative geoexchange HVAC system that heats and cools the facility using 58-degree Fahrenheit water from Mammoth Spring. This building received a Silver certification from the Leadership in Energy and Environmental Design (LEED) Building Council, and the reviewing committee recognized the novel and innovative use of the geoexchange HVAC system.

Refuge of the Year: *Dale Bumpers White River National Wildlife Refuge,* Environmental Stewardship, Arkansas. Dale Bumpers White River Refuge is being recognized as the "Refuge of the Year" for combining innovation, sustainability, use of natural resources and cooperation to upgrade an existing facility. Energy upgrades were chosen for the greatest savings and energy capture. From the modernized, high efficiency HVAC system improvements to the display of solar panels upon entry, the refuge's headquarters building is a demonstration of energy innovation for an existing structure.

The following were also honored:

Valle de Oro National Wildlife Refuge, New Mexico; Environmental Justice. Valle de Oro Refuge is being recognized for being the first urban wildlife refuge created under the Service's Urban Wildlife Conservation Program and the Standards of Excellence for urban national wildlife refuges. The refuge serves as the model for the incorporation of the Urban Refuge Standards of Excellence and the future development of new urban national wildlife refuges across the nation. The refuge is in an underserved environmental justice area of Albuquerque, and was established to protect this property from industrial development and preserve the land and associated water rights for wildlife and for future generations.

Sherburne National Wildlife Refuge, Minnesota; Environmental Stewardship. The high performance Oak Savanna Learning Center at Sherburne Refuge is a model of sustainable design and environmental leadership. As the completed part of a planned visitor center and headquarters, this classroom project utilized existing plans of the Necedah National Wildlife Refuge in its construction in order to reduce costs. Replicability was key to the design, construction and cost reduction at the Oak Savanna Learning Center. The Service used novel approaches to fund, design, construct and equip the building. The Friends of Sherburne initiated and completed a fundraising campaign to help pay for building infrastructure and educational materials. The Learning Center helped decrease the refuge's overall energy use by an appreciable amount, helped offset more than 13 metric tons of greenhouse gases annually, and was constructed to meet the equivalent of a LEED Silver Certification from the U.S. Green Building Counsel.

Headquarters Environmental Compliance Branch Development Team; Environmental Stewardship. The team created a series of short videos for use by field station employees that provide step-by-step instruction in conducting inspections of all AST types found at Service facilities. The Service recognized that inspections of petroleum storage equipment may have not been

properly conducted due to lack of understanding about the need for inspections and how to conduct them. The team produced a series of short videos that demonstrate proper inspection techniques, and convey record-keeping, training and other general requirements associated with tank management.

Environmental compliance auditors now are able to provide the video link to field station staff, thereby providing instruction to resolve compliance problems on the spot. In addition, the videos may be used to satisfy annual training requirements, thereby resolving additional audit findings. The Service incorporated the videos into ongoing classroom and webinar Environmental Compliance Training materials, and has made them available to all bureaus within the Department of the Interior.

Headquarters Ecological Services; Environmental Champion. The Headquarters Ecological Services Program successfully modernized the biological assessment process for threatened and endangered determinations under the Endangered Species Act (ESA) by developing a now nationally applied Species Status Assessment Framework. This process integrates the assessment of future scenarios for the first time, into work under the ESA. The resulting risk profile provides a more accurate representation of climate change effects to decision makers, thereby supporting improved decision making. The framework also serves as a foundational assessment to multiple ESA decisions from listing to recovery to consultations and permitting.

Additionally, Wallkill National Wildlife Refuge in New Jersey received an Honorable Mention.

The seven winners will compete with nominations from other Department bureaus in the Department's Environmental Achievement Award program. □

Headquarters

Tom Barnes (pictured, receiving award from WSFR's Lisa Van Alstyne) is accomplishing great things for conservation in the Branch of Policy for the Service's Wildlife and Sport Fish Restoration Program (WSFR). The Department of the Interior agrees, recently honoring Barnes with a Meritorious Service Award for his 30-year career of excellence and dedication.

The award recognized Tom's work improving federal regulations standardizing policies that affect more than a billion dollars of financial assistance for states, territories and others. It also mentioned that he twice updated the regulations for the Pittman-Robertson Wildlife Restoration and Dingell-Johnson Sport Fish Restoration Acts, including a comprehensive rewrite and reorganization in 2011 that involved nearly three years of intensive coordination with states and territories. □

Northeast Region

Service biologist **Madeleine Lyttle** (Pictured with Jeff Yates, director of Volunteer Operations for Trout Unlimited. Photo courtesy Trout Unlimited) has been recognized by close partner Trout Unlimited as "Conservation Professional of the Year" for her work restoring aquatic habitat.

Madeleine has had a hand in the reconnection of more than 220 miles of native brook trout habitat since 2011, following the removal of more than 20 problematic dams and culverts that had prevented fish and aquatic organisms passage for decades.

Trout Unlimited Director of Volunteer Operations Jeff Yates says, "Madeleine is a hero of mythical proportions among Trout Unlimited chapters in Vermont, New Hampshire and New York." □

Southeast Region

The National Interagency Fire Center (NIFC) in Boise, Idaho recognized a unique government partnership at Kennedy Space Center in Florida and the surrounding refuge lands as a model of success in wildland fire management with the NIFC 2017 Pulaski Award.

The Spaceport Integration Team consists of members of the Service, the space center, Cape Canaveral Air Force Station (45th Space Wing), Florida Forest Service and Brevard County Fire Rescue. The group award is given by NIFC fire chiefs of programs including the U.S. Forest Service, National Park Service and National Association of State Foresters. □

in memoriam

Headquarters

Former Fish and Wildlife Service Director **Spencer Smith** died at his Carmichael, California, home October 30 at the age of 94. Director Smith helped lead the Service from 1968 to 1973, first as Deputy Director, then as Acting Director and finally as Director. This was a transitional period for the agency during which it helped implement new and stronger environmental laws passed to protect the nation's fish and wildlife resources in ››

the face of development pressures.

Director Smith was born in Liberty, Texas, in 1923 and raised in the Hull–Daisetta, Texas, area, an oil and gas producing region located amid extensive marshes. It was during these early years in Texas that Director Smith learned to love the outdoors and the wildlife the area supported. According to his son, Larry, Director Smith would often cut classes at Hull-Daisetta High School to go hunting waterfowl. (He also apparently had a reputation as somewhat of a terror on the local gravel roads, driving fast and slinging as many rocks off the road as possible going around every curve. People would pull off the road and wait until he and his brothers passed.) It was also at the Hull-Daisetta High School that Director Smith began dating classmate Mildred (Midge) Morgan; the couple married in 1942.

Stuart Marcus, manager of nearby Trinity River National Wildlife Refuge, which was established in 1994, recalls receiving "a call out of the blue" from Director Smith about 10 years ago when he learned of this refuge. Marcus says Director Smith said he was glad to hear that a refuge was just down the road from where he was born and raised.

After serving in the Navy during World War II, Director Smith graduated from Oregon State University with a B.S. in fisheries in 1948. After graduation, he joined the Service as a fisheries biologist in Atlanta but left after less than a year to take a position with the Mississippi Department of Wildlife, Fisheries and Parks where he helped to develop their inland fisheries program. He returned to the Service in 1955 as a fisheries biologist in the Division of River Basins Studies in Vicksburg, Mississippi. After two years in Vicksburg, Director Smith was promoted to the position of Regional Supervisor for River Basin Studies in Atlanta and later to Assistant Regional Director for Operations.

In 1968, he moved to Washington, DC, first to serve as a Service Assistant Director and then as Assistant to the Assistant Secretary of the Interior for Fish Wildlife and Parks. He returned to the Service as Deputy Director, was soon named Acting Director and then sworn as the Director in 1972. He served in that capacity until July 1973.

Director Smith's time in DC was coincided with the heyday of the environmental movement. The first Earth Day was celebrated, and the National Environmental Policy Act, the Clean Water Act and the Marine Mammal Protection Act were passed. At the same time, court decisions reinforced the authority of the Service to influence projects throughout the nation that would affect fish and wildlife resources. It was also during this period that vast tracts of lands in Alaska became available for addition to the National Wildlife Refuge System.

Under Director Smith, the Service adopted a management by objectives approach and converted the organization from a functional administrative system to a program management system. Line authority was given to Regional Directors with the charge to integrate all Service activities to benefit the full range of fish and wildlife resources. The Service went on a hiring binge bringing in dozens of biologists in each region to work in the environmental arena and the Division of River Basin Studies became the present-day Division of Ecological Services. The Division of Research was re-aligned and the Office of Biological Services established to develop biological information necessary to support the environmental mission. Field offices were opened and national wildlife refuges established. The Service's budget expanded accordingly, growing from $140 million in 1969 to over $500 million in 1974.

After his service as Director, Director Smith was Western Field Coordinator in Denver, Colorado. He retired from the Service in January 1980 but remained active. He served as an adviser to the International Institute of Applied Systems Analysis in Austria and as an adviser to the Governor of New Mexico on the programs of the state's Department of Game and Fish.

During his lengthy career, Director Smith amassed many kudos and awards including the Department's Meritorious and Distinguished Service awards, praise in the Congressional Record, and a distinguished graduate award from Oregon State University. □

JIM MCKEVITT, FWS Retirees

Northeast Region

On October 6, the conservation community in Maine lost one of its most inspiring leaders in **Jed Wright**, the project leader of the Service's Gulf of Maine Coastal Program. He leaves a legacy as a public servant whose dedication to conservation forged strong partnerships, conserved thousands of acres of land and restored hundreds of miles of healthy rivers. Jed made his way to the Service more than two decades ago following graduate studies at State University of New York Buffalo and Yale University, and work with the World Bank in Mozambique and Angola. Eventually taking the helm of the Gulf of Maine Coastal Program in 2014, Jed joined the Service in 1994 to assist with a mapping project for Atlantic salmon. Already tuned to conservation in Maine, Jed began the first of many years committed to restoring the country's last stronghold for wild Atlantic salmon and many other fish species.

His focus in rivers and aquatic wildlife stemmed from a childhood playing in a backyard stream, racing sticks in the current and spending hours searching for fish. At the Gulf of Maine Coastal Program, Jed and his colleagues championed partnerships improving river and stream health. His efforts

bolstered shared successes with Project SHARE, The Nature Conservancy, Penobscot River Restoration Trust and many other partners crafting win-win situations in streams and rivers for communities and fish. For years, Jed worked with the National Fish and Wildlife Foundation to build capacity and empower local grassroots salmon conservation organizations in downeast Maine to encourage salmon and river restoration in that region.

Through the Atlantic Salmon Conservation Fund, Jed helped to permanently protect thousands of acres of riparian habitat, strengthen local conservation organizations and develop innovative restoration approaches. The fund's work received national prestige with the 2005 Secretary of the Interior's Cooperative Conservation Award recognizing outstanding cooperative conservation achievements accomplished with a diverse range of partners.

Jed was instrumental in helping his colleagues complete a multi-agency regulatory agreement in 2017 on building road-stream crossings that will facilitate recovery of Atlantic salmon and restoration of habitat for other native fish species. His expertise in stream simulation design and his leadership skills were key to accomplishing this agreement, which exemplifies how together partners can fulfill the needs of transportation, flood hazard reduction and river restoration. When a complicated bank stabilization project crossed his colleagues' desks, Jed brought in experts from the West Coast to demonstrate how a technique new to Maine could maintain fish habitat in the Sandy River while also meeting the local community's goals to protect an important town road. Jed also saw this work as critical preparation for the expected environmental changes shaping Maine's coast, often remarking that current habitat protection and restoration efforts will drive how ecosystems will respond to future changes.

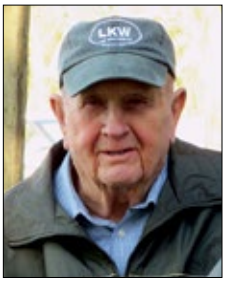
Every spring, Jed helped children and teachers release salmon fry in Maine rivers as part of the Atlantic salmon Adopt-A-Salmon Program, and he assisted local schools in obtaining salmon eggs and educational materials each year.

While some might see conservation as work focused on wild places and wildlife, Jed knew it all boiled down to people. As project leader, he carried on the office's focus on voluntary, collaborative partnerships with people who have similar goals—working in respectful partnerships, with flexibility, creativity and a 'we-can-do-it-together' outlook. Countless anecdotes from partners illustrate his endeavors to build relationships and capacity for the greater good, always with his signature attitude of humility and calm. In partnership with Keeping Maine's Forest, Jed coordinated and facilitated the 10th annual Private Lands Partners Day event in Bangor, Maine. The workshop brought attendees from across the nation to see how economic interests and conservation are balanced in Maine's multiple-use forested landscape.

The loss of Jed leaves a profound void in the conservation family. He had a rare mix of great intelligence, deep compassion, calm patience and energetic passion to persevere in the face of resistance and to push for real and lasting change. He inspired and challenged all who worked with him, and had a sincere interest in developing people. His colleagues noted that they always left a conversation with Jed believing a bit more in themselves, in other people, and in the future.

We are dedicated to living by his example and carrying on his work. □

Southeast Region



Hal Gray Swindell Sr. of Swan Quarter, North Carolina, died September 25 at age 95. He was preceded in death by his wife, Margaret, in 2003.

He worked his entire career as a biologist technician on Mattamuskeet National Wildlife Refuge in North Carolina, retiring in 1979. He remembered seeing the area surrounding Lake Mattamuskeet become the refuge and helped develop the drainage system for the central station. He received commendations on several occasions during his career and was paid stipends for two inventions he developed for the massive drainage pumps on the refuge. His stories about life on the refuge and in Hyde County were fascinating, and he loved remembering and sharing them with anyone who would listen. He and his wife later built a home and retired on the shores of Lake Mattamuskeet.

He was buried with full military honors. □

Alaska Region

Longtime Service employee **Jack Lowell Dean** died October 10 at the age of 86. Jack was born in Minneapolis, Minnesota, and lived a life of many adventures, including two tours of duty in the Korean War and a 30-year career as a Service fisheries biologist.

After graduating from high school in 1949, Jack attended college for a short time but left to enlist in the U.S. Army in August 1950, shortly after the beginning of the Korean War. On September 3, 1951, Jack faced what he later described as a night-long battle where he and fellow soldiers made a series of desperate attempts to repel an attack by the Chinese forces when at one point Jack remembered running out of ammunition and throwing rocks disguised as grenades at the nearby enemy soldiers. In his leadership role, 19-year-old Jack led a furious attack, neutralizing the enemy, followed by repeated forays across enemy fire to resupply his squad. For his heroic actions, Jack later received the coveted Silver Star for gallantry in action.

Upon returning home from the Korean War, Jack completed his education at the University of Minnesota which included part-time employment with the Bureau of Sport Fisheries and Wildlife, part of the Service. »

Post-college, he embarked on the first of his many full-time Service positions, providing fisheries assistance to a number of hatcheries, refuges and tribes throughout Region 3.

In 1960, Jack transferred to Gallup, New Mexico, as the first project leader at a newly designated Management Assistance Office, where he worked with a number of tribes and Pueblos, developing sportfish programs.

The Service's Yellowstone Fishery Project was the high point of Jack's career. He recalled being "at the right place at the right time" when National Park Service administrators and a Secretary of the Interior supported Jack's effort to implement a catch-and-release program within Yellowstone National Park. The novel program was widely viewed as a success by anglers, state and federal agencies alike, and remains in place today.

Following his successful work at Yellowstone National Park, he accepted a position at the Service's Ashland, Wisconsin, Fisheries Assistance Office dealing primarily with the lake trout stocking program and various tribal fishery programs.

While working at the Region 6 Regional Office in 1977, Jack volunteered to help complete the first sizable fisheries inventory of Alaska's Arctic Coastal Plain. This memorable experience lured Jack to the Anchorage Regional Office in 1982, and he ultimately became the project leader at the Kenai Fisheries Assistance Office in 1984, working there until retiring in 1987.

Upon retirement, Jack worked tirelessly in his quest to learn more about the aquatic world as he studied locally rare fish such as semi-dwarf longnose sucker and Arctic char. "As a retired fisheries biologist," Jack said, "I never get tired of wondering about the ecology of our fisheries here on the Kenai Peninsula. My hope is that some young biologist will come along and figure this all out."

Jack's colorful career was shaped by his early childhood time spent fishing and his Korean War experience. Conflict was not an unfamiliar part of Jack's career as he often stood up for the "resource" and had a low tolerance for what he characterized as "BS."

Jack is survived by wife Betty Dean, daughter Wendy, son Mark and two grandchildren, Logan and Arica. He will be remembered by the many people he touched and inspired both as a mentor and a friend. □

Mountain-Prairie Region

Wildlife lost a good friend when retired Service biologist and cartoonist **Kent N. Olson** died December 2.

I knew his art several years before I met Kent Olson. As a Service employee I had seen his work on a number of publications and always thought to myself what a wonderful cartoonist…and then quickly moved along with my day. In 2000 while working at Crab Orchard National Wildlife Refuge I noticed one of his most iconic cartoons, that colorful duck aptly named Paddy O'Mallard kissing a wildlife refuge sign, surrounded by a dozen of his friends, announcing the forthcoming 100th anniversary of the National Wildlife Refuge System in 2003. The image was going on shirts, hats, mousepads, towels and lots of other stuff, and the only clue to who drew it was a small circular "K" drawn to the bottom of the signpost. There was no forgetting this time and I set out to find who this mystery cartoonist was.

An e-mail to the Regional Chiefs produced a note from Sherry Featherman who let me know the "K" was for Kent Olson, a regional interpretive specialist, and that Kent had retired many years earlier in 1989. She believed he still resided in Littleton, Colorado. A quick check and I had a number.

He picked up the phone on the second ring, and our talk went something like this: "Hello, is this Kent Olson?" Perhaps, came the gauged reply. "Well, my name is Jonathan Schafler and I'm an assistant refuge manager at Crab Orchard National Wildlife Refuge in Illinois. I've admired your cartoons for many years and wanted to tell you how much I appreciated your work. Are you still drawing cartoons?"

"Well, that's mighty kind of you, Jonathan. I've been retired for quite some time, and although I occasionally draw a cartoon or two here and there for a church event or a retirement party, my cartoon days are pretty much done. But you say you're at

Crab Orchard? I remember a time there as a trainee..."

Our first conversation lasted almost an hour.

Over the next few years Kent and I had regular conversations about everything from his vivid memories of growing up hunting and exploring the midwestern rivers to his ancestors he could trace back to the Revolutionary War. Kent was an exceptional storyteller, a guy with a sharp mind for detail and a recollection for facts and figures that he kept until his passing. I was fascinated by his stories and learned that not only was he a gifted cartoonist, he was an artful wood carver of waterfowl and an excellent photographer of his profession.

Born in 1928, Kent's first cartoons came from drawing his favorite Sunday morning cartoons, and in high school he was approached by the War Department and asked to carve wooden replicas of WWII planes to help pilots identify enemy aircraft. While the planes were never actually used, it spurred young Kent to a lifetime joy of carving and drawing.

After a brief stint in the U.S. Army, Kent went to college to study pharmacology but soon decided that wildlife and wild places were his passion and applied for a trainee position with the Service. His postings at Crab Orchard and Mark Twain National Wildlife Refuges laid the groundwork for his placement in South Dakota in the Small Wetlands Program where he purchased wetlands for the newly created Wetland Production Areas. It was in the Dakotas in the early 1960s that he started drawing small cartoons to accompany articles he had written on conservation principles and practices years for conservation work in a remarkable career. A green-headed mallard, Paddy O'Mallard, and his friends would teach conservation ethics for decades to come.

The cartoons that Kent drew became such a positive influence that his next assignment was to the Denver Regional Office where he would finish out his career and settle into comfortable retirement. His art appeared in dozens of Service publications, State Game and Fish articles and work for several organizations including Pheasants Forever and the University of Kansas School of Agriculture.

Fast forward a dozen years: The regular phone calls to Kent became a friendship, and we decided to share Kent's large body of work with future generations. He and I decided that we would do a coffee-table book and give it free of charge to every national wildlife refuge, every ecological services field office and every national fish hatchery in the system. A total of more than 700 books.

Only one of Kent's more than 400 cartoon drawings was ever done in color so Kent picked out 60 of his favorite cartoons and re-created them in color. The result was an amazing body of work that educates, informs and entertains.

It took more than 14 years from initial discussion to published book, but the finished product was a wonderful representation of Kent's cartoon conservation legacy. The included CD in the rear of the book is designed to ensure that future generations have access to the art and use it in teaching conservation.

Along the way Kent was honored by the Service's National Heritage Committee with a Conservation Hero Award, an honor he cherished.

A website, <www.paddyomallard.com> has been created to highlight Kent's short stories, carvings and cartoons. If you did not receive a copy at your station please contact me at <Jonathan.i.schafler@uscg.mil>, and, will see that your station gets a copy.

Kent Olson's work will be remembered in the same light as that of the Service's other great artists, J.N. "Ding" Darling and Bob Hines, each with their own unique style and body of work. He will be missed. He is survived by wife Doris and her loving family. □

JONATHAN SCHAFLER

Fish & Wildlife *News*
Division of Marketing Communications
U.S. Fish and Wildlife Service
5275 Leesburg Pike
Falls Church, VA 22041-3803

STANDARD PRESORT
POSTAGE AND FEES
PAID
U.S. DEPARTMENT OF THE INTERIOR
PERMIT G-77

parting shot

Staying Frosty

Refuges in Texas had a rare snow day December 8, and someone at the visitor center for Santa Ana and Lower Rio Grande Valley National Wildlife Refuges took advantage of the precipitation.

CHRISTOPHER QUEZADA/USFWS

Fish & Wildlife News
Editor: Matthew Trott
Assistant Editor: Jennifer Deschanel
Art director: Jane Pellicciotto, Allegro Design
Website: fws.gov/home/fwn/

Submit articles and photographs to:
U.S. Fish and Wildlife Service
EA-Division of Marketing Communications
MS: EA
5275 Leesburg Pike
Falls Church, VA 22041-3803
703/358-2512
Fax: 703/358 1930
E-mail: matthew_trott@fws.gov

Submission deadline:
Spring 2018: by March 30