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Fish & Wildlife *News*

#savethemonarch

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On the cover: A monarch butterfly population overwinters in Pismo Beach, California.

RYAN HAGERTY/USFWS

Saving America's Monarch Butterflies

In early February, the Service, the National Wildlife Federation (NWF) and the National Fish and Wildlife Foundation announced a new initiative to reverse the decline of North America's monarch butterflies. We're proud and thankful to already have a strong group of monarch partners, including U.S. Senator from Minnesota Amy Klobuchar, one of the leading voices for monarch conservation in Congress. I worked with Collin O'Mara, NWF's President and CEO to write this call to action.

The migration of North America's monarch butterflies is one of the natural world's most epic journeys. Only a third the weight of a dime, they fly up to 3,000 miles from their summer homes in America's backyards and grasslands to wintering grounds in Mexico's mountain forests. But in recent years, the monarch butterfly populations so many of us have grown to love have dwindled alarmingly. This decline threatens to deprive future generations of the wonder and beauty of the monarch—and is an ominous sign of the worsening health of our continent's natural ecosystems.

As recently as 1996, the estimated monarch population wintering in Mexico was more than 1 billion butterflies, turning forests into seas of orange and black. Last year, however, the wintering population numbered only about 56.5 million butterflies.

Monarch butterflies, as well as other butterfly species, bees, birds and bats help move pollen from one plant to another, fertilizing flowers and making it possible for plants to produce seeds, fruits and nuts that feed people and wildlife. More than a third of the food that we eat requires pollinators to grow. Yet like the monarch, many of these pollinators are declining, with habitat loss, herbicides and climate change all contributing to their struggles.

We need to know more about exactly why monarch butterflies are disappearing. But we don't need to wait to take the actions that scientists tell us are necessary to redirect the monarch's future skyward.

To save monarchs, we all need to take action today.

Monarchs need Americans to make their homes, businesses, schools and community spaces more wildlife-friendly. NWF's Garden for Wildlife program encourages responsible gardening that helps pollinators and other wildlife thrive, encouraging planting such native species as milkweed and other nectar plants, and using herbicides responsibly. With nearly 200,000 locations and growing, Certified Wildlife Habitats and Community Wildlife Habitats recognize individual and group commitment to providing habitat for pollinators and other wildlife in yards and community-based landscapes.

Monarchs need the help of the federal government and partners at the state and local level. President Obama has directed federal agencies to take additional steps to protect and restore domestic populations of monarchs and other pollinators, calling them critical contributors to our nation's economy, food system and environmental health. The Service will make key investments in monarch conservation totaling more than $3.2 million this year alone. Working with partners, we will restore and enhance more than 200,000 acres of habitat for monarchs on public lands, along highway rights-of-way and on other public and private lands this year, while also supporting more than 750 schoolyard habitat projects and pollinator gardens nationwide.

And monarchs need the agricultural community and other large landowners to continue expanding their role as partners in re-establishing monarch habitat. We will work with farmers to improve habitat for monarchs, and we were happy when in March, Monsanto became the first company to contribute to the Monarch Butterfly Conservation Fund, $3.6 million over three years.

Both the Service and NWF are also part of the Monarch Joint Venture, a broad coalition working to conserve and protect monarch populations and their migratory phenomena by implementing science-based habitat conservation and restoration measures.

The decline of monarchs has continued in part because, until now, saving them has been viewed as someone else's job. With this partnership, we're declaring that era over. It's time for all of us to work together to ensure that future generations of Americans have the chance to enjoy this butterfly. □

Grow Little Acorns, Grow

A new generation of oak trees is growing at the Children's Tree House Child Development Center at the National Conservation Training Center (NCTC).

It all began when the land manager at NCTC, Phil Pannill, asked volunteers to collect acorns so he could grow oak trees for the campus. The Children's Tree House Child Development Center eagerly took advantage of this opportunity to connect children with nature.

One fall morning, despite the blustery winds and light rain, six preschoolers trotted out to nearby woods. The land manager waited for the children under a huge, 150-year-old red oak tree. Pannill showed the wide-eyed students a three-foot tree he had grown from one small acorn. He explained that the small chinkapin acorns were the best ones to plant because they germinate quickly.

The children went on a treasure hunt gathering large red oak and small chinkapin acorns, hickory nuts, black walnuts and colorful leaves, filling their small tin buckets to overflowing with items from the forest floor.

Back in their classroom, the children sorted their bounty by size, counted their collections, and studied the shapes and colors of leaves. Using their imaginations, they made acorn "cap cakes," musical instruments by shaking their pails and raindrop sounds by slowly dropping acorns onto the ground.

RYAN HAGERTY/USFWS

Jocee, one of the preschoolers who learned about acorns and oaks, shows off her treasure.

Next, the children moved to the "messy area" where Pannill had gathered chinkapin acorns and poured them into a bucket of water. Acorns that float to the top are unfit to plant because they contain worms or fungus. The children planted the good acorns sideways about one inch deep in small pots. Interestingly, if the caps of acorns do not remove easily, then they have not matured enough to plant. When they germinate, one end of the acorn sprouts to form roots, while the other end sprouts a shoot.

The acorns grew slowly in the fall and then stayed dormant during the winter. In the spring, most of the growth will be in the roots, while the shoots will grow only slightly. In about a year, the shoots will grow faster. Over the next couple of years, the sapling will be transplanted into larger pots so that the roots can spread and grow deeper so the trees can grow tall and sturdy.

When the oak trees are strong enough, they will be planted in a sunny area along with a mixture of other locally native tree seedlings to help expand the forest on the NCTC campus. The young oak trees need to be protected from the deer by using a variety of measures, which the NCTC staff has perfected, enabling them to grow plenty of trees to a size where the deer can no longer damage them.

The process of picking up acorns, planting them and protecting them to one day grow into mighty oaks is a rewarding experience. Perhaps years from now, one of the children from the day's activities will sit under an oak tree grown on the NCTC campus and teach the next generation about acorns. □

KATHY SHOLL, NCTC

Administration Moves to Protect Arctic National Wildlife Refuge

President Eisenhower established what later became Arctic National Wildlife Refuge in Alaska in 1960 "for the purpose of preserving unique wildlife, wilderness and recreational values." Fifty-five years later, President Obama recommended that Congress add nearly 12.3 million acres of refuge land to the National Wilderness Preservation System.

The Service recommended the wilderness designation in a revised conservation plan for the refuge released in January. The plan will guide the Service's management decisions for the next 15 years.

"Designating vast areas in the Arctic National Wildlife Refuge as wilderness reflects the significance this landscape holds for America and its wildlife," says Secretary of the Interior Sally Jewell." Just like Yosemite or the Grand Canyon, the Arctic National Wildlife Refuge is one of our nation's crown jewels, and we have an obligation to preserve this spectacular place for generations to come."

Based on the best available science and extensive public comment, the Service recommended 12.28 million acres—including the Coastal Plain—for designation as wilderness. The Service also recommended four rivers—the Atigun, Hulahula, Kongakut and Marsh Fork Canning—for inclusion in the National Wild and Scenic Rivers System.

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The Brooks Range in Arctic National Wildlife Refuge.

> *By protecting this amazing place, we show that our great nation is yet capable of ever greater things.*

Service Director Dan Ashe praised the President for the decision. In his blog, Ashe wrote: "By protecting this amazing place, we show that our great nation is yet capable of ever greater things. That we still possess that great quality called 'restraint.' That our national conscience still reflects a sense of responsibility for future generations, and respect for what we know and understand, and especially, for what we do not. And, that we continue leading the world by example rather than rhetoric."

Currently, more than 7 million acres of Arctic Refuge are managed as wilderness.

Designation as wilderness would protect and preserve the refuge, ensuring the land and water would remain unimpaired for use and enjoyment by future generations.

Only Congress has the authority to designate wilderness areas and Wild and Scenic Rivers, but the Service will begin managing the areas as wilderness. If Congress chooses to act, it would be the largest ever wilderness designation since Congress passed the visionary Wilderness Act more than 50 years ago. □

Dangers of Wildlife Trafficking Brought Home to Wyoming Crowd

During winter visits to National Elk Refuge in Wyoming, people are fascinated with elk antlers and learning more about them: how quickly they grow, how much they weigh, when they shed. In February, however, naturalists offered a program focused on a less renewable elk part: the ivories, or two teeth in the animal's upper jaw. The introduction to the unique set of teeth served as a springboard to discuss the larger, global topic of illegal killing and wildlife trafficking.

Illegal harvest of elk ivories existed in the early days of the Jackson Hole valley but was not considered a significant problem. In 1911, Edward Preble, a biologist working for the U.S. Biological Survey, a predecessor of the Service, was sent to study the condition of elk in Jackson Hole. In his report, he listed tusk hunters, as people who took elk teeth were called, as "the lowest scale of all enemies of the [Jackson] elk."

Trumpeter swans, however, represent a Rocky Mountain wildlife species that didn't fare as well in U.S. history. Both market hunting and the millinery trade (which used swan feathers as adornments on fashionable hats) depleted populations of the bird until they neared extinction in the lower 48 states. By 1932, fewer than 70 trumpeters were known to exist worldwide, with nearly half of the known birds in the Greater Yellowstone Ecosystem (though a much larger population was subsequently discovered in Alaska). The passage of the »

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To complement the refuge's program, staff showed items from the National Wildlife Property Repository, the Denver, Colorado, facility responsible for receiving wildlife items that have been forfeited or abandoned to the Service.

Migratory Bird Treaty Act of 1918 and establishment of Red Rock Lakes National Wildlife Refuge in Montana gave protection to trumpeter swans and helped the population rebound in the lower 48 states.

During the program, naturalists showed how the value of a prized part can devastate an animal population. As an example, they cited the African elephant, a species at risk due to a dramatic rise in poaching for its ivory.

> *The value of an animal is something that can be changed by education and awareness.*
>
> —Refuge Spokesperson Lori Iverson

Though historians and archaeologists have documented many practical tools once made from ivory, the market is now driven more by social significance and the status particular items can bring. In a symbolic gesture in November 2013, the Service smashed six tons of contraband elephant ivory. The Ivory Crush sent a message to ivory traffickers and their customers that the United States will not tolerate this illegal trade.

The presentation in Wyoming came just days before a presidential taskforce released the implementation plan for the U.S. National Strategy for Combating Wildlife Trafficking. Building on the strategy's three objectives—strengthening enforcement, reducing demand for illegally traded wildlife and expanding international cooperation—the plan lays out next steps to meet the challenge of trafficking.

One of those steps includes strengthening controls over trade in elephant ivory in the United States.

The strategy makes clear that only by raising public awareness of the damage done by wildlife trafficking will consumption patterns that drive wildlife trafficking change.

That was the idea behind the outreach at National Elk Refuge.

"The value of an animal is something that can be changed by education and awareness," refuge spokesperson Lori Iverson said in an advertisement for the program. "Even though our program was on a pretty small scale, it's our gesture to help make positive gains toward a global conservation issue." □

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TOM KOERNER/USFWS

(Top left) Clay pipe recovered from the pioneer grave. (Top right) Artifacts from the pioneer grave. (Bottom) The sun sets on the Green River at Seedskadee National Wildlife Refuge.

Seedskadee CSI: Archaeologists Hunt for Clues When Old Skull Found on Refuge

People love a good murder mystery. The television shows *CSI*, *True Detective* and *Law and Order* demonstrate the fascination we have with death, crime and detective stories. The staff of Seedskadee National Wildlife Refuge is no exception. On April 21, 2012, a human skull was discovered by a fisherman along the banks of the Green River on the refuge. It was quickly determined that this skull was not the victim of foul play but the beginning of an archaeological detective story.

Seedskadee Refuge is located along the Green River in southwest Wyoming, an area with a rich and varied history that includes westward wagon trains, gunslingers and Native American tribes.

After the skull's unexpected discovery, Service Law Enforcement officers, Bureau of Land Management (BLM) archaeologists and the Sweetwater County Coroner's Office all examined it. They determined that the skull belonged to a male in his early 20s and that the burial was not recent but more than 100 years old. Archaeologists were certain that the rest of the skeleton was still buried, and a team from BLM and the Service methodically excavated the site and found additional skeletal material as well as an assortment of artifacts. In the rich alluvial soil, the vestiges of a long-forgotten daily life surfaced for the first time in more than a century. With these small glass fragments, porcelain buttons, a tobacco pipe and other personal items, archaeologists could learn about this man's life and death.

The remains were brought to the University of Wyoming, where Dr. Rick Weathermon analyzed the remains. Weathermon is an

osteoarchaeologist, someone who studies the bones from archaeological sites. The results of his analysis indicated that the skull was actually from a teenager between 16 and 19.

"The individual was most likely one of the many pioneers that settled the American West during the late 19th century," says Service archaeologist Brant Loflin. The burial site was along the Oregon Trail near the Lombard Ferry, one of the most commonly used crossings on the Green River. Established in 1843, the Lombard Ferry carried such notable pioneers as the ill-fated Donner Party and Mormon leader Brigham Young. Other smaller ferry operations were also recorded in the area with one just a few hundred feet from the burial. Traversing the swift river could be hazardous, and many pioneers drowned or lost all of their belongings if they attempted to ford it alone. The pioneers that braved the open country of the new American West also faced disease, hostile indigenous groups, weather, and swollen rivers and creeks.

"Death on the trail and wagon routes west was very common during the late 19th century," says Loflin.

The burial itself is similar to many found along pioneer trails. The artifacts showed that the teenager was dressed at the time of burial, but an absence of stains or remnants of shoes suggest that he was barefoot.

One key artifact discovered was a clay pipe produced in Ohio by Point Pleasant Pottery. This particular variety of pipe was produced between 1839 and 1890. Archaeologists can use such artifacts to date sites. In this case, the teen was most likely from the mid- to late 19th century during the height of migration along the Oregon Trail.

One question still remains? How did this person die?

"The skeletal material did not show a clear cause of death," says Loflin. "However, the cranium did show some signs of nutritional stress, which can weaken the immune system." In addition to starvation, drowning and freezing, pioneer diaries tell of many fast-acting, potentially fatal diseases such as Asiatic cholera and typhoid fever.

While the actual cause of this teenager's death will never be known, the discovery and scientific investigation of the burial provides archaeologists with a glimpse of life and death along the Oregon Trail. All across public lands in the West, visitors can find the remnants of those that came before. Historic and prehistoric artifacts, homesteads, wagon roads and mining towns are a few of the tens of thousands of documented archaeological sites. Service archaeologists work to preserve and protect the past so that future generations can study and learn how people lived, settled and died. □

STEVE SEGIN, External Affairs, Mountain-Prairie Region

Before he moved to External Affairs, Steve Segin worked as an archaeologist for the Forest Service for 10 years and is still an adjunct faculty member in the Department of Anthropology at the University of Colorado-Colorado Springs.

Service Hatchery Helps Washington Replace Salmon

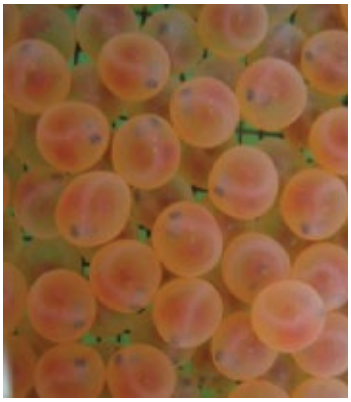
The Washington Department of Fish and Wildlife (WDFW) went looking for a few good salmon eggs, and a Service fish hatchery answered the call.

Throughout the Northwest, people depend on salmon for food, work and play. So when a heavy rainstorm in early January wiped out 600,000 coho salmon fry at the state-run Grays River Hatchery in Washington, managers knew they had to act quickly, and they asked area hatcheries for surplus coho eggs.

Early the next week, the Service's Eagle Creek Hatchery in Oregon sent 351,000 eyed coho eggs to Grays River. Eyed eggs, so-called because eyes are visible as black spots in the eggs, are less fragile than eggs in earlier stages of development. A month later, Eagle Creek transferred nearly 240,000 fry that couldn't be moved safely earlier.

Eagle Creek waited until the fry were at a stage when they are called unfed fry. In the wild, unfed fry would just be coming up out of the gravel to begin looking for food as the yolk supply they have been living on while they developed from egg to fry is very nearly gone. Unfed fry handle transport much better than newly hatched fry, which have very delicate skin over the yolk that's prone to damage with handling.

"We were lucky that we had some surplus coho eggs, and were able to get them over Washington's Grays River hatchery in good shape," says Roy Elicker, the Assistant Regional Director for Fishery Resources in the Pacific Region. "This is not a unique situation out here, as state, tribal and federal hatchery managers work closely within the Columbia Basin to help meet regional production goals for salmon and steelhead."



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CAROLINE PETERSCHMIDT/USFWS

(Top) Eyed coho salmon eggs. (Bottom) The small red spot right about where its stomach would be is all that remains of these unfed fry's yolk supply.

Cascade Hatchery, operated by the Oregon Department of Fish and Wildlife, sent 90,000 excess coho eggs.

"We really appreciate the support we've received from our fellow fish managers," says Jim Scott, assistant director for the WDFW fish program.

The Eagle Creek eggs and fry were a backup for the Yakama Nation's coho restoration program. Once eyed eggs from the Yakama hatchery arrived safely for rearing at Eagle Creek, the backup eggs became surplus and were available to assist WDFW's shortage. □

Water Restored to Cullinan Ranch after 100-Year Absence

In early January, dozens of onlookers at the Cullinan Ranch portion of San Pablo Bay National Wildlife Refuge in California watched an excavator remove a tidal levee. Once the levee was breached, salty water from the San Pablo Bay rushed into the area for the first time in more than 100 years, the first step in a marsh re-creation project.

"Today is a momentous occasion; we have breached the levee and returned over 1,200 acres of wildlife habitat to the refuge," said Anne Morkill, San Francisco Bay National Wildlife Refuge Complex manager, at the ceremony marking the breach.

Cullinan Ranch, just off state Highway 37, was originally a salt-water marsh connected to San Pablo Bay but was converted to farmland in the 1800s. To block seawater from entering the area and create suitable conditions for agriculture, a dike was built on the ranch.

More than two decades ago, as the Bay Area began to grow, Cullinan Ranch was slated for development, and a plan was proposed to construct a neighborhood on the site. Local residents fought to stop the building of thousands of residential homes and a marina, citing a need to preserve natural landscapes in the region.

According to Francesca Demgen, a wetland biologist and member of Friends of San Pablo Bay National Wildlife Refuge, saving Cullinan Ranch was the product of many choosing "action over apathy." With development plans halted, Cullinan Ranch was purchased with federal funds and became part of the San Pablo Bay Refuge in 1991.

Before the levee breach, precautions were taken to protect both people and animals from the restored flows. Contractor Ducks Unlimited built a new levee to prevent water from reaching Highway 37. Additionally, a pump added a small amount of water to the ranch before the levee was breached, which encouraged animals to leave the area before full flows were restored and avoided a mass exodus of animals onto Highway 37.

The new habitat will provide homes for waterfowl and shore-birds, many of which use the refuge during their seasonal migrations. Along with the new bird habitat, the Cullinan Ranch restoration area also offers trails, a kayak launch and fishing piers for the public to enjoy. The site has other benefits, too, says Doug Cordell, public affairs officer for the Service. "This restoration is part of a much larger effort in the North Bay that will also help provide flood control," he explains.

The soil of Cullinan Ranch may take years to restore after becoming dry when the area was cut off from the bay, but the levee breach is just one more step toward a fully functioning wetland. The birds did not seem to mind that the wetland was still in its forming stages as onlookers watched shorebirds arrive and wade into the restored water only minutes after the flows returned. □

CINDY SANDOVAL, External Affairs, Pacific Southwest Region

STEVE MARTARANO/USFWS

Water gushes through the breach to create wetland habitat at San Pablo Bay Refuge.

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Southwestern Alaska Glaciers Disappearing at a Rapid Pace

Located in the northeast corner of Togiak National Wildlife Refuge, the Ahklun Mountains support the only existing glaciers in southwestern Alaska north of the Alaska Peninsula. These glaciers feed meltwater in the summertime to four major salmon watersheds and a wide array of pristine lakes.

But they're shrinking.

Though some previous research had been completed on glaciers in the Ahklun Mountains, until researchers from the Service and Northern Arizona University teamed up in 2006, these glaciers had not been looked at compre-hensively to determine the rate at which they are receding.

The researchers compared the size of the glaciers using aerial photographs and satellite images from 1957, 1984 and 2009, and found that the glaciers in the Ahklun Mountains had lost about 50 percent of their area. The team also conducted an aerial survey of the glaciers to verify their land coverage. They found that 10 of 109 glaciers that were originally mapped by the U.S Geological Survey in the 1970s had completely disappeared. At this rate of melting, all the glaciers in the Ahklun Mountains will be gone by the end of this century.

"This is not the first time these glaciers have receded in part or completely," says Darrell Kaufman, professor of geology at Northern Arizona University and co-author of a paper on the study.

These empty cirques contained glaciers as recently as 1972.

"The thing that is unique is that the rate of change is so rapid we're able to document the changes as they occur, rather than long after the fact."

Scientists have long recognized the value of glaciers as indicators of climatic change. Glaciers respond sensitively to changing temperatures, and often provide the most striking and irrefutable evidence of climatic change. Cold freshwater and sediments that are produced by glaciers greatly influence the ecology within their drainage basins, so their disappearance will inevitably have ecological effects.

"The expression, 'at a glacial pace' may need to be updated," says Patrick Walsh, fish and wildlife biologist with Togiak Refuge and co-author of the paper. "These glaciers are disappearing before our eyes."

Twenty thousand years ago, the glacial ice in this region covered more than 6,000 contiguous square miles, but it's now reduced to small fragments covering approximately 13 square miles.

"The U.S. Fish and Wildlife Service doesn't typically study geological phenomena," says Walsh, "but the ecological consequences of our rapidly changing climate require us to think differently."

Find the full study: <fwspubs.org/toc/fwma/0/0>. □

Student Conservationists Put in a Hard Day's Work on Fish Passage Project on Pueblo Lands

Ask a group of teenagers their idea of fun and you might get answers like hanging out with friends, dodging opponents during a game of laser tag or playing their favorite video games. But for a group of Native American youth from several of New Mexico's pueblos, fun meant working outside on a warm, sunny day in July hauling tons of rock with other tribal youth, community volunteers and Service staff in an effort to restore fish passages along the lower Santa Fe River on Cochiti Pueblo.

Above the loud crunch of gravel being shoveled into buckets, one could hear the laughter and sense the camaraderie of the four Tribal Youth Conservation Corp (TYCC) team members: Emmanuel Yepa, 16, of Cochiti Pueblo/Northern Cheyenne; Kuien Quintana, 17, of Cochiti Pueblo; Dominic Bailon, 18, of Santo Domingo Pueblo; and Xavier Lovato, 17, of Santo Domingo/Cochiti Pueblo.

"I really enjoy this type of work here on the river," says Quintana. "I'm hoping for a career down the road where I get to work in the outdoors. That would be cool."

The TYCC team and helpers worked to construct low-water fish passage stream crossings and restore habitat to reduce erosion and river disturbance caused by motorized vehicles and cattle in a three-mile section of the river that is home to a small population of Rio Grande suckers and provides key habitat for wildlife. Elementary school students had already planted native plants such as long-leaf cottonwoods, roses and willows along the banks, and the pueblo hopes for the potential reintroduction of Rio Grande Cutthroat trout, which was abundant on Cochiti Pueblo before construction of Cochiti Dam in 1969.

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TYCC member Dominic Bailon, center, loads up buckets of rock alongside Service staff members Jason Davis, right, and Kjetal Henderson during a fish passage project on the lower Santa Fe River on New Mexico's Cochiti Pueblo.

Tribes host the TYCC, which hires Native American high-school students to work on their land on natural resource conservation projects. At Cochiti Pueblo, the program is headed by Kai-t Blue-Sky, a wildlife biologist with Cochiti Pueblo Department of Natural Resources and Conservation. Chris Kitcheyan, a Service fish biologist, serves as TYCC program adviser.

The main components of the TYCC program are science, culture and personal growth, says Blue-Sky.

"It is so important to these kids to be involved in the restoration of this area because it means so much. The land, the river, the fish and wildlife — it's all part of who we are," he says.

Adds Kitcheyan, a member of the White Mountain Apache Tribe and former TYCC participant: "We also try to help them get that first step toward where they want to go in the future, and that really helped guide me toward a now 19-year career with [the Service] when I was in the TYCC." »

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TYCC member Xavier Lovato helps the Service's Jason Davis position large rocks to stabilize the bank of the lower Santa Fe River.

Kitcheyan also stresses the importance of the TYCC program in small pueblo communities. Cochiti has a population of 500 on the pueblo and 500 living outside it. "It is a huge source of pride for these kids. They are getting attention for all the right reasons.

"It allows kids to work on their homeland. They are working for their community and are seen by their community members as potential natural resource managers," he says.

Before the fish passage program, Service staff went after hours to meet native youth, helping them discover the natural world around them and demonstrating activities such as electrofishing, which is the use of electricity in water to capture or control fish and is a valuable sampling tool used for fisheries management, research and aquaculture. Eventually, off-duty activities led to official TYCC projects. Such activities, and the eventual creation of the TYCC, help forge strong, trusting partnerships with tribes.

"As an agency, when you show tribes that you're interested and you are willing to work and take that extra step—that extra mile to earn their respect and trust—it truly opens doors and breaks down barriers," Kitcheyan says.

As the sun began to sink in the sky and the 80 tons of rock were evenly spread out on the river bank, TYCC member Lovato flipped his bucket over to make a seat and took a well-deserved rest. Only after the labor was complete did Lovato reflect upon his work.

"We're leaving something for the future, so we can come back when we're 30 and say, 'Hey, I did this,'" Lovato said, with a huge grin from ear to ear. □

MELANIE DABOVICH, Fisheries, Southwest Region

Law Enforcement Agents Work Together to Catch Men Who Violated Game Laws

The remote, wild spaces of the West provide many opportunities for hunters. They also provide ample opportunities for poachers looking to skirt the law.

Fortunately, federal and state wildlife law enforcement agents pursue tips and work together in the name of conservation.

"Some people take pride in these crimes; like it's a mark of honor to kill animals out of season and avoid paying the necessary fees, even though the fees are what enable species conservation," says Service Special Agent Richard Gamba. "Out in the wilderness areas where there's nobody around to see, it's easy for someone to decide that they'll take a chance with the law. But we always find out."

In January 2012, three North Dakota oilfield workers started asking around for somebody to take them cougar hunting in Idaho, even though they didn't have non-resident cougar tags. They found Tod and Jacob Navarro from Idaho, both with a history of game violations, and Christopher Wilson from Oregon.

The Navarros and Wilson took the three North Dakota men—Eric Harmel, Dwayne Hellman and Richard Gustafson—on a guided hunt for cougars, or mountain lions. The three North Dakotans were successful and returned home with three illegally killed cougars.

Then it all started to unravel. What's the good of having a trophy if you can't talk about it? As the saying goes, loose lips sink ships...and this one took on water quickly.

Idaho Department of Fish and Game Officer Greg Johnson received an anonymous tip about

Tod Navarro's truck along with three illegally killed cougars, also called mountain lions.

the illegal hunt, and he coordinated with Special Agent Gamba.

With search warrants in hand, law enforcement agents interviewed Harmel, Hellman and Gustafson. Through the interviews, the three men detailed how they met and paid the Navarros and Wilson $500 each to use their Idaho mountain lion tags, a state wildlife violation.

When the men crossed the state line and left Idaho with their illegally obtained quarry, their case upgraded to a federal violation of the Lacey Act.

The Lacey Act of 1900 was the first federal law protecting wildlife. It mandates civil and criminal penalties for the illegal transport of animals and plants across state lines, including the movement of illegally obtained game.

During the interview, the three North Dakota residents said they knew their actions were illegal.

The hunters all pled guilty to misdemeanor Lacey Act violations. They each paid nearly $5,000 in fines and restitution, forfeited their trophies and compound bows, were ordered to perform 25 hours of community service, and were banned from hunting for a year.

The guides also all pled guilty to misdemeanor Lacey Act violations.

Their fines were less, but all were banned from hunting and fishing anywhere in the United States for at least three years. They were also ordered to perform community service, and one received five years' probation.

"The system worked," Gamba says, talking about the cooperation among Idaho Fish and Game, North Dakota Game and Fish, Service special agents from North Dakota and Spokane, Washington, and the U.S. Attorney's Office in Coeur d'Alene, Idaho. "The best part of this is how well all of the agencies, state and federal, cooperated on this case. We wear different badges but have the same goal. We've got good partnerships."

The story about the wardens' teamwork and successful prosecution of the case will appear in an upcoming edition of *International Game Warden* magazine.

For Gamba, who was born and raised in New York City, the passion to serve as a Service special agent runs deep.

"I saw an ad for the New York Department of Fish and Game in a comic book when I was 7 years old," says Gamba. "I've wanted to protect animals ever since. I get to watch over the caribou and protect grizzly bears. I still have that ad framed in my office.

"When you grow up in a city and you aren't surrounded by wilderness, I think you grow to really appreciate and want to protect it. That's what we do as special agents—protect a resource for the public." □

BRENT LAWRENCE and DYLAN KNAPP, External Affairs, Pacific Region

Jake the Rogue Turkey

Merritt Island National Wildlife Refuge in Florida shares its boundaries with NASA's Kennedy Space Center, and biologists at the refuge frequently respond to calls from Space Center employees to relocate wildlife that has run afoul of their operations. It is not unusual for refuge biologists to wrangle alligators, capture snakes or remove birds that have found their way inside facilities.

In 2014, refuge staff started receiving complaints from Space Center employees about a young turkey that was chasing cars and routinely blocking traffic. On several occasions, biologists Steven Trull or Jim Lyon responded to the complaints, but invariably, the turkey, nicknamed Jake by Space Center employees, evaded capture.

One morning Trull got a frantic call. Jake had entered a security guard shack, causing the armed guards to hastily bail out, leaving Jake locked inside. Trull and Lyon responded, finding the flustered guards looking back inside their shack, while Jake flew about, depositing copious amounts of droppings on the floor, desks and chairs.

Now that Jake was trapped inside, Trull and Lyon knew they would get their bird.

They entered the shack, quickly cornering Jake. Trull, braving a flurry of beating wings, finally apprehended the suspect.

The biologists drove Jake to the north of the refuge, far from NASA's rockets and launch facilities. On their way, they saw a flock of hen turkeys and quickly unloaded Jake. It seems he finally discovered what he was really looking for, as he has not chased a car since. □

JIM LYON, Merritt Island National Wildlife Refuge, Southeast Region

Jim Lyon releases Jake in more appropriate habitat.

With monarchs, Service, partners hope to replicate success of bald eagle recovery

We've Done This B

by MICHAEL GALE *and* DONITA COTTER

A billion monarch butterflies once fluttered across the North American landscape, representing one of the greatest migration phenomena in all of nature. Over the last 20 years, their numbers declined precipitously, with the eastern population falling to a mere 33 million last year.

This year, that number grew to approximately 56.5 million butterflies that concentrated on less than three acres at overwintering sites in Mexico—hardly enough to assure the monarch's migration for generations to come. The vast continental range of the monarch butterfly presents a complex host of challenges to saving this charismatic insect.

But we have done this before.

The population of bald eagles—America's national bird—hit rock bottom in 1963 with just 417 nesting pairs in the contiguous United States. You probably know the story: DDT, a widely used insecticide, built up in adult eagles and thinned the shells of their eggs that would crack while being incubated by the parents. Congress passed the Endangered Species Act, the Service took a host of conservation actions, and Rachel Carson's *Silent Spring* set off a firestorm that changed the country's view of the natural and ended the indiscriminate use of pesticides such as DDT. Today, more than 10,000 pairs of bald eagles roam the country from coast to coast.

(Top): A monarch visits a New England Aster at Sand Lake Wetland Management District in South Dakota. (Middle): Monarch caterpillars need milkweed. (Bottom): A sunflower at Lacreek National Wildlife Refuge in South Dakota gives a monarch a perch.

TOM KOERNER/USFWS

Before

COURTNEY CELLEY/USFWS

For the monarch butterfly, arguably the continent's most beloved butterfly, many threats loom, especially the loss of native milkweed it needs to lay its eggs and its caterpillars need to eat. Nectar plants are also critical to feed the adult butterflies in spring, summer and fall as they migrate more than 3,000 miles between their winter sanctuary in Mexico and breeding habitats across the United States and up into Canada. The wide-scale adoption of herbicide-resistant corn and soy crops, has drastically changed the agricultural landscape, once a vibrant source of breeding and migrating habitat for monarchs. This resistance enables broad and non-targeted application of herbicides that indiscriminately kills vegetation growing around farm fields and in nearby habitat, including milkweed. »

TOM KOERNER/USFWS

Monarchs migrate thousands of miles.

RYAN HAGERTY/USFWS

You Can Help

Every backyard can become an oasis for monarchs and other pollinators—even in cities. Schools, youth and community groups, businesses, and state and local governments can engage in planting native milkweed and nectar plants, and protecting monarch habitat along roadsides, rights-of-way and other areas.

"We need to create alternate habitat for the monarch butterfly," Service Director Dan Ashe shared with reporters at the National Press Club before Valentine's Day when he announced an ambitious campaign, working with the National Wildlife Federation and the National Fish and Wildlife Foundation (which received $1.2 million from the Service to create a Monarch Conservation Fund) to save the monarch butterfly.

In the words of Colin O'Mara, the National Wildlife Federation's CEO, "This is a problem we can fix." Again, we have done it before.

Beyond their beauty and now well-known status, monarchs are excellent indicators of the health of the American landscape, including productive and essential croplands in the Midwest. Monarch declines are symptomatic of environmental problems that also pose risks to food production, the spectacular natural places that help define the national identity, and human health.

The alarm has been raised, and the Service has answered the call. This year alone, the Service will work with partners to restore and enhance more than 200,000 acres of habitat for monarchs and other pollinators on public and private lands. On top of that, the agency has dedicated an additional $2 million in funding for priority projects in three key geographic areas:

In spring breeding areas in Texas and Oklahoma, projects include a Native Pollinator Initiative in Texas and an effort to increase commercial production of milkweed;

In the Midwest Corn Belt, an area important for summer breeding, projects include Milkweeds for Monarchs: The St. Louis Butterfly Project and efforts by the Service's Partners for Fish and Wildlife Program, which engages private landowners in conservation;

In areas west of the Rockies, the Service is funding work to develop a range-wide approach for conserving the western monarch population.

The Service has also laid out a four-pronged framework for inspiring innovation and conservation action for monarchs and other pollinators inside and outside of the agency:

Leadership

The Service is uniquely positioned to lead and coordinate landscape-level conservation efforts for the monarch butterfly. The collective efforts of federal, state, tribal and local governments—along with private industry, non-profits, universities and anyone with a backyard—will be needed to tackle this enormous challenge. Such a gathering of forces requires leadership. Director Ashe chairs an Interagency High Level Working Group on Monarch Conservation that brings together the federal family for coordinated action.

But the effort can't stop there: state, tribal and municipal governments play an important role. Through the Monarch Joint Venture, a diverse partnership coordinating efforts to protect the monarch migration across the United States, the Service can tap the major players working on monarchs and invest in the resources needed to tackle this problem from the broadest perspective.

The monarch also requires habitat and conservation action in Mexico and Canada, which is why the Service is working through the Trilateral Committee of the three nations to develop collaborative efforts throughout the entire range of the butterfly.

Science

The Service and all its partners have a role in contributing to science-based, adaptive management to support increasing the monarch population in a changing climate. The Service is working with scientists at the U.S. Geological Survey (USGS) and the Monarch Joint Venture to find the best available science to refine, focus and implement strategic, landscape-scale solutions to this monumental conservation challenge. Leveraging its Strategic Habitat Conservation (SHC) approach, the Service will use the monarch butterfly as a flagship species for the agency's pollinator work. That means that the work conserving and connecting habitat for monarchs will help other critical insect and avian pollinators.

But there's still a lot that isn't known. The Service's Science Applications Program and the Refuge System's Natural Resources Program Center are working collaboratively with USGS and the Landscape Conservation Cooperatives (LCC) Network to identify and develop needed tools and monitoring approaches, and to develop a strategy to identify knowledge gaps and critical research needs.

Habitat

Scientists estimate that monarchs need a million and a half acres of additional habitat each year to grow the eastern population to 300 million butterflies by 2024. The Service contributes greatly to this national goal by delivering conservation on its own lands as well as through partnerships on other federal and state-owned lands and on private lands through the Partners for Fish and Wildlife and Coastal programs. There's also a lot that can be done by tweaking land management practices to benefit pollinators, from when to mow to adapting the size and schedule of prescribed burns.

Working with the Department of Agriculture's Natural Resource Conservation Service and Farm Service Agency, the agricultural community can be educated about the importance of native milkweed and other nectar plants, and how herbicide use can be reduced and modified to protect pollinators without sacrificing crop productivity. And the Service isn't neglecting the need to increase the availability of native seed for habitat restoration.

People

Perhaps never before has the Service been presented with such a grand opportunity to inspire a new generation of conservationists in America than with the quest to save the monarch. In February, the agency launched a public awareness campaign to engage news media, conservation allies, educators, state agencies, local officials, corporations, the agriculture community and others—particularly in urban areas. From pollinator gardens on Service lands to schoolyard habitats, the Service will work with such partners as the National Wildlife Federation and Monarch Joint Venture to get communities excited about the monarch butterfly. Individual actions matter, from planting milkweed to participating in citizen science monitoring projects. At the end of a decade, the collective actions of individuals will be what saved the monarch butterfly.

The road to saving the monarch is long, winding, even hilly and fully of roadblocks. But working together with conservation partners, along with battalions of schoolteachers, children and community leaders, we can overcome the hurdles and find a path to success.

You can't help but draw a comparison between the plight of the monarch and the dramatic journey of the bald eagle—an instantly recognizable animal, an expansive range and a prominent role for man-made chemicals in its demise. With a national conservation effort, we went from just over 400 bald eagles to 10,000—with the same coordination, we can go from 100 million to 1 billion monarch butterflies. Such a leap requires the engagement of Americans everywhere, and the commitment to take action before it's too late. □

MICHAEL GALE is a Special Assistant with the Service working on monarch butterflies. DONITA COTTER is the National Monarch Conservation Coordinator in the National Wildlife Refuge System.

Milkweed & More

How saving a butterfly could help save the prairie

(Above): Secretary of the Interior Sally Jewell helps Minneapolis second-graders collect native prairie seeds during a visit to Minnesota Valley National Wildlife Refuge. Seed sources on most federal and state lands are generally not available for harvest by the public. (Above right and below): Staff at Detroit Lakes Wetland Management District in northwestern Minnesota harvest, dry and store more than 26,000 pounds of native seed each fall for planting in late February and March.

Monarch on blazing star.

by TINA SHAW | People love monarch butterflies. They are relatively big, vibrant and easy for people to watch in their gardens. If monarchs disappeared from the landscape, people would notice.

And so would many of the wild things in the Midwest that call the nation's prairies their home.

Don't think of the monarch as one species of butterfly, think of it as a mosaic of prairie plants and animals that all need the same things—soil, sun and time to grow. Even in the face of massive habitat loss, the Service has been making a home for monarchs and species of the wider prairie ecosystem for decades.

The Service's prairie restoration is a coordinated, strategic effort on state, federal and private lands all over the Midwest Region. It is a year-round effort. Even in the cold, dark winter, staff at some national wildlife refuges and wetland management districts are getting ready for the growing season. You can adapt these steps for your own backyard, even if you live in the city and have only a small green space. If you use the right plants, you can attract monarchs to your backyard, providing an essential migration path.

In simple terms, building habitat for monarchs and other prairie species is all about the seed.

- Getting the right seed.
- Drying and storing seed.
- Spreading the seed.
- Knowing when to mow.

Getting the Right Seed

Milkweed and other forbs are not universal, and the Service goes to great lengths to use seed from specific geographies that mirror remnant prairie. Detroit Lakes Wetland Management District in northwestern Minnesota has been building prairie habitat for more than 20 years by harvesting a diverse seed mix from places such as Santee Prairie State Natural Area to restore former cropland.

Using a typical agricultural combine, district staff harvest, dry and store more than 26,000 pounds of native seed each fall for planting in late February and March. Staff test a sample batch of this harvest each year to get a sense of how viable the seed stock is, as well as what sort of plant diversity they have in the mix. It is key to have a mix of early- and late-blooming nectar plants, as well as milkweed, to provide diverse food sources over the course of the growing season. Over the past five years, these samples have had as many as 60 native prairie plants, which bodes well for healthy prairies. The majority of these samples have contained various milkweed species.

Across the country, there are more than 100 types of milkweed, and even more nectar plants to choose from, but not all will do well in every part of the country. Selecting the right combination of milkweed and nectar plants for each area is essential. It is also important not to plant tropical, or exotic, milkweed, which can hurt monarchs.

While seed sources on most federal and state lands are not available for harvest by the public, you can learn a lot by talking with staff at your local national wildlife refuge, Service field office or wetland management district.

Knowing When to Mow

Each piece of prairie has a unique microclimate and is impacted by invasives and management practices from neighboring landowners. At Detroit Lakes, staff manage prairie through an annual cycle of spring prescribed burning, followed by a late summer seed collection. Letting the native plants move through their full growing cycle is the best tool against encroaching invasives.

As Detroit Lakes project leader Ryan Frohling explains, "We don't mow very much; only when we get a serious weed complaint. We have worked with the counties to inform them about the diversity of species that we have."

"Not only grass, but the forbs and wildflowers, will out-compete invasives such as plumeless thistle. What we've found is that after about three years we no longer have any issues with this invasive, because the native plants out-compete them," adds Frohling.

Drying and Storing Seed

Drying and storing seed is an important step in advancing prairie habitat the following spring. The drying process must start immediately after harvest. In the case of the Detroit Lakes operation, the drying process takes about a week in the fall for each round of plants harvested. Large fans and a series of aeration tubes help staff dry seeds as quickly as possible so the seeds don't rot.

After the seed is dry, it is bagged and stored it in a covered, cold place where it will stay dry throughout the winter months. Most species require a minimum of 30 days of cold storage to prepare for spreading in the early spring. At Detroit Lakes, staff keep seed at cold outdoor temperatures for roughly four to five months.

Spreading the Seed

Late February and March are a good time to begin spreading seeds in the Midwest. Why spread seed in the late winter when it can naturally spread in the fall? When restoring an area that doesn't have prairie plants, they need to be added to the land in a way that anchors them and gives them a chance to germinate before the snow melts or wildlife eats them.

In other regions, seeds can be sown outdoors on bare soil before the first snow.

In the Midwest, the best weather scenario for planting is a blanket of snow and late winter sun. Staff at Detroit Lakes look for one to two feet of snow on the ground before spreading seed if possible. The angle of the sun is an important aspect of planting because as the sun's rays hits the seed, the heat causes the seeds to melt down into the snow during the day and then freeze into place once air temperatures lower at night. When there isn't enough snow, staff use large rollers to anchor them to bare ground.

The monarch's well-being or peril is a gauge of the overall health of a whole suite of life in the Midwest. When the Service works for monarch conservation on protected lands, it is supporting prairie health. Lesser known, and even more imperiled insects, such as the Poweshiek skipperling and the Dakota skipper quietly benefit through these actions as well.

Monarchs are beautiful, and watching their flight over prairie wildflowers on a warm summer day is something that people would truly miss. But if monarchs disappeared, it could mean the loss of much more. So many other prairie species need the same things to thrive. In a way, monarchs represent the state of the prairie. □

TINA SHAW, External Affairs, Midwest Region

CLOCKWISE FROM UPPER LEFT: TINA SHAW/USFWS, USFWS, KEN SLADE/CREATIVE COMMONS, USFWS

A Positive 90-day Finding. What Does That Mean?

by VALERIE FELLOWS

A monarch fans its wings after hatching.

JOANNA GILKESON/USFWS

You've probably heard by now that the Service made "a positive 90-day finding" on a petition to add the monarch butterfly to the List of Threatened and Endangered Animals. And you may be wondering, what does that mean?

There are two primary ways the process begins to add a species to the List of Threatened and Endangered Animals or Plants under the Endangered Species Act (ESA): 1) Service biologists identify potential species, 2) the Service receives a petition from the public. In the case of the monarch, the Service received a petition from the Center for Biological Diversity, the Center for Food Safety, the Xerces Society for Invertebrate Conservation and Dr. Lincoln Brower to list a subspecies of monarch as threatened.

Next, the Service reviews the petition to determine if it contains substantial information to indicate that the petitioned action may be warranted. This is called a 90-day finding because the ESA states that the Service should make this determination within 90 days of receiving a petition to the extent practicable. In the case of the monarch it was a positive finding, meaning the Service will now begin an in-depth review of the species' status. At the end of this review, which takes about a year, the Service will produce a 12-month finding determining whether or not the species warrants protection under the ESA.

Monarch populations have declined significantly in recent years, with the latest estimates from the Monarch Joint Venture showing the eastern monarch population colonies occupy a total area of less than three acres at overwintering sites in Mexico. That's down from more than 27 acres in 2003–04.

Habitat loss of common milkweed, the host plant of the monarch, was a primary factor for the petitioners. Monarchs will lay their eggs only on milkweed, the only plant their caterpillars eat. Widespread habitat loss and increased pesticide use across the landscape are threats to the species and their specific habitat requirements.

The petitioners also provided information on a number of other threats, including overutilization of monarchs for scientific and education purposes, potential diseases from captive-bred monarchs, and the impact of pesticides, which cause direct mortality and, in the case of neonicotinoids (a new class of neuro-toxin insecticides), behavioral changes.

While the timeframe has not been set, the Service's Midwest Regional office will take the lead on this listing action. The monarch status review is not anticipated this fiscal year.

In the meantime, the Service will use its monarch conservation strategy (tentatively planned for completion in January 2016) to target habitat conservation and restoration projects, and develop Candidate Conservation Agreements or other tools to help the at-risk species. □

VALERIE FELLOWS, Ecological Services, Headquarters

Have You Heard The Buzz?

Pollinator gardens give monarchs prime habitat in Houston

by BETH ULLENBERG

Great things are happening deep in the heart of Texas. The Houston Urban Wildlife Refuge Partnership is attracting a lot of interest in the nation's fourth-largest city from diverse local partners who are helping the Service connect with urban communities and create opportunities for urban residents to "find, value and care for nature."

"Not only are local citizens benefiting from these new partnerships, but pollinators are as well, such as honey bees and specifically monarch butterflies," says Nancy Brown, Southwest Region Urban Refuge coordinator.

A great way to engage urban audiences in conservation is to begin with small habitat restoration projects right in their own neighborhoods. The five national wildlife refuges within 60 miles of downtown Houston are pulling together partners to create and construct pollinator gardens around the city.

Service staff and community partners in the Houston Partnership began by looking for sites where a community pollinator garden could make a difference, and they found several. Beginning with a busy street corner at the intersection of two major roads and a new light rail stop, the area and local neighborhood were prime for something new and special. Refuge staff, partners, local businesses, community members and local high school students came to together to transform an unsightly corner in this former industrialized area into the 5,000-square foot East End Nature Garden. The garden hosts lots of plants and wild flowers, but most importantly, a diversity of milkweed, "monarch gold." The finishing touches to the garden include an interpretive sign highlighting the importance of pollinators and what urban dwellers can do to help them.

The next stop was the Greentree Wilderness Area, managed by the Buffalo Bayou Partnership (BBP). Buffalo Bayou is a historic bayou that winds through the heart of Houston. Under BBP's leadership, 10 miles of the bayou are undergoing a transformation that includes hiking and biking trails, pedestrian bridges, public art—and wildlife habitat. Although in a natural state, the Greentree area along the bayou was overgrown with invasive and exotic species. With the help of a Connecting People with Nature grant, Service staff and volunteers came together to get rid of the exotics and enhance the natural area with a mix of native plants and milkweed species. This is for the benefit of not only the community but also monarchs that now have a spot in downtown Houston where they can find the habitat they need to feed and reproduce during their long migration.

And the buzz continues. A third garden is planned for a city park and will soon take root. Everything is coming together in Houston. Community members are engaged and proud of their work. The Service is reaching out and working with new audiences. The city is seeing improvements to its landscape. The gardens are planted and teeming with milkweed, coneflower, butterfly bush, blazingstar and variety of other native plants. The pollinators, including monarchs, are soon to follow. □

NANCY BROWN/USFWS

ABRA ZOBEL/USFWS

(Top): Local high school students and volunteers work on the East End Nature Garden in Houston. (Bottom): The East End Nature Garden in Houston used to be an unsightly industrialized area.

BETH ULLENBERG, National Wildlife Refuge System, Southwest Region

A newly emerged monarch perches on one of Katie Hone's daughters.

KATIE HONE

IN OTHER WORDS

by KATIE HONE

Sustaining the Monarch Butterfly, One Yard at a Time

Every February and March, millions of monarch butterflies slowly warm up in their Mexican wintering forests and make their way north, looking for the only plant on which they lay their eggs: milkweed. Unfortunately, habitat destruction and herbicides have removed so much of the monarch caterpillar's only food source that the population of this remarkable butterfly has declined by 90 percent.

Not only are pollinators beautiful and work hard in your private garden, but they contribute heavily to the U.S. economy by pollinating food crops.

Scientists estimate that monarchs need a million and a half acres of additional habitat each year to grow the eastern population to 300 million butterflies by 2024. To the average property owner with a small yard, this may seem an impossible task. But every yard that has milkweed adds to that goal. And unlike many species that suffer from habitat loss, monarchs don't need contiguous habitat. Small fragmented patches in gardens and backyards work very well for restoring populations.

Adding native milkweed to your yard (and the "native" part is critical for the monarch) is not only easy, it will make a difference. Three years ago my young girls and I created a monarch waystation in our front yard by planting swamp milkweed and butterflyweed, two milkweed species more suited to a small garden than the common milkweed normally seen in meadows. That summer we found nine monarch eggs and raised them all to adults. The more monarchs we raised the more we fell in love with this insect.

As the monarch's population continued to plummet, we realized we needed to look beyond our own yard if these two little girls were going to raise monarchs with their future children. Last spring, I obtained a flat of swamp milkweed plants and asked everyone in our neighborhood to take one and add it to their gardens. Now, another 21 houses have milkweed, 50 percent of our neighborhood.

Looking beyond your neighborhood, native milkweed can be easily added, if you get permission, to existing public gardens at playgrounds, parks, libraries and schools. This past summer, my young girls and I added swamp milkweed and butterflyweed to an existing garden at their favorite playground. Three weeks later, we found monarch eggs. We raised all three and sent them on their way to Mexico this past September. Those six plants made a difference.

BEN FLEMER

Katie Hone and her two daughters spread milkweed seeds.

Many people ask me, "So why should I care about a little butterfly?" Beyond the simple beauty of the animal and its astonishing 3,000-mile migration, it is also a pollinator. By creating habitat for the monarch butterfly, you are also creating habitat for hundreds of other pollinator species. Not only are pollinators beautiful and work hard in your private garden, but they contribute heavily to the U.S. economy by pollinating food crops. And other pollinators, such as the honey bee, are on the decline as well.

Even if you have a tiny backyard and a few plants seem like an inconsequential drop in the bucket, millions of tiny drops add up to milkweed oceans. By creating this milkweed ocean on public and private lands, it is entirely possible to sustain the monarch butterfly and its migration. Every milkweed plant counts. □

KATIE HONE, a homeowner from Ipswich, Massachusetts, used a grant from Parker River National Wildlife Refuge to convert her waterfront home into a woodland oasis, dotted with native shade gardens and monarch butterfly waystations. It's a setting where her two young children can have close encounters with nature. Katie blogs as <www.themonarchgardener.com>.

More than Monarchs

Because of its well-known migration and good looks, the monarch is often the first butterfly Americans think of, but the Service is entrusted with the care of many other butterfly species. Across the country, butterflies find themselves imperiled by the loss and degradation of habitat, invasive species and other threats. As pollinators, butterflies play an integral role in the environment and the economy, enabling and enhancing the reproduction of plants. They also serve as key indicators of the health of the environment around them. Some of the "other" butterflies are:

KARNER BLUE

MEAGAN RACEY/USFWS

The endangered Karner blue butterfly, whose caterpillars feed only on the wild blue lupine, survives in just two states in the Northeast—New Hampshire and New York—and a few states in the Midwest. The Service has partnered with many organizations and agencies to manage habitat and captive rear and release endangered Karner blue butterflies. Thousands of butterflies have been released in the pine barrens of New York and New Hampshire, from the Concord Municipal Airport to Great Bay National Wildlife Refuge.

LANGE'S METALMARK

USFSW

A century ago, a trip down the San Joaquin River near what is now Antioch, California, meant passing several miles of 120-foot-high sand dunes. Over time, the dunes went from vast to vestigial to almost non-existent. Unfortunately, the dunes were the only habitat for the Lange's metalmark butterfly. In 1980, 55-acre Antioch Dunes National Wildlife Refuge was established to protect the remaining butterfly habitat, as well as that of two species of endangered plants. Continued degradation of dune habitat has limited recovery, but a recent innovative arrangement offers hope. Through a mutually beneficial partnership with the Port of Stockton, California, and the U.S. Army Corps of Engineers, the refuge is now receiving, free of charge, unprecedented amounts of dredged sand from the adjacent San Joaquin River to restore butterfly habitat.

TAYLOR'S CHECKERSPOT

USFSW

Within the dense conifer forests that dominate the Pacific Northwest lies a hidden treasure of prairies that explodes with a diverse rainbow of flowering plants, bunchgrasses and butterflies each spring. The endangered Taylor's checkerspot butterfly lives in a few remaining prairies in Washington and Oregon. The Taylor's checkerspot was listed as endangered in 2013, but the Service has been actively conserving the species and its habitat for more than a decade. The Service works closely with state, local and federal partners, including the Department of Defense at Joint Base Lewis-McChord. The base sustains the largest population of this species, serving as the sole source of adult female butterflies used for captive rearing and reintroduction. Recovery efforts include ongoing prairie restoration, and reintroduction of the butterfly into restored native prairies.

GUAVA SKIPPER

RAUL GARZA

Santa Ana National Wildlife Refuge and Lower Rio Grande Valley National Wildlife Refuge in Texas are known worldwide as "must see" destinations for a variety of bird species and their work with the highly endangered ocelot, but the refuges also hold another treasure, butterflies! The butterfly migration is a colorful bounty that offers a view of many less-common species such as the eastern Mexican white skipper, two-barred flasher, malachite, mimosa skipper, emerald aguna, giant white, zilpa longtail and the ever-elusive and beautiful guava skipper.

SCHAUS SWALLOWTAIL

HOLLY SALVATO

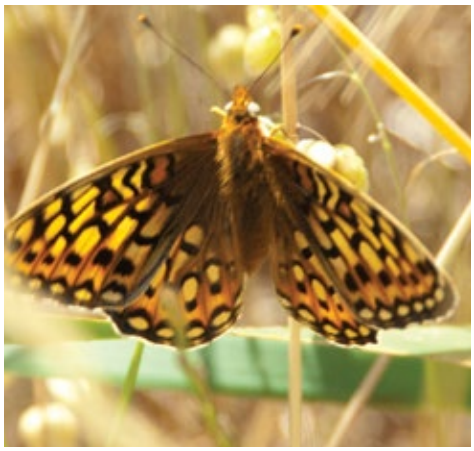
The endangered Schaus swallowtail historically occurred in tropical hardwood hammocks in southern Florida — ranging from coastal Miami into the central Florida Keys — but is now restricted to islands within Biscayne National Park (BNP) and extreme northern Key Largo. The Service funded captive rearing and reintroductions during the mid- to late 1990s, both within BNP and northern Key Largo. These efforts increased Schaus numbers in the short term but not the long term. In 2012, the Service issued an emergency order allowing the University of Florida to reinitiate limited captive rearing and other recovery efforts for the Schaus' swallowtail. As a result, more than 300 swallowtails (adults and larvae) were released during the spring of 2014 within BNP. Additional reintroductions will occur.

DAKOTA SKIPPER

DENNIS SKADSEN

The Dakota skipper and Poweshiek skipperling are two small, mostly inconspicuous butterflies that inhabit high-quality native prairie in the Midwest. These two species were recently listed as threatened and endangered, respectively. With changes in farm prices and policies, native prairie, especially tallgrass prairie, is becoming an increasingly scarce habitat. Waubay Wetland Management District in South Dakota works hard to protect native prairie and these butterflies through easements. It also maintains its prairies with prescribed fire and grazing, mimicking the natural forces that formed these prairies.

CALLIPPE SILVERSPOT



SARAH SWENTY/USFWS

Listed as endangered in 1997, the Callippe silverspot butterfly was historically found in grassland habitat in the seven counties bordering San Francisco Bay in California. With partners, the Service has been working to protect the northern-most known population of this endangered butterfly. These efforts include acquisition and management of key parcels including movement corridors and the extensive removal of exotic plants.

MIAMI BLUE

HOLLY SALVATO

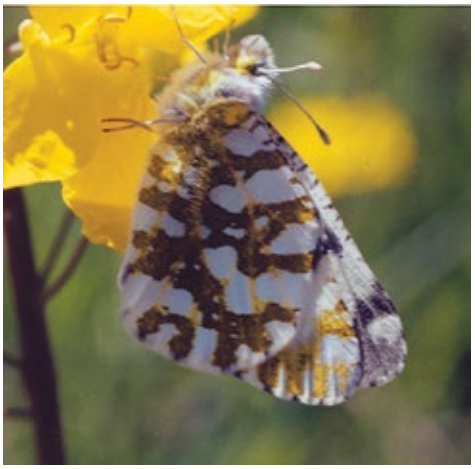
The endangered Miami blue butterfly once occurred throughout coastal areas of central and southern Florida and was thought to be extirpated until its rediscovery late in the 20th century. The butterfly now occurs only locally on a few small islands within Key West National Wildlife Refuge in the extreme western Florida Keys. The experts in the Miami Blue Recovery Team are preparing a recovery plan for the Miami blue and will advise the Service on issues related to the butterfly's status and conservation.

FENDER'S BLUE

USFSW

The Fender's blue butterfly, a subspecies of the Boisduval's blue butterfly, was believed to be extinct from 1937 until it was rediscovered in 1989. The distribution of this endangered butterfly is restricted to Oregon's Willamette Valley, where it currently occupies 32 sites in Yamhill, Polk, Benton and Lane counties. One population is found in wet prairie, while all other remaining populations are found on drier, upland prairies characterized by forage grasses species.

ISLAND MARBLE



USFWS

Just off the coast of northwestern Washington State lies a chain of islands locals refer to as the San Juans. Known for breathtaking views, beautiful beaches, quiet woodlands and orca whales, San Juan Island is also home to one of the last remaining island prairie ecosystems in the Puget Sound. It was here in 1998, at American Camp in San Juan Island National Historical Park, that scientists discovered a butterfly that was thought to have been extinct for 100 years, the island marble butterfly. The Service and National Park Service are working with partners and landowners on the island to develop conservation strategies and habitat protection for these rare and beautiful butterflies.

IN OTHER WORDS

For Senator, Monarch Conservation Starts with Mom

COURTESY AMY KLOBUCHAR

Senator Amy Klobuchar, with her mother, Rose; daughter, Abigail; and a monarch.

by AMY KLOBUCHAR

The monarch butterfly is one of America's most iconic species, but it might not be around for future generations to enjoy if we do not come together to protect it.

With the monarch butterfly population having decreased an estimated 90 percent since the 1990s, and the milkweed plant that monarch caterpillars depend upon for food suffering similar declines, now is the time for action.

I recently joined Republican Senator Susan Collins of Maine in calling on the Departments of Interior, Transportation and Agriculture to build on and strengthen public-private partnerships to preserve the monarch butterfly.

The partnership among the U.S. Fish and Wildlife Service, the National Wildlife Federation and the National Fish and Wildlife Foundation shows that both public agencies and private organizations are taking the threat against monarch butterflies seriously and are working together to reverse the trend.

I'm glad that the U.S. Fish and Wildlife Service has already been working with public and private partners on conservation efforts in Minnesota, including restoring and enhancing more than 6,500 acres of monarch habitat on private land through the voluntary Partners for Fish and Wildlife program, hosting monarch outreach and educational events, and collaborating with the Monarch Joint Venture and Monarch Lab at the University of Minnesota.

The good news is that people like you care about this issue. And from planting milkweed in schoolyards to raising their own monarchs to release in time for migration, people across the country are taking action now to protect these butterflies.

To me, saving the monarch is important not just because they're beautiful or because they're an important species for pollination, but because they remind me of my mom.

My mom taught second grade until she was 70 years old. I still run into people who remember her unit on the monarch butterfly. She would dress up as a monarch in all orange and black with wings and hold a sign that said, "Mexico or bust."

So whenever I see monarch butterflies, I think of my mom and how she would want us to protect the monarch for future students to enjoy. For her and all the generations to come, we must do everything we can to ensure that monarch butterflies remain a vital part of our natural world. □

AMY KLOBUCHAR is a U.S. Senator from Minnesota.

NATURE, HEAL THYSELF

'Living shorelines' take a natural approach to protecting wildlife and people from the impacts of future storms and erosion

by BRITTANY BOWKER

There was a time when shoreline protection often meant installing hard structures such as bulkheads or riprap to armor the coast against erosion and rising sea levels. But since the early 1980s, a "softer" approach—called "living shorelines"—has been transforming the conservation of these important natural areas by allowing the coast to heal itself.

(Above): At Hail Cove in Kent County on Maryland's Eastern Shore, 4,000 feet of living shoreline planned for the site will protect 400 acres of marsh land.

By using a variety of natural materials such as sand and marsh grasses combined with some structure, this method not only protects vulnerable coasts but also maintains their ecological continuity and stability. In states such as Maryland, whose coast is considered one of the most vulnerable to sea-level rise in the country, living shorelines have become a new and widely used method of shoreline protection.

"Two points are important in living shoreline project—maintaining the natural process and minimizing coastal erosion," says Bhaskar Subramanian, program manager for the Shoreline Conservation Service with the Maryland Department of Natural Resources.

As the name suggests, living shorelines contain a substantial number of "living" elements, so they tend to work with nature instead of against it. Unlike concrete seawalls, they create habitat for aquatic species and dissipate wave energy before it reaches land.

No two living shorelines are exactly alike, varying in size, shape and structure. Where wave energy is low to moderate, living shorelines can be composed of sand, wetland plants or logs made of biodegradable materials. In areas with

higher wave energy, a hybrid approach is used, combining these kinds of materials with rock, oyster reefs or submerged aquatic vegetation.

"During an eight-foot wave surge, as in the case of Hurricane Isabel (2003), the marsh grasses form a blanket on the constructed shoreline, with its roots holding onto the sediment under the surface, offering protection from all sides," Subramanian says.

In 2008, Maryland passed a law stating all landowners must use a living shoreline approach to protect their waterfront properties unless they have a specific reason not to. Matt Whitbeck, a biologist with the Service's Chesapeake Marshlands National Wildlife Refuge, says the move paved the way for a shift in shoreline protection methods from artificial to natural.

"In terms of conserving habitat, this was a huge step in the right direction," Whitbeck says.

Federal funding for Hurricane Sandy recovery has boosted this effort along the Atlantic Coast, currently supporting four living shoreline projects managed by the Service:

■ At **Hail Cove** on Maryland's Eastern Shore, $1.3 million will help construct 4,000 feet of living shoreline. By placing sand within rock breakwaters along the eroded marsh banks, the project will create a more suitable environment for the island's migratory birds and nesting diamondback terrapins.

■ At **Fog Point**, also on Maryland's Eastern Shore, a $9 million project to build 21,000 feet of living shoreline will help protect nearby communities from the effects of intense storms and sea-level rise, as well as wildlife and habitat at Glenn Martin National Wildlife Refuge. Whitbeck says this is considered an area of extremely high wave energy, so complex-hybrid construction will be used.

Bhaskar Subramanian of the Maryland Department of Natural Resources is working with the Service on several "living shoreline" construction projects in Maryland.

MARYLAND DNR CHESAPEAKE AND COASTAL SERVIC

RICK BENNETT/USFWS

■ At **Gandy's Beach** in New Jersey, $880,000 will help construct living shoreline along 4,000 feet of shore to restore its salt marsh and adjacent uplands. By enhancing these areas' natural defenses, communities will be better protected against future storm surges.

■ At **Chincoteague National Wildlife Refuge** in Virginia, $550,000 will help construct 3,650 feet of living shoreline and two acres of oyster reef to help protect the refuge as well as its surrounding communities. Kevin Holcomb, a wildlife biologist at the refuge, says this will be an opportunity "for people to see what we're doing and how living shorelines can lessen the impacts of storm surge on their own properties."

Subramanian says monitoring the effects of living shoreline projects is critical to their success.

"You can implement the best design for the best living shoreline, but if you don't monitor it, you don't know what's happening and there's no way to learn from it," he says.

Subramanian says data from previous living shoreline projects, coupled with sea-level rise projections, indicate living shoreline projects will help create a sustainable system that will protect our coasts for years to come.

"Time will tell," he says. □

BRITTANY BOWKER is a Student Conservation Association intern assisting the Service in communicating about projects funded by money for Hurricane Sandy recovery. She is currently a student at the University of Massachusetts-Amherst.

Service works to recover Great Lakes' Cisco, a key in the food web

story and photos by
KATIE STEIGER-MEISTER

In Deep Water

In the early morning hours of a chilly winter day, all is quiet in Two Rivers, Wisconsin, save for a flurry of activity at the Susie Q Fish Market dock. Two commercial fishing vessels, the Peter Paul and the Susie Q, are being readied by crew and Service fish biologists for a full day of trawling on Lake Michigan.

Roger Gordon from Jordan River National Fish Hatchery in Michigan smiles after a productive day of bloater egg collection on Lake Michigan aboard the Peter Paul.

Winter swells and bitterly cold air temperatures on the water cannot deter Service personnel from their mission. Eight miles out from shore and hundreds of feet below the surface of the water, a small silver fish, commonly known as the bloater, is reproducing.

"Most people only see bloaters in deli counters labeled as 'smoked chub,'" says Mark Holey, project leader of the Green Bay Fish and Wildlife Conservation Office. "They have no idea of the importance this fish holds in tying the Great Lakes food web together."

A type of deep water cisco, the bloater provides important nutrients for native predator fish such as lake trout. Yet their populations are low if not completely extinguished in much of the Great Lakes because of over-fishing, invasive species and habitat degradation. An effort by the Service at the request of the state of New York and the province of Ontario, Canada, aims to restore bloater populations in Lake Ontario, which will support growing populations of lake trout and Atlantic salmon. The lessons learned as part of this effort will help to guide cisco restoration efforts in other parts of the Great Lakes.

"Species recovery in the Great Lakes is a priority for us," says Todd Turner, Assistant Regional Director of the Service's Midwest Fisheries Program. "With invasive alewife populations in significant decline, we now have a great opportunity to restore the native bloater back into its historic niche."

An hour after leaving the dock, the rear doors on the Peter Paul and Susie Q are opened in the predawn light and machinery begins to hum as the bottom trawl nets are readied and deployed. For one hour, the nets will be slowly pulled across the lake bed to collect spawning bloaters.

The bloater restoration efforts require the Service to chart new ground in deep-water fish propagation techniques and necessitate both muscle and expertise from numerous National Fish Hatcheries and Fish and Wildlife Conservation Offices. In 2015, the goal is to collect 2 million fertilized bloater eggs. Previous efforts have never yielded more than half a million eggs in a season.

One challenge is that bloaters only reproduce for a month in the heart of the winter in more than 300 feet of frigid water. Winter weather and ice add uncertainty to that narrow time window.

(Left): The bloated appearance of cisco—and the inspiration for their common name "bloater"—is the result of air in their swim bladder expanding when brought to the surface of the lake. (Right): Dale Hanson from the Green Bay Fish and Wildlife Conservation Office assists with bloater egg collection.

"Another distinct challenge to this restoration project is the lack of knowledge we have in the culture requirements for this species," says Roger Gordon, project leader at Jordan River National Fish Hatchery in Elmira, Michigan. Every week for a month or more, Gordon and members of his team drive to Two Rivers to assist with egg collection efforts. "Up to this point," Gordon adds, "no significant studies have been done on the large scale propagation of this small fish."

The Service is now in its sixth year of winter egg collection and bloater research. With its partners, including the Ontario Ministry of Natural Resources and the U.S. Geological Survey, the Service is carrying out multiple rearing trials to fill in the gaps in information.

Back on the boats, the sun finally rises over calm winter waters as the trawl nets are hauled from the deep. As on the Susie Q, aboard the Peter Paul the trawl net is opened, depositing a pile of bloaters across its deck. The bloated appearance of the fish—the inspiration for their name—is the result of air rapidly expanding in their bodies when they are pulled from the bottom of the lake to the surface. In females, the expanded air in their swim bladders will push many of the ripe eggs out of the fish and into the lake before fish biologists have an opportunity to collect them, another complication in bloater propagation and research.

After the fish are removed from the trawl net, commercial fishermen and Service fish biologists sort the fish into bins and begin examining each bloater. Eggs are taken from ripe females, and testes are removed from males. Every set of harvested eggs is fertilized with sperm from one or two male bloaters. Spawned fish are then packaged and labeled for later work in the lab, which will include genetic sampling and aging. The process is repeated until all the fish are gone from the bins. The trawl nets are placed back in the water and the cycle is repeated three more times before the Peter Paul and Susie Q return to the dock that afternoon.

The day was a success, with nearly 200,000 eggs collected. The eggs are packaged and overnighted to the New York Department of Environmental Conservation's Cape Vincent Fisheries Station or the U.S. Geological Survey's Tunison Laboratory. At Cape Vincent, state fish biologists transport the eggs to the Canadian border, where the eggs are received by the Ontario Ministry of Natural Resources for transport to the White Lake Fish Culture Station.

"This year we have already collected more than 1.2 million eggs," says Dale Hanson, a fish biologist from the Green Bay Fish and Wildlife Conservation Office. "Most of the fish that hatch from these eggs will be stocked into Lake Ontario as yearlings, but several thousand will be retained at the White Lake Fish Culture Station and reared to maturity, where they will be used as a future source of eggs to support large-scale stocking operations."

The result? More than 92,000 bloater yearlings stocked into Lake Ontario.

The sun is beginning to drop as gear is hauled off the Peter Paul and the Susie Q. After another grueling day on the winter water, one thing is clear—commitment to the cause is high. It seems only a matter of time that bloaters return to all the Great Lakes. □

KATIE STEIGER-MEISTER, External Affairs, Midwest Region

What Am I?

PATRICK GOWER, a fish and wildlife biologist with the Carlsbad Fish and Wildlife Office in the Pacific Southwest Region, tries to engage audiences with his poetry. He says he tries "to not make it too obvious but easy enough that with a little research, they can figure it out." Do you know what it is?

Answer at end.

lightly dancing
to and fro
shifting plant to plant
like a game piece
upon a checkerboard
boldly displaying
patterns flashing reds
and blacks while
hovering upon

chaparral coated
hilltops bathed
in sunsets that
sink into oceans
that stretch south
towards las playas
de Tijuana

The answer: The endangered Quino checkerspot butterfly, a member of the family *Nymphalidae* (brushfooted butterflies). It is restricted to Riverside and San Diego counties in California, and northern areas of Baja California, Mexico. Quino can be found inhabiting the open areas within patchy shrub or small tree landscapes. They were once abundant, but population numbers have decreased because of loss of habitat and extreme weather events such as drought and fire. Current efforts to benefit Quino include working with partners to permanently protect and manage Quino habitat, improve Quino habitat throughout its range and support current public outreach programs.

JOHN MARTIN/USFWS

MUSEUM OBJECTS COME TO LIFE

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

Heavy Artillery

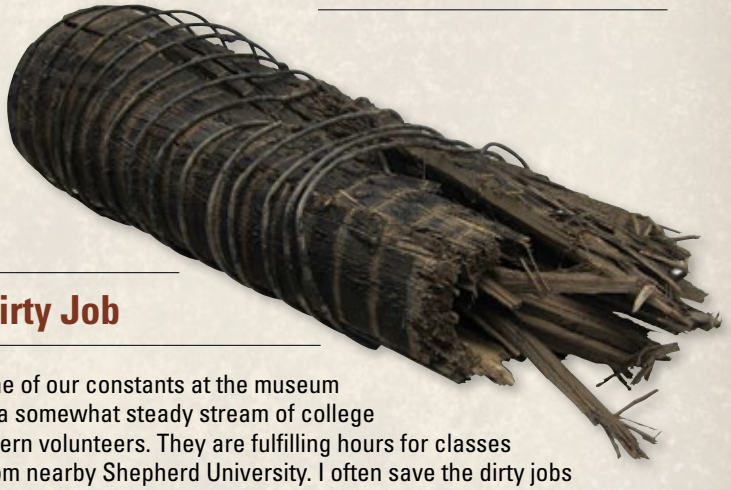
Occasionally, the Service Historian and I give talks around the country on the museum. We usually take objects with us to show off at the lectures. On one trip to Memphis, Tennessee, we both gave presentations to refuge managers and I had a large gun case. I kept the objects with me in my room at the hotel at night. One night, at 3 a.m., there was a fire scare, and I had to carry the bulky, heavy case down 13 flights of stairs. After the all clear, I had to carry it back up the 13 flights, as the elevator was too busy. From now on, it will be Standard Operating Procedure for the Historian to keep the objects with him!

Angry, Smart or Both?

There are two bonteboks full mounts in our museum. They both have very angry looks on their permanently frozen faces. I note this during tours, and wonder aloud if they are a cantankerous species as a whole, or if they are just very smart and these two were angry at their fate.

President Clinton's bear friend

One of our taxidermied specimens had a photo taken with President Bill Clinton. He is a very special grizzly bear that was used in a hunting excursion store in Alaska. The store was a front for an undercover operation to catch hunting guides who were helping hunters take bears illegally. I sure do wish I had a photo with President Clinton!



Dirty Job

One of our constants at the museum is a somewhat steady stream of college intern volunteers. They are fulfilling hours for classes from nearby Shepherd University. I often save the dirty jobs just for them, being the kind curator that I am. Cleaning a large cannon net for capturing and banding waterfowl was one such job. The net was very dirty and smelly, and full of feathers, grass and goose poop. Another was cleaning a creosote- and dirt-covered partially smashed piece of race pipe from a fish hatchery (pictured). Not only do these jobs separate the men from the boys and the women from the girls, so to speak, they also prepare the interns for a future of curatorial work, if it doesn't dissuade them from the field altogether!

Transitions

Pacific

Roy W. Lowe, project leader for the Oregon Coast National Wildlife Refuge Complex, a 37-year veteran of the Service, retired on January 2.

After graduating from Humboldt State University, Roy began his Service career at the Decatur, Alabama, Ecological Services Office in 1977. From 1981–1985, Roy served as a biologist at San Francisco Bay National Wildlife Refuge Complex. He left to take a position as the wildlife biologist for four Oregon Coast national wildlife refuges (NWR). In 1999, Lowe was selected as project leader for the Oregon Coast Refuges. Since then, the refuge complex has grown significantly, and a once non-existent visitor services program now stretches the length of the Oregon coast. Presently, it reaches millions of visitors traveling U.S Highway 101, the Pacific Coast Scenic Byway.

"It's been amazing to watch the refuges on the Oregon coast grow over the years from four refuges when I arrived to six refuges today with the establishment of Siletz Bay NWR and Nestucca NWR in 1991," Roy says. "Oregon Islands NWR has since been expanded four times, Bandon Marsh NWR two times, and Nestucca Bay NWR once. Through astounding partnerships, we have acquired some spectacular real estate along the coast, places like Coquille Point, Crook Point, Neskowin Marsh, Two Rivers Peninsula at Nestucca Bay and Whale Cove."

Just before retiring, Roy received the Service's Land Legacy Award for his commitment to conserving important and iconic habitats for wildlife and people through land acquisition (p. 35). The award cited him for "displaying a tireless advocacy for the lands and wildlife the Service protects."

Throughout his career, Roy demonstrated an unending commitment to the conservation of fish, wildlife and their habitats. That commitment has been recognized not only through awards but through requests for his guidance and expertise from places as far away as China.

"Roy has been a tremendous force for conservation throughout his career and especially here on the Oregon coast," says Regional Director Robyn Thorson. "His belief in partnership and support for his staff have resulted in success for conservation—success that can be seen all along the coast from salt marsh restorations to priceless places like Two Rivers Peninsula at Nestucca Bay." □

Longtime natural resource professional **Eric Rickerson** has been hired as supervisor for the Service's Washington Fish and Wildlife Office. Rickerson provides leadership in all facets of the federal agency's wildlife conservation responsibilities, including important partnerships with tribes, Washington state, other federal agencies, non-governmental organizations and others.

"The wildlife resources in Washington deserve strong collaboration among government organizations and the public," says Pacific Region Director Robyn Thorson. "Eric was selected for his excellent partnership skills, in addition to his outstanding management experience."

Rickerson will lead a staff of approximately 115 employees, headquartered in Lacey, with field stations in Spokane and Wenatchee, Washington. The offices manage complex natural resource issues throughout Washington, requiring broad collaboration on landscape scales with a variety of partners. Core responsibilities include species conservation and recovery, private lands and conservation partnerships, listing and classification of endangered species, federal agency assistance and consultation, leadership in forming the Lake Sammamish Urban Wildlife Refuge Partnership, the assessment of contaminants on natural resources, fisheries management and outreach.

"The Washington Fish and Wildlife Office has a long history of working with partners, conserving trust resources in Washington that enrich all of our lives," says Rickerson. "I look forward to using my experience to build on that history of success."

Rickerson formerly served as the deputy chief for wildlife programs for the Oregon Department of Fish and Wildlife (ODFW), where he oversaw the Game, Conservation and Habitat Resources programs. He had been with ODFW for 17 years and also held various technical and leadership positions. □

Southwest

Charna Lefton, the Southwest Region's Assistant Regional Director for External Affairs, retired in January after working in the public relations field for nearly 40 years, the last eight with the Service. Throughout her career, Charna demonstrated great passion for caring for natural resources through the power of words. Charna was also a strong advocate of less "science-speak" when sharing Service messages to gain more support. During the last part of her career, Charna focused on sharing the message of workplace balance. She also did two stints with the Bureau of Land Management and spent six years in Bolivia with the Peace Corps.

Today she is ready to enjoy the next phase of her life. Charna intends to reunite with her passion for reading—she is a member of two book clubs—and enjoy family and friends in Albuquerque, New Mexico. There may be a trip or two planned as well. □

Mountain-Prairie

Natural resource professionals are well known for their commitment, passion and dedication. Not as many are also known for having a fantastic sense of humor and spending their free time acting in local theater productions.

Lorrie Beck has spent many years being all of those things, but as of December 27, she is retired from the Service. Lorrie spent more than 30 years in federal service.

Lorrie began work in 1981 with the U.S. Peace Corps in Lesotho, South Africa. Beginning in 1984, she spent nine years working for the U.S. Army Corps of Engineers across parts of Kansas and Missouri.

In 1993, the Service was fortunate enough to hire Lorrie at Yukon Delta National Wildlife Refuge in Alaska, where she stayed until 1999. She then accepted another Service position, this time in the Service's Mountain-Prairie Regional Office as an outdoor recreation planner for North and South Dakota. In 2001, Lorrie made her final career move to Wichita, Kansas, as the only Service employee at the Great Plains Nature Center (GPNC). During her time at GPNC, she primarily worked as a park ranger (naturalist), but she was elevated to the position of GPNC director in 2012. Lorrie's passion and commitment to environmental education and the interpretation of natural resource conservation made her the obvious choice for the leadership position. As director, she oversaw all management activities at the facility, but continued along with other GPNC staff to provide education through programs, events and personal contacts.

We congratulate Lorrie as she moves into this new phase of her life. Undoubtedly, she will have much more time to pursue her other passions, including reading, theater, Habitat for Humanity and long road trips, but she will be missed. □

Headquarters

Fred Bagley, who spent 37 years with the Service—most in the Division of International Conservation administering programs aimed at development of wildlife conservation capacity in Asia—retired at the end of 2014.

He got his start with the Service as a biologist in the Southeast United States, working on recovery of such species as the bald eagle, gray bat, Ozark and Virginia big-eared bats, Alabama cavefish, watercress and bayou darters, red hill salamander and Alabama red-bellied turtle.

Birds were what first drew him to the outdoors, he says, and in retirement he hopes to have time to do more biking/hiking/bird watching. He also hopes to get involved in some local conservation projects.

When Fred was starting his work in Asia, he went to India to learn about his first project, building the conservation capacity with the Wildlife Institute of India. The project was designed by Fred's then-supervisor, Dave Ferguson. When Fred got to India, he spoke to Vikki Nanda, a foreign national working in the Science Office of the U.S. Embassy, about the new collaboration with the Wildlife Institute. Fred says Vikki told him: "'Dave and I have made the baby; now it's your job, Fred, to deliver it!'"

After 25 years in Asia, Fred not only delivered the baby but saw that it got its college degree in conservation. □

David Cottingham, Senior Adviser to the Director focusing on reducing the impacts of renewable energy development on wildlife, retired at the end of December. David spent many years at the Service, Department of the Interior, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Marine Mammal Commission and the Council on Environmental Quality working on complex natural resource management issues involving diverse parties.

Roddy Gabel, Chief of the Division of Management Authority, retired from the Service's International Affairs Program at the end of 2014 after nearly 35 years of service.

In 1980, Roddy's love of birds led him to a position with the Patuxent Wildlife Research Center, where his career began in the Endangered Species Propagation Program working with whooping cranes and other endangered birds. As an expert aviculturist, he was invited to consult on similar programs in Puerto Rico and Hawaii, and while at Patuxent, he completed an M.S. in Avian Physiology.

In what seemed like a cruel joke, Roddy developed allergies to birds, and in 1989 he took a two-year detail to a position supported by the Service at the American Fisheries Society as a technical editor, where he honed his writing skills and "learned a lot about fish!"

When the detail ended, Roddy moved to Service Headquarters, first in the Division of Scientific Authority in International Affairs, where he eventually became Chief, and later as Chief of the Division of Management Authority. During this time, a longstanding passion for orchids and other plants led to Roddy becoming a recognized expert on trade in plants under the Convention on International Trade in Endangered of Wild Fauna and Flora (CITES).

For about the last 10 years, Roddy says he has been honored to represent the United States in international forums, including as North American representative on the CITES Plants Committee (2004-2010) and North American member and vice chair of the Standing Committee (since 2010), culminating in his selection as one of the two committee chairs for the 16th Meeting of the Conference of the Parties to CITES in Bangkok in 2013. He says he has appreciated the opportunity to work with some truly great people, both here and abroad, and could not have planned a better career! □

Rowan and Puddles, the Refuges mascot, share a moment at 2014's Holiday Breakfast.

Rowan Gould: 38 Years of 'Doing Something More Important, Bigger Than You Are'

"I'm just Rowan," says Dr. **Rowan Gould**, the Service's newly retired Deputy Director for Operations, when talking about a story on his retirement.

It doesn't matter that in an email announcing the retirement Service Director Dan Ashe called him "our Glue Guy," a basketball term that refers to players who consistently put the team first and do all the little things to enable it to succeed.

It doesn't matter that twice Rowan served as acting Director of the U.S. Fish and Wildlife Service or that he led the Department of the Interior's response to the Deepwater Horizon oil spill, as he had years earlier with the Service response to the Exxon Valdez in Alaska.

And it certainly doesn't matter that he has a room full of awards from his 38-year Service career, including the Presidential Rank Distinguished Service Award, the Meritorious Service Award and the Gold Secretarial Executive Leadership Award.

"There are so many people in the Fish and Wildlife Service," Rowan says, who "have done more, better than I've ever even thought of."

It's that same powerful belief in Service employees that gives Rowan confidence in the agency's future. "Oh my gosh, yes, I'm optimistic," he says.

"I'm optimistic because of the people we have working for the Fish and Wildlife Service and the fact that they have this passion for what they do, and more and more they have the smarts to know how to push us forward from a mission perspective."

Compared to when he started, Rowan says the Service is much more partner-focused, teamwork-focused and inclusive.

"Those are the traits that are going to cause us to be relevant in the future," he says.

"I am leaving an agency that has nothing but a bright future in front of it," Rowan adds, " and it's because of the people and the kinds of people we're bringing into the Service."

He's also quick to praise the current crop of employees for welcoming these new voices into the Service family.

Rowan learned early in his career how important it is to think about the future.

An early mentor and conservation hero, fish pathologist Dr. Stan Snieszko, taught Rowan that "time really is irrelevant."

Dr. Snieszko shared the experiences of his 40-year career with Rowan, just as Rowan does with young people now. In 40 years, those once-young people will have almost 120 years of experience—theirs, Rowan's and Dr. Snieszko's.

Rowan realized that "you've got to see things in the larger context. You can't see it in the day-to-day," because time goes by like that, he adds with a snap.

"You have to understand how it was, how it is and know in your heart that it is going to be different in the future and just try to envision what that future is going to look like," he says, and then act with that future in mind.

Rowan praised Director Ashe for doing that a lot.

"Dan acts in the present but thinks in the future," Rowan says, "and his actions are the result of what that future's going to look like and not just what it looks like right now."

Fishing, one of his early loves, taught Rowan another key concept he has used throughout his career. What drew him to fishing, he says, "wasn't the catching. It was the thrill of the chase; it was the expectation that the big one was just around the corner." That taught him to always be ready to jump at opportunities. That preparation gave him the two most rewarding experiences of his career—managing the responses to the Exxon Valdez oil spill and to the Deepwater Horizon oil spill in 2010.

He calls the work after the Exxon Valdez spill in 1989 in Alaska "fascinating and tiring." He adds: "You were tired, but you knew there was something out there that needed to be cared for and represented, and that was fish and wildlife and their habitats."

Again, Rowan applauds the Service workers. "Our people were so incredible—both in the Exxon Valdez spill and the Deepwater Horizon spill.... Our people really know what they're doing, and having some kind of oversight of what was going on and working with those folks—that was the most rewarding thing I ever did in my career."

Here, the passion for conservation that Rowan says burns in all Service workers shines through: "I was in the middle of it. I did it. I was not getting sleep. I was working seven days a week. It was intense, but it was really great."

Pretty passionate for someone who got into fish and wildlife management not "to save the world and save the environment but...to get into what I liked the best; and that was in that world of fishing and hunting and wildlife management."

Everyone in the Service has been drawn in by some connection to the outdoors, Rowan says—hunting, fishing, bird-watching, hiking, something. Once in the Service, those people start thinking about the very existence of fish and wildlife and their habitats. And they start to care and "care more and more and more." Then, you get full-fledged conservationists, and that happened to Rowan.

What will he do now that he's retired? "I'll do what I can do," he says. "I don't plan on walking away from my passions."

One of those passions is "diversity and civil rights, because I think that is important for the Fish and Wildlife Service to [be able to] carry on into the future and still be relevant."

"I've been saying that for quite a few years now," he says, "so I'm not going to walk away from that." In fact, he was at the National Conservation Training Center the week after he retired to talk diversity and civil rights.

Rowan's work in the diversity arena "is transforming the Service into a model for other public agencies," Director Ashe says, calling him "our diversity and inclusion champion."

Rowan also mentions a passion to improve the Service's science capacity, and here again Director Ashe praises him for his "vision for science capacity and scientific integrity." Rowan says he wants to connect all the scientists that used to be under the Service. He doesn't mean putting them all back in the Service, but just connecting them so they are all available to whatever agency needs them.

Rowan had his frustrations at work—such as having to mesh the political realities of the world with his conservation values—but in retirement, he says, "I'll miss everything."

For everyone in the Service, he says, "the one common denominator is caring about what you do here—you're doing something more important, bigger than you are. I just love that feeling."

Rowan's career, which started in 1976 in Seattle and took him all over the country many times over, is proof of that love.

We will miss you," Director Ashe told him in that email, "but we will continue confidently, because we stand on the firm foundations which you have helped build." □

MATT TROTT, External Affairs, Headquarters

After celebrating 40 years in the federal government, **Ann Haas** retired from her position in the Branch of Communications for the Ecological Services Program. Most recently she worked on the Endangered Species Recovery Champion awards, Endangered Species Act's 40th anniversary and the annual endangered species calendar. Ann wrote feature articles and provided content on threatened and endangered species for various communication outlets, including the Endangered Species webpages, social media and the Endangered Species Bulletin. Ann's career with the Service included stints with both the Ecological Services Program and the Office of Law Enforcement. □

After 37 years in the Service, **Denise Henne** (seen with former Secretary of the Interior Ken Salazar) retired from her position in the Ecological Services Program. Most recently she worked on the Endangered Species Expenditures Reports and Significant Portion of the Range policy, but before that she worked as a staff member and manager in several other Service programs, including the Divisions of Federal Aid and Habitat Conservation. Denise worked on numerous congressional reports and outreach documents relating to federal assistance, endangered species regulations and coastal barrier protection, and will be remembered for her dedication to public service and natural resource conservation. □

Days after the retirement of Dr. Rowan Gould (p. 33), the Service's Deputy Director for Operations, Service Director Dan Ashe announced the appointment of **Jim Kurth** as the new Deputy Director. Kurth, a 35-year Service veteran and career federal employee, had served as Chief of the National Wildlife Refuge System since 2011. The Deputy Director of Operations assists the Director in managing day-to-day operations and provides additional key executive leadership for the agency.

"Jim Kurth is a natural leader with proven ability to effectively manage far-flung operations and meet complex conservation challenges. He understands how to multiply resources, and inspire and engage people. Most importantly, Jim loves the Service, its employees and its partners," said Director Ashe in making the appointment. "I'm excited to work with Jim to continue improving the agency and strengthening our landscape-level collaborations with state wildlife agencies and other key partners."

Before becoming Chief, Kurth served as the Refuge System's Deputy Chief for 12 years beginning in 1999. During this 15-year period of unprecedented growth, the Refuge System added more than 60 units encompassing more than 50 million acres. Beginning in 2011, he led development and implementation of Conserving the Future: Wildlife Refuges and the Next Generation—a renewed vision for the future growth and management of the Refuge System.

Kurth began his Refuge System career in 1979 at Mississippi Sandhill Crane National Wildlife Refuge. He then moved on to a series of positions with progressively greater responsibilities at Arthur R. Marshall Loxahatchee National Wildlife Refuge in Florida, Bogue Chitto National Wildlife Refuge in Louisiana, Seney National Wildlife Refuge in Michigan's Upper Peninsula, and Ninigret National Wildlife Refuge in Rhode Island.

From 1994 until he became Deputy Chief, Kurth managed the 20 million-acre Arctic National Wildlife Refuge in northern Alaska—the largest refuge in the United States. Arctic also contains an 8 million-acre wilderness area—the largest within the Refuge System.

Kurth holds a degree in wildlife management from the College of Natural Resources at the University of Wisconsin–Stevens Point. □

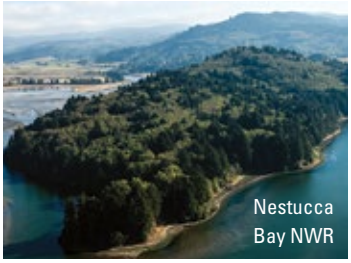
Cyndi Perry (seen here with service-dog-to-be Nathan) retired on December 31. At her retirement, Perry was the Chief of the Division of Bird Habitat Conservation in the Migratory Bird Program, but her career with the Service spanned 28 years, five Service programs and four regions. A Michigan native, Perry began her Service career at the Great Lakes Fishery Lab in the early 1980s. In the 1990s, she spent time in the New England Field Office as a contaminant specialist working on Superfund sites. Perry worked in Headquarters for five years in the Ecological Services and Migratory Birds programs before becoming an ecosystem coordinator for the Midwest Region. Stints in the HQ Migratory Bird Program and as a refuge supervisor in the Northeast Region followed, before Perry became the Chief of the Branch of Policy and Partnerships, within the International Affairs Program's Division of International Conservation. In 2012, Perry joined the Migratory Bird Program, serving as Division Chief until her retirement.

In addition to her conservation work, Perry will be remembered for her companions: puppies training to be service dogs. She was one of several puppy raisers in the Service. Over her years at HQ, Perry brought nine puppies to meetings and presentations. When she announced her retirement, Perry says, a staffer asked her if that meant current puppy Sully was leaving, too. Sadly yes.

Future plans include trips to Africa and the Galapagos islands with husband Rick Sayers, a retired Division Chief in Ecological Services, and raising a puppy of their own. □

honors

Pacific



Nestucca Bay NWR

BERGMAN PHOTOGRAPHY

In December, Chief of the Division of Realty for the National Wildlife Refuge System Eric Alvarez presented two prestigious awards to two champions of conservation along the Oregon coast—**The Nature Conservancy Oregon** and **Roy W. Lowe**, project leader for the Oregon Coast National Wildlife Refuge Complex.

They received the **National Land Protection Award** and the **Land Legacy Award**, respectively, for their efforts to protect important habitat and special places along the Oregon coast. For the past several decades, the Oregon Coast National Wildlife Refuge Complex has had an invaluable partner in The Nature Conservancy Oregon. Together, they have worked to conserve the unique and iconic habitat that people and wildlife need.

Nestucca Bay National Wildlife Refuge, one of the Oregon Coast Refuges, is one such special place. It protects sweeping ocean views from the well-known headlands and vital habitat for wildlife such as migratory waterfowl, elk, songbirds, amphibians, salmon and trout.

In 2013, TNC Oregon responded to the refuge's call for help to secure the 102-acre Jesuit Retreat property and the 90-acre Harder property, both encompassing rare forested headland tracts with exceptional views and outstanding visitor use potential. Collectively, these two new acquisitions are now known as the Two Rivers Peninsula Unit. Wildlife using this area includes migratory songbirds, bald eagles, peregrine falcons, bobcat, black-tailed deer and many other species. Shoreline and tideland habitats are used by a variety of estuarine fish including coho and Chinook salmon. TNC Oregon reports that it received more requests from members and the general public to help the Service secure the Jesuit property than for any other acquisition it has worked on in Oregon.

"The Nature Conservancy in Oregon has been one of our most valued partners in conservation since the late 1980s. In 2013, TNC Oregon reached a new conservation pinnacle by securing the Jesuit and Harder properties at Nestucca Bay NWR," says Lowe. "Their endeavors leading to the acquisition of these parcels are nothing short of astounding and have brought great pride and joy to the Service, conservation community, and to local residents and citizens."

Funding for the permanent protection of the Jesuit Retreat property was made possible by a National Scenic Byways grant to The Nature Conservancy through the Federal Highway Administration and Oregon Department of Transportation. National Scenic Byways grants are based on one or more archeological, cultural, historic, natural, recreational and scenic qualities. Funding for the adjoining Harder Property came from this same grant as well as the Land and Water Conservation Fund, a 50-year-old program that uses revenues from offshore oil and gas development to conserve parks, open spaces and wildlife habitat for the benefit of hunting, fishing and outdoor recreation. □

Midwest

The Society of Environmental Toxicology and Chemistry (SETAC) presented the **SETAC North America 2014 Government Service Award** to Midwest Region Contaminants Specialist **Dr. Lisa Williams**. Created in 1997, this award recognizes exemplary dedication and service by a scientist or scientific organization toward promoting the collective application of environmental toxicology and chemistry to risk assessment in a government function; promoting the implementation of programs that can be used for the development of ecologically sound and acceptable practices and principles; and providing a forum for communication among professionals in government, business, academia and other segments of society involved in the protection of the welfare of the general public. Lisa's colleagues in academia and government in the United States and Canada contributed to the nomination. □

COURTESY OF ALEX PRENTICE

The Fishers & Farmers Partnership for the Upper Mississippi River Basin (FPP) recognized Service biologist **Heidi Keuler** (seen with Partnership Co-Chairs Jack Lauer and Steve Sodeman), coordinator of the partnership, because "your leadership and professionalism have been an invaluable asset to the development, function and motivation of a rather unique partnership." Organized under the National Fish Habitat Partnership, the partnership "was created to address the needs of both farmers and fishes across the Upper Mississippi River Basin." It includes non-governmental agricultural and conservation organizations, tribal organizations, and state and federal agencies. Service staff help guide the work of the partnership, which designs practices to benefit farms and aquatic habitats. Among Heidi's accomplishments mentioned by the partnership: "secured multi-state grant funds to support stakeholder engagement training in Iowa, Minnesota, Missouri and Wisconsin." □

Jeramie Strickland, wildlife biologist at Upper Mississippi River National Wildlife and Fish Refuge, has received the 2014 **Wildlife Society Diversity Award** for his work promoting diversity in natural resource professions, especially wildlife conservation and education.

Jeramie is passionate about the pursuit of higher education and committed to increasing diversity in STEM (science, technology, engineering and math) fields through mentoring and professional development opportunities. He serves on the Service's Midwest Region's Diversity Recruitment Team, the Service's Area Mentoring Development Program, the Refuge System National Ambassador Program Charter Team, and is a mentor for the Service's Career Discovery Internship Program, which won the Wildlife Society Diversity Award in 2012. He also shares his talents with such partners as the Ecological Society of America, the Institute for Broadening Participation and Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science Program.

Also dedicated to turtle conservation, Jeramie has been able to pursue both passions with alma mater Iowa State University's Turtle Camp Research and Education in Ecology program. Turtle Camp gives traditionally underrepresented high school and undergraduate students an opportunity to gain hands-on experience in the field. □

in memoriam

Southwest

Retired Service employee **Jerry F. Bentley** died December 5 at age 80. He is survived by his wife of 26 years, Jane; daughter Laurie Bentley of Albuquerque, New Mexico; son Rick Bentley and wife Apryl of Datil, New Mexico; step-son Jeremy Bridge and wife Petra of Albuquerque, New Mexico; and step-daughter Jessica Coulson and husband Brian of Boulder, Colorado. Jerry had six grandchildren, six step-grandchildren, one great grandson, and one great step-grandson.

Jerry graduated from Arlington High School in May 1953. He served in the U.S. Army from 1955 to 1958 as a paratrooper and medic. He graduated from Texas A & M University in January 1963.

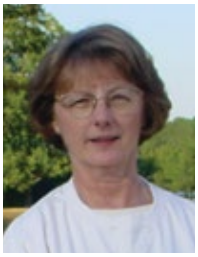
Jerry was with the Service from 1961 until his retirement in 1998. His career took him to National Fish Hatcheries in Arizona, New York, New Mexico, Oklahoma and Alabama; Service offices in Missouri and Texas; and the Regional Office in Albuquerque. □

Southeast

Longtime Service employee **Ken McDermond**, coordinator for the South Atlantic Landscape Conservation Cooperative (LCC) and former Deputy Regional Director of the Pacific Southwest Region, died January 30. He was 57. Earlier in his career, he served as Regional Chief for the National Wildlife Refuge System in the Service's Mountain Prairie Region.

A believer in the LCC concept, which involves bringing partners together to work on conservation, Ken said on a "Meeting the LCC Coordinator" webpage: "If we don't get out there and help private landowners and other agencies and other organizations conserve wildlife and habitats, we're only touching the surface. I have this whole concept of bringing the science together and bringing as many partners together as possible to help set the vision for the landscape."

A Navy veteran, Ken began his career as a biologist with the Nisqually National Wildlife Refuge Complex in Washington in 1984. In 1985 he moved on to the Pacific/Remote Islands National Wildlife Refuge Complex in Hawaii. During his 11-year tenure there, he filled a variety of biological and management positions, the last five years as the refuge manager for the complex. □



Former Southeast Region Regional Director **Noreen Clough**, the first woman to serve as Regional Director, died January 16 at age 71 after a battle with cancer. Before becoming Regional Director, she held a variety of leadership positions, including Acting Deputy Director-External Affairs, then-Service Director Mollie Beattie's liaison to the states and to the International Association of Fish and Wildlife Agencies, Acting Regional Director of the Service's Southwest Region, Chief of Resource Management for the National Wildlife Refuge System and Deputy Assistant Director for Fisheries in Headquarters. Early in her career she led the Interagency Work Group that oversaw the Arctic National Wildlife Refuge oil and gas assessment program and was lead author on the report to Congress resulting from that effort. She received the Department of the Interior Meritorious Service Award in 1987 among a number of other awards.

After retiring from the Service, Noreen twice served as Bass Anglers Sportsman Society's (B.A.S.S.) national conservation director, and a tribute on Bassmaster.com says: "Noreen Clough was the perfect mix of smart and successful, passionate and opinionated, and a whole heap of fun." A tribute on Legacy.com called her "a class act and a real inspiration to all women in conservation." The Southern Division of the American Fisheries Society is working to establish a scholarship program in Noreen's name for women studying to enter the fisheries profession.

Noreen was a great inspiration and mentor to many of the Service staff who worked either for her or with her during the course of her career. Her amazing gifts will be missed. □

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PETE ROMPH

Like a Butterfly. Friends of Brazoria Wildlife Refuges and the Texas Master Naturalist Program - Cradle of Texas Chapter helped bring a little "wild" to the banks of Buffalo Bayou in Houston, Texas, during their annual KBR Kids Day Celebration in October.

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