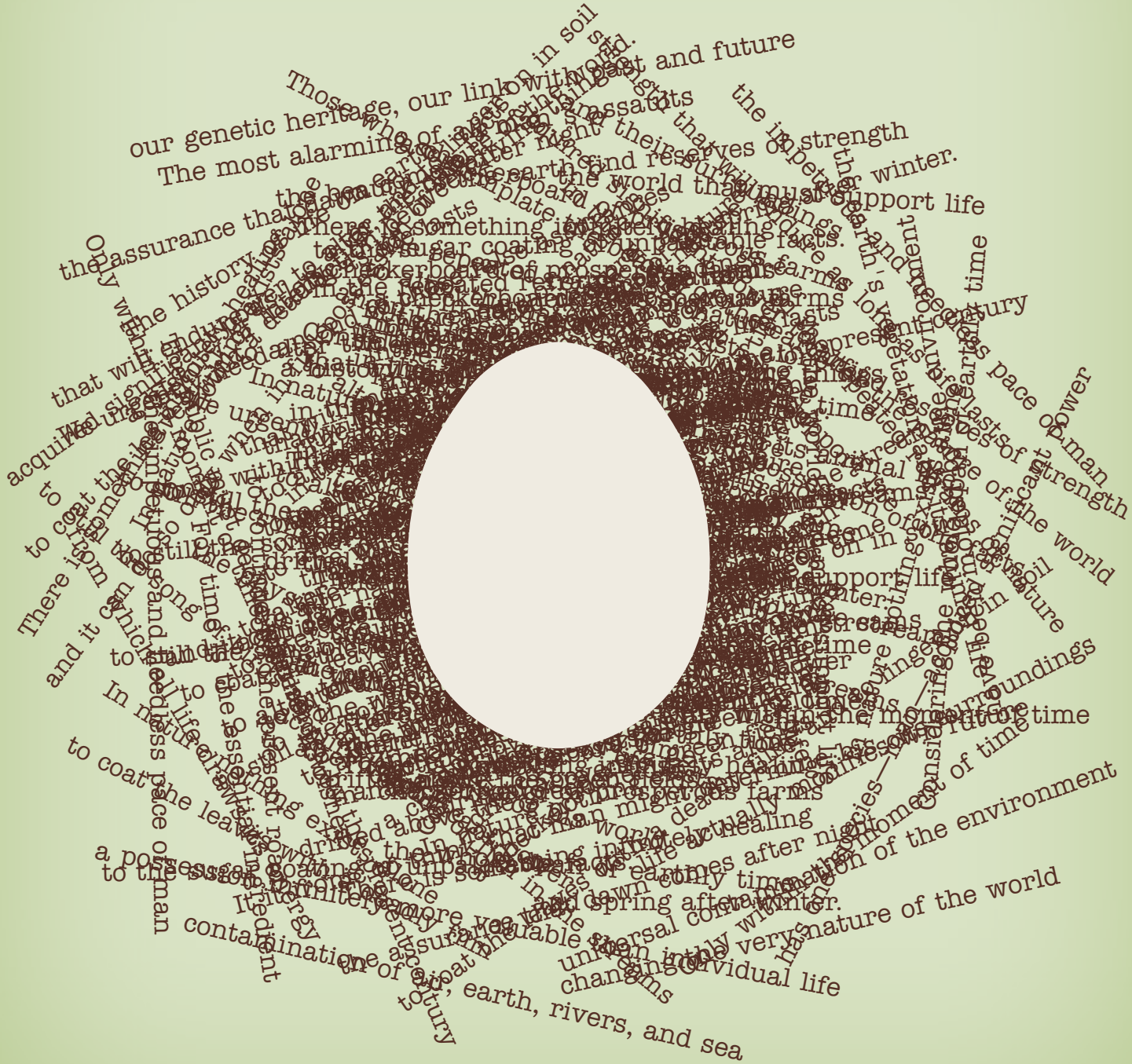
U.S. Fish & Wildlife Service Fall 2012

Fish & Wildlife News



what's inside

Departments

Features

SPOTLIGHT

Rachel Carson at Woods Hole, MA

USFWS

BY JOHN D. JURIGA

by MICHAEL COFFEY, GEORGIA PARHAM *and* ANNETTE TROWBRIDGE

COVER ART:
Jane Pellicciotto

Regaining the Relevancy Rachel Carson Gave Us

Sometimes I wonder just what went through the minds of the average American reader when he or she picked up *Silent Spring*, published 50 years ago.

Author Rachel Carson's early work, filled with sparkling prose, coupled with biological fact, had pushed science books onto the best-seller lists as people gobbled up her stories about the sea and its denizens. Readers learned we share this earth with some amazing critters—and we need to consider the effects of our actions on them and the environment.

And it was to this theme she again turned to in *Silent Spring*. "In nature nothing exists alone," she wrote.

Silent Spring served as an alert to the massive dangers associated with the widespread and unrestrained use of pesticides, most notably DDT, in the environment. She did not argue to get rid of pesticides altogether but wanted to ensure they were used safely.

The prose of this new work was just as moving, but the tone was definitely darker. The first chapter alone—describing a chemical-filled destruction hitting one hypothetical town—must have kept some people up at night. And the book did not get a lot more cheerful. It went on to explain in a simple-but-scientific way how chemicals from pesticides leached into the water and soil, and found their way into plants and the animals.

Carson, a former writer-biologist for the U.S. Fish and Wildlife Service, filled *Silent Spring* with page after page of primary source material—all grounded in solid scientific fact. Much of this information came from refuge managers, fishery biologists and the scientists at Patuxent Research Refuge.

Her critics howled. They flung accusations and tried to discredit her work, hoping to sway the public and knock Carson off her game.

Nothing worked. Carson, though dying of cancer, defended her work with a steadfast dignity and brilliance. But what were the readers of 1962 thinking?

I suspect some must have felt horror at this revelation. Others must have been angry. And some were probably still a little unsure.

But I imagine no one doubted the relevancy of natural resource conservation and the federal agency most responsible for it, the U.S. Fish and Wildlife Service.

From Carson's landmark work sprang the early environmental movement, as people took to heart her lesson that we are all connected. Eight years after her death, the Environmental Protection Agency banned most use of DDT in the United States.

The importance of conservation has not shrunk in the 50 years since *Silent Spring* appeared in bookstores. In some ways conservation and the Service are more significant now than at any time in our history.

Last year, the world's 7 billionth person was born. The world population is likely to top 9 billion people by 2050. With more people consuming more resources—land, water, food, fiber and fuel—wildlife will get less.

So, it will take extraordinarily strategic conservation efforts to ensure that abundant, healthy and diverse populations of wildlife are left for the next generation.

But not everyone realizes this or even cares.

It is up to us to foster awareness of this issue and to show everyone that they have a personal stake in conservation: that conservation is relevant to them.

And how did Rachel Carson do that? She told conservation's stories.

There are many out there. In this issue of the *Fish & Wildlife News* alone, you can read about cooperative efforts to clean up Cabeza Prieta National Wildlife Refuge in the Southwest, save tree cactus plants from sea-level rise in the Southeast and restore mussels in the Mississippi River.

You will find pieces on Rachel Carson herself from Ward Feurt, who has ably managed Rachel Carson National Wildlife Refuge for more than 15 years, and one of Ward's interns, recent college graduate Bri Rudinsky.

I hope you enjoy this edition of *Fish & Wildlife News* and that it inspires you. □

Service Trains Soldiers to Battle Colorado Wildfires

When wildfire raged across the front range of Colorado's Rocky Mountains in June and spread onto the U.S. Air Force Academy grounds, another branch of the military took notice. Major General Joseph Anderson from the U.S. Army's 4th Infantry Division, based at nearby Fort Carson, turned to the nation's leaders in wildland fire management for help training his troops to fight fires, in case they were needed.

Two members of the U.S. Fish and Wildlife Service Fire Management Branch answered the call. They were joined by six other wildland fire specialists from the Bureau of Land Management, Bureau of Indian Affairs and the U.S. Forest Service.

The Service's Fire Preparedness Coordinator Kevin Conn led the charge to deliver a crash course in wildland fire suppression and safety. With less than 24 hours' notice, the group of eight from the National Interagency Fire Center in Boise, Idaho, boarded a single-engine plane bound for Colorado. In the midst of local evacuations and the upcoming Fourth of July holiday, they had training underway for 500 soldiers the following morning.

With the Service's Fire Training Specialist Russ Babiak as one of six instructors, Conn's group provided classroom instruction and field exercises to more than 1,000 troops from the infantry's 1st and 3rd brigades. They accomplished this over a six-day period in record high temperatures.

Each brigade was divided into two battalions to facilitate course delivery. Each battalion from the 1st Brigade received four hours of classroom instruction the first day. The first battalion spent the next day testing its skills on the ground. On the third day, the second battalion followed suit. The entire three-day process was repeated with the 3rd Brigade.

"Logistics were the most challenging aspect, considering the short notice and the need to outfit the participants with the necessary materials and tools," Conn said. "We relied heavily on the interagency fire organization and the equipment cache system to expedite the process."

Among the challenges was the need to move among three locations across the base during the week, including a makeshift classroom in a chapel. Two sites were designated for field training, miles apart, requiring multiple buses to transport hundreds of personnel.

Safety measures were in place during the field exercises, due to the risk of lightning. The instructors, all familiar with fire weather patterns, were prepared to quickly remove students from the grounds if conditions made it necessary.

The Army firefighters did not end up being called upon because existing personnel suppressed the fire.

RUSS BABIAK/USFWS

Kevin Conn, national fire preparedness coordinator, addresses U.S. Army troops from the 4th Infantry Division at Fort Carson, Colorado.

Commanding Gen. Charles H. Jacoby, Jr., of the United States Northern Command and the North American Aerospace Defense Command (NORAD) expressed appreciation for the group's teaching effort. Jacoby is the first member of the U.S. Army to serve in his current post. He visited the National Interagency Fire Center at the end of July to receive an intelligence briefing and consult with all federal agency fire directors on the national wildfire situation.

Firefighters from the Service have helped train military personnel, as well as foreign firefighters, for the last 25 years. Now operating under a formal agreement for military and international fire training and deployment, other current and former staff have assisted with the training over the years. This includes Cal Gale with the Fire Management Branch in Boise; Loren DeRosear, Southwest Regional Fire Management coordinator; and staff now retired from the branch, as well as the Pacific Northwest, Southwest, Midwest, Southeast, Northeast and Mountain-Prairie regions. □

KAREN MIRANDA, Fire Management Branch, National Wildlife Refuge System, Headquarters

Tribal Wildlife Grant Provides Data, Promotes Cooperation

The U.S. Fish and Wildlife Service's Alaska Region used a Tribal Wildlife Grant to increase not only understanding of the ringed seal—one traveled 5,493 miles in 277 days—but also cooperation and understanding among the biologists who collect data on these marine mammals and the subsistence community that relies upon the seals for sustenance and cultural continuity.

In 2007, the Native Village of Kotzebue received a grant to capture ring seals and fit them with satellite tags that would record their movements, diving habits and haul-out behavior, and transmit the data to NOAA satellites.

From 2004 to 2006 a similar project resulted in the tagging of 20 bearded seals, and 10 Kotzebue residents helped capture and tag the animals. They also caught a number of ringed seals, a key ice-dependent species, giving the village the idea to propose and develop a similar project aimed at increasing understanding of these pinnipeds. Up to that time, very little was known about ringed seal movements, dive behavior or habitat use; even though the species is of great importance to subsistence hunters and a major prey source for threatened polar bears.

CREDIT: PHOTO COURTESY OF THE NATIVE VILLAGE OF KOTZEBUE.

The seal tagging crew in 2008. Front: From left to right, Doc Harris, John Goodwin, Kathy Frost, Edward Ahyakak, and Grover Harris, Sr. Back: Jeff Barger, Pearl Goodwin, and Grover Harris Jr. The satellite tag is visible, glued to the fur on the seal's back.

Between 2007 and 2009, the grant-funded study resulted in the capture and tagging of 37 ringed seals and and 11 bearded seals. In short, it was a great success. The longest-lived of the tags continued transmitting for 297 days, and the research recorded (among other information) a seal diving to a depth of 984 feet. The study also greatly increased understanding of the seasonal movements, habitat use and foraging behavior of ringed seals in Alaska.

Participant Kathy Frost of Kotzebue, summed it up, saying: "This project was so successful because local residents and biologists combined their skills and ingenuity and worked as a team." Frost added that the team exceeded expectations and tagged more seals than the 20 originally proposed because of the Tribal Wildlife Grant Program's flexibility in providing no-cost extensions for additional field work and analyses. Additional funding was provided by the Native Village of Kotzebue, Alaska Department of Fish and Game, the National Fish and Wildlife Foundation, ConocoPhillips, Shell Exploration and Production Company, and the National Marine Fisheries Service's Alaska Region.

Perhaps most significant of all was the spirit of cooperation that developed over the course of the project. All members of the research team were trained in capturing seals, tagging them, collecting blood samples and taking measurements. Because of this, local participants could work when no biologists were on site, and more than half of the seals were caught and tagged when this was the case. As a result, the wildlife professionals came away from the experience with an increased understanding of and respect for the knowledge and abilities of local people, and resource users developed a greater trust in the information that guides the management decisions that affect their lives.

Additional information about the grant and this ground-breaking project can be found on the Native Village of Kotzebue's website at <kotzebueira.org/current_projects2.html>. □

BRUCE WOODS, Media Relations, Alaska Region

Service Shark Week

Employees and Volunteers React Quickly in Shark Encounters and are Reminded of the 'Wild'

The Discovery Channel broadcasts Shark Week every summer on TV. But for U.S. Fish and Wildlife Service employees and volunteers in the Pacific, the second week of November 2010 will always be a reminder of shark encounters at two of the refuge system's most remote locations.

On the afternoon of November 7, 2010, Ty Benally, wildlife refuge specialist at Tern Island in the Hawaiian Island National Wildlife Refuge, and Service volunteer Keith Burnett were snorkeling around Tern Island in what Benally remembered as "ideal weather conditions." Benally surfaced to shoo away a juvenile frigate bird pulling on his breathing pipe, while Burnett dove down to check out a moray eel in a coral head. "I saw a large flash of silver in my periphery," Burnett said. "I realized it was a shark, bigger than any we get out here, about 15 feet away and swimming right for Ty at the surface."

The next few minutes happened quickly as Benally, unaware of the tiger shark, felt a tug on his flipper. "I thought it was Keith just messing around," Benally said. "I turned expecting to see him and instead I saw a *big* shark!"

Meanwhile, Burnett could only look on as the shark swam in a "quick but causal" way toward Benally. "All I can remember was praying 'please don't eat my friend' and desperately hoping I didn't see any blood," Burnett said.

KEITH BURNETT/USFWS VOLUNTEER

Ty Benally shows off the 12-inch bite taken out of his flipper by a tiger shark.

Benally and Burnett both managed to swim away from the shark, and it wasn't until they reached the shore that they discovered half of Benally's right flipper was missing. "I saw this big shark bite out of my flipper, Benally said "and was pretty freaked out for a while."

Neither Benally nor Burnett ventured back into the water for several weeks, and it was a year before Benally felt ready to snorkel again.

Four days later and about 1,256 miles from Benally, another diver had his own shark encounter in the waters of Palmyra Atoll National Wildlife Refuge.

Kydd Pollock, a diver with The Nature Conservancy, and four others were diving, about two-and-a-half miles from Palmyra Atoll's research station, with Refuge Manager Amanda Meyer. Soon, though, the divers noticed a gray reef shark caught in one of their nets.

"The shark was tangled and beginning to roll around in the net to try and escape it," Pollock recalled. He and his colleagues freed the shark, but as they swam away, the shark swam back toward the net.

Pollock dove down to gather a remnant of the net so the animal wouldn't become tangled again when he "saw movement out of the corner of my eye. So I looked over my shoulder, and all I saw was an open mouth full of teeth coming down on me."

The shark bit Pollock twice over the top of the head and facemask. "On the second bite it began to shake me violently and I remember thinking, 'This is really happening,'" he said. The shark backed off and spat out the intact mask, only to return. A third bite grazed Pollock's nose and left eye region before the shark swam away.

Still conscious, but "pretty out of it," Pollock made it to the surface where others helped him into the support vessel.

"All I could think when I saw him was the need to get him the best care as quickly as possible," said Meyer, who sped Pollock back to the research station where Ned Brown, TNC's field station manager, was waiting to assist.

Meyer, also Pollock's girlfriend, alternated between providing medical care and moral support. "It was so tough because I wanted to tend to his wounds and hold his hand at the same time," she siad.

Pollock was back on the job two days after the bite, the only one he has got in 21 years of diving. He has fully recovered from his injuries. All that remain are faint scars and a newfound respect for Meyer. "She worked efficiently and bravely with the team to get me taken care of," Pollock said. "I couldn't have asked for better care."

Both shark encounters served as reminders to those involved about the unpredictability of working with animals. "My experience really reminded me how wild this place is," Benally said, while Burnett now approaches snorkeling with "more respect, awareness and a couple other friends."

For his part, Pollock quoted Dr. Jonathan Gardner, a marine scientist at Victoria University of Wellington, who conducts research at Palmyra: "Sharks may be unpredictable, but they generally don't cause significant problems for human populations. They deserve our respect and admiration, and perhaps more than anything they deserve our protection." □

AMANDA FORTIN, External Affairs, Pacific Region

Service Law Enforcement Trains "Antiques Roadshow" Appraisers

Trade in objects made from wildlife raises many thorny legal questions, and demand is rising for objects made from rhinoceros horn and other parts of protected wildlife.

To help make buyers and sellers of these objects knowledgeable about the rules, the U.S. Fish and Wildlife Service's Office of Law Enforcement representatives conducted a workshop on wildlife protection laws for 70 appraisers assembled at the Cincinnati Convention Center. The workshop was conducted after a July taping of an episode for the 2013 season of *Antiques Roadshow*.

"Understanding the law is the first step in compliance," said OLE Deputy Chief Ed Grace. "It's important that appraisers know how wildlife laws apply to items sold as antiques."

A few days before, *Antiques Roadshow* host Mark Walberg interviewed Service Director Dan Ashe on the spike in rhinoceros poaching caused by soaring demand for rhino horn in Asian medicines and carved objects.

In February, more than 150 Service special agents and refuge officers, with Homeland Security Investigations agents, Internal Revenue Service agents and state conservation officers, arrested seven people as part of Operation Crash, a nationwide undercover investigation of illegal trafficking in rhinoceros horn.

"Trafficking in rhino horn is about greed, pure and simple," said Service Director Dan Ashe. "People who smuggle rhino horn, regardless of where it comes from, are no better than the poachers in Africa who hack off the horns of living rhinos and leave them to die a horrible death."

At the workshop, the officers reviewed laws and regulations for endangered species, migratory birds, and other wildlife; spotlighted materials in the antiques trade (such as elephant ivory, rhino horn and sea turtle shell) that can be problematic with respect to interstate sale or commercial export; and answered questions from workshop participants.

Age of the objects can be a major issue. If items were created 100 years ago or more or were lawfully imported into the U.S. under the Endangered Species Act, people here may sell them. International sale and export from the United States require permits from the Service.

Sellers of centuries-old items should have documentation that shows how old the objects are. Buyers should request such documentation, and sellers should provide it to their customers.

Buyers need to understand that the mere assertion that an object is an antique is meaningless under the law. Documentation is needed.

An often-heard question is " Why prohibit sale of items from long-dead animals?" Commerce in products made from wildlife that have been dead for decades can spur demand for more of the same. Such demand ultimately can mean that the animals remaining in the wild end up becoming the ongoing source of supply, with new and increased poaching and smuggling.

A key point officers made: These laws can be complicated, so always remember, when in doubt, contact the Service to determine the legality of your item. □

This dagger, confiscated by the Service, has a rhino horn handle.

USFWS

USFWS

The Service confiscated this statue made from elephant ivory.

Studies Examine Habitat Change at Alaska's Yukon Delta National Wildlife Refuge

The 19 million acre Yukon Delta National Wildlife Refuge in southwest Alaska supports one of the largest aggregations of water birds in the world, and its most productive wildlife habitat is the coastal region bordering the Bering Sea. It is therefore no surprise that some of its greatest challenges include potential sea-level rise and habitat alterations from accelerated warming.

The effects of major storm events and resulting sedimentation have already been documented along the Bering Sea coastline. Current data about coastal habitat change on the refuge are critical to meet these challenges. The National Wetlands Inventory is partnering with the National Wildlife Refuge System, the Migratory Bird program and the U.S. Geologic Survey-Alaska Science Center to provide some of the needed data.

As part of the cooperative effort to address coastal issues, the NWI As part of the cooperative effort to address coastal issues, the NWI conducted a first-of-its-kind study to document change inland over a coastal gradient across changing landscapes, geologic units and wetland types, and then to attribute these changes to geomorphic and ecological processes. Using current and historic imagery, and field verifications, NWI developed a 56-year retrospective change analysis. The analysis indicated the amount and type of change through time along the central coast of the Yukon-Kuskokwim Delta.

This project also produced a regional climate change vulnerability map for western Arctic coastal Alaska.

These studies contributed to western Arctic research and to the ability of the Western Alaska Landscape Conservation Cooperative to begin addressing potential impacts on wildlife from climate change. The Migratory Bird program has used the climate change vulnerability map and data on spectacled eider population densities to gain insight into the potential impacts of changing sea levels upon coastal habitats.

This important partnership continues to provide much needed data to protect critical habitats in Alaska. NWI also continues to expand its wetland information base for the central coast of the Yukon Delta, using recently acquired imagery to update existing wetland maps to better characterize the overall extent of wetland change. □

Images show the dramtic change in Angyoyarawak Bay shoreline habitat. Left: 1980. Right: 2007

Conservation Leaders for Tomorrow Gives Non-Hunters a Hunting Awareness

CLfT

Changing demographics and increasing urbanization mean that fewer people with a hunting background are applying to work for wildlife agencies. As employees who grew up hunting retire, the need exists to provide real-world, hands-on, hunting awareness education to the next generation of leadership.

To meet this need, the Wildlife Management Institute and the Max McGraw Wildlife Foundation launched the Conservation Leaders for Tomorrow (CLfT) program, in 2005. CLfT is a professional development program designed for non-hunting students and professional leaders within natural resource disciplines. CLfT programs are five-day workshops delivered in a highly interactive, hands-on educational setting for individuals who desire a more detailed understanding of hunting and its varied role in wildlife conservation.

CLfT is not intended to recruit participants into hunting. It is intended to expose them to a variety of skill sets and allow them to better understand and better relate hunting to resource management. Being able to experience an actual hunt affects participants a number of ways, ranging from a purely academic learning experience to an intense high energy outing. Participants leave CLfT better able to relate what hunting and hunters mean for conservation.

Veteran CLfT Instructor Bob Byrne mentors a Service member during the upland bird hunting portion of the first CLfT workshop at NCTC.

CLfT Comes to NCTC

Like the various state agencies, the U.S. Fish and Wildlife Service has seen the same decline in employees who have participated in hunting and other consumptive uses of wildlife and has looked for programs like CLfT to provide this education to their current staff.

Increased involvement of Service staff showed both a need and desire for the CLfT program at NCTC.

In January, CLfT held its first Professional Workshop at NCTC exclusively for Service employees. While Service employees had attended other workshops and both current and retired Service employees serve as instructors, a Service-only workshop had not been conducted until NCTC. Prospect Hall, a nearby hunting and shooting facility, assisted in the workshop.

The educational goal of CLfT is to "identify future and current leaders of the natural resource profession who do not hunt and provide them with an understanding of the diverse values and important roles of hunting and its impact on conservation."

With more than 150 instructors nationally, CLfT provides presentations that share vital information and encourage participants to exchange thoughts and ideas. Workshop topics include hunter demographics, motivations, hunting ethics, the role hunting and other consumptive uses play in society, firearms handling, and wildlife ecology.

With a near one-to-one ratio of trained CLfT instructors and workshop participants, every participant has the opportunity to to experience a mentored upland bird hunt. Many participants call the hunt a highly valuable experience that broadens their understanding and perceptions of hunting and hunters.

The first workshop at NCTC was considered a success and plans are in place to return to NCTC for another Service-only workshop in December. "This is a great way to hit a segment of folks that are going to make a big difference. The feedback I got from folks has been extremely complimentary," said NCTC Director Jay Slack.

CLfT Director Zachary Lowe said, "CLfT pairs very well with the mission of NCTC and it is a natural fit and privilege for us to be there."

Besides NCTC, in the year ahead CLfT will conduct 12 workshops at eight locations across the U.S. that will provide professional development opportunities for 240 top participants from various universities, state and federal wildlife management agencies.

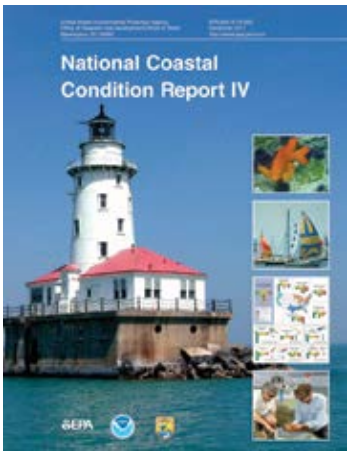
For additional information please visit <www.clft.org>. □

DAVID L. WINDSOR, National Coordinator, CLfT

National Coastal Condition Report Available Online

EPA has released the National Coastal Condition Report IV, the fourth in a series of environmental assessments of U.S. coastal waters and the Great Lakes. The U.S. Fish and Wildlife Service's National Wetlands Inventory is a contributing agency to this effort. The report has been posted at <www.fws.gov/wetlands>.

The reports summarize the condition of ecological resources in the coastal waters of the United States and highlight several exemplary federal, state, tribal and local programs that assess coastal ecological and water quality conditions. The report presents four main types of data: coastal monitoring data, national coastal-ocean condition data, offshore fisheries data and assessment and advisory data. This report relies heavily on coastal monitoring data provided by coastal states through EPA's National Coastal Assessment to assess coastal condition by evaluating water quality, sediment quality, benthic community condition, coastal habitat loss and fish tissue contaminants.



Information is organized by coastline segments including Alaska, Hawaii and the Island Territories. The overall condition of the nation's coastal waters was rated fair for the reporting period 2003 to 2006.

The reports are the result of a multiagency effort among the Service, the EPA and NOAA. The agencies agreed to use nationally consistent monitoring surveys to minimize the problems created by compiling data collected using multiple approaches. □

HAPPY BIRTHDAY 50th *Silent Spring*

This year marks the 50th anniversary of Rachel Carson's book *Silent Spring* and the modern environmental movement. Rachel Carson (1907–1964) is best remembered for her pioneering indictment of pesticides in *Silent Spring* (1962). Yet this book never would have been possible had she not spent 16 years working for the U.S. Fish and Wildlife Service and its predecessors.

In 1936 Carson was hired by the Bureau of Fisheries for $19.25 a week writing radio scripts explaining marine biology and the work of the Bureau of Fisheries to the American public. Carson remained a writer-biologist for the U.S. Fish and Wildlife Service—the entity created in 1940 by combining the Bureau of Fisheries with the Biological Survey. Her writing and editing skills allowed her to become chief editor of all publications by 1949, an important position as the Service attempted to explain wildlife conservation for the first time to the broader American public. In addition to playing a key role in shaping how the public viewed conservation, Carson was also suddenly exposed to cutting edge science conducted by Service researchers. This research documented troubling new findings on environmental contaminants.

"Those who dwell among the beauties and mysteries of the earth are never alone or weary of life."

The Service's premiere wildlife research laboratory in Patuxent, Maryland, had begun to study the effects of pesticides like DDT on certain wildlife, primarily birds and their eggs. As chief editor, Carson oversaw all the scientific publications emanating from this research and as early as 1945 began considering the topic as a source of an article or book. However, she was already at work on her second book *The Sea Around Us* (1951). This book was a best seller and allowed Carson to leave government service and devote herself full time to writing. Yet the seed of an idea had already been laid, and 10 years after she left the Service in 1952 Carson would write *Silent Spring.* This pioneering book was instrumental in the modern environmental movement. The skills Carson had developed in her 16 years as government writer allowed her to take a complex scientific argument and make a compelling case to the general public that indiscriminate use of pesticides was having a devastating effect on wildlife and natural systems.

Carson's legacy work, and the public concern it aroused, contributed to the creation of the Environmental Protection Agency, the Service's Division of Environmental Contaminants and the Endangered Species Act. She also inspired the American public to be concerned about the status of their local environment. Carson's life and legacy are an inspiration to all public servants who seek to protect our natural resources in perpetuity. □

MARK MADISON, Historian, NCTC

(Upper right): Eleanor Mallett, a sixth grader from Berwick, Maine, performs her own one-woman play "Silent Spring: Reactions and Reforms to the Environment." She researched and wrote the 10-minute performance for National History Day and performed in D.C. for a national audience. Eleanor portrays the many opinions formed toward *Silent Spring*, taking on the roles of President John F Kennedy, pesticide spokesman Dr. Robert White-Stevens, and here, Rachel Carson herself. (Above left): Coastal Maine Botanical Gardens' Youth and Family Program Coordinator Erika Huber uses a hands-on exhibit to teach a member of the public about bird-plant interactions. (Bottom): John shows off a sea star from the Tidal Critters Touch Tank, sponsored by the Gulf of Maine Marine Education Association.

Silent Spring Changed How Country Thought about Conservation

In Carson's book, mankind is seen as destroyer of nature rather than its protector

by WILLIAM SOUDER

Through the summer and into the fall of 1962, America crossed a historic divide—leaving behind the age of conservationism and entering the age of environmentalism. Swept aside were decades of an optimistic commitment to a good stewardship of natural resources and in their place came a more urgent, more divisive call to action, in which competing ideas about man's proper place in the natural world would become the environmental debate-without-end that is argued to this day. At the center of this sea change stood an unassuming author, Rachel Carson, and her decidedly angry new book, *Silent Spring*.

Silent Spring, beautifully crafted but unlike anything Carson had written before, was in many ways a dismal, pessimistic book. It began with a fable that was to become one of the great set-pieces in American literature—a portrait of an idyllic town and a lush surrounding countryside that are devastated by pesticides, chemical poisons whose overuse had contaminated the total environment, laying waste to the forests and fields, destroying the health of livestock, killing the game fish, and obliterating a once-bountiful population of bird life. Now the landscape was bleak and without color and silent. Carson's imagined world of gray, coming out at the height of the Cold War, reminded many readers of the lifeless, depressed existence that many believed then prevailed in the Soviet Union—and of what the world at large might look like in the wake of a nuclear confrontation between the Soviets and the United States.

Carson's blistering indictment of the indiscriminate use of synthetic pesticides—in particular DDT—created a sensation when three long excerpts appeared in the *New Yorker* magazine in June 1962, and the book was enveloped in controversy months before its actual publication at the end of September. The chemical industry—and its allies in government—called Carson's polemic hysterical and one-sided. One pesticide maker, threatening a lawsuit to block the book's publication, suggested that Carson was in league with "sinister influences" in the Soviet Union and its Eastern European satellites, and that her true goal in restricting the use of pesticides was to undermine American agriculture. Meanwhile, many members of the public, sharing Carson's alarm over pesticides, swamped the federal government with demands for action, especially by the Department of Agriculture, which at the time was the regulatory authority for pesticide use.

The tense response to *Silent Spring* deepened in mid-August when *Newsday*, a Long Island daily, launched a five-part series revealing how worried the

PERFORMANCE: RYAN ROBERT/USFWS BOTANICAL GARDEN: SOFIA POONAWALA/USFWS. SEA STAR: KARRIE SCHWAAB/USFWS. EAGLE FEATHER: TIM KNEPP

government was about Carson's claims that federal agencies—which were among the heaviest users of chemical pesticides—had been lax in their oversight of such products, even as government scientists had become increasingly aware of the dangers inherent in their use. The series began ominously:

"The lid is about to blow off a behind-the-scenes controversy over swelling evidence that chemical pesticides, enthusiastically promoted by the United States Agriculture Department despite 16 years of warnings, have decimated species of wildlife and now threaten man with cancer, leukemia and abnormal gene development."

Newsday took note of the economic and health benefits that had come with pesticide use—rising farm productivity and declines in insect-borne diseases in parts of the world—but also reported that many scientists had come to believe these advances were outweighed by the damage pesticides did to the balance of natural ecosystems and by rising incidences of disease in both wildlife and human populations. While the government knew the truth about the dangers of pesticides, the paper reported, it was being covered up by a well-funded public relations campaign by the chemical industry—and by the Agriculture Department, which had "leaped aboard the pesticides bandwagon as soon as DDT was introduced," conducting its own large-scale spraying campaigns and encouraging farmers to use pesticides.

Newsday did not examine a parallel problem Carson had made explicit in *Silent Spring*: the widespread contamination of the environment by radioactive fallout, which had risen to disturbing levels in 1962, the peak year for atmospheric testing of nuclear weapons—mainly by the United States and the Soviet Union. The most worrisome connection between pesticides and fallout was the long-term nature of the threats they posed. Although some radioactive by-products of nuclear explosions were short-lived, a number had long half-lives and could persist at high levels in the environment for years. Nor did they necessarily remain "in the environment." In 1962 it was common to find high levels of radioactive contaminants in milk, as cows pastured on land that had received fallout served as radiation delivery systems to human populations, mainly children. Although the government insisted that radioactive fallout presented little health risk to humans, the scientific community disagreed. In 1958, the Nobel laureate Linus Pauling presented the United Nations with a petition signed by more than 11,000 scientists urging a halt to nuclear testing. Pauling and his colleagues argued that even small increases in the amount of radiation to which human populations were exposed would, over long periods of time, cause genetic mutations with unknowable but profound consequences.

It was the same story with pesticides. Many, like DDT, could persist in the environment for a long time. But they did not remain sequestered in target organisms or soils and vegetation, as they were readily stored in fat tissues and thus entered into food chains, creating ecosystems in which living things would tend to carry ever-higher body burdens of toxic chemicals. In *Silent Spring*, Rachel Carson wrote that the connection between radiation and pesticides was inescapable:

"In this now universal contamination of the environment, chemicals are the sinister and little-recognized partners of radiation in changing the very nature of the world—the very nature of its life."

The furor over *Silent Spring* crested at the end of August, when President Kennedy was asked at a press conference whether the Agriculture Department or possibly the Public Health Service would look into the pesticides issue. "Yes," the president answered firmly, "and I know that they already are. I think, particularly, of course, since Miss Carson's book, but they are examining the issue." The next day, Kennedy instructed his science adviser, Jerome Wiesner, to establish a formal commission on pesticides and report back by the following spring. The findings, issued in May of 1963, confirmed that the dangers of pesticides described by Carson in *Silent Spring* were real—though the question of what to do about it went largely unanswered at the time.

//

Although she is today unknown or forgotten by many people, in 1962 the president's reference to "Miss Carson" needed no elaboration. Rachel Carson was one of America's most celebrated writers—the author of three best-selling books about the sea that had delighted millions and whose work, until *Silent Spring*, was invariably described as "poetic." *Silent Spring* was, for Carson, a change of direction but in no way a change of heart.

Carson had been concerned about pesticides since 1945, when the Fish and Wildlife Service had begun testing DDT at the Patuxent Research Refuge in Maryland—not far from where Carson lived in Silver Spring with her mother and their cats. Although she had earned a degree in zoology from Johns Hopkins University and spent several years teaching biology, Carson had never been a working scientist and instead prepared reports and press releases, and helped edit papers written by Service technical staff. When she started reading the findings coming from the DDT testing at Patuxent, Carson proposed doing a story about DDT for the *Reader's Digest*. The magazine declined.

The early DDT studies at Patuxent produced mixed but troubling results. In aerial spraying experiments, DDT appeared to be highly toxic to aquatic organisms, both fish and invertebrates. Its effects on birds and mammals were harder to assess—and demonstrated how difficult it was to evaluate the use of such a poison over a large area in which many species could move around to escape the spray, and where the delivery of DDT by airplane was anything but precise. But controlled laboratory experiments indicated that DDT was toxic to every species tested, and by August of 1945 the Service had issued a warning that DDT had to be used with extreme caution.

It was in 1939 that a Swiss chemist named Paul Muller discovered the insecticidal properties of dichloro-diphenyl-trichloroethane—DDT—which seemed to be a miracle chemical that was deadly to insects but appeared harmless to warm-blooded animals, including people. DDT was deployed widely in World War II to kill mosquitoes and lice—in 1943 the U.S. Army had halted a typhus epidemic in Naples, Italy when it sprayed more than a million civilians with DDT—and following the war it went into general use in a staggering array of commercial, agricultural and residential products. The first sample of DDT, just six pounds of it, had arrived in the United States in 1943. By 1959, annual use of DDT hit 80 million pounds. As for Paul Muller—in 1948 he won the Nobel Prize for discovering DDT's lethal properties.

Along with the rapid expansion of the use of DDT and other synthetic pesticides came finding after finding from the lab and reports from the field showing that these pesticides were dangerous—producing collateral damage among many non-targeted species, especially birds. Of course the larger question lurking behind these warnings was what effects DDT and other pesticides might have on human health. In *Silent Spring* Rachel Carson listed a litany of known and potential dangers, including direct, acute and sometimes fatal poisoning; abnormal development; genetic mutation; and cancer. Carson's emphasis on human health—which had not been the focus of much of the research on pesticides to date—was central to *Silent Spring*'s role in the shift from conservationism to environmentalism. Carson stood astride this divide, playing a key part in the defining of both eras.

//

American conservationism had been rooted in the concerns of sportsmen, who beginning in the late 19th century saw a need to protect wild places and the game that inhabited them. Actions on this front would eventually include the establishment of national parks and wildlife refuges, the enactment of game laws that set fixed bag limits in defined hunting and fishing seasons, the banning of market hunting of waterfowl and plumage birds, and ultimately in the recognition that human encroachment in the natural world had to have limits. Rachel Carson wrote about these developments, notably in the 1940s in her famous series of Service booklets called *Conservation in Action*. So did a University of Wisconsin professor named Aldo Leopold. Late in his life, Leopold worked on a collection of essays he called *Great Possessions*. Leopold died before the book was published and so never knew that his publisher had brought it out just as he'd written it, but under a different title—*A Sand County Almanac*.

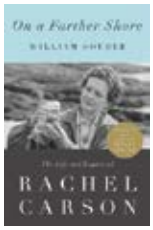
In that landmark book, Leopold proposed a new approach to conservation—an idea he called the "land ethic" that argued that human activity should strive to maintain the stability and diversity of ecosystems. And this was not, Leopold emphasized, merely a consideration for game species or economically important resources, rather it was a moral obligation.

Rachel Carson and Aldo Leopold had helped to define the high point of American conservationism at mid-century, and what is notable in hindsight is the focus on forests, streams, fishes, birds and other animals. These were the resources and species of concern. But by 1962, with *Silent Spring*, Carson would reverse the lens. Now, instead of being the earth's protector and conservator, mankind was increasingly seen as its destroyer, one armed with nuclear weapons and chemical poisons that had made the main species of concern us.

Rachel Carson believed this was all due to a character flaw in the human species—arrogance. And one of the most detrimental features of human arrogance, she said, was the heedless deployment of new technologies without regard for the unintended consequences. Near the end of *Silent Spring* she sums it up:

"The 'control of nature' is a phrase conceived in arrogance, born of the Neanderthal age of biology and philosophy, when it was supposed that nature exists for the convenience of man."

What we know now is that man and nature are not separate, and that neither exists solely in service to the other. That all life is interwoven and worthy of consideration is an idea that guided Rachel Carson in all her work—and that is central to the book that changed the way we think about the environment to this day, *Silent Spring*.



WILLIAM SOUDER is the author of *A Plague of Frogs* and *Under a Wild Sky*, which was a finalist for the Pulitzer Prize. His new book, *On a Farther Shore: The Life and Legacy of Rachel Carson* was published in September by Crown.

Courage
Defines Rachel Carson

Despite illness and personal attacks, her commitment remained unshakable

I say and write the name Rachel Carson a hundred times a week, and have for more than 15 years. As refuge manager at Rachel Carson National Wildlife Refuge, her name, work and legacy are an immediate and palpable presence. The message in her five books and in much of her *Conservation In Action* Series is the same:

"The life of the planet is interrelated…each species has its own ties to others, and…all are related to the earth." —RACHEL CARSON

JOHN AND KAREN HOLLINGSWORTH/USFWS

This is the theme of *The Sea Around Us* and the other sea books, and it is also the overriding message of *Silent Spring*.

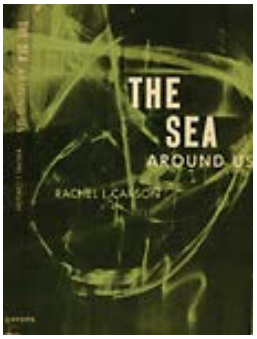
In 2007, the refuge celebrated her 100th birthday with an event featuring exhibits, demonstrations, special tours, a collection of proclamations recognizing her landmark work submitted by various states, and the mandatory birthday cake. This event provided the impetus for an ongoing dialogue with the community and various entities associated with the refuge.

We are now celebrating the 50th anniversary of the publication of *Silent Spring* and have been targeting a younger audience through a variety of activities based on messages contained in her works. The emphasis is on actions that apply today and can shape thoughts and deeds in the days to come. Highlights have included a presentation on how to protect oneself from toxins in the environment and another—by an 11-year-old—titled "Reactions to Silent Spring and Reforms to the Environment," a "Sense of Wonder" walk, and a numerous of other activities all based on an environmental theme.

This effort is continuing as the refuge is helping sponsor a statewide essay contest this fall to be based on themes contained in *Silent Spring* and supporting a host of observances held by other entities with informational products and participation.

While rereading *Silent Spring* for the 50th anniversary, I was again struck by how well her work has held up. For decades, Carson's style of framing arguments with careful research, primary source references and measured conclusions has proved persuasive; indeed she is one of the most influential thinkers of the 20th century. Some current works of E.O. Wilson, Sandra Steingrabber, and Theo Colborn reverberate with the alarm Carson sounded in *Silent Spring*. Other concepts in the book, such as the rapidity of change and the speed with which new situations are created due to altered ecosystems have not achieved as much traction. But that can change.

Rachel Carson gave voice to the modern environmental movement. I used to think of this as her consummate achievement. More recently, I have come to admire and wonder at how she did it. She earned enough money from her first best seller, The *Sea Around Us*, to resign from the U.S. Fish and Wildlife Service and devote herself to her research and writing. She purchased a summer cottage near here, at Southport Island, Maine, and returned here annually. Plagued by health problems for much of her life, Carson viewed writing as a constant, defining characteristic from her first award at age 12 to the letters she wrote just before her death 45 years later. She was diagnosed with breast cancer in 1957 and was ill while both writing and defending *Silent Spring*.



The vitriolic assaults began as soon as the book was excerpted in *The New Yorker*. The chemical industry, Department of Agriculture, American Medical Association and others often used sexist and personal remarks such as "isn't it just like a woman to be scared to death of a few bugs." They called her hysterical, condemned her unmarried status and personal appearance, and alleged Communist connections. They went on to attack those associated with her, including her publisher Houghton Mifflin, and withdrew advertising for a CBS interview show with Eric Sevareid. Today, what impresses me most is her conduct while she was sick, in fact, dying, and under attack. She persevered. She was frequently depressed and afraid, but her beliefs were unshakable. As the USDA attacked her credibility, she spoke out with in-depth interviews. She testified before Congress, twice, to defend her research. Her letters reference moments of fear, loneliness and isolation, but publically she was calm and determined. Her unshakable commitment, despite her body's degeneration and criticism from powerful adversaries, earns my respect. Rachel Carson's courage is what I most admire. □

"Those who contemplate the beauty of the earth find resources of strength that will endure as long as life lasts."

—RACHEL CARSON

WARD FEURT, Rachel Carson National Wildlife Refuge, Northeast Region (pictured at left)

Rachel Carson: A Dream, a Refuge, a Legacy

Intern wants to make sure everyone keeps a "Sense of Wonder"

USFWS

Bri Rudinsky works with the shorebirds of Rachel Carson National Wildlife Refuge.

by BRI RUDINSKY

Five years after the death of Rachel Louise Carson, Ann Cottrell Free wrote an article for the April 13, 1969, edition of *This Week* magazine, a syndicated newspaper supplement, called "The Great Awakening." It recounted the efforts to protect the environment since Ms. Carson's death in 1964 and suggested people ask the Department of the Interior for a refuge to be named after Ms. Carson.

Thousands of letters later, the Coastal Maine National Wildlife Refuge, established in 1966, was renamed the Rachel Carson National Wildlife Refuge on June 27, 1970. While many refuges along the East Coast were considered, Coastal Maine was chosen because it is heavily used by waterfowl and shorebirds during migration and encompasses many of the habitats studied by Ms. Carson. Occupying nearly 50 miles and 1,305 acres of Maine's coastline, the refuge was also attractive because it is near Ms. Carson's summer home, where she studied the sea and wrote much of *Silent Spring*. Today the refuge protects approximately 5,600 acres of critical habitat and is home to several threatened and endangered species.

During the dedication of the Rachel Carson NWR, Secretary of the Interior Walter J. Hickel said: "Sometimes those who march to a different drum hear the music before we do. This was the case with Rachel Carson." A trained biologist and gifted poet, Ms. Carson was often called the mother of the "Age of Ecology." Known for standing her ground when others wavered in the face of big corporations, false allegations and pesticide use, Ms. Carson deftly translated scientific research into prose, helping the public see the negative effects of unrestricted pesticide use on wildlife, humans and the environment as a whole. Ms. Carson's most famous work, *Silent Spring*, published in 1962, spotlighted the detrimental effects of the unrestrained use of the pesticide DDT at a time when it was unheard of that anyone, let alone a woman, would speak out.

Today, 50 years after the release of *Silent Spring*, Rachel Carson's legacy is beginning to fade from the minds of those who hold the future of our nation and its environment—the youth. As I sit here in the intern office of the Rachel Carson NWR, just a few short days after a 50th anniversary event at the refuge, I hear not just the tranquil sounds of nature and muted conversations of visitors reading about the life of Ms. Carson. I also overhear people ask, Who really cares?

At a time when fewer people are involved in nature and conservation, I believe another awakening may be in order.

When I accepted an internship with the refuge, I hoped it would eventually lead to a position as a biologist with the U.S. Fish and Wildlife Service. Although I graduated from college just days before starting, I jumped into the unknown territory of Maine and the Service with both feet and hit the ground running. My first few days were a blur as I desperately tried to recall all the information I learned about Rachel Carson and DDT from what seemed like ages ago. Thankfully, during part of this whirlwind week, I was able to catch my breath and go to the beaches to meet the birds.

The Rachel Carson NWR is home to least terns and piping plovers. Piping plovers are federally protected under the Endangered Species Act, but both species are considered endangered by the state and protected by the Migratory Bird Treaty Act. Due to their protected status, I have spent many hours on the beaches monitoring the birds and their chicks. It's a tough job, but the sense of achievement after seeing the newly hatched chicks is worth every minute of it. The year 2012 has been a hard one for the birds. An early season storm swept up Maine's coast, destroying the nests and leaving little hope for the shorebirds. Thankfully, these persistent birds have re-nested and are continuing their fight for survival.

The birds at Rachel Carson NWR show the world that nature is resilient, and despite the hardships it faces, it will persevere with the encouragement from mankind. To me, Rachel Carson was more than an author or an activist. She was the voice of nature and embodied its qualities of persistence and resilience. She is an inspiration and I aspire to make as much of a difference in the world today as she did 50 years ago.

This is why I believe it is time for another call to action; this time to rediscover one's "sense of wonder" before it is lost forever. While I know that Ms. Carson's "sense of wonder" has been etched into my soul for eternity, I have witnessed it fading away from the lives of so many others in today's electronically dependent society. Another awakening is needed to restore it.

As the anniversary of *Silent Spring* comes to a close, I can only hope, as just one protector of the environment, that I can work hard and rise through the ranks carrying with me the glimmer of hope that Ms. Carson instilled in the hearts of many all those years ago. As she stated so eloquently, "We stand now where two roads diverge. But unlike the roads of Robert Frost's familiar poem, they are not equally fair. The road we have long been traveling is deceptively easy, a smooth superhighway on which we progress with great speed, but at its end lies disaster. The other fork of the road—the one less traveled by—offers our last, our only chance to reach a destination that assures the preservation of the earth."

BRI RUDINSKY, Rachel Carson National Wildlife Refuge, Northeast Region

BRI RUDINSKY/USFWS

BRI RUDINSKY/USFWS

"A trained biologist and gifted poet, Ms. Carson was often called the mother of the 'Age of Ecology.'"

(Top): A newly hatched least tern chick at Rachel Carson NWR. (Bottom): Three common terns.

A Legacy of Conservation Art

WILDLIFE ARTIST BOB HINES

USFWS

Left: Hines' "The Symbol of the Nation" at D.C. Booth Historic National Fish Hatchery and Archives. Above: cover of a book on Hines by the author.

by JOHN D. JURIGA

The centennial of National Wildlife Artist Bob Hines' birth is an opportunity to examine his considerable legacy in art conservation. Hines (1912–1994) held a niche in the U.S. Fish and Wildlife Service. His 31-year employment in the organization spanned the appointments of 10 Interior Secretaries and seven Service Directors, and an examination of Hines' career gives one a glimpse of the history of U.S. conservation efforts in the past century.

Hines entered wildlife art so that he could educate the public about Ohio's wildlife. He had no formal art training after graduating from high school. When Hines accepted a job offer as staff artist with the Ohio Division of Conservation and Natural Resources in 1939, he contacted his former high school art teacher. In a refresher course of just four days, he learned enough about oil painting to serve him the remainder of his art career. Back in the 1940s, when he worked for the Ohio Division of Conservation, Hines began giving "chalk talks" to youthful audiences. Armed with an easel and a piece of chalk, he would draw an animal while weaving a tale about his personal experiences in the outdoors. Hines saw no reason to cease these sessions when he later transitioned to federal employment. His work in Ohio sowed the seeds of environmental stewardship a generation before the concept penetrated the public consciousness.

It was only a matter of time until his talent would extend beyond the boundaries of his home state. Bob fulfilled his goal of designing a federal Duck Stamp with his 1946 red head duck stamp. In 1947 he made his debut as a book illustrator with Frank Dufresne's *Alaska's Animals and Fishes*. After the book's release, Hines joined an Alaskan trek with the Outdoor Writers Association of America. The grandeur of Alaska's landscape and wildlife appealed to the both the artist and outdoorsman in him. Alaska became one of his favorite destinations.

Dufresne left Alaska to become the chief of information for the Fish and Wildlife Service. When an opening for an artist presented itself, Dufresne encouraged Hines to leave Ohio and join the federal government. A product of his generation, Hines was less than enthusiastic to learn that his new supervisor would be a woman, a biologist named Rachel Carson, but Hines and Carson developed a cordial working relationship that evolved into a loyal friendship and a productive collaboration. Carson asked him to illustrate the third volume of her trilogy of sea books. Together they traveled from Maine to the Florida Keys, researching material for *The Edge of the Sea*, a 1955 release.

Hines was particularly proud of his role in creating an open competition for the annual federal Duck Stamp design. He coordinated the Duck Stamp contest for more than 30 years, advancing the aims of conservation throughout the country while promoting the genre of wildlife art. He also conceived the notion of a primer for North American waterfowl. Rejected by five commercial publishers, *Ducks at a Distance* went on to sell more than 2 million copies when placed in the public domain. The booklet was translated into Spanish and French thereby aiding hunters in both hemispheres of the Americas.

In the mid-1950s, Hines facilitated and designed the first four U.S. postage stamps featuring American wildlife, introducing the term conservation a decade before it entered the national lexicon. A British philatelic survey named his 1957 tricolored whooping crane design one of the 10 best stamps in the world.

Hines painted six large murals for the Service. His first mural notably depicts some 50 species of wildlife found on Mattamuskeet National Wildlife Refuge.

He also illustrated more than 50 books during his career, several of those being high profile releases from the Service. *Birds in Our Lives*, a 1966 release, features a color bald eagle rendering by Hines on the frontispiece. The GPO reproduced the eagle image as a collector's print. Renamed "The Symbol of Our Nation," the print sold well more than 100,000 copies during the country's bicentennial year. Hines also did color illustrations for *Sport Fishing USA* (1971) and *Fifty Birds of Town and City* (1975). Secretary of the Interior Rogers C. B. Morton presented Hines the Distinguished Service Award in 1971. Morton noted that Hines "possesses a remarkable visual perception...He paints wildlife in the act of being alive." The next year Ohio Congressman Delbert L. Latta read into the Congressional Record, "The Department of the Interior can be proud to have Mr. Hines on its staff, for his service to his fellow Americans is priceless."

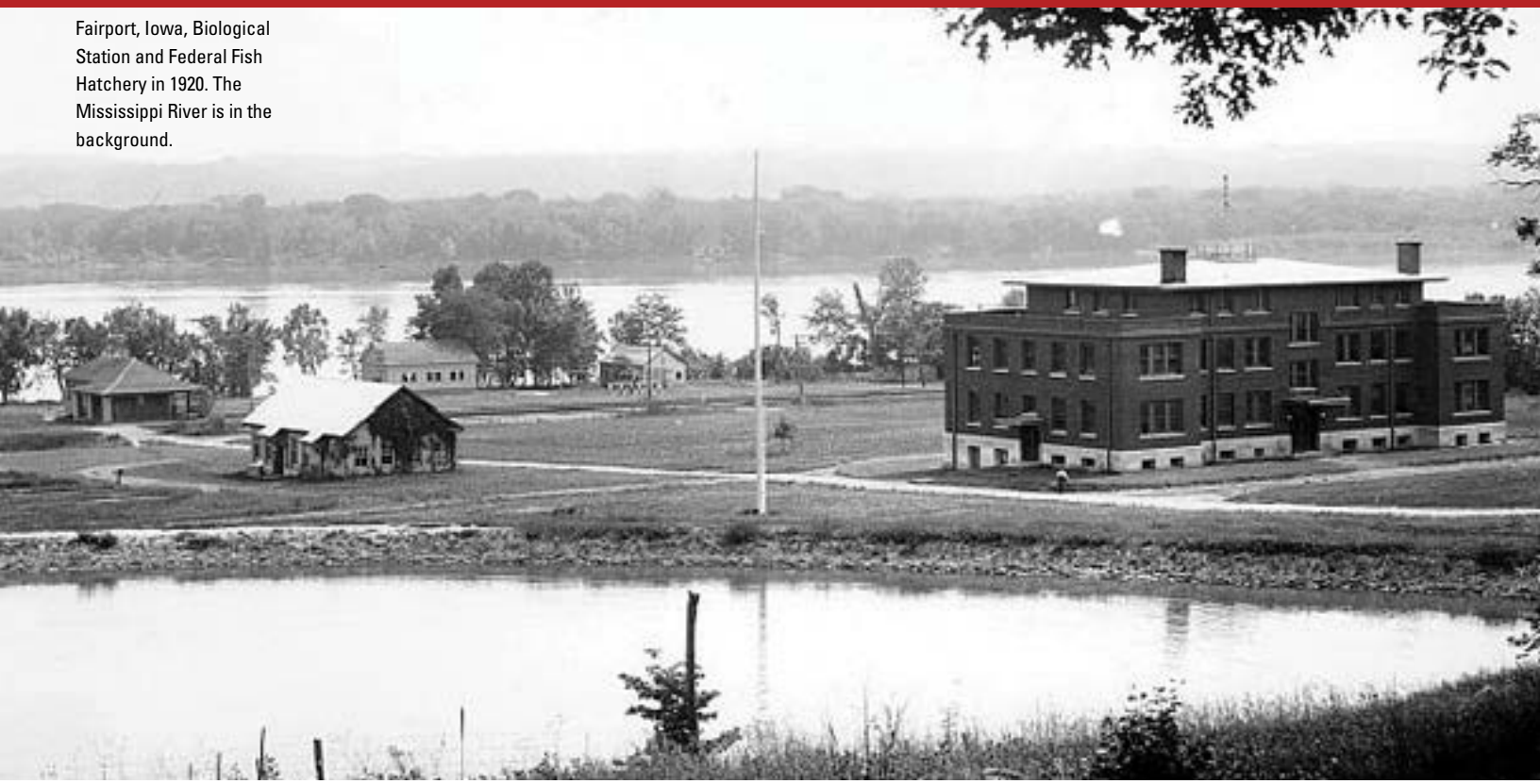
REX GARY SCHIMIDT/USFWS

Hines and Rachel Carson spent many hours along the Atlantic coast visiting refuges and gathering material for many of the agency's pamphlets and technical publications. Here, they search out marine specimens in the Florida Keys around 1955.

In 1978 Hines readily accepted an assignment to return to Alaska to document those species of wildlife at risk to human interference. He worked diligently on an expanded portfolio of Alaskan wildlife. Hines retired from the Service in 1982. He submitted several entries to the federal Duck Stamp contest, hoping for a second stamp, but he never placed. His traditional style compounded by a faltering dexterity conspired against him. Hines's last major commission was to illustrate a 50th anniversary edition of *Under the Sea-wind*, a 1991 release of Carson's first book.

Hines's health deteriorated until he required skilled nursing care. After his death at age 82 in 1994, there was no public funeral service, no obituary in the newspaper. An interoffice Service memo noted that Hines' "practiced eye could see the incredible details in a sunset or the breast feather of a wild turkey." Bob Hines left behind an incredible body of work, a visual legacy that continues to educate, enlighten and inspire others about the natural world that he understood and cherished.

JOHN D. JURIGA, author of *Bob Hines: National Wildlife Artist* (Beaver's Pond Press, Edina, MN, 2012)



Fairport, Iowa, Biological Station and Federal Fish Hatchery in 1920. The Mississippi River is in the background.

Fixing What's Broken Is What We Do

Natural resource trustees giving mussels in Mississippi River ecosystem a new life

by MICHAEL COFFEY, GEORGIA PARHAM *and* ANNETTE TROWBRIDGE

In Bettendorf, Iowa, along the nation's largest river, lie beds of mussels with improbable names: the butterfly and the pistolgrip, the fawnsfoot and the deertoe, the plain pocketbook and the washboard. Though sedentary and mostly invisible, these creatures are key players in what makes this part of the Mississippi River the special place it is—a haven for bald eagles and anglers alike, for fish and boaters and birds, and for all those who simply love the river.

Mussel beds provide many critical river ecosystem services, like filtering the water and adding to the biological diversity that makes ecosystems resilient.

IOWA DEPARTMENT OF NATURAL RESOURCES

Bettendorf, though, is also home to shoreline factories that depend on large volumes of fresh water from the Mississippi River for their industrial processes. Back when more stringent laws were just coming on the books, such as the Clean Water Act of 1972, one of those factories released polychlorinated biphenyls (PCBs) and other hazardous chemicals into the river. Exposure to these hazardous substances wreaked havoc on the natural resources of the river. Warnings were sounded about eating the fish, and the natural ecosystems that made this area so unique were compromised. Mussels in particular were vulnerable: They cannot move away from the threats they face.

That's where the Natural Resource Trustees, led by the Environmental Contaminants program of the U.S. Fish and Wildlife Service, and the Iowa Department of Natural Resources come in. As Natural Resource Trustees, these agencies have joint responsibility to evaluate how much damage occurred to natural resources and to use this information to restore to the public what was lost—in other words, "fix what's broken."

Using provisions of the Natural Resource Damage Assessment and Restoration laws, Trustees pursued a claim against the party responsible for the contamination, securing a settlement in 2008 that provided funds to launch an aquatic restoration effort. The Trustees then gathered public input and developed a restoration plan to stock mussels, produced at fish hatcheries, into the Mississippi River.

Why mussels? Mussel beds provide many critical river ecosystem services, like filtering the water and adding to the biological diversity that makes ecosystems resilient. Mussel beds are highly attractive to fish because they provide stable substrate for many invertebrates that serve as prey for fish. In turn, the fish provide human recreation and food and are themselves prey for bald eagles and the other aquatic-dependent birds that use the Mississippi River.

Mussels are one of the most imperiled aquatic species in North America. In addition to the stresses that occur from living along an industrialized shoreline, native mussels are at risk from the invasive zebra mussel that has invaded the Mississippi River. Zebra mussels, along with past commercial harvest of mussels for their shells, have decreased the overall abundance of mussels in local beds. Augmenting mussel populations with artificially propagated mussels will help conserve mussel beds and species diversity. Most important, this plan will help restore the entire Mississippi River ecosystem.

Growing native mussel species and restoring mussel beds can be tricky—mussels have a fairly intricate life process that requires a range of specific host fish for the successful development of glochidia, or mussel larvae. Success also depends on a spirit of partnership and teamwork. Trustees are calling upon the expertise at the Service's Genoa National Fish Hatchery in Wisconsin and the Fairport, Iowa, State Fish Hatchery. Both the Genoa and Fairport hatcheries have a history of successful mussel propagation. Genoa played a key role in the recovery of the endangered Higgins eye pearly mussel, and the Fairport State Fish Hatchery spent its early days culturing freshwater mussels to help with conservation efforts after overharvesting by the commercial button industry.

Here's how the Mississippi River augmentation works. In the fall of 2011, biologists from the Iowa Department of Natural Resources collected adult mussels from area mussel beds after they had spawned. The adult mussels with fertilized eggs were transported to the Genoa National Fish Hatchery where they were held until the eggs hatched and the glochidia were washed out of the adults' brood sacs. The glochidia were allowed to attach to the gills of specific host fish, including flathead catfish or walleye. Early this year, the first batch and host fish were transported to the Fairport State Fish Hatchery near Bettendorf, where

MIKE COFFEY/USFWS

Fisheries Biologist Kirk Hansen (right) and Environmental Specialist Joe Sanfilippo from the Iowa Department of Natural Resources hold immature mussels produced at the Genoa National Fish Hatchery.

they are being held in cages until the glochidia grow into immature mussels and drop off into trays. The immature mussels will be held over until next summer to increase their body size and avoid many of the natural causes of early life stage mortality. This cycle will be repeated for about three years to produce several mussel species.

By next summer, the first batch of year-old mussels will be placed in the river. And once again, deertoe, butterfly, black sandshell, fawnsfoot and other little-seen but vitally important mussel species will take up their natural roles in the ecosystem of the Mississippi River.

MICHAEL COFFEY AND ANNETTE TROWBRIDGE, Contaminants Program, Midwest Region

GEORGIA PARHAM, External Affairs, Midwest Region

Aesthetic Exercise

Hunting fully immerses the hunter as a participant in nature.

by CRAIG SPRINGER

Scraps of a 35-year-old moving memory play behind my eyes, pieced together in monochromatic fragments. Aged memories are overlain in layers like the autumn sky that I see. It's variegated in various shades of gray, leaden like fresh glazier's putty and sullen like soot, but there is a pleasant platinum quality in the shadowless light. Clouds move in thick lumpy layers, like they can't quite mix with one another. Fat raindrops patter the ground. Sodden soil curls around my boots as I slog through a fallow field that hadn't been plowed for a few years. A Winchester 12-gauge pump shotgun gets heavy on my shoulder. I am but a wiry boy, barely 16 years of age.

In an adjacent cathedral-like woodlot, a blue jay chatters audible autumn incense that arcs through the cold air. Bony branched Osage orange trees line some of the fences on this old Ohio farm near where I lived for a time as a kid. The tree's softball-sized pomes that look more like rusty-green brains than they do oranges litter the fields' edges. They lie over last summer's grasses laid level by wind and rains and killing frosts. Common hackberry trees crop up in the corners on this old place. Their gnarled gray stucco bark mirrors the sky above. The brown hulls of Queen Anne's lace too wet to crackle belie the snowy white umbrella-topped flowers that they were in summer. The briar tangles reach through a rusted field fence and scrape my brush pants tattered by previous such encounters.

Ninety acres of brambles and hedge rows and fallow rocky fields, they cut at right angles through the recesses of recollection. Smooth distant hills patched in fields and woodlots like a symmetric quilt rise and fall. I fancy that these fields I hunt in memory once looked more manicured before they turned fallow. Pioneering vegetation softens the visual edges. The place wasn't too productive for farming; scads of erratic protruding rocks scraped by the disc spoke to that. So did the occasional small cairns in the corners beneath the common hackberries that marked nothing in particular, save for the muscle and sweat that went into the land many years back. Old farmland reverted to a mosaic of hardwood forest and pockets of prairie made an ideal place for a bobwhite quail hunter in the autumn.

Come early November, it usually brought with it the first real makings of winter: cold, wet, dismally gray, sometimes in doses a week long. But it also brought with it something spiritually uplifting, hunting seasons.

Despite the press of years, this place and the experiences that it yielded are an everlasting spiritual larder. All things spiritual rise. Most any ardent hunter will tell you that a full-immersion experience in nature that comes with hunting is, irreducibly, a spiritual one. Witness the dissonance of a ringneck pheasant as it puts sky between the two of you; or the disquieting skirr that comes with a covey of quail taking to the wing from your ankle—they both turn your eyes upward. Duck hunters scan the skies for distant black specks. Goose hunters sit in pits listening for the jarring cacophony coming from afar; their eyes and thoughts turn upward. Blue grouse hunters in the West, already in the high country, their eyes are drawn upward to the tops of blue spruce and white fir on the flush. All of these things have an upward movement. All of them immerse you in nature. All of them sharpen your senses and all of them are without question, spiritual experiences.

Few hunters in our contemporary society go afield strictly to put meat in the freezer. People hunt for the aesthetic ritual, and the kernel of ritual is spiritual experience. "The duck hunter in his blind and the operatic singer on the stage, despite the disparity of their accouterments, are doing the same thing," said the father of modern wildlife management, Aldo Leopold. He reduced the reason for hunting to this odd comparison. "Each is reviving, in play, a drama formerly inherent in daily life. Both are, in the last analysis, aesthetic exercises."

Hunters describe their full-immersion nature-experience in varying degrees as connecting with the fruits of the land in ways that can't come from other recreations. Writers from Socrates to Aldo Leopold to Ortega y Gassett to James Swan mused that the experience of hunting clarifies the mind. Hunting fully immerses the hunter as a participant not just observing nature, but one who is in nature. It's deeply emotive—like a painter locked in the canvas, a writer living in the page, a carpenter crafting the right cut, all caught in the muse. It is nature that makes us human, and hunting makes our existence cogent.

Hunting is recreation; your senses stir and awaken to re-create one's own being. The aesthetic primordial act of hunting is paradoxical: immersed in the hunt that could end in death is life-affirming. And that speaks to core of why hunters—and anglers too—are conservationists, why they care immensely for nature. Conservation of wild things in wild places matter to people.

One of my favorite places to hunt Mearns quail in New Mexico where I live is at the juncture of two dry ravines where a spring wells up through a crack in the earth. On a jutting rock outcrop, a lone gnarled netleaf hackberry hangs by roots that palm through crevices. Its knobbed corky bark is just like that found on common hackberries growing on a fallow Ohio field from my youth. The tree evokes an everlasting fluid image that flows behind the orbits of my eyes. A covey of bobwhite quail takes to the wing in a flurry. My 12-gauge kicks my skinny frame and a thud hits my ears. The birds' brown forms in flight pass through the hackberry trees and meld into a miasma, swallowed by a sooty gray sky.

Over and over again these many years, I have lived in that fixed spot of time. Those odd acres made an impression upon my soul. Chance encounters with wild things in wild places register in my morals. Deeper yet, the land that I will probably never see again still serves up spiritual food that sticks to my ribs. □

CRAIG SPRINGER is a fish biologist in the Southwest Region and editor of *Eddies* magazine <www.fws.gov/eddies>.

"The duck hunter in his blind and the operatic singer on the stage, despite the disparity of their accouterments, are doing the same thing."

—ALDO LEOPOLD

USFWS

A Foundation for Conservation

NFWF is a strong partner for the Service

By JEFF TRANDAHL

Nearly three decades after we were created by Congress, the National Fish and Wildlife Foundation—better known as NFWF—is now one of the world's largest conservation grant-makers. Back in 1984, we were established as a private nonprofit organization and given the mission to expand the resources available for important conservation projects by the U.S. Fish and Wildlife Service and other federal agencies.

With that as our goal, we've proceeded to raise more than $1.4 billion in private contributions and grantee matching funds, nearly triple our federal appropriations of $576 million. The total value of our commitment to on-the-ground conservation is now more than $2 billion. We're proud of that record and honored to be part of the solution for the complex environmental problems in our country.

Besides the Fish and Wildlife Service, NFWF works with the Forest Service, Natural Resources Conservation Service, National Oceanic and Atmospheric Administration, Bureau of Land Management and other federal partners to fund actions that protect imperiled species and the wild places they need to survive. Our list of collaborators now includes dozens of corporate supporters, a host of large and small conservation organizations, foundations, and state, tribal and local governments.

We continue to maintain our close ties to the Fish and Wildlife Service. Service Director Dan Ashe sits on our Board of Directors and helps to keep the vital connection between our organizations strong.

The Service has a special place in my professional development, as well. My father, Arden Trandahl, spent 36 years as a fish hatchery expert with the Service, retiring with honors in 1996. I spent my youth around scientists and hatcheries, and knew from an early age that I wanted to be like him when I grew up, protecting fish and animals.

Strategies and Solutions

If there's one common element to the work NFWF does, it's our commitment to finding effective, science-based solutions to conservation problems through partnerships with both public and private sectors. A great example is conservation of the American oystercatcher.

NFWF has been working with the Service for the last four years to bring back the oystercatcher, a handsome shorebird that makes its home on the beaches and salt marshes of the Atlantic and Gulf coasts. The oystercatcher population had declined to about 10,000 birds in 2008 and was dropping 1 percent each year. That downward trend was destined to continue unless decisive action was taken.

NFWF worked with the Service's Northeast Region's Migratory Bird program and the American Oystercatcher Working Group to craft a detailed business plan and identify actions that would offer the greatest gains for the oystercatcher population. Our focus was protecting nesting and foraging areas and reducing the threat of disproportionately abundant predators. In consultation with the Service, we selected priority locations for our actions, made 25 grants to 14 groups in support of the business plan strategy and commenced work.

The results have been nothing short of remarkable. Based on projections from monitoring of nesting populations, the oystercatcher population decline may have been not only halted but completely turned around. It appears oystercatcher numbers have increased 4 percent in just 48 months. As wildlife professionals know, a reversal of this magnitude during such a short time span is rarely seen.

During the last two years, NFWF made a major commitment to the recovery of oystercatchers, which also benefitted other shorebirds. We leveraged the Service's contribution of $1.8 million with an additional $4.8 million, for a total investment of $6.6 million.

By combining resources, we're helping this imperiled species make remarkable gains. NFWF applies this kind of cooperative funding model to projects throughout the country.

NFWF

Based on projections from monitoring of nesting populations, the oystercatcher population, which was declining, has increased 4 percent in just 48 months.

NFWF is working in Wyoming with others to protect the annual migration route of the pronghorn.

Other NFWF Initiatives

In the Sky Islands region of the Southwest, NFWF has targeted priority grasslands landscapes to support key wildlife species like the Chiricahua leopard frog, jaguar and prairie dogs. National wildlife refuges in Arizona provide anchors of protected land for these species. Now, NFWF is working with private ranchers in these regions to expand protected lands, restore cienegas and remove invasive species.

Other NFWF projects address the issue of connectivity. In Wyoming, we've spent the last several years collaborating with the state Department of Fish and Game and Department of Transportation, the Wildlife Conservation Society and others to make sure the annual migration route of the pronghorn, one of the longest in America, is protected. In the northern Rockies, we're supporting projects to connect migration corridors for grizzly bear.

One of NFWF's most exciting undertakings with the Service this year is our Pacific Seabird Initiative. On Midway Atoll's Eastern Island, a critical breeding area for black-footed and Laysan albatross, our grants are supporting the removal of golden crownbeard. This invasive plant, introduced in the 1940s, now covers more than 60 percent of three Midway Islands and keeps the birds from nesting. With treatment methods field-tested by Service staff, the crownbeard is being removed, restoring prime breeding grounds and preventing further declines for the albatross. These actions were made possible through contributions from a private NFWF donor.

NFWF projects benefit conservation in all 50 states and around the globe. Every step of the way, we make connections with both public and private partners to make our mutual goals a reality. We know that success will require every possible resource—and we'll continue to contribute our very best effort. Learn more at www.nfwf.org. □

JEFF TRANDAHL, Executive Director and CEO of the National Fish and Wildlife Foundation

pacific

GREAT WIDE OPEN

Celebrating a Fence-Free Sheldon Wildlife Refuge

Since 2009, volunteers and staff with Friends of Nevada Wilderness have hauled out more than 150 miles of barbed wire fencing at Sheldon National Wildlife Refuge, and in August they pulled out the last fence post.

The fence, mostly for grazing, was deemed unnecessary by the U.S. Fish and Wildlife Service—grazing at Sheldon ended in 1994. It was seen as an obstacle to pronghorn migratory paths and water access. Pronghorns shimmy under rather than leap over fencing. The refuge is also home to sage-grouse, low-flying birds that can get entangled in the barbed wire.

"Volunteers with the Sierra Club and other organizations have been pulling this old fence from the Sheldon since the mid-1990s so it's been a huge team effort," said Friends Executive Director Shaaron Netherton. "It's exciting to finally be pulling out the last post and the final wire! Pronghorn and sage-grouse can't do this work themselves, so they rely on volunteers and organizations to keep their home safe."

Barry Reiswig, former refuge manager and an instrumental figure in removing grazing from the Hart-Sheldon Refuge Complex in 1994, was amazed by the progress.

"I can hardly believe you folks removed so much fence in such a short period of time," Reiswig said. "To picture that big refuge without endless cross-fencing is a dream come true! You guys are the best."

The Sheldon National Wildlife Refuge was founded in 1931 to protect the pronghorn, the fastest land animal in North America, which can reach speeds of 60 mph. The Sheldon Refuge encompasses more than half a million acres of sagebrush-steppe ecosystem that provides habitat for bighorn sheep, mule deer, pygmy rabbits, hawks and falcons, and 75 species of butterfly. □

DARCY SHEPARD, Friends of Nevada Wilderness

Volunteers remove fencing at Sheldon National Wildlife Refuge.

BRIAN BEFFORT

MAKING WAY

"The Lark Defenders"

Protecting the rare streaked horned lark through partnerships

The streaked horned lark, a rare subspecies of the horned lark found only in small parts of Oregon and Washington, has been confirmed for the first time on Tenasillahee Island—thanks to partnerships and the help of "the Lark Defenders."

Situated in the middle of the Columbia River, Tenasillahee Island is part of a series of small islands that make up the Julia Butler Hansen Refuge for the Columbian White tailed Deer. The island is also a disposal site for dredging operations run by the U.S. Army Corps of Engineers and the Port of Portland to maintain proper channel depth for ship passage.

DAVID MALONEY/USFWS

As Rob Beringer, the shore superintendent of Dredge OREGON for the Port of Portland, scanned the sandy island terrain where his crew would soon dump tons of silt from the bottom of the Columbia River, he saw a brown and white blur out of the corner of his eye.

The blur turned out to be a bird. Beringer quickly realized, however, that this was not just any bird, "I knew it was a juvenile streaked horned lark and that they are both rare and fragile." Beringer identified the bird thanks to his own online research and training from partnering agencies.

Beringer contacted one of those partnering agencies and spoke to Jon Gornick, dredge operations manager for the Corps. Gornick reasoned that, "The presence of a juvenile bird indicated the

Rare streaked horned lark

presence of a nest," and felt a buffer zone should be established, "to be mindful of the breeding site but still allow the work to be done."

Gornick reached out to Hannah Anderson, regional rare species program manager for the Center for Natural Lands Management and expert on Columbia River larks. Anderson "recommended that they have a buffer of 100 feet."

Finding evidence of streaked horned larks breeding on Tenasillahee Island came as a "pleasant surprise" to Cat Brown, wildlife biologist with the U.S. Fish and Wildlife Service and the streaked horned lark lead in Oregon. "We detected larks there in the past but not regularly," said Brown.

The streaked horned lark is a candidate species, and the Service is currently reviewing its status to determine if it warrants protection under the Endangered Species Act. Regular surveys for the last several years have found a small but persistent population of larks on the sandy islands in the lower Columbia River.

The crews cordoned off the area as Anderson recommended. "It was a little problematic because it was in the middle of our disposal area so we could only run one disposal pipe instead of two around their perimeter," said Beringer.

The Corps continued its work despite reduced capacity and space, giving Anderson the "warm and fuzzies" because, "they could have easily dumped on the larks and no one would have known."

The streaked horned lark couple and their young continued nesting undisturbed, and Gornick and Beringer were dubbed "the Lark Defenders" by Anderson. "Their teams really went the extra mile to protect these rare birds," said Anderson. "You can almost imagine them in superhero outfits!" said Brown.

While Gornick and Beringer don't think they will be donning capes anytime soon, they are both pleased at the collaborative help they provided for the streaked horned lark. "We are coordinating with the Fish and Wildlife Service on what to do to help, altering our operation to get work done and not impact the birds," said Gornick. "I think we did the right thing. It slowed us down but we were able to both dispose on the island and save the baby larks, a twofold win," added Beringer. □

AMANDA FORTIN, External Affairs, Pacific Region

INTERNATIONAL EXCHANGE

Sharing the Service's Fish Passage Expertise with South Korea

In early July, the Pacific and Pacific Southwest regions of the U.S. Fish and Wildlife Service led a three-day fish passage tour for two government officials and four scientists from the Republic of Korea.

"We want to learn from the experts on fish passage in the United States and we currently have no provisions or standardized approaches to provide fish passage facilities at barriers on rivers and streams in the Republic of Korea," said Dr. Jinwon Seo, a postdoctoral research associate at the University of Idaho, who coordinated the tour.

South Korea will host the seventh World Fisheries Congress in 2016 and is considering multinational approaches to fish passage as one theme for the conference.

Dan Shively, the Pacific Region coordinator of the Service's National Fish Passage Program, and Donnie Ratcliff, the program coordinator in the Pacific Southwest, organized the tour of fish passage improvement projects along the Columbia River and Central Valley of California.

"We are very interested to learn about your laws, regulations and practices with regard to fish passage and fish harvest," said Namchul Lim, Secretary of the Ministry of Food, Agriculture, Forestry and Fisheries. Added Jaemin Baek, Director of the Institute of Inland Fisheries Research Branch of National Fisheries Research & Development, "We have no such laws or regulations in my country and the fishery resources are declining."

The tour started with a half-day overview of the Service's fish passage programs and authorities. Presentations focused on Service efforts to provide passage for salmon, Pacific lamprey and other fish species at Columbia River mainstem and tributary hydroelectric dams and irrigation diversions. "By presenting several project examples, we highlighted the broad range of laws and regulations, as well as the different processes and procedures, that give the Service and other agencies the authorities to specify fish passage requirements at both federally operated and privately owned facilities," Shively said.

The tour included a visit to the newly constructed, state-of-the-art fish ladder and juvenile fish bypass facility at the Rivermill and North Fork Dam Complex

DAN SHIVELY/USFWS

Jinwon Seo (pointing) translates as Mike Langsley (fourth from left), senior fish biologist with the Army Corps of Engineers, explains how the juvenile bypass facility works at Bonneville Dam.

along the Clackamas River near Estacada, Oregon. It is the world's longest operating fish ladder at 1.7 miles in total length, bypassing two of the three hydroelectric dams in the complex. "That was amazing," said Jaeok Kim, one of the Korean scientists.

The participants also learned about designs to screen fish safely from irrigation and withdrawal along the East Fork Hood River in Oregon, returning the migrating juvenile salmon back into the stream while sending irrigation water on to the fruit crops in the Hood River Valley. "We have a lot of irrigation diversions along rivers and streams in the Republic of Korea in support of the agricultural industry," said Seungheon Lee, an agricultural engineering scientist with the Korea Rural Community & Agriculture Corporation. "Most of them have no facilities to protect fish," he said.

Participants spent their final day touring fish passage facilities in the Central Valley of California led by Ratcliff. They visited several sites run by the California Department of Water Resources (DWR) and learned about fish protection within the California State Water Project.

Participants agreed the tour was an extremely valuable and important start to developing effective fish passage and protection regulations and policies for South Korea. "Many Asian countries believe the United States has some of the best policies and practices when it comes to fish and wildlife protection," said Seo. "We look to the West for the latest information, science, and approaches. We are very thankful to the Service and look forward to developing stronger international relations on fish passage assistance." □

DAN SHIVELY, National Fish Passage Program, Pacific Region

DONNIE RATCLIFF, National Fish Passage Program, Pacific Southwest Region

southwest

WRECKING CREW

Abandoned Vehicles Removed on the Cabeza Prieta NWR

Boundless desert surrounds you in Cabeza Prieta, the third largest national wildlife refuge in the lower 48 states. Seven rugged mountain ranges cast shadows over barren valleys once swept by lava. Saguaros loom in stark profile above the baked earth. A 56-mile, shared border with Sonora, Mexico, might well be the loneliest international boundary on the continent.

Imagine Rhode Island without any people and only one wagon track of a road. Cabeza Prieta NWR is that big, that wild and also incredibly hostile to those who need lots of water to live. Yet, within a landscape at once magnificent and harsh, life does persist, even thrives.

Temperatures may top 100 degrees F for 90 to 100 consecutive days from June to October. Summer thundershowers and winter soaking rains average about 3 inches on the western part of the refuge and up to 9 inches on the eastside, 60 miles away.

Now take that pristine picture you have in your mind and impose the image of potentially armed and dangerous drug smugglers roaming through this land in old trucks and cars. That was the case here not too long ago.

At one time, the Cabeza Prieta National Wildlife Refuge was a hotbed for drug smuggling activity. A large number of vehicles crossed the desert carrying cargos of drugs from Mexico to points north. The traffic was so heavy that a vehicle trail was created by the mid-1990s known as the Los Vidrios.

Then the U.S. Border Patrol stepped in. To address the problem of illegal immigrants and drug smugglers crossing the open border, the U.S. government, through the Department of Homeland Security, decided to build a barrier along the U.S.-Mexico border.

With the completion of the border barrier along the refuge perimeter in early 2009, the illegal vehicle traffic was virtually eliminated. However, before the barrier was in place many of the vehicles had broken down in the rugged terrain and were abandoned where they stopped. These vehicles diminished the untrammeled beauty of the largest contiguous wilderness area within the National Refuge System in the lower 48 states. Most of the vehicles had been in the desert for eight or more years.

Refuge Manager Sid Slone coordinating with the Regional office in Albuquerque, New Mexico, determined that these abandoned vehicles had to be removed from the landscape. Most of the wrecks could be reached using administrative trails or on previously disturbed trails created by the smugglers, and removed with relatively little new surface disturbance. It was decided that the best method with the least impact to the wilderness was to remove the abandoned vehicles with a forklift or backhoe, but refuge equipment and staff was limited.

USFWS

Border Patrol and refuge staff load abandoned vehicles for removal.

The amount of time the equipment would be in the wilderness was also a concern because this work would have some impact on the solitude of the wilderness.

"The vehicles were identified for removal in the Cabeza Prieta's CCP, and besides being an eyesore, they were all located in designated wilderness which degraded the wilderness character," Slone said. "There were also concerns that liquid pollutants may eventually leak from these vehicles."

Steve Martin, Yuma Sector chief of the U.S. Border Patrol, generously offered the assistance of some of his staff and heavy equipment, and Dr. Benjamin Tuggle, the Service's Southwest Regional Director, gratefully accepted.

Using the Border Patrol's 4-wheel drive forklift with large balloon tires to minimize soil disturbance and a backhoe from the refuge, the Service and Border Patrol staff quickly loaded 31 abandoned vehicles onto flatbed trucks and removed them from the Cabeza Prieta National Wildlife Refuge and Wilderness Area.

Three abandoned vehicles remain, in the western portion of the refuge far from the ones that were removed.

Two are being considered for removal by bringing in a backhoe, picking them up and carrying them to a waiting flatbed truck. The third vehicle poses a significant problem. It is wedged tight in a wash and would require something like a heavy-lift helicopter to pluck it out. The effort to remove that last one could be very costly so plans are up in the air—so to speak.

Once all of the vehicles are removed the environmental mitigation will consist of raking out and removing the tracks left when the vehicles were driven in. The cost for this project so far has been about $15,000 each, mostly in labor, for the refuge and the Border Patrol.

This was the latest, but not the only, example of the Border Patrol (both the Yuma and Tucson sectors including their Ajo and Wellton field stations) and Cabeza Prieta NWR working closely together to solve problems. To address common issues in this region, these two agencies have also partnered with others, including Organ Pipe Cactus National Monument, Luke Air Force Base, the Marine Corps Yuma Air Station and the Bureau of Land Management's Phoenix District. □

TOM BUCKLEY, External Affairs, Southwest Region

midwest

MAKING WAY

Two Rivers National Wildlife Refuge Welcomes Island with Summer of Paddling Event

Two Rivers National Wildlife Refuge held a Summer of Paddling 2012 event to Clarksville Island in late July to celebrate the island's addition to the National Wildlife Refuge System.

It was the first public paddling event held to visit the 870-acre island in the Mississippi River directly across from Clarksville, Missouri.

Clarksville Mayor Jo Anne Smiley welcomed the group the morning of the event and received a commemorative Summer of Paddling 2012 miniature paddle.

The Summer of Paddling 2012 is a series of paddling events on the Mississippi River for paddlers of any level of experience.

From young Boy Scouts to ocean paddlers, 22 participants came out for the event.

"I've only ever paddled on the ocean," said Joan Ranthum. She added that it was quite a different experience to kayak on the Mississippi River. Ranthum traveled to Clarksville from Iowa to spend the weekend in the river city with friends and take part in the event.

Karen Morrow of Alton, Illinois, said she would have never paddled to the island on her own and appreciated the opportunity. She and a friend enjoyed taking nature photos and video during a break on a sandbar of the island.

The event was led by staff from Two Rivers, Great Rivers/Clarence Cannon and Crab Orchard National Wildlife Refuges; rangers from the Army Corps of Engineers; and paddle guide Kevin Dempsey. □

CORTNEY SOLUM, Two Rivers National Wildlife Refuge, Midwest Region

CORTNEY SOLUM/USFWS

Two Rivers National Wildlife Refuge volunteer Duane Johnson enjoys the day on the water.

SECOND CHANCE

Helping Habitat for Humanity and Wildlife: A Different Spin On Recycling

When Necedah National Wildlife Refuge in Wisconsin opened a new visitor center in April, it needed to remove its old office and could not find anyone interested in the building. The refuge turned to a new and unique partner: Habitat for Humanity.

The local Habitat for Humanity group came and inspected the building, and was happy to assist with the deconstruction. Volunteers are carefully removing light fixtures, doors and other salvageable items that will be either used in rebuilding projects or sold through Habitat resale shop to raise funds for new houses.

"These folks know what they are doing," said Refuge Manager Doug Staller. "They are very efficient in their approach."

The goal is to have the building down before winter comes in 2012. The refuge is happy to be partnering and putting a different spin on recycling. The efforts are helping Habitat for Humanity and helping the Service remove a building at little cost. □

USFWS

A volunteer For Habitat for Humanity removes conduit from the old Necedah building.

southeast

GOOD GROWING

Key Tree Cactus Reintroduced

With a lot of help from his friends from Fairchild Botanical Gardens and Florida State Parks, South Florida Ecological Services Field Office botanist Dave Bender reintroduced 72 Key tree cactus plants to an area of higher elevation in the Florida Keys on July 25, as part of what Bender calls an "interim solution" to help reverse alarming negative population trends for this highly endangered species.

"The numbers for this species dramatically declined over the past decade or so…by as much as 90 percent," Bender said.

That prompted Bender to work with partners to find a site where a new population can hopefully be established—somewhat insulated from the threat of sea-level rise.

"This is the first time we've tried reintroducing this species," Bender said. "This is a publicly protected site where Key tree cacti previously existed, but haven't been seen in many years. Also, plants were propagated from a population on a nearby Key, so we believe they're genetically close to the plants that once existed at the reintroduction site."

Topographic data were used to identify higher sites in order to help protect the newly reintroduced plants from the threats of sea-level rise and high tides, which deposit large amounts of salt into the soil.

"Hurricanes and tropical storms also increase salinity levels in the soil. These plants don't like that," Bender said. "The areas with the highest mortality rates are the same areas with the highest levels of soil salinity."

Another problem is poaching. There are those who collect and sell plants, especially cacti and orchids, for commercial purposes. "We're not publicizing exactly where this new population is because we don't want to give potential poachers a treasure map," Bender added.

Endangered Key tree cacti ready to be planted as part of reintroduction.

DAVE BENDER/USFWS

In the meantime, representatives from the state and Fairchild Botanical Gardens will monitor the newly reintroduced plants at least monthly for the first year, and then on an annual basis. "This new population takes us from seven to eight. There are only 300 to 400 plants left in all of the Keys," said Bender. "We're trying to create a new home for the Key tree cactus, as well as trying to buy some time, as we anticipate the impacts of sea-level rise."

Dana Hartley, leader of the South Florida Ecological Service's Office Endangered Species Team, said, "We're fortunate to have a botanist of Dave's caliber. He's so thorough and conscientious, and so good at establishing the right priorities and building the right relationships to make things happen." □

KEN WARREN, South Florida Ecological Services Field Office, Southeast Region

GROUNDBREAKING

Dam Demolished; Harpeth River Now One of Tennessee's Free-Flowing Rivers

The removal of a lowhead dam in Franklin, Tennessee, begun in late July, will make the Harpeth River one of the few rivers in Tennessee that is entirely free flowing.

"Not only will the removal of the dam improve the quality of the water and fish habitat, but it will also improve public access and enhance recreational opportunities for our residents and visitors," said Eric Stuckey, city administrator for Franklin, Tennessee. "And the new structure, made of natural materials, will continue to allow the city to continue to draw water into our reservoir to serve our water utility customers."

Secretary of the Interior Ken Salazar identified the Harpeth River Restoration and Lowhead Dam Removal Project as the one project for Tennessee for the America's Great Outdoors Rivers Initiative. The Rivers Initiative is identifying projects around the country to serve as models of how to conserve and restore key rivers, expand outdoor recreational opportunities and support jobs in local communities. This project is one of 51 around the country that the Secretary is highlighting, one in each state and in the District of Columbia.

TOM MACKENZIE/USFWS

Work begins on dam removal on the Harpeth River in Franklin, Tennessee.

"This is the kind of project that has so many good things going for it," said Dan Ashe, director of the U.S. Fish and Wildlife Service. "By pooling our limited resource funds at the federal, state and local levels, we can each take on a piece of the project with our best capabilities, enabling the vision of America's Great Outdoors by fostering state and local buy-in and implementation. This partnership results in wildlife benefits and improved water quality, and tops it off with super fishing, canoeing and kayaking recreational opportunities to be enjoyed by everyone."

In addition to enabling fish to swim the length of the river, the project will improve the public access point and safety for paddlers as part of the Harpeth River Blueway.

It will also stabilize eroding river banks near the lowhead dam to reduce sediment and pollutant loads and improve water quality.

The Harpeth River Watershed Association received $350,000 toward the $870,000 total from collaborative funding programs of the Service, Southeast Aquatic Resources Partnership, and the National Fish Habitat Partnership for projects to improve fish habitat and remove blockages to fish passage. □

TOM MACKENZIE, External Affairs, Southeast Region

northeast

HOME AWAY FROM HOME

Chesapeake Bay Field Office Finds Foster Nests for Osprey Chicks

Life isn't always easy for osprey chicks on the Chesapeake Bay. Often storms and other phenomenon displace the young birds from their nests. Chesapeake Bay Field Office biologists on the Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island wildlife management team work with Tri-State Bird Rescue and Research Inc. to put displaced osprey chicks into suitable foster nests.

PETE MCGOWAN / USFWS

CHRIS GUY/USFWS

In June, Suzi Feldhuhn, a volunteer with Tri-State Bird Rescue and Research, delivered three young ospreys, approximately four to five weeks old, to the Poplar Island wildlife management team for relocation into suitably-aged osprey foster nests on Poplar Island and the South River, near Annapolis, Maryland.

To reduce stress on the foster chicks, the wildlife management team had scouted out several osprey nests the day before the relocation.

On July 23, another young osprey, six weeks old, was received from Tri-State Bird Rescue and Research and relocated into a foster nest on Poplar Island.

Subsequent monitoring of the foster nests showed that all four foster chicks had fledged. The team has successfully relocated 11 osprey young between 2009 and 2012. □

(Left): A foster osprey chick (with band) sits in its foster nest with a similarly aged chick. (Below): Chesapeake Bay Field Office biologist Pete McGowan checks a potential osprey foster nest.

East Lift at Conowingo Dam provides fish passage on the Susquehanna River.

USFWS

UPSTREAM

Deputy Director Tours Fish Passage Facilities of the Susquehanna River

Chesapeake Bay Field Office biologist David Sutherland organized a tour of fish passage facilities for U.S Fish and Wildlife Service Deputy Director Rowan Gould and National Hydropower Coordinator Frankie Green at the first two dams spanning the Susquehanna River: Conowingo Hydropower Dam in Maryland owned by Exelon Corporation and Holtwood Hydropower Dam in Pennsylvania owned by PPL Corporation (formerly Pennsyvannia Power and Light).

The group first stopped at Conowingo Dam, getting an up-close and first-hand look at the West Lift, which actually captures and holds fish for spawning in tanks, and for transport upstream. The East Lift provides complete fish passage over the dam and passes the majority of the fish. After lunch, the group traveled upstream to the Holtwood Dam to get an update on the Holtwood hydropower expansion, the pending land transfer and improvements to fish passage.

Providing fish passage is crucial to a variety of diadromous fish, including American eel, blueback herring, alewife and American shad. American shad and gizzard shad were the only species observed that day.

Exelon's Conowingo Dam is currently in relicensing. The Service and its partners are working with Exelon to ensure that fish passage is improved for all migratory species and that the facility is maintained to effectively provide passage fish during the most vital time for fish migration. □

KATHY RESHETILOFF, Chesapeake Bay Field Office, Northeast Region

mountain-prairie

HOT OFF THE PRESS

Service Firefighters Take a "Staff Ride"

In June, firefighters responsible for protecting refuges in Montana traveled by boat and on foot to the site of the much-studied Mann Gulch Fire, where 13 firefighters lost their lives in 1949. After reviewing the sequence of events, the group progressed through five critical locations and decision points, putting themselves in the place of firefighters at that time in history.

The Mann Gulch Fire in Helena National Forest in Montana received national media attention, inspired a 1952 feature-length movie, and was recounted by Norman MacLean in his award-winning book *Young Men and Fire*.

"The staff ride is the best leadership training I have experienced," said Mike Granger, Fire Management Officer at Charles M. Russell National Wildlife Refuge, who organized the day-long session after attending a similar course at the Gettysburg Battlefield.

A staff ride is an on-the-ground case study of high-risk incidents that have resulted in tragedy. The training technique has been used by the military since the 1970s, and was adopted by the wildland fire community in 2006.

Safety training is a critical component of the Service fire management program. There have been three firefighter deaths in the history of the Service, and none since 1981. □

The U.S. Fish and Wildlife Service Montana Fire Crew.

alaska

HOT OFF THE PRESS

Alaska cvwaían KoíTíagwahchíyaa (Fire's Natural Role in Alaska)

The Alaska Fire Management program has worked with Allan Hayton of the University of Alaska Fairbanks Alaska Native Language Center to translate a poster explaining the role of fire in Alaska's boreal forest ecosystem into the Gwich'in Athabascan language.

The poster was produced for the USFWS Alaska Fire Management program several years ago by Alaska artist Kathy Sarns. Hayton says he was pleased to be involved with the project: "Sometimes I get translation requests that I just can't translate because it's some concept from another culture that doesn't have an equivalent in Gwich'in. You can translate anything into Gwich'in really, but if it is a foreign concept it ends up being really descriptive and long. But this poster is already very familiar to Gwich'in people who live on the land and see the patterns in nature."

The poster is being distributed by the Alaska Eastern Interior Fire Management Officer in Gwich'in Athabascan villages in the Yukon Flats area of Alaska. It is also available through the Regional Fire Management office in Anchorage. Future translations will be in Koyukon Athabascan, Inupiaq and Yup'ik.

The poster is an element of the K-12 Role of Fire in Alaska curriculum, which has been developed to help teach Alaskans about the role of fire in the boreal forest and tundra ecosystems. It is online at <alaska.fws.gov/fire/role>. □

SHARING RESEARCH, OPENING DOORS

Alaska's Partners for Fisheries Monitoring Program

The Partners for Fisheries Monitoring Program, housed within the Office of Subsistence Management funds social scientists, fisheries educators and biologists who work with non-governmental agencies in rural areas where there are projects for the Fisheries Resource Monitoring Program (FRMP). But the program also fills an important role by reaching out to young people.

These Partners live and work with communities in their area doing capacity building and outreach with subsistence users. They have direct contact with community members and an opportunity to foster hiring from the local area for fisheries research.

The program provides an opportunity for high school and college students to work as interns during the summer on a variety of projects that monitor fish stocks. One of the goals of the program is to employ more students from the rural areas where the projects are based. The program is designed to introduce students to different types of work relating to fisheries and social science and biology, and give them practical field experience working with trained staff. To date, more than 250 students have participated in the summer intern programs. The goal is to spark the interest of the students and ignite a desire to seek a college education in social or biological sciences and pursue jobs in resource management in the region they are from or in other areas of Alaska.

The Partners work directly with the FRMP projects in the summer and then conduct community meetings during the winter to share the information they are gathering from the research projects.

At this time the Partners Program funds Partners in five Native organizations including the Kuskokwim Native Association and the Bristol Bay Native Association. By living in the communities that are funded by the program the Partners become fully immersed in the local population and provide a direct link for the exchange of information. □

PALMA INGLES/USFWS

Glen Lindsey, a college intern, and Mike Thalhauser, a Partners biologist working in the Kuskokwim River area, travel to the George River weir.

pacific southwest

MAKING LEAPS

Leopard Frogs Go to School

How many teenagers do you know who get up at 6 a.m. on Saturday, during summer break, and go to school by choice? Jason Wurtz is one such teenager. The 16-year-old junior-to-be at Pahranagat Valley High School in Alamo, Nevada, volunteers his free time taking care of some rare animals.

Each of the last two years, Wurtz eagerly anticipated the arrival of spring, because that is when the northern leopard frogs at Pahranagat National Wildlife Refuge begin to breed. The refuge is located a few miles south of Alamo. Several of Pahranagat's springs serve as the southernmost stronghold for this small, native frog species. The population of northern leopard frogs in the western United States is declining across much of their historical range. However, the frogs on the refuge are doing well. With Wurtz's help and the support of science teacher Wesley Wilson, they are expanding their population and the number of sites they occupy.

How is Wurtz contributing to the amphibians' well being? The short answer—he keeps them in school.

ANNJANETTE GREENWOOD/USFWS

(Top): Jason Wurtz releasing northern leopard frogs into a spring on the Pahranagat NWR. (Bottom): A tiny northern leopard froglet rests on Jason Wurtz's thumb.

Here's the rest of the story:

Each February, as the frogs' breeding season approaches, Wurtz prepares aquariums in his high school's agriculture classroom. The U.S. Fish and Wildlife Service, through the Pahranagat NWR, furnishes the aquariums and associated supplies. When the male leopard frogs begin serenading the females on the refuge, Wurtz knows it won't be long before egg masses can be found in the springs. When at least three leopard frog egg masses are located, usually in early March, a refuge biologist collects a portion of one of the masses. The freshly laid eggs are delivered to Wurtz at the school. He places the eggs in one of the aquariums and dotes over them like a father-to-be.

Within days the eggs hatch into tadpoles, which require daily care and feeding. Wurtz carefully watches over the newborns; regularly checking the water quality, monitoring the water temperature, and providing the tadpoles with a daily diet consisting of a special flaked food that helps them grow and remain healthy.

By late June or early July, the tadpoles morph into inch-long froglets and Wurtz must bid them farewell. The froglets are released into the wild at one of springs at the refuge, hopefully growing to maturity and starting additional populations.

Captive rearing provides protection from the many predators in nature that typically consume most of each year's tadpoles. This year the froglets are being released into a small, isolated spring that does not currently have leopard frogs and is not plagued with predatory fish or non-native bullfrogs that would eat the froglets.

Introductions of captive-reared northern leopard frogs on the Pahranagat NWR over the last two years have resulted in the establishment of a fourth population at a separate spring site.

This particular population is now self-sustaining—producing eggs, tadpoles and froglets. Wurtz's contributions to this effort were critical.

Wurtz said he will continue rearing the froglets in his junior and senior years, with the hope of passing the project to another student when he graduates in 2014. For its part, the staff at the Pahranagat NWR will gladly take the eggs to school to ensure that northern leopard frogs continue to prosper in the Pahranagat Valley. □

DARRELL FREEMAN, Pahranagat National Wildlife Refuge, Pacific Southwest Region

Little Anglers

KETTI SPOMER/USFWS

Kids practice casting at the grand opening of the Upper Mississippi River National Wildlife & Fish Refuge La Crosse visitor center in Wisconsin.

transitions

3 Service Employees Accepted to The Wildlife Society Leadership Institute

Three Service employees were accepted into The Wildlife Society Leadership Institute for 2012. They are **Dominic Bachman** (Modoc National Wildlife Refuge; Alturas, California), **Megan Cook** (Office of the Science Advisor; Arlington, Virginia), and **Liisa Schmoele** (Partners for Fish and Wildlife; Columbia, Missouri). Between May and October, participants will engage in leadership training that consists of intensive individual and group exercises plus mentoring activities with members of TWS Council, staff, and previous Institute participants. Each participant will also interview a wildlifer who has been an important part of the wildlife profession as part of TWS' Conserving Our Wildlife Conservation Heritage program. The Institute will culminate at The Wildlife Society's annual conference in Portland, Oregon, in October. □

Headquarters

National Wildlife Refuge System biologist and manager **Mendel Stewart** has been named the conservation agency's new chief of the Division of Budget, Performance and Workforce.

Since 2005, Stewart has served as manager of the San Francisco Bay National Wildlife Refuge Complex, made up of seven area refuges. One of the best known refuges in the complex is the Don Edwards San Francisco

Bay National Wildlife Refuge, the country's first urban refuge. There he oversaw the planning and first phase implementation of the 15,000-acre South Bay Salt Pond Restoration project—the largest wetland restoration project on the West Coast. The project aims to restore tidal marsh that provides important habitat for species including the endangered California clapper rail and helps trap carbon dioxide a greenhouse gas.

Stewart began his Service career in 1984 as a biological technician in Atlanta, Georgia. A year later, he took his first refuge manager post at Merritt Island National Wildlife Refuge in Florida, where he helped build a vigorous volunteer program. He went on to serve as refuge manager at Hobe Sound National Wildlife Refuge in Florida and as manager of the San Diego National Wildlife Refuge Complex, where he oversaw land acquisition planning on 43,000 acres.

Stewart is a member of the Refuge System's Urban Wildlife Refuge Initiative implementation team. The team is developing a 10-year strategic plan to better serve diverse young people and city dwellers, in accordance with the agency's *Conserving the Future* vision document, published in 2011.

Stewart is also a veteran of Headquarters, where he served from 1995 to mid-2000. When Congress passed the National Wildlife Refuge System Improvement Act of 1997, Stewart crisscrossed the country, training refuge managers and Service staff on the law and its implications.

Stewart was raised in Hopkinsville, Kentucky, and holds an undergraduate degree in biology from Western Kentucky University and a master's degree in public administration from the University of Memphis. In 1999 he received the Hammer Award for his efforts to cut government costs and boost efficiency in the Conservation Reserve Enhancement Program, a voluntary land protection program for environmentally sensitive lands.

More recently he helped establish and lead the Bay Area Ecosystem Climate Change Consortium—a climate change science support organization in the San Francisco Bay area for land managers and policy makers. Stewart and his wife, Kristin, have two daughters, Tori and Kylie. □

Wildlife biologist and conservation leader **Marcia L. Pradines**, from Harpers Ferry, West Virginia, has been named chief of the Division of Visitor Services and Communications for the National Wildlife Refuge System.

As division chief, Pradines will oversee the implementation of the refuge system's vision for the next decade. That vision is contained in a document titled *Conserving the Future*, which the agency published in 2011. Pradines served with distinction on the Conservation Delivery core team, whose work contributed to that document. Nine implementation teams have until spring 2013 to set their plans in motion. *Conserving the Future* implementation is to be significantly complete in five years.

Pradines previously served as deputy chief of the Service's Division of Migratory Bird Management. There, working with other federal agencies, including the Bureau of Land Management and the National Park Service, and partner organizations such as the Humane Society of the United States and American Bird Conservancy, she reviewed the status of regulations protecting migratory birds. She helped develop policy on such issues as how to reduce bird deaths from wind turbines, communication towers and accidental snaring by commercial fisheries.

An outdoor enthusiast who enjoys fly fishing, whitewater kayaking and upland bird hunting, among other activities, Pradines has experience in budget management and leader recruitment. She is also a National Conservation Leadership Institute alumnus and coach.

Before joining the Service, Pradines held leadership positions at the Wildlife Habitat Council in Silver Spring, Maryland, and the Pennsylvania Wildlife Center.

Pradines holds a master's degree in wildlife management from West Virginia University and a bachelor's degree in biology from the University of Pittsburgh. □

Anna M. Harris, a U.S. Fish and Wildlife Service economist raised in New Hampshire, was named to oversee implementation of a 10-year strategic plan for the National Wildlife Refuge System as *Conserving the Future* implementation coordinator.

An avid fisher and hunter, Harris has interpreted national survey data on fishing, hunting and wildlife-associated recreation, and has authored or co-authored several papers on hunting, fishing and aquaculture. She is a member of numerous outdoor recreation and environmental interest groups and has led fly-fishing demonstrations at several of them.

Harris holds a master's degree in agricultural and applied economics from Virginia Tech and a bachelor's degree in agribusiness management and rural development from West Virginia University. □

Southwest

Wade Harrell has accepted the position as the Service's Whooping Crane Recovery coordinator in the Southwest Region. Wade will become a member of the Region 2 Recovery staff in Albuquerque, but he will be based on the Texas Coast at Aransas National Wildlife Refuge. Wade brings a rich variety of skill and experience in developing strong partnerships to advance wildlife conservation, and is excited about the opportunity to work with the wide array of partners advancing the continued recovery of this flagship endangered species.

Wade is a fifth generation native Texan, born in Corpus Christi. He spent his formative years exploring and fishing the marshes and beaches of the Gulf Coast and hunting in the thorn scrub region of South Texas. These early experiences led to a great interest in wildlife conservation. Wade received a B.S. in wildlife and rangeland science from Texas A&M Kingsville. He earned both his M.S. and PhD from Oklahoma State University in rangeland ecology. Wade has served with the U.S. Fish & Wildlife Service as the Partners for Fish and Wildlife Program coordinator for the Austin Ecological Services office since 2009, leading a team of biologists in restoring and maintaining diverse wildlife habitats.

Before working for the Service, Wade was employed by The Nature Conservancy of Texas, serving as the Coastal Prairies Project director for six years.

Wade is married and has two very active sons age 7 and 9. Some of Wade's favorite activities include wading or kayaking shallow grass flats of the Texas coast pursuing redfish or walking the grasslands of Nebraska or South Dakota in search of grouse and pheasant. □

honors

Headquarters

Bill O. Wilen, a senior wetlands biologist, has been awarded the highest honor of the Department of the Interior, the Distinguished Service Award, in recognition of his outstanding contributions to and leadership of the National Wetlands Inventory program and wetlands conservation.

In his more than 30 years of service, Dr. Wilen served as the project leader, then director of the National Wetlands Inventory Center. Now as a senior wetlands biologist, he serves not only the Service but also the Department, participating in wetland, floodplain and coastal initiatives at the highest administration levels.

Dr. Wilen helped establish the Service's wetland classification system as the federal data standard for reporting on the location, status, and trends of wetlands. He was instrumental in developing and getting the wetland mapping standards adopted as the federal standard. He had the vision to post

NWI data on the Internet so that the entire world could assess and use it. Dr. Wilen is dedicated to getting the data to the public, helping the world better understand and appreciate wetlands, and giving others no excuse for ignoring wetland in their efforts to "balance" economic growth with environmental protection. Because of his leadership in the federal mapping arena as Chair of the Wetlands Subcommittee, in 2009, the Federal Geographic Data Committee named Dr. Wilen its National Spatial Data Infrastructure Champion. He has also been involved with the Sea Level Affecting Marshes Model for nearly 25 years and with the online viewer, SLAMM-view, since its inception. □

Pacific

Pacific Region Director Robyn Thorson, National Wildlife Refuge System Chief Jim Kurth, NWRS Regional Chief Robin West and others recently honored Nisqually NWR Manager **Jean Takekawa**, and Oregon Coast NWRC Manager **Roy Lowe** with Department of the Interior **Honor Awards for Meritorious Service**.

Jean has demonstrated her leadership skills and dedication to natural resources in a number of ways during her time with the Service. Her accomplishments are significant, sustained, and span the National Wildlife Refuge System.

Jean managed public hunting programs, controlled invasive plants, monitored sea turtle nesting, and founded a state-wide snail kite sighting program for the Loxahatchee National Wildlife Refuge Complex in Florida. As wildlife biologist supervisor for the San Francisco Bay NWRC in California, she worked tirelessly on seabird restoration, threatened snowy plover management and monitoring of marine mammals. She also successfully implemented a plan that doubled the population of the endangered California clapper rail.

Continuing to exhibit outstanding leadership when her work took her to Nisqually National Wildlife Refuge in coastal Washington, Jean aided in the acquisition of a visitor center, classrooms and outdoor nature play areas where more than 200,000 visitors come each year for engagement and education. Jean also played a significant role in the extensive and historic 15-year partnership with the Nisqually Estuary Restoration Team in which more than 900 acres of tidal habitat were restored in the Nisqually Delta—the largest tidal marsh restoration project ever completed in the Northwest. This monumental effort represents a critical step to recover endangered Chinook salmon in the Nisqually Watershed and was recognized with the Costal America Partnership Award in 2010. □

Roy W. Lowe III has provided strong leadership and invaluable contributions to marine and coastal ecosystems of the National Wildlife Refuge System. His legacy of accomplishments has benefited the wildlife and wild places of the United States.

Roy went from being the only staff member of four small Oregon coast refuges in 1985, to managing the six national wildlife refuges, 21 staff members, four friends groups, countless partnerships, and 320 miles of treasured Oregon coastline that make up the Oregon Coast National Wildlife Refuge Complex. During his 27 years of service, Roy has developed both the unique headland of the South Oregon Coast's Crook Point and the culturally significant Ni-les'tun Unit of Band Marsh National Wildlife Refuge. Following the Tenyo Maru Oil Spill in the 1990s, Roy designed the Oregon Education Project component of the spill restoration plan.

Continuing his outstanding conservation efforts, Roy completed the largest salt marsh restoration project ever in Oregon along the Lower Coquille River, a project that created more than 400 acres of tidal wetlands critical to migratory birds and juvenile salmon. Roy's passion for seabirds and marine life is also evident in his current work with the Service's Birding Initiative, which examines the impact of climate change and sea-level rise on coastal habitat. □

USFWS

Jean Takekawa (center) and Roy Lowe (center-left), both led historic habitat restoration projects in Oregon and are presented an award for Meritorious Service by Robin West, Regional Chief NWRS (far left), and Robyn Thorson, Regional Director (far right). Refuge System chief Jim Kurth also attended.

Northeast

The Society of Wetland Scientists has recognized **Ralph Tiner** for his contributions furthering the field of wetland science. Ralph is the Regional National Wetlands Inventory coordinator for the Northeast Region. His seminal paper,

Geographically Isolated Wetlands of the United States, was identified among the top 30 wetland science papers in the international journal *Wetlands* in April. Ralph's work was done as part of NWI's effort to provide information on the importance of the nation's geographically isolated wetlands at a time when regulation of such wetlands was being relaxed by Supreme Court decisions. His work provided a definition that has been widely accepted as the standard definition of isolated wetlands: "wetlands that are completely surrounded by upland at the local scale." His term "geographically isolated wetlands" has joined the lexicon of all wetland scientists.

Some of the more common geographically isolated wetlands are vernal pools (common in the Eastern U.S., other forest regions and on the West Coast), kettle-hole wetlands in the glaciated regions, Carolina bays of the Atlantic Coastal Plain, Florida's cypress domes, prairie pothole wetlands of the upper Midwest and Southwest playas.

The paper described these wetlands and the functions and values they offer. Despite being geographically separated from other wetlands and waters, they provide many of the typical wetland functions such as surface water detention (aiding in flood protection) and carbon sequestration (important for mitigating effects of climate change).

Isolated wetlands are ecologically important, providing vital habitats for both local and migratory wildlife, including local watering holes for wildlife, breeding pools for many amphibians, principal breeding grounds for North American waterfowl and vital habitats for birds and other animals migrating across the dry western landscape

These wetlands also contribute to the nation's biodiversity, providing habitats for rare and endangered species. Isolated wetlands are under increasing pressure for development, and many states provide no state wetland protection, relying on federal efforts only to manage and conserve wetlands.

Ralph also was awarded the Department of the Interior Superior Service Award for his contributions in leadership, coordination and expertise to his field and the National Wetlands Inventory program.

Wetlands: 30 Years of Wetlands Commemorative Issue, April 2012, may be found at <www.springerlink.com/content/0277-5212>

Ralph's paper may be found online at <www.springerlink.com/content/82438253874jxr40>. □

Pacific Southwest

Carmen Leong-Minch, the outdoor recreation planner for the San Francisco Bay National Wildlife Refuge Complex, was honored as one of the recipients of the American Recreation Coalition's 2012 Beacon Awards, which recognize outstanding efforts by federal agencies and partners in harnessing the power of technology to improve public recreation experiences and federal recreation program management.

Carmen has put a special focus on incorporating technology into San Francisco Bay National Wildlife Refuge's visitor services. Since 2008 she has dramatically increased this effort by using GPS technology, social media, QR code projects, touchscreen exhibits and partner websites to broaden our reach to new and diverse audiences.

For the past three years she has partnered with REI to throw an annual GPS-orienteering event called Amazing Refuge Race. Inspired by the hit TV show, *Amazing Race*, Carmen designed a race where participants compete against each other using GPS devices to navigate through a series of fun, learning-based challenges.

She also partnered with iNaturalist.org for a BioBlitz, which allows for real-time, online reporting of observed species by event participants. More recently Carmen received a grant from the refuge's Friends group to bring WiFi to visitor facilities.

As the coalition said in its award announcement: "This kind of passion, this kind of skill in using technology to make time in America's Great Outdoors fun, are exactly what we need to win over the hearts and minds of today's young Americans and connect them to our legacy of refuges, parks, forests and more." □

Northeast

Sandy Perchetti, the volunteer coordinator for the Edwin F. Forsythe National Wildlife Refuge in New Jersey, was honored as one of the recipients of the American Recreation Coalition's 2012 Legends Awards in recognition of her outstanding work to improve outdoor recreation experiences and opportunities for the American people.

After a visit in 2009 to the Arbor Day Tree Farm in Nebraska, Sandy returned to the Forsythe refuge with a vision to create an outdoor Children's Nature Discovery Area, a safe and user-friendly place where parents and children would be introduced to the outdoors in a relaxed and fun environment. With refuge staff on board, planning and developing designs for the area began.

Sandy orchestrated several Eagle Scout projects to develop certain parts of the Discovery Area, including a Gathering Area, Climbing Area, Holly Tree House, Quiet Area, Garden Area and entranceway signage. Natural materials used throughout the area ensure that every child connects with nature. Sandy received a U.S. Fish and Wildlife Service Challenge Cost Share grant to purchase equipment for the Discovery Area, including arrowheads, puzzles, digging screens, rain sticks, a nature art table, a discovery table, natural picnic tables, tree blocks, benches and a natural balance beam.

Last year the refuge received an award from the Youth in the Great Outdoors Funding Initiative and nature art tables were added so children could create their own works of art using natural materials. A partnership with Richard Stockton College created two new stations—a Nest Building Station and a Discovery Tunnel. On Earth Day, 2011, Sandy organized the formal opening of the Children's Nature Discovery Area with a ribbon-cutting ceremony. □

in memoriam

Southeast

Service mourns loss of ornithologist Jorge Saliva

An accomplished ornithologist and wildlife expert, Dr. Jorge Enrique Saliva, died July 23 at the age of 49.

A Caribbean sea bird expert, Jorge Saliva, spent more than two decades as a wildlife biologist with the U.S. Fish and Wildlife Service. He joined the Caribbean Ecological Services Field Office, when it was known as the Boquerón Field Office in 1990. He was a passionate individual, actively promoting conservation of fish and wildlife resources, particularly sea birds, migratory shorebirds, neotropical migrant birds and marine mammals. His lifework allowed him to make valuable contributions to the conservation of many threatened and endangered species such as the brown pelican, piping plover, Puerto Rican plain pigeon, broad-winged hawk, sharp-shinned hawk, yellow-shouldered blackbird, the Antillean manatee, endangered plants and wildlife in general.

He also listed and designated critical habitat for the coqui guajón and the plant cobana negra. He was a prolific scientist with more than 25 professional publications that are recognized today as primary reference in the field of wildlife conservation. He was currently contributing with the Puerto Rico Climate Change Working Group in the development of a Climate Change Adaptation Strategy for Puerto Rico.

He was loved and admired by everyone with whom he interacted for his precise analysis, and prankster sense of humor. He was a passionate human being, who fully enjoyed diving in open waters, weight lifting, racquetball, trekking and exploring nature. His knowledge and love for nature and conservation was a key asset to the Service, especially when he interpreted nature during presentations, interviews, nature walks and other educational activities.

For 15 years he conducted aerial surveys and telemetry for the Antillean manatee. He was an early supporter for the rehabilitation and rescue of manatees conducted by the Service, Puerto Rico Department of Natural and Environmental Resources, the Caribbean Stranding Network (known today as the Puerto Rico Center for Manatee Conservation) and the Puerto Rico Zoo.

His most significant work was devoted to the study and conservation of the roseate tern, conducting more than 20 years of uninterrupted census and nesting surveys. The information gathered through his research, allowed the Service to develop a Recovery Plan and long-term recovery strategies for the roseate tern in the Caribbean and the Northeast Region of the United States.

For the brown pelican, he collaborated with other recognized species experts by conducting aerial surveys, and nesting surveys since the 1990s. He actively promoted conservation for the most important pelican breeding colonies in Vieques and Guánica. He worked on predator eradication initiatives to safeguard the breeding habitat for the species in Puerto Rico and the U.S. Virgin Islands.

He was also involved in the response to the Deepwater Horizon Oil spill in the Gulf of Mexico by participating in aerial surveys to identify injured wildlife and helping develop the Natural Resources Damage Assessment for this incident.

Most recently Jorge authored the 90-day finding for the black-capped petrel, and as a recognized Service expert was providing technical assistance to Deepwater Horizon restoration planning effort.

Jorge graduated from the University of Puerto Rico, Mayaguez Campus with a bachelor's degree in biology. He completed a master's and doctoral degree in ecology and evolution from Rutgers in New Brunswick, New Jersey. He was a member of the American Ornithologists

Union, Association of Field Ornithologists, Waterbird Society, Cooper Ornithological Society, Society of Caribbean Ornithology, Sociedad Ornitológical de Puerto Rico, Caribbean Stranding Network and the Interagency Oceanaria Group.

Jorge will be deeply missed by the Service and the conservation community. □

Midwest

Erwin (Erv) L. Boeker passed away December 26, 2011, at the age of 91 after a three-year battle with cancer. After service as a pilot in World War II with the U.S. Navy and attaining a bachelor of science degree in zoology at Colorado State University, Erv spent three busy years as chief pilot for the Colorado Division of Wildlife. He then transferred to become a Fish and Wildlife Service refuge pilot/biologist in the Midwest Region from 1955 to 1958, becoming a research pilot/biologist with Denver Wildlife Research Center in 1958.

Erv made many important contributions to our field of knowledge about birds and other wildlife; notably whooping cranes, sandhill cranes, Merriam's turkeys, bald and golden eagles, Aleutian geese, peregrine falcons and black-footed ferrets. His career continued to grow after he retired from Service. He was hired by the National Audubon Society to conduct a multi-year study of bald eagles, working closely with the Native American community in Haines, Alaska. This critical conservation effort led to the formation of the Chilkat Bald Eagle Preserve. Well into his late 80s, Erv worked as a volunteer biologist with the Division of Migratory Bird Management, lending his expertise on crane and goose surveys. His unique personality and tireless dedication to conservation will be greatly missed. □

Southwest

Former Service biologist **John Peterson** died on July 28 in New Mexico. In December 1968, he graduated from Utah State University with a bachelor's degree in wildlife management. He then began his career with the U. S. Fish and Wildlife Service as a fish and wildlife biologist. Over the years, he was stationed in Bloomington, Indiana; Lebanon, Ohio; Washington, D.C.; and Albuquerque, New Mexico. He was field office supervisor for several years of the New Mexico Field Office in Albuquerque.

After retirement, he and wife Carolyn cared for foster teens. A few years ago, John was part of coalition of people who raised government funding to purchase a $2 million parcel of land that expanded the Albuquerque's East Mountain public open space area.

He served in various positions on the Sierra Vista Mutual Domestic Association board of directors, including president. SVMDA provides drinking water to Sierra Vista Estates.

He was also president of the Cedar Crest Mutual Domestic Water Consumers & Sewage Works Association, another company providing water to commercial businesses and homes.

Horses and riding were two of his passions, as was his interest in the Old West history.

For many years, John also enjoyed building and racing exotic sports cars.

John was a 13-year survivor of prostate cancer. He was cared at home with the help from Hospice de la Luz.

In lieu of flowers, please make a donation to the Trust for Public Land, 607 Cerrillos Road, Suite F1, Santa Fe, NM 87505 or to Hospice de la Luz, 3812 Academy Parkway North NE, Albuquerque, NM 87109. □

At the Mic

USFWS

National Fire Management Budget Coordinator Kathy Perez (right) discussed issues, challenges and accomplishments of Hispanic women at the 15th annual conference for the National Organization for Mexican American Rights (NOMAR) held in Denver in August. The conference theme was "Hispanic Americans: A Key Ingredient for America's Future." NCTC Director Jay Slack also spoke. The U.S. Fish and Wildlife Service co-sponsored the event with other federal agencies.

Fish & Wildlife News

USFWS-Public Affairs
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive
Room 330
Arlington, VA 22203

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

parting shot

Service employees James Rebholz and Sue McDonald "get their goose on" while working with burrowing owls at Umatilla Chemical Depot in Oregon. Service Land Management Research and Demonstration Areas (LMRD) biologists recently helped transfer 15 burrowing owls to Canada from Umatilla. Artificial burrows were installed at Umatilla a few years back to encourage the owls to nest, and the project has been successful enough that some owls could be sent to Canada, where they are listed as endangered. The Service considers them a Bird of Conservation Concern.

Fish & Wildlife News
Editor: Matthew Trott
Editorial advisor: Craig Rieben, Chief, Internal Communications
Art director: Jane Pellicciotto, Allegro Design

Submit articles and photographs to:
U.S. Fish and Wildlife Service
4401 N. Fairfax Drive, MS 332-A
Arlington, VA 22203
703/358-2512
Fax: 703/358 1930
E-mail: matthew_trott@fws.gov

Submission deadline:
Winter 2013: by October 21

Printed on recycled paper.