



# RefugeUpdate

National Wildlife Refuge System

[www.fws.gov/refuges](http://www.fws.gov/refuges)



*INSIDE: Tundra swans rest at the Hecla Waterfowl Production Area, which is part of Sand Lake Wetland Management District in South Dakota. WMDs and WPAs are vital to the National Wildlife Refuge System, particularly in the Upper Midwest. See Focus section. (Tom Koerner/USFWS)*

## Conservation Team Built With Geothermal Steam

By Bill O'Brian

**R**on Cole and staff are on the verge of launching an audacious idea that would go a long way toward easing the perennial water problems of the oldest national wildlife refuge established for waterfowl.

Cole is the project leader at Klamath Basin National Wildlife Refuge Complex in southern Oregon and northeastern California. In cooperation with Michael Noonan, a local green energy entrepreneur/organic farmer/conservationist, Cole and staff are analyzing a plan to build a small-but-efficient geothermal steam power plant on the southern edge of Lower Klamath National Wildlife Refuge.

Proceeds from energy produced by the plant, which is awaiting completion of an environmental assessment and formal approval of U.S. Fish and Wildlife Service leadership, would offset refuge power costs to move water for the benefit of wildlife, waterfowl in particular.

While putting such a facility on refuge land might seem incompatible with conservation, Cole explains that it will further the refuge's mission and assures that "the plant won't be built unless the conservation benefit to the refuge is clear."

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## Implementation Of Vision Is In High Gear



Progress comes in waves.

For *Conserving the Future*, this is high tide.

Working to meet spring and summer deadlines for final

products, *Conserving the Future* implementation teams are reviewing hundreds of comments as they finalize strategic plans on landscape conservation planning, national communications, community partnerships and other issues.

The Strategic Growth implementation team has completed a comprehensive assessment of the National Wildlife Refuge System's land acquisitions. The assessment shows that more than five million acres could still be purchased within acquisition

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# From the Director

## A Lasting Legacy

I recently came across an article my dad wrote for *The Nature Conservancy Magazine* in 1974, when he headed the Service's Albuquerque Regional Office Division of Realty. I was a high school senior.



Dan Ashe

The article, *Genesis of a National Wildlife Refuge*, tells about the work that went into establishing New Mexico's Sevilleta National Wildlife Refuge, at 220,000 acres still the largest

land donation in Service history.

My father calls Sevilleta "fascinating in its physiographic diversity, at least to this native easterner." He describes it as "a vast land of mountains, alluvial fans, piedmont bajadas, terraces, canyons, washes, arroyos, hills and ridges, sand dunes, and bosque lands."

He tells how overgrazing had hurt the lands and how they will "need help to

recover their former productiveness." He also talks about the partnership and "common objectives" with The Nature Conservancy, the Campbell Family Foundation and the Mary Flagler Cary Charitable Trust that resulted in the refuge.

I know Dad is intensely proud of Sevilleta, which these days attracts mule deer, pronghorns, black bear, lizards and many species of birds.

The article shows the Service and many conservation partners, like TNC, at their best as they negotiated—even on Christmas day—to complete the donation. Land with an estimated value of \$6 million to \$12 million was sold for \$500,000 to TNC, which conveyed it to the Service.

The article reminded me of our people in the Mountain-Prairie Region who recently worked with Louis Bacon on the Sangre de Cristo Conservation Area in Colorado. Mr. Bacon's donation of an easement on about 170,000

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# Chief's Corner

## A Race Against Time

This *Refuge Update* focuses on wetland management districts, one of the U.S. Fish and Wildlife Service's most innovative ideas ever. Many concepts of modern strategic



Jim Kurth

habitat conservation have their roots in the past 50 years of work in the Prairie Pothole Region.

We identified our conservation target: waterfowl. We understood the

challenge: habitat loss. We knew we had to work at a landscape scale to be successful. We recognized that working

lands in private ownership were a key. Over the years, we have purchased more than 700,000 acres of waterfowl production areas. They provide great duck nesting habitat and are places where people can enjoy hunting and other outdoor recreation. We enlarged our conservation footprint by purchasing more than 2.7 million acres of easements.

In 1986, the North American Waterfowl Management Plan put our efforts into sharper focus. It laid out population objectives that we could step down into habitat protection strategies. Over time, our Habitat and Population Evaluation Team (HAPET) scientists have used

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# Refuge Update

Ken Salazar  
Secretary  
Department of the  
Interior

Dan Ashe  
Director  
U.S. Fish and Wildlife  
Service

Jim Kurth  
Chief  
National Wildlife  
Refuge System

Martha Nudel  
Editor in Chief

Bill O'Brian  
Managing Editor

Address editorial  
inquiries to:  
Refuge Update  
USFWS-NWRS  
4401 North Fairfax Dr.,  
Room 634C  
Arlington, VA  
22203-1610  
Phone: 703-358-1858  
Fax: 703-358-2517  
E-mail:  
RefugeUpdate@fws.gov

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## FOCUS: Wetland Management Districts

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## Refuge System Awards

*Andrew French receives the Paul Kroegel Refuge Manager of the Year Award for his leadership in New England. Page 15*

# Hackmatack Refuge Established Outside Chicago

In one of his last actions before announcing he was leaving the Department of the Interior, Secretary Ken Salazar in January heralded the establishment of Hackmatack National Wildlife Refuge on the Illinois-Wisconsin border northwest of Chicago.

Hackmatack is the 561st national wildlife refuge in the National Wildlife Refuge System and the 10th refuge established during Salazar's four-year tenure as Secretary.

The refuge was formally established with the acquisition of a 12-acre habitat conservation easement donation from Openlands, a Chicago-based organization dedicated to the protection of the natural and open spaces of northeastern Illinois and the surrounding region.

Restoration of wetlands, prairie and oak savanna at Hackmatack Refuge will offer environmental education and conservation opportunities for the estimated 3.5 million people who live within 30 miles of it.

"Thanks to the vision of conservation leaders and organizations throughout the greater Chicago metropolitan area, Hackmatack will provide a way to connect children, families and all urban and suburban residents to nature and wildlife," said Illinois Gov. Pat Quinn.

The refuge will benefit a variety of wildlife and plants and their habitats. The refuge acquisition boundaries were formulated based on the soils, historic vegetation, watersheds, existing conservation areas, habitat requirements of desired wildlife species, public roads and comments received from the public. The refuge will link and expand existing conservation areas to benefit migratory birds, endangered species, and provide wildlife-dependent recreational opportunities.

Land conservation methods for four core areas, encompassing up to 11,200 acres in total, will include purchase from willing sellers, conservation easements, public-private initiatives and partnerships aimed at creating contiguous natural



*Glacial Park, which has long been considered an important open space in McHenry County, IL, is within the acquisition boundary of newly established Hackmatack National Wildlife Refuge. (Tina Shaw/USFWS)*

habitat. Conservation corridors that connect the core areas will be established primarily through use of partnership efforts and to a lesser degree through willing-seller purchase.

U.S. Fish and Wildlife Service Midwest Regional Director Tom Melius had words of praise for Openlands, the Illinois Department of Natural Resources, Wisconsin Department of Natural Resources, Friends of Hackmatack and the wider Hackmatack Planning Partnership.

"This truly collaborative effort underscores our commitment to pulling in the best science together with the best community support," Melius said. "Taken together, these components create a project far greater than the sum of its parts."

## Habitat for 109 Species

Hackmatack Refuge will provide habitat for 109 species of conservation concern, some of them federal and state threatened and endangered species. The species include 49 birds, five fishes, five mussels, one amphibian, two reptiles and 47 plants.

Salazar made the Hackmatack Refuge announcement at a plank-laying ceremony at Pelican Island Refuge in Florida. The ceremony recognized the six new refuges established in 2012,

including Swan Valley Conservation Area in Montana, which had not been announced previously.

That conservation area, which helps connect the Canadian Rockies with the central Rockies of Idaho and Wyoming, was established with an 80-acre conservation easement donation from The Nature Conservancy. Southwest of Glacier National Park, the conservation area offers the potential protection of 10,000 acres via easements and up to 1,000 acres in fee-title land adjacent to Swan River National Wildlife Refuge.

The conservation area will protect one of the last low-elevation, coniferous forest ecosystems in western Montana that remains undeveloped. The Swan Valley provides habitat for several trust species, including grizzly bear, gray wolf, wolverine, American marten and Canada lynx; migratory birds, such as harlequin duck, black tern and peregrine falcon; and native bull trout and westslope cutthroat trout.

The plank-laying ceremony also celebrated the 2012 renaming of Noxubee Refuge in honor of the late Sam Hamilton. Hamilton, a 30-plus-year veteran of the Service, was Director from September 2009 to February 2010. The northern Mississippi refuge is now Sam D. Hamilton Noxubee National Wildlife Refuge. 🦅

# In These Refuge Sandhills, Rule Is: Please Disturb

By Susan Morse

An icy wind rakes the sagebrush on a sandy knoll at Red Rock Lakes National Wildlife Refuge. The gusts remind you how harsh this mountain corridor of western Montana can be. But the rare sandhill ecosystem at your feet welcomes nature's beatings.

How much disturbance do these roughly 4,000 acres of sandhills need? What form should it take? How can the refuge provide it while protecting migratory birds and other wildlife?

Refuge biologists are conducting field studies over the next two or three years to find out. With The Nature Conservancy, the Bureau of Land Management and the University of Montana Western, they're measuring how birds and insects respond to various disturbances. They're analyzing the chemical makeup of the plasma and feathers of brewer's and vesper sparrows to "determine what [the birds] are eating ... and at what stages they're eating it," says refuge manager Bill West. "It's pretty amazing."

The survival of rare plant and animal species hangs on their efforts.

These include three invertebrates—the St. Anthony dune tiger beetle, the big sand tiger beetle and a ladybird beetle said to be the rarest in the country. There are also uncommon wildflowers: painted milkvetch, fendler cat's-eye and pale evening primrose.

"All these rare plant and invertebrate species rely on early seral habitat"—a first stage of ecological succession found in sand environments, says refuge biologist Kyle Cutting. "Early seral means the sand is actively moving; it's being blown about."

The refuge acquired these sandhill acres in 2007 from TNC after the nonprofit bought 7,000 acres from a private landowner. TNC kept 3,000 of the acres, to manage with BLM.

Today, the refuge sandhills are in late succession stage. Returning them to an



Sean Schroff, a field biologist at Red Rock Lakes National Wildlife Refuge, and Michelle Anderson, a University of Montana Western field ecologist, prepare sensors to monitor air and soil temperature changes during a study evaluating a sandhill ecosystem at the southwestern Montana refuge. (Kyle Cutting/USFWS)

earlier stage is tricky. Historically, fire and bison grazing shaped the sandhills, but neither is an option for the refuge. Concern for sage-grouse precludes large-scale prescribed fire because the ground-dwelling bird (a candidate for endangered species status) is dependent on sagebrush. "Basin big sagebrush—the predominant sagebrush in the refuge sandhills—takes between 20 to 55 years to recover after fire," says Cutting.

Bison grazing carries its own issues. Citing damage to fences and livestock, neighboring ranchers oppose free-roaming bison, some of which carry brucellosis, which can infect livestock.

That leaves one option: cattle grazing. Red Rock Lakes Refuge uses it outside the sandhills. But the refuge wants more evidence the sandhills will benefit before it applies its standard prescription—one graze per area every fourth year. The study is providing it.

Biological sampling, says Cutting, has shown higher levels of insects and bird forage in the off-refuge western sandhills—"the area that's been intensively managed with grazing and fire"—than in less disturbed refuge

acreage to the east. Bird counts are comparable throughout. "So that gives the refuge reassurance," says Cutting. "It could justify intensive targeted grazing in the eastern portion."

Refuge manager West is used to convincing skeptics of grazing's benefits. Unlike the Forest Service or BLM, the refuge does not give private landowners the *right* to graze on public land. "We use grazing only in a prescriptive way. There's no expectation that because we let you do it this year, you can do it next year."

"Some people think letting the land lay idle is better management," says West. "It's not." Outside the sandhills, "we see no appreciable wildlife response improvement after three years of rest. So that's the point at which we go back in" and graze.

Next up for study: how bird reproductive success compares on intensely managed versus less managed sandhill acres. If there's no marked difference, look for grazing to help re-create early seral habitat on the refuge. 

*Susan Morse is a writer-editor in the Refuge System Branch of Communications.*

# A New Way to Count Whooping Cranes

By Brad Strobel

For six decades, the U.S. Fish and Wildlife Service has monitored the population of the last wild migratory flock of whooping cranes primarily via an annual census. Now, Aransas National Wildlife Refuge and the National Wildlife Refuge System's Inventory and Monitoring (I&M) program are devising a way to improve that count.

The flock of endangered cranes migrates between nesting territory near Canada's Wood Buffalo National Park and wintering territory near Aransas Refuge on the Gulf Coast of Texas.

In 1950, the first whooping crane aerial census found 31 cranes, all wintering within 20,000 acres of salt marsh at Aransas Refuge. Since then, the population has grown to almost 300 birds and expanded onto 140,000 acres of salt marsh, some refuge land, some privately owned. Technological advances—including GPS (Global Positioning System) and high-resolution satellite images—have been huge. Yet the crane-monitoring method has changed little.

So, refuge and I&M staffs are developing a formal protocol for monitoring wintering whooping cranes. The protocol will describe the survey's objectives, sampling design, field methods and data analysis procedures. It will be submitted soon for professional peer review to ensure that the methods are scientifically defensible and professionally valuable.

Although still in draft stage, the protocol updates the method. Previously, one observer flew over the wintering grounds and marked the location of cranes on paper maps. The plane's flight paths often were different, which resulted in some areas being searched more thoroughly than others. The new method will use two observers searching out opposite sides of the aircraft while navigating along evenly spaced transects. GPS-equipped laptops will record the cranes' locations digitally on high-resolution satellite images. This will improve data collection consistency.



Aransas National Wildlife Refuge and the National Wildlife Refuge System's Inventory and Monitoring program are using the latest technology to develop a new method of counting wintering whooping cranes. (Klaus Nigge)

The protocol also updates how we analyze the data, so we can be confident in the results—which is vital to the Service mission and in line with the *Conserving the Future* vision's call for sound science. The previous method was coined a census—because it was assumed that the population and search area were small enough to count each bird without error. But as the population grew, the chances of counting each bird decreased, and the census's design did not allow the Service to gauge reliability.

The draft protocol includes a survey method called distance sampling. It is useful even when some whooping cranes are missed. For more than 30 years, distance sampling has been successful for counting wildlife from whales to deer. By measuring the distance each group of cranes is from the aircraft and using distance sampling, refuge staff members can credibly estimate the number of cranes present, even when they don't see them all.

The refuge and I&M staffs thoroughly tested a distance-sampling approach before trying it with live cranes. They analyzed data from previous surveys

and learned that nearly 95 percent of the whooping cranes recorded were less than 500 meters from the plane. They flew experimental surveys and learned the new method could accurately estimate the number of crane decoys present. They tested conventional distance sampling against a cutting-edge modification and learned that better results were obtained by incorporating crane locations and habitat information into the analysis.

More than 60 years of Service census data have taught biologists a lot about where the whooping crane population has been. The new method, which retains much of the old, now provides statistically defensible estimates of abundance, while providing a better understanding of how whooping cranes use habitats. These innovations help the Service continue recovery of North America's largest endangered bird by informing conservation planning, land protection efforts and policy decisions. 🦢

Brad Strobel is a wildlife biologist—until recently at Aransas National Wildlife Refuge in Texas and now at Necedah Refuge in Wisconsin.

# Milestone at Upper Ouachita Refuge

By Ann Simonelli and Stacy Shelton

The Conservation Fund has achieved two important milestones—the planting of its two millionth tree as part of its voluntary carbon offset program, Go Zero, and a total of one million trees in the ground at Upper Ouachita National Wildlife Refuge in Louisiana. All were made possible via private donations.

Since 2010, donations from hundreds of thousands of individuals, together with gifts from leading companies, have been put to work at Upper Ouachita Refuge to restore nearly 3,000 acres with native seedlings. As part of its “Plant One for Ouachita” campaign, The Conservation Fund oversaw two plantings at the refuge last December, when the milestones were reached. Among the types of trees planted then were sweetgum, overcup oak, bitter pecan, nuttall oak, willow oak and sweet pecan.

Forestland once blanketed the 46,500-acre refuge, providing shelter for ducks and bears and slowing floodwaters for communities downstream. In the 1960s, when food prices began to rise, lush forests and waterways throughout Louisiana—including the Upper Ouachita Refuge area—were slashed and burned, leaving behind a drastically altered landscape.

The refuge is one of the largest floodplain restoration projects in the nation. The Conservation Fund, together with the U.S. Fish and Wildlife Service and others, is aiming to repair the Ouachita River’s natural hydrology and restore much of the native forestland that once covered the region. As they grow, the new forests will provide cleaner air, cleaner water for those downstream—including the cities of Monroe and West Monroe, LA—and more places to roam for threatened species like the Louisiana black bear.

“Our partnership with The Conservation Fund’s Go Zero program has been ground-breaking,” Service Southeast Regional Director Cindy Dohner said. The Service alone “could not have



*The Conservation Fund’s voluntary carbon offset program, Go Zero, has planted one million trees at Upper Ouachita National Wildlife Refuge in Louisiana. (Sean Gardner)*

achieved what this public-private partnership has been able to accomplish. Together, we are returning significant portions of the Lower Mississippi Valley to its native state, conserving fish and wildlife, and fighting climate change. We are extremely grateful to The Conservation Fund and its donors for their work to achieve these milestones. Now let’s push ahead to another million-tree mark.”

“Over the next century, these trees will provide food and habitat for hundreds of thousands of waterfowl and other migratory birds and wildlife,” said Upper Ouachita Refuge manager Joe McGowan. “It’s a partnership that has greatly improved our wetlands restoration efforts here. With the help of The Conservation Fund and its donors, Upper Ouachita will continue to provide some of the very best wetlands for wildlife and the American people.”

The refuge, established in 1978, is bisected by the Ouachita River and consists of upland pine-hardwood and bottomland hardwood forest; agriculture, moist-soil wetlands, and open water. The refuge provides excellent wintering habitat for tens of thousands of ducks

and geese. The endangered red-cockaded woodpecker and the Louisiana black bear are found there. Other wildlife species that make the refuge home include alligators, deer, turkey, squirrels, bald eagles and beavers.

“We are incredibly proud of our donors and honored to work with the Service to restore special places in America like Upper Ouachita Refuge,” said Go Zero director Jena Thompson Meredith. “Its biologists and foresters are the very best stewards we could ask for to care for these new trees.”

To date, The Conservation Fund’s reforestation-based carbon programs, including Go Zero, have helped to protect and restore more than 26,000 acres nationwide with eight million trees that will trap an estimated nine million tons of carbon dioxide as the forests mature.



*Ann Simonelli is a media relations manager for The Conservation Fund. Stacy Shelton is a public affairs specialist in the Service Southeast Region office in Atlanta.*

# A “Celebrity” Puts the Spotlight on Colusa Refuge

By Mike Peters

**F**or two consecutive winters, an exotic avian visitor from Asia has had a strong influence on Colusa National Wildlife Refuge and the northern California communities surrounding it.

On Dec. 8, 2011, a Sacramento birding group spotted a beautiful male falcated duck resting conveniently close to a refuge wildlife observation deck. Falcated ducks have been sighted in North America outside Alaska just a few times. They breed in southeast Russia, northern Mongolia, China and Japan. Their global population is about 90,000. Most spend the non-breeding season in China.

Soon, because falcated duck sightings are so rare, birders from across the country migrated to Colusa Refuge. Some drove all night to catch a glimpse. During the duck’s winter 2011-12 stay the refuge—which normally receives about 15,000 visitors a year—saw 10,000 to 12,000 visitors in two months.

We began calling him our “celebrity duck” because of the media attention and phone calls he generated. We created an overflow parking area. We enlisted more volunteers to answer questions and help manage crowds on the deck.

## Uptick in Business

Small towns nearby noticed an uptick in business. Community leaders and owners of local hotels, motels and restaurants were proud of the refuge’s celebrity bird.

During that first stay, the duck often swam and rested with American widgeon, and he seemed to have a strong attraction to one particular female widgeon. He was not seen on the refuge after Feb. 10, which is when many waterfowl migrate northward.

Almost immediately after the falcated duck left, there was speculation about his future travels. Because of his affinity for the widgeon, I believe that he migrated with them and spent the summer in western Canada or Alaska. A question everybody asked: Would he return to Colusa Refuge in winter 2012-13?



*The rare presence of an Asian falcated duck, below, for two winters in a row has made Colusa National Wildlife Refuge famous in global birding circles. Even when the duck is not around, above, the northern California refuge is a great place for birding and photography. (Mike Peters/USFWS)*

I believed there was a good chance he would come back to the same pond he frequented in winter 2011-12 because site fidelity is common among migratory birds. Rare birds often re-use the same site multiple years because, it is thought, they know good feeding areas and safe locations where they can avoid danger.

So, over the summer—in addition to normal maintenance to increase productivity of wetland units—we improved the three-mile auto tour route. We constructed several vehicle pullouts, added gravel and widened a portion. In early fall, we refilled wetlands with water to provide habitat for the migratory waterfowl that arrive by the thousands and stay through winter. Bird and visitor numbers increased. Some visitors were return customers who liked the changes to the auto tour route and said they had “discovered” the refuge the previous winter when they came to see the celebrity duck.

Then, on Dec. 2, 2012, he returned. While enjoying the sight and sound of white-fronted geese and talking with new volunteers on the viewing deck, I scanned the pond through my binoculars. I saw the falcated duck sleeping on the same island that he had favored the previous winter.



Although the falcated duck was last seen on the refuge on Dec. 22, 2012, in January 2013 birders were still traveling to the refuge from as far away as the East Coast looking for him. Fortunately, the thousands of Ross’s and white-fronted geese and other migratory waterfowl that winter at Colusa Refuge provided great birding and photography opportunities for those duck chasers.

Will our celebrity duck return next winter? Who knows, but I’m sure many visitors will be scanning the ponds next fall with hopes that he does. 🦆

*Mike Peters is manager at Colusa and Sutter National Wildlife Refuges in California.*

## “Jewels on the Prairie”

By Bill O'Brian

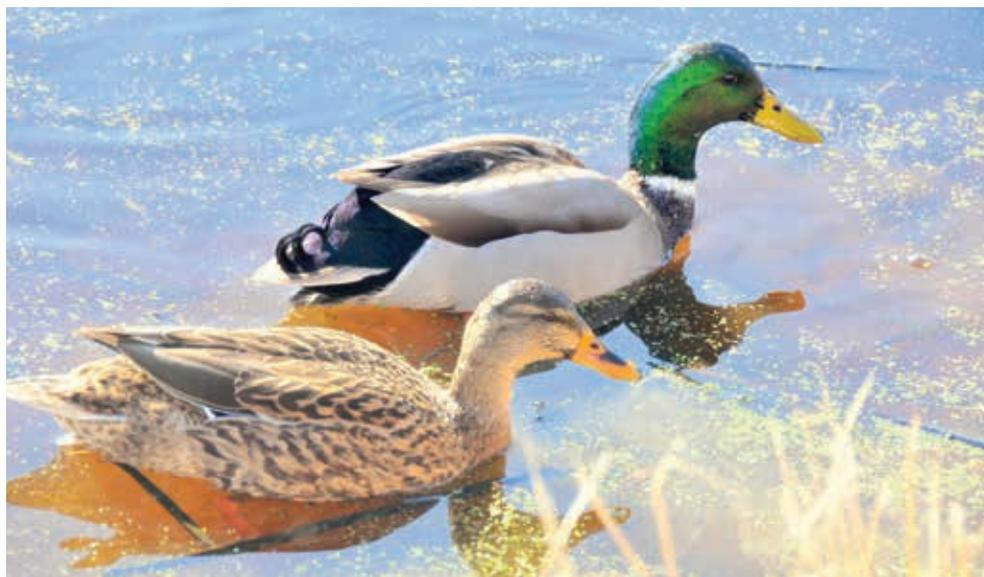
Last year, Ashley Dang, a 22-year-old Student Conservation Association intern at the Prairie Wetlands Learning Center in Minnesota, was asked to succinctly describe wetland management districts and waterfowl production areas.

Here's what she wrote:

*The wetlands and surrounding uplands of the American Midwest are places unlike any other. Here, waterfowl glide gracefully across the water; the earthy smell of wetland reeds and grasses drifts through the air; and the clear calls of migrating birds echo overhead.*

*Areas like these have been designated as waterfowl production areas ... separate tracts of land set aside by the federal government to restore and protect vital nesting and breeding wetland habitat for millions of waterfowl. WPAs are grouped into administrative units called wetland management districts, which manage nearby WPAs and cooperate with local landowners to ensure that these vibrant pockets of life continue to thrive ...*

*These “jewels on the prairie” are part of the National Wildlife Refuge System,*



*Scenes from Sand Lake Wetland Management District in northeastern South Dakota. Clockwise from above: a mallard pair rests at Swanson Waterfowl Production Area; avocets feed at Spring Lake WPA; and a northern shoveler takes flight at Long Lake WPA. (Tom Koerner/USFWS)*

*a system of lands where wildlife comes first. It's not just wildlife that loves waterfowl production areas; these lands are open to certain types of wildlife-dependent recreation.*

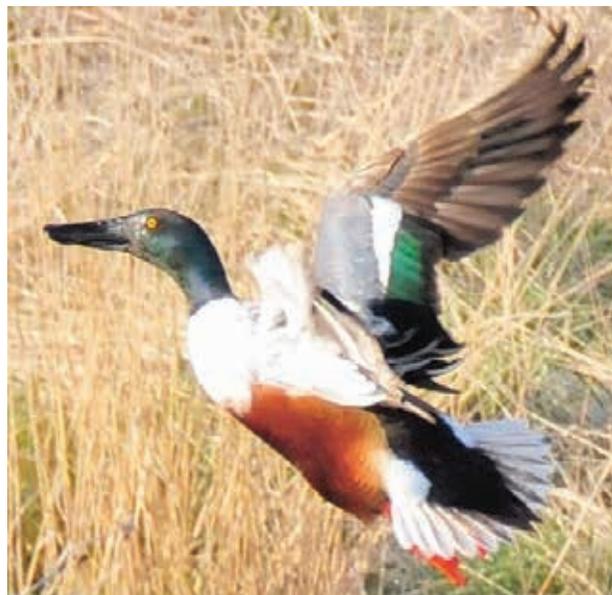
Jewels, indeed, especially in an era when prairie conversion to farmland is acute.

There are 38 WMDs, comprising thousands of WPAs, across the Midwest or Prairie Pothole Region (aka “America’s duck factory”).

Typical WMD land falls into one of three categories: fee-title land owned by the Service; conservation easement land to which a private owner retains ownership; and land conserved under

### Facts & Figures

- There are 38 wetland management districts in the Refuge System. They are made up of thousands of waterfowl production areas.
- With more than 36,000 separate fee and permanent easement tracts covering nearly three million acres, WPAs account for 18 percent of Refuge System lands in the Lower 48 states.
- More than 95 percent of WPAs are in North Dakota, South Dakota, Minnesota, Iowa and Montana.
- All but two WPAs are in the Midwest or Prairie Pothole Region. The geographical outliers are Oxford Slough WPA in southeastern Idaho, which is managed by Bear Lake National Wildlife Refuge, and Carlton Pond WPA in Maine, managed by Sunhaze Meadows Refuge.
- More information: <http://www.fws.gov/refuges/smallWetlands>.





a voluntary agreement with a private owner via the Service's Partners for Fish and Wildlife Program.

"Wetland management districts are the first and, I think, best examples of strategic habitat conservation and landscape-level planning in the Fish and Wildlife Service," says Midwest Region refuge supervisor Jim Leach.

WMDs often are overshadowed within the Refuge System.

"I imagine that if you're not from the Upper Midwest, WMDs and WPAs mean nothing to you. You can't know how important they are," says Larry Martin, the manager at Minnesota's Fergus Falls Wetland Management District, which comprises 217 WPAs totaling more than 44,000 acres.

A WMD differs from a refuge in several ways, Leach and Martin point out. A refuge generally is one contiguous land base with one border; one set of neighbors and, in the Lower 48 states, relatively short internal distances. A WMD is more cumbersome. A WMD includes fragmented acreage in many WPA units scattered across numerous counties and townships. A WMD must work with hundreds of landowners and neighbors. A WMD has more boundary, enforcement and trespass issues. The driving time from a WMD's headquarters to a given WPA can be hours.

"The work of managing a traditional wetland management district, I believe—



and this is a generalization—is more complex than managing a traditional refuge," says Leach.

Another important distinction is that, whereas refuges are closed to many public-use activities unless specifically opened, WPAs are open to public recreation, including hunting, fishing, trapping, photography, environmental education and interpretation, unless specifically closed for a particular reason. An estimated 800,000 people visit WPAs annually.

"WPAs are busy," says Martin. "On opening day of waterfowl hunting season, hunters sometimes sleep in their vehicle overnight to get to the WPA they want."

Beyond providing recreation for people and habitat for ducks, wetland birds,

grassland birds, raptors and shorebirds, WPAs are important to the Upper Midwest in other ways. Their wetlands and grasslands serve as absorbent sponges that reduce runoff and help in flood control. Their vegetation helps reduce carbon emissions.

But, to Martin—who has worked for the Service for 33 years and as a manager at WMDs for more than 12 years—the value of a WPA, especially at dawn, is more than all of that.

"When I can go out and hear a bobolink sing, it's exciting," he says. "It sort of transports you back to what it must have been like before the settlers first came."



## The SWAP Is Vital

Wetland management districts and waterfowl production areas exist largely because of the Small Wetland Acquisition Program, which was created in 1958 via an amendment to the 1934 Migratory Bird Hunting Stamp Act.

"This legislation allowed the Service to purchase WPAs. So, without the SWAP, there would be no WMDs or WPAs," says Fergus Falls WMD manager Larry Martin. "As to conservation in the Upper Midwest, there is no other conservation program like it."

Relying heavily on survey data provided by Service Habitat and Population Evaluation Team (HAPET) offices in

Bismarck, ND, and Fergus Falls, MN, SWAP uses funds from the sale of Migratory Bird Hunting Stamps (Duck Stamps) to acquire land and easements that permanently protect some of the most threatened and productive migratory bird habitat in the country.

"The SWAP has protected nearly three million acres of habitat in its 54 years of existence, but we have a long way to go," says Martin. "To sustain the Prairie Pothole Region bird populations, the Service's goal is to permanently protect an additional 12 million acres of high-priority grasslands and wetlands."

# ... Wetland Management Districts— Pooling Efforts—and Data—to Save the Prairie

By Heather Dewar

**T**he wetland management districts and national wildlife refuges of the northern Great Plains are bastions of America's prairie heritage—relics of a landscape some consider the nation's most endangered. Many were acquired from 1930 to 1960, when managers thought the best way to conserve land was to leave it alone. But in the modern era, idle land quickly can become degraded.

An active approach is taking shape on 20 WMDs and refuges in Montana, North Dakota, South Dakota and Minnesota, where biologists and managers are collaborating to apply real-time research to a landscape-scale management strategy.

The goal of the five-year-old Native Prairie Adaptive Management program (NPAM) is to find the best techniques to stem an advancing tide of Kentucky bluegrass and smooth brome grass. The invasive grasses are crowding out native grasses, eliminating habitat for native butterflies and birds, and perhaps rippling up the food chain.

"I don't think we have a prairie left that you could call pristine," says Sara Vacek, wildlife biologist at 52,000-acre Morris WMD in Minnesota. NPAM coordinator Cami Dixon says it is unlikely pristine prairie exists anywhere in the four states.

Dixon, an inventory and monitoring regional zone biologist based in North Dakota, has the data to back that up—115,000 field observations, taken at the same locations yearly on the 20 participating WMDs and refuges.

The resulting database tracks changes in the plant community and guides management of each unit. It's a homegrown experiment in adaptive management, inspired by U. S. Fish and Wildlife Service staffers who suspected invasive grasses were spreading, did field research that confirmed it, and developed the modeling and management strategy

with help from the U.S. Geological Survey and others.

In the early 2000s, managers and biologists recognized "all of us had the same problem" with invasive grasses, says Todd Frerichs, manager at Audubon National Wildlife Refuge Complex in North Dakota. "All of us were too short-staffed to really aggressively manage it and monitor it, so we decided to pool our efforts."

Here's how it works: Each site manager selects a group of three or more study plots. Biologists lay out transects, one per five acres, on each plot. Every summer they walk the transects, stopping at 50 preset points to note the plants. "It's very quick," says Vacek. "We can get 20 or 30 transects done in a day."

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***"Prairie doesn't like to be idle. It likes to be burned or grazed, because that's how it evolved."***

The observations go into a computer model that produces a recommendation for each plot: burn, graze or rest. Managers follow through; the results are monitored the next summer and go back into the model to refine it.

So far, no strategy is obviously best, but one thing is clear, Dixon says: "Prairie



Arrowwood Wetland Management District manager Paul Halko and Native Prairie Adaptive Management program (NPAM) coordinator Cami Dixon record plant life in a prairie transect in North Dakota. U.S. Fish and Wildlife Service staff members at 20 Refuge System units make 115,000 field observations annually as part of NPAM's inventory and monitoring effort. (USFWS)

doesn't like to be idle. It likes to be burned or grazed, because that's how it evolved."

Native grasses evolved with grazing bison and elk, which defoliated the plants, spread seeds, pushed them into the soil with their hoofs, and fertilized them with droppings. Frequent fires halted the spread of shrubs and trees.

By mimicking natural processes, managers hope to give native grasses an edge. Timing is critical, and tricky, because growth patterns between natives and invaders seem similar. Some units are trying variations—burning twice per season, combining burning with cattle grazing, or varying grazing intensity. They use NPAM's monitoring to track the outcome.

"It's making us be more aggressive with our management, which is good because that's the way we need to be going," Frerichs says.

*continued on pg 14*



Campers Noah Simpson and Jenna Sypniewski release ducks during a banding lesson at Woodie Camp, a weeklong sleepover gathering held each August at Fergus Falls Wetland Management District's Prairie Wetlands Learning Center. (Teresa Schlieman/Minnesota Waterfowl Association)

## “Waterfowl 365” at Fergus Falls

By Bill O'Brian

**M**ore than 800,000 people visit waterfowl production areas annually. Across the Prairie Pothole Region, WPAs are epicenters of outdoor recreation—few more so than western Minnesota's Townsend WPA each summer.

There, every August since 1989, the Minnesota Waterfowl Association, the Prairie Wetlands Learning Center and Fergus Falls Wetland Management District have co-hosted a weeklong sleepover gathering known as Woodie Camp.

Woodie Camp is designed to help foster the next generation of Minnesota conservationists by teaching 50 youth (ages 13-15) the ins and outs of nature journaling, outdoor photography, waterfowl identification, shooting skills, waterfowl calling, wild game preparation, boat safety, gun care and

other aspects of being an enthusiastic, responsible waterfowler.

Jessica Dowler, a wildlife biologist at Glacial Ridge National Wildlife Refuge in northern Minnesota, is a Woodie Camp alumna. She attended as a 13-year-old in 1994, when the camp was about half its current size.

*“We hope that waterfowl hunting is the gateway into a yearlong and lifetime journey into nature.”*

“I give a lot of credit to Woodie Camp for where I am today,” she says. “The shining moment for me was that I won top gun. It was pretty cool to beat out 19 high school boys in the shooting.”

The intricacies of shooting and gun safety are a big part of Woodie Camp, but so are the fundamentals of conservation. The week features lessons about wetland ecology, waterfowl ecology, prairie ecology, aquatic plants, wetland invertebrates and duck banding.

Last year volunteer instructor Andy Thill coined a phrase that defines Woodie Camp's mind-set—“waterfowl 365.”

“We hope that waterfowl hunting is the gateway into a yearlong and lifetime journey into nature,” says Matt Conner, a visitor services manager at the Prairie Wetlands Learning Center. “During the course of the week campers are taught the ‘how to’ of waterfowl hunting, but the passion of ‘why to’ shared by the instructors is what makes this a truly special week.”

Woodie Camp, which costs about \$30,000 to conduct annually, is free of charge to the campers, thanks to contributions

*continued on pg 14*

# Wetland Management Districts — Friends of St. Croix WMD: “Dynamic ... and Caring”

By Karen Leggett

**T**he Friends of the St. Croix Wetland Management District is a four-year-old organization with fewer than two dozen regularly active members. Yet the group harnessed the energy of 468 volunteers over a one-year period in 2011-12 and chalked up a long list of accomplishments.

How is such a small group of Friends so successful?

“They’re having a good time, and they are doing something good for natural resources,” says Tom Kerr, who is the manager at the wetland management district in west-central Wisconsin. “They have an incredible network of people they know. That’s how we hear about problems but also get the support we need in the community.”

Friends president Brian Headlee believes open communication with the district’s staff is critical to the partnership’s success: “The WMD wants our buy-in. We know the land acquisition plans, we understand prescribed burns, and we relate to the community.”

## “Letting Us Use the Tools”

Greg Scheder is a particularly active member who wanted his Cub Scout pack to work on a conservation service project two years ago. District biologist Chris Trosen needed help removing invasive species. “Who better than a bunch of eight- to 10-year-old boys to help with that?” says Scheder. A result was that 50 people came to the first Conservation Day of Service in 2010.

The following year, Scheder persuaded the Boy Scouts to support a Conservation Day on the WPA (waterfowl production area), and more than 400 Scouts and family members turned out to help clear an oak savanna.

The best part for 11-year-old Will Scheder? “Letting us use the tools to cut down the trees and bushes.”



Tracy Ronnander, a range technician at St. Croix Wetland Management District in Wisconsin, briefs Boy Scouts at Conservation Day on the WPA in 2011. (Tina Shaw/USFWS)

## Students Plug Away

Sixty-five people showed up at an annual Friends and Neighbors Night Out, asking about tree removal, controlled burning and prairie restoration at the Prairie Flats South Waterfowl Production Area. District staff learned that one landowner wanted to restore native prairie on his property.

At the same event, high school principal Jeff Moberg expressed interest in a partnership. Over the past two years, his students have produced thousands of plugs from local seeds germinated in the school’s greenhouse. With assistance from WMD staff and half a dozen Friends, students plant the plugs to help restore prairie. This year, students are growing lupine, which is crucial for the endangered Karner blue butterfly and other butterflies.

“Caring for the plants in the greenhouse is a great lesson in responsibility and problem-solving,” says agriculture teacher Rachel Sauvola.

## Auto Tour Birding Guide

With a National Fish and Wildlife Foundation grant and support from

the Wisconsin Department of Natural Resources, the Friends also worked with Trosen to produce an auto tour birding guide.

“It’s a great example of local partners pulling together to promote the importance of these public lands for many species of non-game birds,” says Trosen.

The guide identifies common bird species, explains the conservation goal of restoring prairies, wetlands and oak savanna, and encourages visitors to volunteer, join the Friends or buy a Duck Stamp.

For its efforts, the Friends of the St. Croix Wetland Management District won a 2012 Department of the Interior Take Pride in America Award in the nonprofit group category.

“We’re greatly blessed with a dynamic group of fairly intense and caring people,” says Headlee. “Everyone has unique talents, and everyone is a resource.”

*Karen Leggett is a writer-editor in the Refuge System Branch of Communications.*



## Easement Enforcement Eyes in the Sky

By John Pancake

**U.S.** Fish and Wildlife Service pilots Brian Lubinski and James Ward spend hundreds of hours every year patrolling the prairie.

Ward, who flew for the Bureau of Land Management in Utah before joining the Service's wetland acquisition office in Huron, SD, likes to say he traded the "purple mountain majesties for the amber waves of grain."

Tucked into those amber waves of grain are countless prairie potholes—little ponds, marshes and lakes that ancient glaciers created.

The Service protects thousands of these spots by paying landowners a lump sum to preserve them permanently. The easements mean these wetlands can't be burned, drained, ditched or filled, although they may be farmed if they dry up naturally. Lubinski and Ward fly over to make sure the agreements are honored.

Easements cover about 1.5 million acres of wetlands in the Upper Midwest, many in Refuge System wetland management districts. Duck Stamps purchased by hunters and other conservationists are an important source of money to finance the easements, which protect habitat for geese, swans, cranes and many species of ducks—including mallards, blue-winged teal, green-winged teal, goldeneyes, hooded mergansers, gadwall and pintails.

Lubinski and Ward's work has grown more important as grain and soybean prices have soared and farmers are tempted to squeeze extra crops onto protected wetlands. Climate change may have also prolonged dry spells that make it easier to get heavy ditch diggers into marshes.

New technology is making monitoring cheaper, faster, easier and safer. Service officers combine digital photography with satellite positioning and GIS (geographic

information system) tools to capture and analyze information in new ways.

Lubinski, a wildlife biologist/pilot based in the Midwest Region office in Bloomington, MN, says he used to fly with two officers who used paper maps and visible landmarks to find easements. Now he flies alone, navigating with GPS (global positioning system) and a computer programmed with a flight plan that takes the guesswork out of his route.

Technology also makes it possible to survey the easements from a higher, and therefore safer, altitude. His digital photos link to GPS technology that can find exactly where every pixel is. Special software enables officers on the ground to scrutinize anomalies. Officers also can check photos from previous years to detect changes.

Lubinski flies his twin-engine Partenavia Observer over his area in the fall. He finds potential problems on 5 to 10 percent. When officers find what looks like an easement violation, they first check the records to see if a special exception has been granted. Then they investigate the area and visit the landowner. When biologist Lubinski has enforcement questions, he contacts Midwest Region refuge zone officer Brent Taylor.

Ward, a federal wildlife officer/pilot, goes on many of these visits himself when



*Conservation easements cover about 1.5 million acres of wetlands in the Prairie Pothole Region of the Upper Midwest, many in National Wildlife Refuge System wetland management districts. Fish and Wildlife Service Mountain-Prairie Region federal wildlife officer/pilot James Ward and Midwest Region wildlife biologist/pilot Brian Lubinski regularly take to the sky to help enforce the easements. (Chuck Traxler/USFWS)*

he's not flying his Cessna 182. Though the encounters can get confrontational, complaints are usually resolved voluntarily. The landowner agrees to a restoration timetable, and Service officers help make sure everything is done right the first time.

Every year a few cases are turned over to the Justice Department, but Service officers say the goal is better wetlands, not victories in court.

The technology they use is changing quickly. Service officers have tried ground-penetrating radar that can help detect underground drainage work. And Jeffrey Lucas, law enforcement representative for the easement enforcement team at Refuge System headquarters, says the Service is investigating whether a four-pound unmanned aerial vehicle—that is, a drone—could do some of the aerial surveys in the future. 🦋

*John Pancake is a freelance writer who lives in Goshen Pass, VA.*

## Pooling Efforts — from page 10



A wild lily on the prairie of North Dakota. (Cami Dixon/USFWS)

Participants hope NPAM will identify strategies that work on a landscape level. And because NPAM is run by staffers, not graduate students whose research is usually shorter term, it can evolve as conditions change.

“We have no end date in mind,” Vacek says. “We’re not going to stop managing grasslands, so it could go on forever.”

*Heather Dewar is a Maryland-based science writer who formerly worked in the Refuge System Branch of Communications.*

## Implementation of Vision Is in High Gear — from page 1

boundaries of existing wildlife refuges. By some estimates, such acquisitions could take 100 years to complete at current funding levels. Looking forward, the team suggests that Refuge System land protection goals should be directed at priority conservation targets, with positive impacts within and beyond refuge boundaries.

The team’s work has resulted in a draft strategic growth policy, now being considered by the U.S. Fish and Wildlife Service director and his leadership team. The policy would sharpen the Refuge System’s focus so lands are added effectively and strategically.

Among other recent actions:

- *Conserving the Future* has brought forth the first major rethinking of the Friends Mentoring program in the program’s 15-year history.

## “Waterfowl 365” at Fergus Falls — from page 11

from Minnesota Waterfowl Association members, partners and others. But each year there are about 20 more camp applicants than spots available. So, attendees are selected based on a why-I-want-to-go-to-Woodie-Camp essay.

The 35 to 40 instructors who volunteer each year are vital to the camp’s success and low cost, says waterfowl association executive director Brad Nylin. “Some are there to teach one class one day,” he says. “Many are there the entire week and help with everything.”

The main role of the U.S. Fish and Wildlife Service is to host the camp at the Prairie Wetlands Learning Center’s dorm facilities, says Conner. The Minnesota Waterfowl Association “arrives with the camp planned and executes the week with military precision.”

While precise conservation lessons and messages are hallmarks of Woodie Camp, so is fun. The week includes a competitive team tournament in which skills are tested, scavenger hunts,

orienteeing, decoy painting, campfires, conservation quizzes and even a wild game cooking contest a la the Food Network’s “Iron Chef” series.

Still, waterfowl hunting is at the camp’s core, says visitor services manager Conner, who is an instructor each summer.

“Hunting is a passion,” he says. “Like any passion, it can’t always be scientifically explained. When asked ‘Why do you hunt?’ some hunters are compelled to speak about population management or economic impacts of hunting. But what I hope Woodie Campers learn is it is okay to be honest with themselves and others as to why they are hunters. When the alarm goes off at 3:30 a.m., and it is sleeting outside with 20 mph winds, we don’t think to ourselves, ‘I need to do my part for species management and economic stimulus.’ We think to ourselves, ‘The ducks will be flying today!’ ”

- The Communications implementation team expects a revised version of the draft strategic plan will be available in April for more public comment.
- The Urban Wildlife Refuge Initiative implementation team has received scores of Service proposals for creating an urban presence in 10 diverse communities that don’t now have a nearby wildlife refuge. “From a first reading of the proposals, we can see that people were innovative, they were thinking outside the box, striving to reach people who hadn’t been introduced to wildlife refuges early in their lives,” said team co-chair Marcia Pradines.

At the same time, planning for an “urban summit” workshop is in high gear. About 150 invitations are expected to be extended for the training at the National Conservation Training Center in Shepherdstown, WV, Sept. 23-25.

Those attending will include Service staff working in or near urban areas and those who want to build stronger programs to reach this segment of the nation. The workshop will be a chance to hear about the work of the urban team, which has, among other things, developed standards of excellence for wildlife refuges working in urban areas and researched ways to reach new audiences.

In recent weeks, dozens of names for the urban initiative were proposed on the America’s Wildlife Facebook page. Among them: Natural Neighbors, Habitat for Urbanity, and Wildscapes: National Wildlife Refuges of America’s Cities. Votes are being tallied now.

To keep abreast of *Conserving the Future* news, go to <http://AmericasWildlife.org>, where you can find quarterly progress reports and more information.



Jackie Jacobson received the Employee of the Year Award for her work as visitor services manager at Audubon National Wildlife Refuge in North Dakota. Andrew French received the Paul Kroegel Refuge Manager of the Year Award for this leadership at Silvio O. Conte National Fish and Wildlife Refuge and Stewart B. McKinney and John Hay National Wildlife Refuges in New England. (USFWS)

## French Honored as Refuge Manager of the Year

The National Wildlife Refuge Association and the National Fish and Wildlife Foundation have honored three individuals and a Friends group with 2013 National Wildlife Refuge System awards.

**Andrew C. French** received the Paul Kroegel Refuge Manager of the Year Award.

French was cited for innovation and leadership that resulted in the designation of the Connecticut River watershed as the first national blueway. As the manager at Silvio O. Conte National Fish and Wildlife Refuge and Stewart B. McKinney and John Hay National Wildlife Refuges, French has demonstrated that the three refuges, spread across a 400-mile area of New England, are assets in their communities and the watershed. During his 33-year U.S. Fish and Wildlife Service career, French has had great success in fostering landscape level conservation, environmental education efforts and recreation partnerships.

**Jackie Jacobson** received the Employee of the Year Award.

Jacobson was recognized for her work as visitor services manager at Audubon Refuge, ND. She established the North Dakota Education Team, which has reached more than 80,000 people statewide and has helped conserve prairie and wetland habitats.

**Bob Ebeling** received the Volunteer of the Year Award.

Ebeling has donated more than 10,000 volunteer-hours at Bear River Migratory Bird Refuge, UT. He has used his professional engineering skills, provided visitor services and contributed to countless other efforts over the past 23 years.

**Friends of Maga Ta-Hophi Waterfowl Production Area** received the Friends of the Year Award.

The group was honored for efforts to increase the name recognition and local and regional support for Huron Wetland Management District, SD—of which Maga Ta-Hophi WPA is a part. In just five years, the Friends have developed a year-round environmental education program. They also have contributed to wildlife surveys, maintenance projects and citizen science efforts.

### Other Honors

**Sheila McCartan**, visitor services manager and park ranger at Nisqually National Wildlife Refuge, WA, received the 2012 Sense of Wonder Award. The award recognizes outstanding contributions in the field of interpretation and environmental education within the Service. McCartan has consistently excelled at the many programs and events she has produced. She was honored for reaching more than 10,000 students and teachers in

the Pacific Region; facilitating Growing Up Wild teacher workshops; building and sustaining education partnerships; and building and implementing an environmental education center and outdoor nature explore area at Nisqually Refuge.

**Five national wildlife refuges** have been recognized for excellence in environmental, energy or economic performance. The 2012 Department of the Interior Environmental Achievement Award winners include: the Greening of the Refuge team at **Kenai Refuge, AK**, for outstanding organizational achievement in building and fleet energy efficiency; **San Francisco Bay Refuge Complex, CA**, for transforming its headquarters building into a model of sustainability, consuming 52 percent less energy than the previous building; **Benton Lake Refuge, MT**, for building a 25.4-kilowatt hybrid solar photovoltaic and wind energy system, the first of its kind in the U.S. Fish and Wildlife Service's Mountain-Prairie Region; **Rocky Mountain Arsenal Refuge, CO**, for its visitor center exhibit hall that tells how the refuge lands have been restored from being a World War II munitions site to native short grass prairie land; and **Turnbull Refuge, WA**, for its maintenance shop energy retrofit. ↗

# Around the Refuge System

## Arkansas

The White River has been named the nation's second national blueway. The blueway program recognizes river systems whose economic, recreational and natural values are protected by conservation partnerships. The White River watershed includes White River and Cache River National Wildlife Refuges. White River Refuge was established in 1935 to protect migratory birds. Cache River Refuge was established in 1986 to protect wetland habitats and provide feeding and resting areas for migrating waterfowl. Both conserve some of the last remaining bottomland hardwood forest in the Mississippi River Valley. The 17.8-million-acre White River watershed extends into Missouri. Deputy Secretary of the Interior David Hayes called the river "the recreational and economic lifeblood of communities from the Ozarks to the Mississippi." The Connecticut River, whose four-state watershed is Silvio O. Conte National Fish and Wildlife Refuge's acquisition boundary, was designated as the first national blueway last year.

## New York

Wertheim National Wildlife Refuge is one of 10 Northeast Region refuges participating in a pilot program that conducted acoustic inventories of bats last summer. The study, which uses state-of-the-art technology, is important because bats are in precipitous decline as a result of white-nose syndrome.

The pilot's goal is to compile baseline data about bats on refuges. Very little bat research has been done on Long Island, says Wertheim Refuge biologist Robin Donohue. "A lot of what we have dates back to the 19th century." Only one case of white-nose syndrome has been confirmed on Long Island, he says, so at Wertheim Refuge "it would be exciting to see any healthy individuals of the species that white-nosed syndrome hits particularly hard."

Other refuges participating are: Patuxent, MD; Montezuma, NY; Great Bay, NH; Great Swamp, NJ; Silvio O.

Conte (Nulhegan Basin), VT; Canaan Valley, WV; Great Meadows and Oxbow, MA; and Rachel Carson, ME. "We have a whole bunch of acoustic data," says Laura Eaton, an assistant regional biologist overseeing the project. "My goal is to have the information analyzed in midsummer and to have reports ready by the end of the fiscal year." The reports will show what species of bats use which refuges. The reports will also lay the groundwork for future identification of important habitat features, such as locations of maternity colonies. The pilot was funded in part by the Refuge System Inventory and Monitoring program.

## Midway Atoll

Wisdom, a Laysan albatross and the world's oldest-known wild bird at age 62 (or older), hatched a chick on Feb. 3 at Midway Atoll National Wildlife Refuge. She laid the egg last November, and she and her mate took turns incubating it. Wisdom was first banded by U.S. Geological Survey scientist Chandler Robbins in 1956 as she incubated an egg. Robbins found her again in 2001, and Midway Atoll Refuge biologist Pete



*Wisdom, a Laysan albatross and the world's oldest-known wild bird, tends to her chick at Midway Atoll National Wildlife Refuge. The chick hatched on Feb. 3. (Pete Leary/USFWS)*

Leary spotted her in 2012. Wisdom has raised at least 30 chicks. "Only one chick has been banded so far, two seasons ago," says Leary. Last season "the chick wandered away and lost its temporary band before we could put on a permanent band. It probably survived. We just didn't know which one it was." Albatross lay only one egg a year. It takes much of a year to incubate and raise the chick. Word of Wisdom's latest chick attracted global interest in social and mainstream media, including prominent articles in the *Washington Post* and the *Sunday Times* of London.

## Arizona

The latest survey of desert bighorn sheep at Kofa National Wildlife Refuge shows an estimated population of 428. That is slightly higher than the 402 estimated in a 2010 survey and the highest since 2007. The apparent population increase is not statistically significant, however, and biologists' analysis of the past six surveys indicates no significant decline or improvement to the herd's population. Wildlife management agencies remain concerned about the low population levels on the refuge compared to the estimated

812 animals of a 2000 survey. Wildlife experts attribute the decline of the herd's size at the refuge since 2000 to a variety of potential factors, including drought, predation, water availability, disease and human disturbance. The U.S. Fish and Wildlife Service and Arizona Game and Fish Department are jointly addressing the suspected causes of the decline. For the past 50 years, Kofa Refuge has been an important source of desert bighorn sheep for the restoration and maintenance of bighorn populations throughout

the Southwest. Information about Kofa Refuge bighorn sheep is at [www.azgfd.gov/kofa](http://www.azgfd.gov/kofa).

## Two Regional Refuge Chiefs Named

Two new Fish and Wildlife Service regional refuge chiefs have taken their posts.

Charlie Blair, a 35-year Service veteran, is Midwest Region refuge chief. Blair brings a wealth of experience managing national wildlife refuges. Most recently, he was project leader at Minnesota Valley National Wildlife Refuge and Wetland Management District, where he oversaw implementation of a diverse program in an urban setting. Earlier, Blair managed Maine Coastal Islands Refuge, Sherburne/Crane Meadows Refuge Complex in Minnesota, Ottawa Refuge in Ohio, Ninigret Refuge Complex in Rhode Island and Stewart B. McKinney Refuge in Connecticut. He also has refuge experience in Maryland, Delaware and Alaska. Blair succeeds Rick Schultz, who retired late last year.

Will Meeks is Mountain-Prairie Region refuge chief. Meeks has more than 18 years of Service experience. He has been a private lands biologist, refuge wildlife biologist, refuge manager, deputy division chief in Refuge System headquarters and project leader. He most recently led the Habitat and Population Evaluation Team (HAPET) in Bismarck, ND. Before that, he worked at Refuge System headquarters as deputy chief of the Division of Natural Resources and Conservation Planning and in other wildlife resource and planning roles. Earlier, he was Alaska Maritime Refuge deputy manager and Lostwood Refuge manager in North Dakota. He has worked at wetland management districts in the Dakotas as well. Meeks succeeds Matt Hogan, now Mountain-Prairie Region deputy director.

## Hawaii

Five crew members who were at the Service's Tern Island research station when a tornado-like storm struck on Dec. 9, 2012, are safe. The early morning storm ripped through the



*Samantha Smith, left, and other Career Discovery Internship Program students listen as Service biotech Jared Green explains turtle trapping at Great Meadows National Wildlife Refuge in Massachusetts. The CDIP received The Wildlife Society's 2012 Diversity Award. (Lamar Gore/USFWS)*

research station, destroyed most of the island's limited infrastructure (including communications/electrical systems) and killed about 250 of the island's 3,000 nesting seabirds.

The crew—Service manager on duty Chad Bell and volunteers Abram Fleishman, Morgan Gilmour, Larry Chlebeck and Mike Johns—was safely evacuated on the *MV Kahana* and reached Honolulu Dec. 20. Bell “did a simply incredible job keeping the volunteers safe and communicating during this very trying incident,” said Doug Staller, superintendent of Papahānaumokuākea Marine National Monument.

Tern Island is in French Frigate Shoals 490 miles northwest of Honolulu in Hawaiian Islands National Wildlife Refuge Complex within the marine national monument. “With the exception of one building and some water tanks, the entire field station (barracks, boathouses and storage sheds) is destroyed beyond repair,” said Meg Duhr-Schultz, a Service manager who was off-island when the storm hit. Looking to the future, Staller said “the facilities at Tern Island might

look very different, but we are committed to maintaining a presence there so that we and our co-trustees can continue our important conservation research” for the benefit of green turtles, monk seals and other species. Photographs and more information are on Duhr-Schultz's personal blog at [frenchfrigateshoals.org](http://frenchfrigateshoals.org).

## Diversity Award

The Service's Career Discovery Internship Program (CDIP) has received The Wildlife Society's 2012 Diversity Award. The CDIP is a youth immersion program, which began in the Northeast Region in 2008. The Service partners with the Student Conservation Association to provide conservation experiences to culturally and ethnically diverse freshmen and sophomore college students, who would not otherwise participate in a conservation-based job. Since 2008, the program has expanded to include the Southeast, Midwest and Alaska Regions. Almost 200 students have participated at about 70 Service field stations. Of those who took part from 2008 to 2011, 17 percent have advanced into staff positions within the Service. 🦋

## From the Director — continued from page 2

acres constitutes the largest single conservation easement donation in Service history.

Closer to Sevilleta, Valle de Oro Refuge near Albuquerque and Rio Mora Refuge and Conservation Area in northern New Mexico were established last September. And early last year, our folks in Florida worked all out to get up and running Everglades Headwaters Refuge and Conservation Area. In 2012, we also established Swan Valley Conservation Area in Montana and Hackmatack Refuge outside Chicago.

Some of these new refuge units share a key difference from Sevilleta: The Service does not own the land. We are increasingly partnering with private landowners, who are excellent stewards of the land. We are developing conservation easements that provide important wildlife habitat while enabling these stewards to continue working the land as they have done for generations.

And we're trying to connect these privately owned lands to our great public estate of national parks, national forests and national wildlife refuges, and state and local conservation areas.

We are making clear that conservation is not just the responsibility of the Service. We all have a stake in it, public and private sector alike.

Dad, of course, knew this when establishing Sevilleta. He ends the article: *More than anything else, to my thinking, the genesis of the Sevilleta Refuge is an example of what can be achieved when the private and public sectors work together.*

My father's work lives on at places like Sevilleta. And he's far from the only retiree—or current employee—who can say that. That's what's so great about working for the Service. We all contribute to the conservation of wildlife and wild places for generations to come.



Pronghorns at New Mexico's Sevilleta National Wildlife Refuge, which was established with the help of Director Dan Ashe's father, Bill. (USFWS)

Our work matters. Our values endure. I'm proud of the work my father did, at places like Sevilleta; I'm proud of the work we are doing today, at places like the Dakota Grasslands; I'm proud of the foundations we are laying for those who will come after us. Our legacy is writ large on the landscape. 🦋

## Chief's Corner — continued from page 2

emerging tools and technology, like geospatial data analysis and modeling, to pinpoint the best areas for waterfowl nesting. This helps us get the highest conservation return on investment.

Recently, threats to habitat in the Prairie Pothole Region have accelerated. High prices for agricultural commodities are resulting in large tracts of prairie being converted to row crops. Tile drainage is expanding into new areas. A boom in oil, gas, and wind energy is further fragmenting the landscape. Director Dan Ashe has responded to this crisis by directing 70 percent of the Migratory Bird Conservation Fund to the Prairie Pothole Region and requiring science-based investment decisions. Our

longstanding partner, Ducks Unlimited, is helping us accelerate land protection. We are in a race against time.

It's hard to envision what the Prairie Pothole Region will look like a hundred years from now.

I remember how it looked when I made my first trip to the field after moving to headquarters in 1999. I visited the Windom Wetland Management District in Minnesota with my long-time friend, now-retired refuge supervisor Don Hultman. The district manager then was Steve Kallin, whom I met in college at the University of Wisconsin-Stevens Point in 1974.

It was a beautiful spring day at Windom, full of songs of meadowlarks, bobolinks

and red-winged blackbirds. As we walked across a waterfowl production area, a hen mallard flushed a few feet ahead of us. Steve gently pulled back some of the grasses, and there it was, a clutch of mallard eggs. I remember feeling incredibly happy. It was a simple moment of shared pride in generations of conservation work.

I am thankful for the visionaries who began this work and am proud of the generations of professionals who have continued to protect and manage our wetland management districts. I know today's wetland managers, who are the best trained and best equipped ever, will carry on this great legacy. 🦋

## Conservation Team Built With Geothermal Steam — continued from page 1

Further, he says, the refuge is rigorously following National Environmental Policy Act (NEPA) procedure “and conducting our environmental due diligence every step in the process.”

### Why It Is Necessary

Lower Klamath Refuge, which was established by President Theodore Roosevelt in 1908, is 50,092 acres of intensively managed shallow marshes, open water, grassy uplands and croplands that provide feeding, resting, nesting and brood-rearing habitat for waterfowl and other birds along the Pacific Flyway.

Water in the Klamath Basin has become a precious commodity, though, and obtaining it and moving it has become much more expensive in recent years for at least two reasons.

The first is that water distribution is overseen by the Bureau of Reclamation (BOR), which delivers it through canals that crisscross the huge two-state basin. But BOR’s Klamath Project has just one legislated purpose—agriculture. As a result, Lower Klamath and other basin refuges get water only after BOR meets its legal obligations to, in order, endangered coho salmon and American suckers in the Klamath River; tribal trusts and 20 agricultural irrigation districts. “We’re last in line,” says Cole. “We get water through windows of surplus, what is left over after all legal obligations are satisfied.”

So, the refuge complex must use what little water it gets efficiently. Which leads to the second issue. Since a 50-year reduced-rate agreement with Pacific Power expired in 2006, the cost of moving water to replenish wetlands at Lower Klamath Refuge and nearby Tule Lake Refuge has risen almost thirtyfold—from 33 cents per acre-foot to more than \$9.

The geothermal steam plant would alleviate both problems.

### How It Would Work

The geothermal plant would be built and operated by Noonan’s company, Entiv Organic Energy. The plant would extract



*This well was drilled on the southern edge of Lower Klamath National Wildlife Refuge 12 years ago during a drought. Now, it is a key part of a proposed geothermal steam power plant that would alleviate water problems at the refuge that straddles the Oregon/California border. (Bill O’Brian/USFWS)*

hot water from an underground aquifer via one well, run the water through turbines to produce steam power, re-inject the slightly cooler water back into the aquifer via a second well, and sell the power to a utility, probably Portland General Electric.

Ongoing revenue from sales would be paid to a refuge Friends group, which would use the money to offset refuge power costs to move water aggressively for the benefit of wildlife.

The entire project came about largely by accident because, during a severe basin-wide drought in 2001, Lower Klamath Refuge drilled three wells about 3,500 feet apart in search of cool ground water for wetland use. Instead, the wells led to an aquifer of water ranging from 150 to 210 degrees.

The project is feasible, financially and environmentally, because those wells exist. Financially, the major expense of well drilling already has been paid. Environmentally, refuge land near the wells already has been disturbed, so further disturbance will be minimal.

The project is feasible technologically because it will use new low-water-

temperature, high-water-volume technology developed by Technip, a multinational energy company with which Noonan and Entiv do business. Entiv plans to build at least two other similar plants on private land in the basin. Together, the plants will be the first in the United States using the new technology. There are currently three other plants in the world using it—in Iceland, Germany and Japan.

### “Locally Driven Solution”

Cole says the endeavor, which has the backing of the Klamath tribes, numerous conservation partners and Siskiyou County, California, could be operational by early 2014. If it is, he says, “the plant will showcase geothermal technology” for the refuge and the entire basin.

“This is a locally driven solution” to a persistent water-distribution problem, says Noonan. “I don’t want to be a power company; I just want to offset costs” of moving water on organic farmland and, as a friend of conservation, “fold in the refuge.” 🦋



# RefugeUpdate

USFWS-NWRS  
4401 North Fairfax Dr.  
Room 634C  
Arlington, VA 22203-1610



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## A Look Back ... Olaus Murie

Olaus and Mardy Murie spent their honeymoon tracking caribou along the Koyukuk River in Alaska in 1924—the beginning of a lifelong partnership to explore and protect America’s wilderness and wildlife.

Born in 1889 to Norwegian immigrants in Minnesota, Olaus became a biologist for the U.S. Bureau of Biological Survey—the precursor of the U.S. Fish and Wildlife Service—in 1920. His work would ultimately influence actions of at least three presidents.

In Montana, he wrote that the “jumble of carved and stratified buttes perhaps mellowed by the setting sun or set off by cloud formations at dawn, leaves nothing to be desired.” On Murie’s recommendation, President Franklin D. Roosevelt established the Fort Peck Game Range in 1936, which would become Charles M. Russell National Wildlife Refuge.

Murie’s studies of the elk herd in Wyoming defined the principles of elk research and management in the mid-20th century. He served as president of



*The work of Olaus Murie (1889-1963) influenced actions of at least three American presidents. (USFWS)*

the Wilderness Society and The Wildlife Society and as director of the Izaak Walton League. He not only studied and lobbied for wildlife—he painted it, too. His image of swans in Jackson Hole is on display at the National Museum of Wildlife Art.

In 1956, the Muries led their signature expedition to the upper Sheenjek River of Alaska’s Brooks Range—which Olaus called “a little portion of our planet left alone.” They lobbied to keep it that way along with Supreme Court Justice William O. Douglas, Aldo Leopold’s son Starker and Wilderness Act author Howard Zahniser. In 1960 President Dwight E. Eisenhower set aside eight million acres as the Arctic National Wildlife Range. Twenty years later, the Alaska National Interest Lands Conservation Act (ANILCA) renamed “range” to “refuge,” increased the total area to 19 million acres and designated a large portion as wilderness. The Wilderness Act was signed by President Lyndon B. Johnson in 1964, a year after Olaus Murie died.

Mardy Murie continued the push for wilderness preservation, empowered by Olaus’ belief—shared during a 1978 National Public Radio interview—that it is “better to be in the thick of the fight than standing in the corner with your face to the wall.” 

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