



# RefugeUpdate

National Wildlife Refuge System

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



One of seven new urban wildlife refuge partnerships will bring a conservation message to Masonville Cove, a neighborhood in Baltimore. Here, children fish at the cove, an inlet of Chesapeake Bay. (Courtesy of National Aquarium)

## Refuge System Is Establishing 7 Urban Wildlife Refuge Partnerships

By Bill O'Brian



In a major effort to connect city dwellers to nature, the National Wildlife Refuge System has created an Urban Wildlife Refuge Initiative and is establishing seven pilot urban wildlife refuge partnerships this year.

The partnerships are being formed in response to *Conserving the Future* Recommendation 13, which calls for the creation of “an urban refuge initiative that defines excellence in our existing urban refuges, establishes the framework for creating new urban refuge partnerships and implements a refuge presence in 10 demographically and geographically varied cities across America by 2015.”

The *Conserving the Future* Urban Wildlife Refuge Initiative implementation team will formally announce the pilot partnerships at the Urban Academy, a U.S. Fish and Wildlife training session Sept. 23-25 at the National Conservation Training Center in Shepherdstown, WV. Three other urban wildlife refuge partnership designations are scheduled to be announced by 2015.

The pilot partnerships allow the Service to work with key community organizations that have been active in wildlife conservation and can help set the stage for

## As Floodwaters Rose, Service Rose To the Occasion

By Tracey McDonnell

Each spring—after a long, cold, dark Alaska winter—the ice on the massive Yukon River breaks up. It is a major meteorological/hydrological event. Tabitha Ramos, wife of Koyukuk and Nowitna National Wildlife Refuges deputy manager Keith Ramos, has lived in the village of Galena for three river breakups.

“Anyone watching the mighty Yukon break up can see the power and force of water,” she says. “Watching mile-wide sheets of ice float by can truly make you feel small. When you feel the giant ice hit the bank and thunder and shake the earth beneath, it can make you feel very small.”

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## From the Director Unsung Heroes of the Service

In the 1950s and '60s, the space race between the United States and the Soviet Union captivated our nation. An urban legend has President John F. Kennedy asking an employee at a NASA center what he did. "I'm helping put a man on the moon, Mr. President," the man replied. While not the expected answer from a janitor, the employee's response voiced the unified culture of "One Agency, One Vision" at NASA then.



Dan Ashe

Our "One Service" vision is "to conserve the nature of America," and I want all employees, just as that NASA worker did, to value the importance of their job and the contribution they make to our collective success.

Our refuges would not be the jewels they are without each and every staff member—regardless of grade, title

or duties. Everyone plays a role in conservation.

We're lucky to have skilled wage-grade professionals in our ranks like "wetlands artist" Dennis Vicente, maintenance work leader at Bosque del Apache National Wildlife Refuge in New Mexico. Deputy refuge manager Aaron Mize calls what Vicente does "not just a science, but an art." And Vicente is a master at crafting habitat for birds at Bosque.

Any good refuge manager will extoll the value of these highly skilled workers without hesitation.

"Many times a manager will ask, 'How can we make this happen?'" says John Blich, national heavy equipment coordinator and a wage-grade employee for 18 years. "And that's when we really go to work and do our best stuff—building access roads for handicapped hunters, creating photo blinds for the public, restoring critical

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## Chief's Corner

### In at the Start

The Focus section about newer refuges in this issue of *Refuge Update* brings back great memories of the early days of my career when I had the opportunity to work on three new refuges. I began my career with the Fish and Wildlife Service in late 1979 at Mississippi Sandhill Crane National Wildlife Refuge. The first land was purchased in 1975; staff showed up two years later.



Jim Kurth

When I arrived, land acquisition was progressing quickly. The staff had grown to six, all of us younger than 35. We used an old FEMA trailer as our office.

I shared one of the bedrooms as an office with the other assistant manager. We couldn't stand up at the same time because our chairs would collide and trap our legs under the old battleship gray, military surplus desks.

We didn't care. We had important work to do.

The cranes numbered fewer than 40 birds. They had been pushed to the brink of extinction because of ill-conceived plans to drain the Gulf coastal savannas, exclude fire, and convert them to slash pine plantations. In 1981, there were only two nests and only one chick was known to have fledged. We began the slow process of restoring habitat and reintroducing fire.

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## Refuge Update

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## Inside

### Propagator of Plants

Baron Horiuchi, the U.S. Fish and Wildlife Service's only horticulturalist, makes a big difference at Hakalau Forest Refuge in Hawaii. Page 4

### FOCUS: Our Newer Refuges

Since 2000, 38 refuges, conservation areas or wildlife management areas have been added to the Refuge System. This issue looks at how a handful of them are progressing. Pages 8-13

### Note to Readers

In early July, after the July/August issue of *Refuge Update* went to press, the Department of the Interior rescinded the national blueway designation for the White River of Arkansas and Missouri. The online edition was updated then to reflect the rescindment. However, it was too late to update the "2nd Blueway Connects 3 Refuges to 1 Watershed" article on Page 11 of hard copies of the issue. For more about the rescindment, see Page 14 of this issue.

# Feral Horses: A Conundrum of Epic Proportions

By Karen Leggett

While some may see wild horses as majestic symbols of the American West, these feral animals cause substantial habitat damage. Consider Sheldon National Wildlife Refuge in Nevada, which was established to provide habitat for pronghorn, mule deer, greater sage-grouse, pygmy rabbits and others.

The refuge has experienced the damage that feral horses can wreak. The refuge is full of sagebrush-dependent species native to its high-desert habitat—nearly 300 invertebrates, 235 birds and 76 mammals.

The horses on the refuge are descendants of domesticated animals turned loose. They damage habitat by grazing and trampling vegetation and streambeds. In 2008, then-project leader Paul Steblein studied more than 100 scientific papers about the effects of horses on the sagebrush-steppe ecosystem and concluded that “never have I found science so condemning.” He believes horses are the number one issue inhibiting the mission of Sheldon Refuge, an assessment corroborated by a panel of wildlife biologists and natural resource managers.

Current project leader John Kasbohm says habitat monitoring data from 2002 onward show that 44 percent of the refuge’s streams and 80 percent of its springs are severely degraded because of feral horse and burro activity. The soil becomes compacted and eroded, stream banks become unstable, species richness and plant cover are reduced, and cultural resource sites are trampled. Recent research shows horses are having similar impact on critical upland habitats.

Without controls, the horse population increases by 18 to 20 percent a year. Sheldon Refuge now has more than 800 horses and 100 burros. Sterilization has cut the foaling rate by more than two-thirds over the past six years, but that does not resolve the problem quickly enough to reverse the habitat damage.



*Feral horses at Sheldon National Wildlife Refuge, NV, damage wildlife habitat by grazing and trampling vegetation and streambeds. (Gail Collins/USFWS)*

The refuge’s 15-year comprehensive conservation plan (CCP) calls for removing feral horses and burros by 2017. The refuge is implementing that provision with particular care because of the horse’s iconic status. Horse advocates range from those who want to leave the animals alone and let nature take its course to those who may be willing to work with the refuge to find homes in which to place the horses. The primary solution involves using helicopters to gather the horses for removal, and paying contractors or individuals to find long-term care for them.

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## *Sheldon National Wildlife Refuge now has more than 800 horses and 100 burros.*

“I came here knowing how to do partnerships and make sure people knew what we were doing and why. It’s hard to reach common ground,” says Kasbohm. “Most environmental groups support horse removal because they recognize

the damage to refuges where wildlife is the primary mission.”

During public meetings and comment periods before the CCP was approved in September 2012, animal rights activists as well as wild horse and burro advocates expressed concerns about treatment of the animals during and after the gathering and the possible loss of the horses entirely. However, independent veterinarians are present during gather operations, and the refuge continues to work with known horse adoption contractors.

Even plans carefully designed to navigate the controversies can be problematic.

Sheldon Refuge received almost \$1 million from a special U.S. Fish and Wildlife Service fund for large invasive species projects as well as matching funds and in-kind contributions from conservation partners. The refuge plans to gather 400 horses this summer and 400 next summer. But the price per

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# “If You Plant It, They Will Come”

By Megan Nagel

Sometimes Baron Horiuchi and his work at Hawaii’s Hakalau Forest National Wildlife Refuge are all that stand between a plant and its disappearance from Earth.

*Phyllostegia brevidens* was thought to be extinct for more than 100 years, before being discovered on the refuge. Since then, Horiuchi has propagated and replanted more than 1,000 of the native plants, ensuring the species’ survival.

As the U.S. Fish and Wildlife Service’s only horticulturalist, Horiuchi leads a team of volunteers and staff in restoring native and endangered species at Hakalau Forest Refuge. Because of his persistence and ingenuity, more than 6,000 other plants of seven endangered species have been propagated from seeds and cuttings, greenhouse-grown and planted in protected areas.

Horiuchi’s techniques have resulted in the propagation of several endangered Hawaiian lobeliad and mint species. The lobeliad *Clermontia pyrularia* is down to six individuals in the wild; he has propagated 1,100 in the greenhouse in the past decade and a half. *Cyanea shipmanii* lobeliad is down to three individuals in the wild; he has propagated 800. Endangered mints *Phyllostegia velutina* and *Phyllostegia racemosa* are down to 10 individuals each in the wild; he has propagated hundreds.

“You learn how not to give up on plants,” Horiuchi says. “It’s like creative work.”

For his contributions toward native plant propagation at Hakalau Forest Refuge, the Service awarded him the 2012 Rachel Carson Award for Scientific Excellence. “We are honored that Baron has been recognized with this award,” says Service Pacific Region Director Robyn Thorson.

Since 1987, almost 500,000 native plants, including koa trees, have been planted at the refuge, which is on the windward slope of Mauna Kea, a 13,796-foot dormant volcano on the Big Island of Hawaii. Each year 20,000 plants are

grown at the refuge greenhouse.

Horiuchi cultivates plants—and partnerships, too.

Seeds are collected, germinated, propagated and transplanted by volunteers he supervises. The program is so popular with conservation partners that volunteer weekends are booked a year in advance. A greenhouse entrance sign made for Horiuchi by volunteers features the Hawaiian word *Laulima*.

“Laulima means ‘many hands working together.’ The work I do would not be possible without our volunteers, and all of the other refuge staff,” says Horiuchi. “The volunteers are about the island—it is in their heart. They are passionate about this work, just like the refuge staff. *Mahalo* to all of them for making Hakalau Forest Refuge what it is today.”

## Native Forest Restoration

The refuge was established in 1985 to conserve habitat for some of the most diverse native bird populations in Hawaii. Little was known then about large-scale native forest restoration. So refuge staff began intense adaptive management, conducting carefully designed small experiments as part of broader forest restoration.

At the time, Hakalau Forest Refuge’s 32,733 acres resembled a pasture. Now, as a result of adaptive management techniques used by refuge staff and replanting led by Horiuchi, the slopes of Mauna Kea are returning to native forest habitat, and native bird populations are stable or increasing.



Baron Horiuchi is the U.S. Fish and Wildlife Service’s only horticulturalist. For his work in leading a team in restoring native and endangered species at Hakalau Forest National Wildlife Refuge in Hawaii, he received the 2012 Rachel Carson Award for Scientific Excellence. The Hawaiian word *Laulima* means “many hands working together.” (Megan Nagel/USFWS)

Many of the native bird species, such as ‘apapane, ‘i‘iwi, Hawaii ‘elepaio, and Hawaii ‘amakihi, are seen within replanted areas and returning forest habitat. In addition, the endangered Hawaii creeper and ‘akiapōlā‘au regularly forage in replanted koa groves.

“If you plant it, they will come,” says Horiuchi. “That’s how I found out I loved the ‘elepaio, when it was the first bird I started seeing come back to the koa trees.”

Forest restoration at the refuge creates a necessary hedge against extinction for many Hawaiian bird species and serves as a hopeful model of how Hawaiian forest may be restored elsewhere.

Horiuchi can’t imagine working anywhere else. “I love these trees, this forest, this island,” he says. “It’s in my heart.” 🌿

Megan Nagel is a public affairs officer in the Pacific Region office in Portland.

# Seabirds Warn of Ocean Change

By Susan Morse

What have 30 years of research and monitoring on Maine seabirds taught us? That the marine environment is changing fast. That ocean birds may be failing to adapt. That few threats—from ocean warming and offshore energy development to competition from commercial fisheries—could have been foreseen when Maine Coastal Islands National Wildlife Refuge staff began the work in the early 1980s.

For the work, the refuge received a 2012 U.S. Fish and Wildlife Service Rachel Carson Award for Scientific Excellence.

The refuge, which comprises more than 50 islands, is using the research and monitoring data to manage seabird colonies and, staff members hope, stem the birds' decline.

Consider the Arctic tern. Its 36,000-plus mile annual migration from Antarctica wintering grounds to Maine breeding grounds is the world's longest; the bird makes the equivalent of two round trips to the moon in its 30-year lifetime. Small light-sensing units called geolocators have documented the distance flown.

But in recent years, counts of Arctic terns have dropped by 42 percent, from 4,224 pairs in 2008 to 2,467 pairs in 2012. "There are fewer pairs of Arctic terns breeding in the Gulf of Maine, and those terns that do breed are producing fewer chicks," says refuge biologist Linda Welch. "They're doing very poorly."

Some researchers suspect climate change is disrupting the birds' food chain. "So it might be the birds can't find enough food to rebuild their body stores and regain the energy they need to fly from Antarctica all the way back to the coast of Maine in good enough shape to start breeding again," says Welch.

Or take the great shearwaters that summer in the Gulf of Maine. Satellite tags show the large birds forage across the entire gulf—not just near the coast, says Welch. She hopes developers will consider that when deciding where to place proposed offshore wind farms.



Arctic tern counts have dropped sharply in recent years at Maine Coastal Islands National Wildlife Refuge, which received a 2012 Rachel Carson Award for Scientific Excellence for its seabird research and monitoring. The tern's 36,000-plus mile annual migration from its Antarctica wintering grounds to its Maine breeding grounds is the world's longest. (USFWS)

Tracking devices may help researchers determine why some Maine seabirds can't find enough fish to feed their chicks. Arctic terns forage for herring and other small fish at the water surface; unlike puffins and razorbills, they can't dive. The refuge's Machias Seal Island once hosted the largest tern colony in the gulf. But in 2007, a fish shortage led 3,500 tern pairs to abandon their nests. "They haven't raised any chicks since," says Welch.

Other Maine colonies are having similar trouble. While the problem appears worst for Arctic and roseate terns, puffins and razorbills are affected. Puffins are generally still able to produce chicks, but often those chicks are smaller, says Welch.

Marine productivity levels, currents and water temperature all influence fish distribution. Increased Arctic ice melt could also affect water chemistry and fish location. "It's not an easy problem," says Welch.

New tracking technology is making seabird research easier. But interpretation of movement patterns,

population changes and productivity rates relies heavily on visual data painstakingly collected over the past 30 years. It's not glamorous work. Each summer, seasonal technicians live on the colonies and monitor the seabirds. They document how many pairs return to the colony, how many eggs are laid, how many of those eggs hatch, how often chicks are fed, and which species of fish are brought to the chicks. Researchers compare notes with U.S. and Canadian conservation partners also monitoring the gulf.

"Having a long-term monitoring effort has been critical to our understanding of changes in productivity and seabird diet," says Welch. "For example, with the Arctic terns, we had 25 years of population growth. Now we have five years of population decline. Our management actions haven't changed. Our predator control actions haven't changed. So we know something else has changed." 🦅

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

# Cross-Cultural Collaboration at Tamarac Refuge

By Karen Leggett

Ojibwe children from the White Earth Circle of Life Academy have been making regular visits to Tamarac National Wildlife Refuge for two years now, and visitor services manager Kelly Blackledge says the educational partnership absolutely resonates in the community:

“Kids are recognizing the refuge and learning about the U.S. Fish and Wildlife Service as an organization. It has helped bring more families from the White Earth community to other interpretive programs we offer, and it has helped develop relationships.”

Each class, kindergarten through sixth grade, comes three times a year—fall, winter and spring—to the 43,000-acre refuge where Eastern deciduous hardwood forest, Northern coniferous forest and tallgrass prairie habitats converge in western Minnesota.

Staff and volunteers lead activities that address curriculum requirements in science and other subjects. The refuge also is an outdoor classroom to practice the Ojibwe names of wildlife. On woodland hikes children look for the food cache of *ajidamoo* (squirrels) and write in journals about the *amik* (beavers). While the partnership connects children with nature and the refuge, it also incorporates the academy’s goal of culturally based education.

“We really felt welcomed and respected,” says Mary Otto, assistant to the tribal education director, who is particularly impressed with the knowledge and skill of volunteers, often members of the Friends of Tamarac.

Otto also appreciates that staff conducted programs at the academy while the refuge visitor center was closed for



*Miya Rojas, a ninth-grader from the White Earth Nation, kayaks through wild rice at Tamarac National Wildlife Refuge in Minnesota during a natural technology summer camp. The camp is one of several activities involving the Ojibwe Tribe and the refuge. (Joe Corney/Red River Basin Commission)*

renovations. Those visits benefited Blackledge as well. Blackledge, who initiated the school partnership with the tribes, now works in the Native American community often enough that it feels “less odd to see the Service uniform on the reservation.”

The refuge and the tribe cooperate on other education projects, too.

Blackledge helped create an interactive wildlife display for younger children. The traveling exhibit was shown in the tribal headquarters, where tribal leaders saw refuge staff and volunteers teaching kids.

The White Earth Tribal and Community College teams up with the local 4H native youth coordinator on a nature technology summer camp in which middle school students learn photography and videography at the refuge. Last summer, they filmed while kayaking through fields

of wild rice. Another 4H activity teaches White Earth teens to use iPads and GPS technology to map, photograph and document the condition of refuge signs, kiosks and historical markers. That project was replicated in four states and earned a 2012 Connecting Youth With Nature Through Natural Resources Conservation Education Award.

Environmental education is only one area of collaboration between Tamarac Refuge and the White Earth Nation, a band of the Ojibwe Tribe that refers to itself as *Anishinaabe*, or “original people.”

Refuge manager Neil Powers says two recent agreements between the Service and the White Earth Nation led to the restoration of a 70-acre wetland site and 25 acres of grassland. The wetland improves water quality by reducing sedimentation in Lower Rice Lake, which is culturally significant to the Ojibwe because of its bountiful wild rice crop. Other projects address aquatic invasive species, wild rice and wolves.

“We have a unique relationship since part of the refuge actually lies on the reservation,” says Powers, who is working with tribe officials on a law enforcement memorandum of understanding. The process of agreeing on details is long and complex, Powers says, but ultimately tribal and Service officers will share information and allow the tribal court system to deal with some cases involving tribal members.

Mike Swan, the White Earth Nation director of natural resources, says an update that respects treaties and improves the partnership is definitely needed because the current agreement has been in effect since 1981. 

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

# The Transformation of Santee Refuge

By Dave Barak

Santee National Wildlife Refuge has undergone a remarkable transformation over the past six years. The result is a refuge—just off Interstate 95 in central South Carolina—that is increasingly reaching its full potential in terms of wildlife habitat, visitation and preserving a land ethic.

Established in 1941, Santee Refuge has faced significant challenges. The refuge's size and shape have fluctuated with winds of time and politics during its eight decades. After years of belt-tightening, shrinking resources and waning waterfowl populations, assets declined. Impoundment dikes, roads and trails overgrew; water management systems became antiquated; the refuge fell into disrepair.

“When I first arrived in 2006,” says refuge manager Marc Epstein, “the shop yard looked like a virtual ‘Antiques Roadshow’ for equipment.”

However, with the support of regional/refuge staff and the momentum of the National Wildlife Refuge System, Santee Refuge is now a significant destination for wildlife and visitors.

The recently completed comprehensive conservation plan (CCP) “laid out our vision for the next 15 years,” says Epstein. “Although [the process was] challenging at times, all the staff had an opportunity to share a common vision for the future.”

The Santee Refuge rebound can be traced to the National Wildlife Refuge System Improvement Act of 1997, which ushered in an era of renewed enthusiasm. The rebound began in earnest, however, in 2007 with a maintenance action team (MAT) project.

Wage-grade employees from all over the U.S. Fish and Wildlife Service's Southeast Region undertook a huge erosion-control effort. Tons of rip-rap, which had been long neglected in refuge backwoods, was relocated along Lake Marion to reinforce the



*A painted bunting perches on a branch at Santee National Wildlife Refuge. With the help of a Service maintenance action team (MAT), many partners and a dedicated staff, the refuge just off Interstate 95 in central South Carolina is beginning to reach its full potential. (Marc Epstein/USFWS)*

refuge's shoreline. Subsequent deferred maintenance projects, opportune partnerships and skillful grant applications essentially have built a new refuge.

By replacing 98 percent of its water-control structures and pumps, and installing new dikes, the refuge has restored its interior wetlands and enhanced management capacity. Significant habitat improvements and first-class law enforcement of sanctuary areas have resulted in annual increases in wintering ducks, sandhill cranes and migratory Canada geese (for whom the refuge is the southern terminus on the Atlantic Flyway).

The refuge's partnerships with Santee Cooper and Ducks Unlimited have benefited the local community in at least two ways: The environmental quality of life is vastly improved, and the refuge's 194,000 annual visitors boost the economy. Enhancing the refuge as a national treasure also has instilled a sense of pride and ownership in people who love—or are learning to love—central South Carolina.

Over the past six years, news has traveled among them as fast as squirrels about rehabilitation of the refuge's visitor center, the 7.5-mile wildlife drive, the canoe trail through the proposed wilderness area, the observation towers, the 35 miles of hiking trails, the elevated boardwalks and other improvements.

The Santee Birding and Nature Festival in April, now in its sixth year, draws hundreds of

visitors from all over the country. The refuge's Christmas Bird Count has been called one of the best inland CBCs east of the Mississippi River and north of Florida.

The almost 13,000-acre refuge protects and interprets a rich archaeological and historical past, too. It harbors an Indian mound, built more than 1,000 years ago by the native Santee tribe. During the Revolutionary War, the mound area was transformed into Fort Watson, a British battlement overtaken by Gen. Francis “Swamp Fox” Marion, in a pivotal victory in the American struggle for independence.

There continue to be challenges, both budgetary and environmental, but it's easy to imagine that our forebears would be proud that a revitalized Santee Refuge is conserving a vital and sustainable landscape. 

*Dave Barak is a Student Conservation Association intern at Santee National Wildlife Refuge in South Carolina.*

## Community Support Is Key From the Start

By Bill O'Brian

Since 2000, the U.S. Fish and Wildlife Service has acquired approximately 56.5 million acres of land and water. Roughly 54.1 million of those acres are within marine national monuments in the Pacific Ocean. During that time, 38 refuges, conservation areas or wildlife management areas have been added to the National Wildlife Refuge System.

This *Refuge Update* Focus section looks at how a handful of them are progressing.

In recent years, the approach to new-refuge land acquisition has changed. The Service has tried to give new refuges an initial boost through higher appropriations requests, says Eric Alvarez, Refuge System Headquarters realty chief since 2002.

"I'm happy with the direction we've been going in the last few years, focusing additional resources on new refuges versus just putting them into the mix, as previously had been done," Alvarez says. "It's important not only to establish yourself in the community by having a refuge but also by being out there buying land from landowners, because neighbors talk to neighbors."

Alvarez notes that, when it comes to establishing refuges, conservation areas are "growing in acceptance." They are essentially easement-only refuges based on partnerships with private landowners and non-governmental organizations. They cannot be as intensely managed as fee-title land the Service owns can be, Alvarez says, but "the habitat is still protected from development and destruction."

Six of the eight most recently established refuges include a conservation-area component.

As Alvarez looks to the future of land acquisition and refuge establishment,

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*A blacktip reef shark swims at Palmyra Atoll National Wildlife Refuge, part of Pacific Remote Islands Marine National Monument. Roughly 54.1 million acres acquired by the National Wildlife Refuge System since 2000 are within marine national monuments. (Laura M. Beauregard/USFWS)*

### Refuges Established Since 2000:

#### 2012

Hackmatack NWR, Illinois-Wisconsin  
Rio Mora NWR and CA, New Mexico  
Valle de Oro NWR, New Mexico  
Sangre de Cristo CA, Colorado  
Swan Valley CA, Montana  
Everglades Headwaters NWR and CA,  
Florida

#### 2011

Flint Hills Legacy CA, Kansas  
Dakota Grassland CA, North and South  
Dakota

#### 2010

Cherry Valley NWR, Pennsylvania  
Tulare Basin WMA, California

#### 2009

Mariana Arc of Fire NWR, Pacific  
Mariana Trench NWR, Pacific  
Wake Atoll NWR, Pacific

#### 2007

Rocky Flats NWR, Colorado

#### 2006

Rocky Mountain Front CA, Montana  
Neches River NWR, Texas

#### 2004

Glacial Ridge NWR, Minnesota  
Holt Collier NWR, Mississippi  
Theodore Roosevelt NWR, Mississippi

#### 2003

Mountain Longleaf NWR, Alabama  
Baca NWR, Colorado

#### 2002

Cahaba NWR, Alabama  
Red River NWR, Louisiana

#### 2001

Detroit River IWR, Michigan  
Bayou Teche NWR, Louisiana  
Assabet River NWR, Massachusetts  
Vieques NWR, Puerto Rico  
Coldwater River NWR, Mississippi  
Palmyra Atoll NWR, Pacific  
Kingman Reef NWR, Pacific

#### 2000

Oahu Forest NWR, Hawaii  
Dakota Tallgrass Prairie WMA, South  
Dakota  
Caddo Lake NWR, Texas  
Northern Tallgrass Prairie NWR, Iowa-  
Minnesota  
Guadalupe-Nipomo Dunes NWR, California  
Big Oaks NWR, Indiana  
Cat Island NWR, Louisiana  
North Dakota WMA

NWR= National Wildlife Refuge; CA=Conservation Area; WMA=Wildlife Management Area; IWR= International Wildlife Refuge.



## Progress on the Prairie

By Bill O'Brian

**T**hird-generation South Dakota cattle rancher Wade Weiszhaar wants to preserve his family's way of life, maintain his family's livelihood and conserve the prairie landscape his family cherishes.

That makes him an ideal participating landowner in the Dakota Grassland Conservation Area.

The conservation area identifies 1.7 million grassland acres and 240,000 wetland acres to be protected across the prairie of eastern South Dakota and North Dakota. Since its establishment as part of the National Wildlife Refuge System in September 2011, the conservation area has acquired 119,578 grassland and wetland acres, all via perpetual conservation easements.

"Landowner interest is very high," says Harris Hoistad, a refuge manager within the Dakota Grassland Conservation Area. "We have a list of people waiting for us to work on their easement offer, and the infusion of Migratory Bird Conservation Commission funds has helped to get us off to a great start. We have a long way to go to reach the goals of the project, but we are making progress."

Weiszhaar is one reason for the progress. More than half his land is in grassland/wetland conservation easements. The Weiszhaar Ranch in north-central South Dakota covers about 13,700 acres. Of those, 2,600 acres are farmed for corn, alfalfa, wheat and soybeans, primarily to feed the ranch's 3,500 cattle. The remaining 11,100 acres are native prairie range—7,000 of them in easements.

"Corn at \$7 and soybeans at \$14" per bushel, Weiszhaar says, is a major economic incentive for fellow Dakotans "to turn this land upside down and farm it. They're breaking it up at an alarming rate. Once native range is broken up, it's not native range. We would love to see



*The Dakota Grassland Conservation Area was established as part of the National Wildlife Refuge System in September 2011. It aims to conserve what participating cattle rancher Wade Weiszhaar calls "the vastness, the openness, the sea of grass that seems like it just goes on forever" in the Prairie Pothole Region. (Tom Koerner/USFWS)*

the land stay the way it was hundreds of years ago. We understand that we need farming in our country, too, but it seems like it's going overboard."

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**"Landowner interest is very high."**

The Dakota Grassland Conservation Area is designed to slow that rapid conversion of native prairie to agriculture. It augments the U.S. Fish and Service's 55-year-old Small Wetlands Acquisition Program to conserve habitat in the Prairie Pothole Region.

The region—named for its millions of small, water-filled glacial depressions, or "potholes"—is known as North America's "duck factory." Its grasslands and wetlands are vital to millions of migratory birds, grassland nesting prairie songbirds and waterfowl.

The conservation area is an overlay of nearly all wetland management districts in the Dakotas. Hoistad compares it to a refuge where the land is owned by another agency but the Service also has a property interest. Think Merritt Island National Wildlife Refuge overlaying Kennedy Space Center in Florida. "Except in this case," Hoistad says, "our existing refuge land interests are being added to by the acquisitions of the conservation area project."

Last year, Service Director Dan Ashe redirected Migratory Bird Conservation Fund money toward the Prairie Pothole Region. The Dakota Grassland Conservation Area uses money from that fund, Ducks Unlimited, the North American Wetlands Conservation Act and the Land and Water Conservation Fund to acquire easements from landowners like Weiszhaar.

Why is slowing the conversion to agriculture and conserving prairie so important to him?

*continued on pg 12*

## Restoring the “Grandfather Trees of the Woods”

By Bill O'Brian

**B**efore European settlement, more than 90 million acres of longleaf pine forest blanketed the southeastern United States from southern Virginia to eastern Texas. Today, after centuries of logging, fire suppression and clearing for development and farming, just 3 million acres remain.

These forests remain mostly on patches of public land such as Mountain Longleaf and Cahaba River National Wildlife Refuges in Alabama, where manager Sarah Clardy is essentially a one-woman longleaf pine restoration operation.

Sure, Clardy has help from federal, state, academic and non-governmental conservation partners. Sure, she praises her predecessors' great work. But when it comes to accomplishing the primary mission of the two refuges—to conserve and restore longleaf pine forest—Clardy is it. Because one position was lost through retirement attrition and a second is vacant, Clardy is the only full-time U.S. Fish and Wildlife Service staff member at these two refuges and Watercress Darter Refuge.

“There can be 140 indigenous plant species within one square kilometer of longleaf pine ecosystem,” says Clardy. “That makes it as diverse as a tropical rainforest. It’s also one of the most endangered ecosystems. It’s important that plant species diversity is restored at Mountain Longleaf and Cahaba River Refuges; the more diverse the flora, the more diverse the fauna.”

About 35 percent of habitat at the 9,016-acre Mountain Longleaf Refuge in eastern Alabama is longleaf pine. A major challenge for restoration is that refuge land—which was Fort McClellan Army Base from 1917-1999—must be cleared of unexploded ordnance before thinning or small-block prescribed burns can be conducted. Still, since being established in 2003, the refuge has done



*As part of a longleaf pine forest restoration effort across the Southeast, Mountain Longleaf and Cahaba River National Wildlife Refuges in Alabama are helping young montane longleaf pines, left, grow to maturity, right. (Sarah Clardy/USFWS)*

large-block burns on 7,200 acres and chemically treated 71 acres.

“At Mountain Longleaf, the forest has been able to maintain itself with continuous regeneration,” says Clardy. The goal is to encourage that regeneration—mostly via prescribed fire, which “removes young hardwood species, thereby allowing the [fire-resistant] longleaf pine more nutrients, space and light, so it can grow and become established.”

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*“There can be 140 indigenous plant species within one square kilometer of longleaf pine ecosystem.”*

About one-third of 3,700-acre Cahaba River Refuge’s central Alabama habitat is longleaf pine, another third is upland or bottomland hardwood, and the final third is planted loblolly pine. The refuge, which was established in 2002, is working to restore abandoned coal mine land and replant 100 acres with longleaf pine in winter 2014-15. In winter 2004-05, 200

acres of loblolly pine were cleared and replanted in native longleaf pine.

“Everything we do is small in scale but moving toward the bigger picture” of landscape level longleaf pine restoration across the Southeast, Clardy says.

Partners such as Talladega National Forest, The Nature Conservancy, refuge Friends and universities—especially Auburn University and Jacksonville State University—have been vital to refuge research, restoration and outreach efforts.

“The better people understand why we’re doing what we’re doing, the more they will support us,” Clardy says. “When visitors feel that connection with the outdoors, with the forest, when they hear a bobwhite quail or pileated woodpecker, when they see a wild turkey ... then they get it.”

All longleaf trees at the two refuges are of the subspecies montane longleaf pine.

“They aren’t as tall or as big as coastal longleaf pine, but they are just as majestic,” says Clardy. “They’ve always stood out to me as the grandfather trees of the woods—like they are doling out wisdom to the younger trees.” 



## Prairie Partners: NRCS, TNC and Glacial Ridge Refuge

By Michelle Banks and Bill O'Brian

**M**igratory birds, waterfowl, nesting songbirds and other wildlife have a new place to call home at Glacial Ridge National Wildlife Refuge in northwestern Minnesota. Thousands of acres of marginal farmland have been converted back to native tallgrass prairie and wetlands in the nation's largest contiguous restoration effort of its kind.

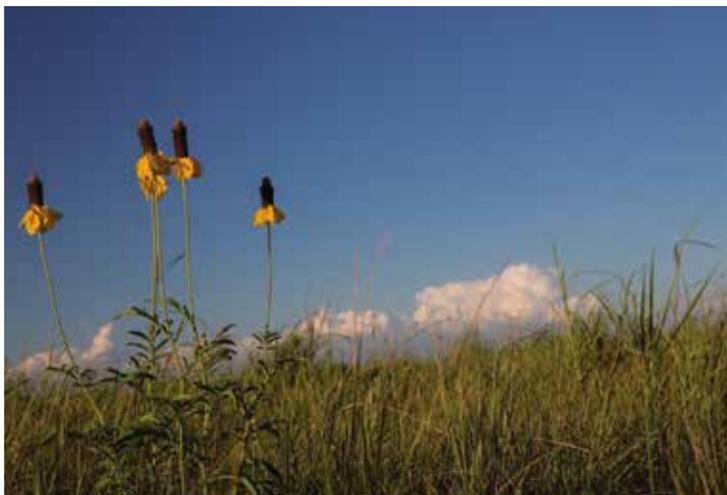
The refuge was established in 2004 to preserve and restore native tallgrass prairie and wetlands. Its acquisition boundary spans about 36,000 acres. Most of the land—lying in the sandy, rocky beaches of glacial Lake Agassiz—was once used for crop production and cattle/sheep grazing. Today much of it is again thriving for wildlife.

“You’re looking at basically the size of a township,” says Greg Bengtson, project manager for the Department of Agriculture’s Natural Resource Conservation Service (NRCS). “That’s a huge area.”

Over the past decade, Bengtson has worked with The Nature Conservancy, the U.S. Fish and Wildlife Service, two dozen other partners and 11 private landowners to conserve about 2,000 acres a year at Glacial Ridge Refuge via the NRCS Wetland Reserve Program.

“From the beginning, the partnership focused on The Nature Conservancy and NRCS initiating the project through land acquisition and prairie reconstruction, and the Fish and Wildlife Service concentrating on long-term management,” says Glacial Ridge Refuge manager Dave Bennett.

TNC purchased 24,000 acres from Tilden Farms Inc. in the early 2000s. The NRCS Wetland Reserve Program facilitated replanting of native tallgrass prairie habitats and restoration of land hydrology. The Service now owns about 21,000 acres, most via purchase or donation from TNC.



Since 2004, about 21,000 acres of native tallgrass prairie have been reconstructed at Glacial Ridge National Wildlife Refuge in Minnesota. Here, long-headed cone flowers in bloom dot the refuge landscape. (Courtesy John Gregor/ColdSnap Photography)

The refuge is managing the land, Bennett says, by controlling invasive species, such as reed canary grass, willows and hybrid cattails, that “are tenaciously trying to grow” and by managing diversity of plant species/vegetation height on the prairie.

With these combined efforts, Glacial Ridge Refuge is the largest contiguous tract of Wetland Reserve Program land in Minnesota and the largest contiguous tallgrass prairie project in U.S. history.

“We call it *reconstructed* prairie, rather than restored prairie,” says Bennett, “because the success of true prairie restoration is a many-years endeavor.”

Bennett, who has been manager since the refuge’s establishment, notes that only 1 percent remains of the 18 million acres of native tallgrass prairie that existed in Minnesota at the time of European settlement. This project represents a good start on prairie reconstruction, he says, but what makes it particularly valuable is its contiguousness. Contiguous native tallgrass prairie is vital to upwards of 300 wildlife and bird species.

Beyond that, Bennett says, an important legacy of the project is that the NRCS/TNC/Fish and Wildlife Service

partnership “that helped create the refuge will always be active. It will be used to expand what we’ve learned at Glacial Ridge—to take that knowledge of landscape management, the ideals that benefit nature and people—and expand it beyond the current boundary.”

Bennett and Bengtson emphasize that,

along with improved habitat for native plants and animals, Glacial Ridge Refuge helps humans, too.

Healthy native tallgrass prairie and wetlands “improve the quality of the water running off the site and into the township,” says Bengtson. New public drinking-water wells for the city of Crookston, MN, are on Glacial Ridge Refuge. In addition to providing natural water filtration, healthy habitat saves communities money by providing natural flood control.

Despite a recently published U. S. Geology Survey study that documented mercury in some shallow refuge wetlands, Bennett says that wetlands are a vital component of prairie habitat.

“Mercury deposition that has fallen on our Earth is detectable in various degrees across northern Minnesota,” he says. “The degree to which this affects the biotic communities is something we will study, better understand and manage.”

*Michelle Banks is a Natural Resource Conservation Service public affairs officer. Bill O'Brian is managing editor of Refuge Update.*

## Community Support Is Key From the Start —from page 8

he sees uncertainty on one hand and guidance from *Conserving the Future* on the other.

“The last 40 years, we were pretty sure. The next 40 years, we are not as sure,” he says. “The Land and

Water Conservation Fund is up for reauthorization in 2015. Without that reauthorization, there’s zero money appropriated for land acquisition from Congress. We would be strictly limited to our Migratory Bird Conservation Fund dollars as allocated by the Migratory

Bird Conservation Commission for waterfowl refuges.”

Alvarez is optimistic reauthorization will occur, whether short-term or for another 50 years. Regardless, he says, “science is always going to drive our mission,” and the *Conserving the Future* strategic growth policy will provide direction.

“For the first time, the policy really narrows the land acquisition focus on migratory birds in decline, waterfowl and endangered species,” he says. “It’ll be tiering off existing plans, like endangered species plans, where land acquisition can be used as a tool for the conservation of that species.”

Still, he says, a key to establishing a new refuge is early land acquisition momentum:

“If you can only do one tract a year, you’re not connecting much with the community. In the first year if you can acquire land from 10 landowners who are willing sellers and the second year another 10, that not only helps you with community support for the Refuge System but also those landowners are voting members of the public who can be very influential in their communities and elsewhere.”



*Everglades Headwaters National Wildlife Refuge and Conservation Area in Florida was established in 2012. It is one of 38 refuges, conservation areas or wildlife management areas that have been added to the National Wildlife Refuge System since 2000. (Keenan Adams/USFWS)*

## Feral Horses —from page 3

horse to place them with an adoption contractor continues to increase. Kasbohm blames the drought-driven high price of hay and a market saturated with horses.

Now the refuge is partnering with horse advocates again, trying to find new adoption vendors and investigating a group that has offered to take 40 horses for free. “Unfortunately, we may have to take longer to remove the horses,” Kasbohm says.

In the end, Steblein says, “we recognize the stature of the horses. It’s an icon of the West. There’s a place for horses. Just not on a national wildlife refuge.”

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

## Progress on the Prairie —from page 9

First, Weiszhaar says, “the beef cattle operation is going to be a thing of the past if this keeps up ... and we love raising beef for the American consumer.”

Second, it’s about “the vastness, the openness, the sea of grass that seems like it just goes on forever,” he says. “The rolling hills and the prairie potholes seem like they were just meant for this part of the country, and we’d sure love to maintain that. If we take care of the land, the land takes care of us.”



# Rebuilding Trust at Vieques Refuge

By Susan Morse

If goodwill is key to a refuge's success, Vieques National Wildlife Refuge faced tough odds.

When the refuge was established in 2001 at a Navy weapons storage site on the Puerto Rican island of Vieques, it inherited not just thousands of acres of subtropical habitat, but a legacy of distrust.

Viequenses held protests to demand an end to 60 years of Navy bombing and land restrictions. In 2003, the Navy quit its island bombing range. But when Congress transferred that land to the refuge instead of returning it to local control, some community leaders fumed.

The refuge's first task? Convincing citizens "we're not the Navy," says Vieques Refuge manager Mike Barandiaran. "We have worked hard to show local citizens we have common interests and we can achieve them better by working together." Ten years later, it's a new ballgame, and building community relations is one reason why.

To serve residents and tourists, the refuge has kept its many secluded refuge beaches open 365 days a year. It has repaired roads (including two to the island's famed bioluminescent bay), built public restrooms, opened a new visitor center, trained local youth in conservation, and hired a bilingual, largely Puerto Rican and Viequense staff.

As requested by the community, the refuge has restored historic names (Caracas, La Chiva, Punta Arena) to beaches the Navy had rechristened Red, Blue and Green. And—most important—the refuge is protecting sea turtles, replanting mangroves and working with local citizens to spread a conservation ethos. What wins people to conservation here? National pride. Natural beauty. And economics: Nature-based tourism is a driver in the Vieques economy.

"This is the beginning of a brand-new age for us," Barandiaran says.

Oscar Diaz, who led the refuge from its 2001 start to 2007, agrees. "Relations with the community are much better," says Diaz, who today manages Cabo Rojo Refuge. "The Service has done an excellent job rebuilding trust."

Cleanup of contaminants left by the Navy continues. Searches for unexploded ordnance complicate refuge work. But as the refuge and partners learn to balance habitat restoration with Navy vegetation removal, prospects for conservation are brightening.

## Residents Help With Turtles

One focus is protecting endangered leatherback, hawksbill and green turtles that nest at the refuge. Each spring, residents help monitor nests on refuge beaches. "It's too much for one person to do," says Mitsuka Bermudez, a Viequense woman who protested against the Navy presence and now is vice president of *TICATOVE*, the refuge Friends group. "We have over 40 sea turtle nesting beaches. If it weren't for volunteers with *TICATOVE*, we couldn't do it." More than 20 volunteers worked eight-hour patrol shifts in May.

Another focus is conserving native plants. Recently the refuge propagated two native endangered species—*cobana negra* and *matabuey*. On Earth Day local families helped transplant the seedlings to a new refuge greenhouse. They also learned about restoring native



To accommodate residents and tourists, Vieques National Wildlife Refuge in Puerto Rico keeps its secluded beaches open 365 days a year. At the request of the local community, the refuge also restored historic names to the beaches—including this one, Caracas Beach. (Susan Morse/USFWS)

mangroves, which filter saltwater and stop beach erosion, and controlling invasive mesquite.

Engaging youth is a priority. In June the refuge co-hosted the island's fourth youth fishing derby. More than 400 people—137 kids—attended. A Youth Conservation Corps team led a beach and pier cleanup. In June the refuge also co-hosted its second two-week conservation workshop for kids ages 5 to 12.

The common thread? "Buy-in from the community," says refuge law officer Zack Kincaid. "That's the thing here: trying to convince the community that we're here to do some good. What did Aldo Leopold say? Ninety percent of wildlife management is people management."

Vieques Refuge is determined to get that right. 

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

# Around the Refuge System

## Arkansas-Missouri

The Department of the Interior in early July rescinded the national blueway designation for the White River of Arkansas and Missouri. The move came after opponents contended that the designation could result in new regulations or private land seizures. Supporters said those objections could make landowners hesitant to voluntarily take part in conservation efforts. DOI spokeswoman Jessica Kershaw said the Department withdrew the designation “in light of requests received from local and state stakeholders.” The National Blueways System was created in 2012 as part of the America’s Great Outdoors initiative. The White River was the second national blueway. The Connecticut River watershed in New England was the first. An article about how blueway status would have benefited the White River watershed appeared in July/August *Refuge Update*.

## New Mexico

A Rufous-necked wood rail was sighted at Bosque del Apache National Wildlife this summer. It was the first recorded sighting of the bird in the United States. The small, chicken-size bird typically is found in Central and South America. It was first seen by 19-year-old Matt Daw on July 7. Immediately afterward, hundreds of birders came to the refuge along the Rio Grande to see the Rufous-necked wood rail for themselves. “It’s way cool,” said refuge manager Aaron Mize. “We have people flying into Albuquerque every day, from Florida, California, the East Coast. There are people coming in renting cars and driving down because it’s such a neat and rare event.”

## New National Recreation Trails

Three refuge trails were among 28 newly designated national recreation trails announced by Interior Secretary Sally Jewell in May.

*Mud Pond Trail*—In the Pondicherry Division of Silvio O. Conte National Fish and Wildlife Refuge, NH, visitors walk through a forest community uncommon

to the Connecticut River Valley to a pond and a boreal forest fen. The 0.6-mile universally accessible trail has 900 feet of raised boardwalk with rest stops that offer extraordinary views.

*Timber Point Trail*—At Rachel Carson Refuge, ME, a 1.4-mile trail with an elevated platform takes visitors past freshwater wetlands, fringing salt marshes, cattail marshes, mixed deciduous forest, mudflats (used by shorebirds), coastal shrublands, rocky shores, and views of the Little River Estuary and the Atlantic Ocean.

*Hellcat Interpretive Trail*—At Parker River River Refuge, MA, two branches of the one-mile Hellcat Interpretive Trail meander through dunes, shrub thickets, vernal pools, maritime forest and brackish marsh habitats. More than 120,000 visitors enjoy the trail annually.

For more information about refuge trails, go to <http://www.fws.gov/refuges/trails>.



*A visitor enjoys the new universally accessible Mud Pond Trail at New England’s Silvio O. Conte National Fish and Wildlife Refuge. It is one of three refuge trails newly designated as national recreation trails. (USFWS)*

## Florida

- Archie Carr National Wildlife Refuge broke a record this season for green sea turtle nesting. As of mid-August, there were 8,714 green sea turtle nests on the refuge, exceeding the previous record (2011) of 6,023 nests for the entire season. And the green turtles will continue nesting until October. “We should be screaming from the rooftops,” says refuge manager Kristen Kniefel. “A 13 percent increase in green sea turtle nests year after year is unheard of in wildlife recovery efforts.” Each nest has 100-120 eggs, but only one hatchling in 1,000 survives to adulthood. Archie Carr Refuge boasts the highest density of loggerhead sea turtle nesting in the world and the highest nesting density for green sea turtles in North America.

- Merritt Island National Wildlife Refuge overlays NASA’s Kennedy Space Center. The state of Florida has proposed building a 150-acre commercial spaceport on the refuge’s northern edge. Proponents say the spaceport would give the Space Coast region a much-needed economic boost. A coalition of outdoors/environmental groups has asked the Department of the Interior to oppose to the spaceport. “The northern end of the refuge is our most pristine area,” says refuge manager Layne Hamilton. “This is an area we have been managing for wildlife since we acquired it.” Hamilton is concerned about many aspects of the proposed spaceport’s impact. She is worried about adjacent habitat for waterfowl and the threatened Florida scrub jay. She is worried that the spaceport would further restrict prescribed burns vital to healthy scrub jay habitat. She says the spaceport could disturb an important cultural resource, an 18th-century British sugar mill

## North Carolina



This new 6-by-24-foot mural hangs at the Coastal North Carolina National Wildlife Refuges Gateway Visitor Center. It depicts scenes ranging from Pea Island Refuge barrier island beaches to Roanoke River Refuge cypress/gum swamps. It was painted by Manteo (NC) High School art students under the guidance of teacher Robin York. (USFWS)

called Elliott Plantation. She worries about the “hundreds of thousands of visitors” to the refuge and Cape Canaveral National Seashore who would be turned away during the spaceport’s one dozen to two dozen planned launches a year. The Federal Aviation Administration is overseeing an environmental impact study of the spaceport proposal. The study is expected to take about a year.

- A mid-July frog call survey by J.N. “Ding” Darling National Wildlife Refuge and the Sanibel-Captiva Conservation Foundation discovered an invasive toad species that is potentially dangerous to local wildlife and pets. The foundation issued an action alert about giant toads, also known as cane toads or marine toads, which were found in a temporary wetland near the refuge. The foundation said the frogs’ large glands behind the eyes and above the shoulders produce a toxin that can be fatal to small wildlife—and even giant toad tadpoles are toxic. The foundation recommended that care be taken to prevent pets from putting the toads in their mouths.

## North Dakota

For the second straight year, about 30,000 breeding American white pelicans returned to Chase Lake National Wildlife

Refuge, which appears to have recovered from a mass disappearance of the birds a decade ago. Refuge manager Neil Shook says the nesting pelican population has increased since 2004 and 2005, when almost 30,000 pelicans left the refuge and thousands of chicks later died. An aerial count this summer showed about 15,000 nests, with an estimated two adults per nest. Last year, a similar count found 31,534 breeding adults, up from 20,854 in 2011. This summer was “down a little but still above the long-term average,” says Shook. The refuge has one of the largest white pelican nesting colonies in North America. Adult pelicans generally arrive at the refuge by mid-April, nesting starts in early May, chicks hatch in June, and the pelicans leave by September. Most of the Chase Lake pelicans are believed to migrate to the Gulf Coast for the winter.

## The Surprising Benefits of Refuges

A report released by the Cooperative Alliance for Refuge Enhancement (CARE) highlights unexpected benefits that national wildlife refuges add to the health, safety and economic well-being of the American people. Among the benefits described in *America’s Wildlife Refuges 2013: Delivering the Unexpected* are:

- Eighty percent of the nation’s 561 refuges provide natural buffers against urbanization and other development

pressures, thereby preserving undeveloped lands and airspace that enable military units to execute vital training missions.

- Conservation easements on nearly 3.5 million acres of refuge lands allow many private landowners to keep their ranches and farms in production.
- Henderson Airfield at Midway Atoll Refuge has been estimated to save commercial airlines at least \$28 million annually and, in 2012 alone, was used by nearly 50 private and military flights for emergency or refueling purposes.
- Wildlife refuges generate more than \$32.3 billion each year in natural goods and services, such as buffering coastal communities from storm surges, filtering pollutants from municipal water supplies and pollinating food crops.
- Refuge employees often double as first responders to natural disasters and other emergencies.

CARE is a coalition of 22 wildlife, sporting, conservation and scientific organizations that support refuges. 

# Road Culverts Improve Safety and Habitat Connectivity

By Jeff Mast

Roads and other transportation infrastructure are vital to visitors and conservation managers at national wildlife refuges. They also can fragment habitat and compromise wildlife and driver safety.

Recognizing this, the U.S. Fish and Wildlife Service Transportation Program has been working with the Federal Highway Administration (FHWA) and state/local agencies to improve habitat connectivity and safety, especially in working to build wildlife culverts and fish passages under new/improved roads near refuges.

At **Laguna Atascosa National Wildlife Refuge** in south Texas, acting manager Leo Gustafson says data show that on average endangered ocelots cross refuge visitor roads about 45 times per month and a local state highway about four times a month. Gustafson points out that the estimated dozen ocelots at the refuge are “one of only two remaining breeding populations known to occur in the United States.” The other population of three dozen is on private land north of the refuge. South Texas zone biologist Mitch Sternberg says at least 20 ocelots have died in road accidents in recent decades. Conserving and connecting habitat for ocelots is critical to minimizing mortality risk and improving the species’ ability to flourish. In 2016, the Service and the FHWA are planning to build five ocelot crossings, two on the refuge and three on a bordering county road.

Southwest Region refuge transportation coordinator Robert O’Brien hopes the crossings will “demonstrate to local and state DOTs that we are being proactive on our side of the fence, and the crossings on the refuge can serve as an example design for wildlife crossings outside the refuge on state and county roads.”

At **Kenai National Wildlife Refuge** in Alaska, supervisory biologist John Morton says that in 2009 more than 1.4 million vehicles traveled the 22 miles of the Sterling Highway bisecting the



*Increasingly, national wildlife refuges and federal, state and local highway agencies are collaborating on wildlife culverts and fish passages like this one at Kenai National Wildlife Refuge in Alaska. Culverts improve habitat connectivity and road safety. (Steve Suder/USFWS)*

refuge. From 2000 to 2007, Morton says, “there were 174 vehicle collisions with wildlife on this road section, including 24 black bear, three brown bear, five caribou and 142 moose.”

As a result, agencies are cooperating to identify the crossing hotspots. The refuge is working with Alaska DOT to develop wildlife-mitigation structures as part of the state’s plans to improve that section of the highway as soon as funding is available.

At **Silvio O. Conte National Fish and Wildlife Refuge’s Nulhegan Basin Division**, staff members are working with the Vermont Fish and Wildlife Department and Trout Unlimited to inventory/prioritize culverts to improve fish habitat connectivity. A major rehabilitation of Lewis Pond Overlook Road this summer included three fish-bearing culverts where barriers to fish passage existed previously.

At **Alligator River National Wildlife Refuge**, North Carolina DOT, the Service’s Southeast Region and refuge

staff are for the first time discussing black bear and red wolf crossing issues along state routes that run through the refuge. They seek to minimize wildlife mortality.

At **Great Dismal Swamp National Wildlife Refuge** on the Virginia-North Carolina border, in 2005 a multi-agency partnership resulted in two large crossing underpasses, as well as several small structures, to accommodate the passage of black bears, deer and bobcats under

U.S. Route 17, which skirts the refuge. This is especially important because the refuge is at biological carrying capacity for bears, and juveniles are likely to establish territory beyond the refuge’s boundary. “With a four-lane, divided highway that receives a lot of traffic, it is essential to have safe crossings for the bears to move east from the swamp,” says refuge manager Chris Lowie.

Steve Suder, the Service’s national transportation program manager, says the key is federal-state-local cooperation from the start:

“As we look forward at mitigating the impact of wildlife-vehicle collisions in the vicinity of national wildlife refuges, we must be proactive and collaborate with our partner agencies to achieve the many mutual benefits that result.”

*Jeff Mast is Refuge System transportation coordinator for the Northeast Region.*

## As Floodwaters Rose, Service Rose to the Occasion — from page 1

This year, in late May, the breakup went terribly wrong.

Ice jammed at an S-curve about 20 miles downstream of Galena, stopped the flow and, over three days, caused the river to back up to flood levels elders had never seen. By the time the waters receded, approximately 300 of Galena's 500 residents had voluntarily evacuated; scores of houses and buildings had been destroyed or damaged; meat and fish in residents' freezers had spoiled; snowmachines, ATVs, cars, trucks, wood splitters and fuel tanks had been ruined or lost. But, thankfully, nobody was hurt or injured.

Ever since then, U.S. Fish and Wildlife Service employees have been there for the people of Galena.

Seven of Koyukuk and Nowitna Refuges' 13 employees—Kenton Moos, Wayne Strassburg, Brad Scotton, Frank Harris, Aimee Rockhill, Ben Pratt and Ben Koontz—stayed as waters rose rapidly. They watched over eight federal government-owned houses and the refuge office, and helped the community. Keith Ramos and refuge information technician Myra Harris coordinated emergency equipment purchases from Fairbanks. State evacuation planes were slow in coming, and refuge ranger Karin Bodony pushed for more of them for stranded residents.

Kanuti Refuge manager Mike Spindler, a pilot stationed in Fairbanks, flew a satellite phone in for Moos. Spindler was joined by regional heavy equipment coordinator Thomas Siekaniec, regional facility manager Troy Civitillo, and wage-grade employees Bradley Storm and Paul Banyas of Kanuti Refuge and Arctic Refuge, respectively, to help with initial cleanup.

Throughout this crisis and its aftermath, Moos has demonstrated true leadership. He has made staff and family safety the priority. He made sure those who stayed were okay emotionally and physically. He tirelessly orchestrated the pulling of wet insulation, plywood and sheetrock to avoid mold and rotting. He went house to house, running generators trying to save

food. He has balanced caring for our assets with helping neighbors. With houses unlivable, staff families have been separated. Still, Moos has salvaged a couple of refuge projects, in part to provide staff with a break from the flood.

Interns Traven Apiki from Alaska Maritime Refuge and Alfredo Soto of Arctic Refuge and almost two dozen Service employees from elsewhere voluntarily have come to Galena for stints to help the refuge and the community.

Through it all, everyone's can-do attitude has been amazing.

"I have always felt that those who live in bush Alaska are a special breed," says Bodony, a long-time Galena resident. "This became quite evident throughout the flood. Without exception, everyone I was with acted calmly, carefully and selflessly to make sure that everyone was taken care of."

Apiki echoes that sentiment: "The event that took place in Galena was a complete tragedy, and yet all the residents were in high spirits."

Residents have spent the summer rebuilding houses and acquiring provisions needed to make it through a winter where there are no restaurants or box stores. Fall starts in September. Winter comes right on fall's heels—and winter in Interior Alaska is not for the weak. Flying or barging in supplies is



An ice jam on the Yukon River resulted in massive flooding in Galena, AK, which is headquarters for Koyukuk and Nowitna National Wildlife Refuges. Since the May flood, U.S. Fish and Wildlife Service employees have been helping the village to recover. (USFWS)



Alaska Region heavy equipment coordinator Thomas Siekaniec; Kanuti National Wildlife Refuge wage-grade employee Bradley Storm and refuge manager Mike Spindler; and Arctic Refuge wage-grade employee Paul Banyas went to Galena promptly to help with initial cleanup. (USFWS)

not cheap. But with the help of state and federal disaster aid, emergency managers, volunteers and our dedicated employees, Galena is rebuilding.

Soto says more than one resident told him: "I didn't think it was possible to come back and rebuild the home and the life I used to have. You all have given me great hope." 🦋

Tracey McDonnell is Alaska Region refuge supervisor.

## Chief's Corner — continued from page 2

The first release of cranes raised from a captive flock at the Patuxent Wildlife Research Center took place in 1981. When I left Mississippi Sandhill Crane Refuge in 1983, we didn't know whether we could save the birds from extinction, but I felt our work might make the difference.

Today the picture is much brighter. A record 39 nests were found this year. The refuge has a sophisticated fire program that has greatly improved habitat, and an outstanding biological program that not only tracks how the cranes are doing, but has also learned a lot about other creatures that live in the savannas and wetlands.

### *Working on a new refuge reminds me of being a parent: You never tire of watching your kids grow.*

I know budgets are a real problem for folks in the field, but it's hard not to recognize the tremendous progress that has been made. I had a lot of fun back then, working with great people for a great cause. I am proud of my many colleagues who have carried on the work over the past 30 years—at Mississippi

Sandhill Crane Refuge, and at Bogue Chitto and Bon Secour Refuges, which we administered from Mississippi immediately after they were established.

Working on a new refuge reminds me of being a parent: You never tire of watching your kids grow, and you marvel at the things they accomplish. If you ever get the opportunity to help start up a new refuge, I hope you jump at the chance.



## From the Director — continued from page 2

habitat, installing/building water control structures for fish raceways, creating walking trails and boardwalks, farming.”

The Service would also suffer greatly without sharp administrative staffers, who do anything and everything to support the work of their refuges.

Bob Strader, project leader at Lower Mississippi River Refuge Complex, calls administrative staff “the glue that binds us together and the oil that keeps us going.”

In his office, it's administrative officer Charman Cupit.

Cupit, Strader says, “wears many hats and wears them well”—from budgeting and information technology management to photography and volunteer coordination.

At Quivira Refuge in Kansas, says manager Mike Oldham, Christine LaRue is the budget analyst but also a radio dispatcher during fires, educator, volunteer, greeter and all-around problem-solver.

Administrative officer Ginger Taylor at Southeast Louisiana Refuge Complex is so good at budgeting that the complex is able to spend its funds “down to the last penny” yet never go over



*Maintenance work leader Dennis Vicente takes a measurement for a wetland water delivery ditch and control structure at New Mexico's Bosque del Apache National Wildlife Refuge. Deputy refuge manager Aaron Mize says that what Vicente does is “not just a science, but an art.” (Sean Brophy/USFWS)*

budget, project leader Ken Litzenberger says.

Whatever hats our wage-grade and administrative professionals may be wearing at a given time, don't for a second doubt their vital role in conservation.

As Pacific Southwest Region inventory and monitoring coordinator Karen Laing says of her agreements technician and administrative officer, Rita Howard, these dedicated employees “inspire us all to redouble our work for wildlife conservation.”

To all who work behind the scenes to support conservation, I hope you know how much I and the entire Service value you. The successes we've achieved are yours as well, and you should be proud. 

*The Service's National Conservation Training Center is working on an exhibit about wage-grade professionals and all that they have made possible.*



*The members of a middle school nature group enjoy the view from a state park overlooking New Haven, CT. Stewart B. McKinney National Wildlife Refuge will work closely with the urban wildlife refuge partnership there. (Common Ground Connecticut)*



*Amira Ghazzah of Chicago enjoys a marsh at Bartel Grassland just south of the city. An urban wildlife refuge partnership there aims to create a ladder of nature learning and engagement opportunities that starts in urban neighborhoods and expands to the forest preserves, and ultimately, refuges. (Cristina Rutter/Forest Preserve District of Cook County)*

## Refuge System Is Establishing 7 Urban Wildlife Refuge Partnerships — continued from page 1

expanding the nation’s conservation constituency. The seven partnerships are:

**Creating Urban Oasis in New Haven Harbor Watershed.** This Connecticut project will create a network of wildlife-friendly habitat oases and habitat improvements in municipal parks, schoolyards, vacant lots and units of Stewart B. McKinney National Wildlife Refuge.

**Forest Preserve District of Cook County, Chicago.** This project focuses on creating a ladder of nature learning and engagement opportunities that starts in urban neighborhoods and expands to the forest preserves, and ultimately, refuges.

**Houston Wilderness.** The Texas Mid-Coast Refuge Complex will be part of a coalition to create a coordinated Service conservation presence in the Houston metro area.

**Providence Diversity of Wildlife, Lands and Communities Project.** The Rhode Island Refuge Complex and the Service’s Southern New England/New York Bight Coastal Program will work with partners to take conservation messages to more than 100 parks, schools and a zoo.

**Masonville Cove Urban Wildlife Refuge, Baltimore.** This Maryland cooperative between the Chesapeake Bay Ecological Services office and Patuxent Research Refuge will bring a conservation message to a poor, high-crime neighborhood along the Patapsco River.



**Lake Sammamish Kokanee Salmon Partnership, Seattle.** It will increase awareness, understanding and support of the Service, the Refuge System and conservation of aquatic ecosystems and native species at Lake Sammamish State Park and the Issaquah State Salmon Hatchery and elsewhere.

**Los Angeles River Rover.** The San Diego Refuge Complex will create a River Rover, whose goal is to bring “people to the river” and “the river to the people.” The project will involve a mobile exhibit space to include an interactive model of the Los Angeles River watershed.

“With 80 percent of the U.S. population currently residing in urban communities, the challenge to ensure our natural resources are conserved and valued by the American people has become even more complex,” the implementation team said in explaining the partnerships. “To ensure that we nurture a new conservation constituency, the U.S. Fish and Wildlife Service must promote strategies to engage these audiences in meaningful, collaborative ways that build sustainable, broad-based support for the mission.”

For more information, go to <http://AmericasWildlife.org>.





# RefugeUpdate

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## A Look Back ... Harold Benson

**H**arold Benson and his wife, Betty, had just bought a house near Washington, DC, when Harold said, “we’re going to North Dakota.”

“There’s no trees out there, are there?” she asked.

“No, this is an opportunity for a new employee to go out and see if he can do anything,” he replied.

And so, in 1958, Benson began building the Small Wetlands Acquisition Program, which uses Duck Stamp proceeds and conservation easements to protect migratory bird and waterfowl habitat, mainly in the Prairie Pothole Region.

“Back in those early years,” Benson recalled in an oral history interview at the National Conservation Training Center, “we spent all the money we could spend, and I know, myself, I had taken almost 200 agreements the first year.”

Benson was born in Minneapolis in 1929. He graduated with a degree in forestry from the University of Minnesota before serving in the Korean War and beginning



*Harold Benson (1929-2007) was a conservation pioneer on several fronts. (USFWS)*

a 30-year career with the U.S. Fish and Wildlife Service in 1958.

He was an early leader in two other major conservation efforts—the Endangered Species Act of 1973 and the North American Waterfowl Management Plan of 1986. He became the first assistant regional director for federal aid and endangered species, writing the first biological opinion on the Everglade

kite. Later, as chief of refuges in the Southeast Region, Benson worked on the joint ventures that were critical to the success of the North American Plan. Charles Baxter, the first joint venture coordinator for the Lower Mississippi Valley, says Benson “had a personal interest in the success of the plan. And his management style was such that he came to basically every meeting ... so I always had a supervisor that understood what I was doing.”

Benson received the Department of the Interior Distinguished Service Award in 1995. His pioneering leadership in the Small Wetlands Acquisition Program (SWAP) was recognized in 2008 when the Harold W. Benson Memorial Waterfowl Production Area was re-named in his honor at Chase Lake Wetland Management District in North Dakota.

SWAP colleague Paul Hartmann says of Benson: “There were but a few who saw every obstacle as an opportunity ... he was the leader who inspired the rest of us to go out and ‘save the dirt.’” 

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