



RefugeUpdate

National Wildlife Refuge System

www.fws.gov/refuges



INSIDE: Merritt Island National Wildlife Refuge in Florida is one of several refuges where the endangered green sea turtle is found. See the Focus section, which celebrates this year's 40th anniversary of the Endangered Species Act. (Caroline S. Rogers/U.S. Geological Survey)

Teaming Up to Save Money, Share Skills, Boost Morale

By Heather Dewar

Litchfield Wetland Management District in central Minnesota sprawls across 36,000 acres in seven counties. Its maintenance crew is always busy. So, awhile back when mechanic Steve Warner asked to spend two weeks at a faraway national wildlife refuge building a road as part of a Maintenance Action Team (MAT), district manager Scott Glup was skeptical.

“My initial thought was: ‘Okay, we have more work than we can get done. Why do I want to send my folks off to work on another station?’ ”

But Glup approved the request and saw an immediate payoff. Team members “come back feeling better about themselves and their jobs,” he says. “And they come back with a different skill set that involves coordination and working with others.”

Now, Glup is a believer. “Anytime someone here wants to go on a MAT project, I say, ‘You bet. Go.’ ”

The National Wildlife Refuge System wants others to follow suit. Last summer, Chief Jim Kurth and the regional refuge chiefs approved a work group’s recommendation

continued on pg 23

Bringing the Vision To Your Community



Conserving the Future concepts are getting real.

As spring and fall dates for some finalized plans draw near, many implementation teams are drafting strategies that are available for public discourse.

Reading the draft plans makes one fact stand out, says *Conserving the Future* implementation coordinator Anna Harris: The National Wildlife Refuge System will operate differently in the coming decade than it has in the past. “We have long talked about reaching people who live in cities, younger people and those from varied ethnic backgrounds. These plans will transform talk into action.”

The Communications implementation team has put forth a five-year

continued on pg 22

From the Director

Partners, Vision and the Endangered Species Act

Recognizing that every extinction threatens the web of life that supports us all, Congress in 1973 passed one of the world's most important pieces of conservation legislation—the Endangered Species Act.



Dan Ashe

In the 40 years since, the ESA has provided a vital safety net for America's native fish, wildlife and plants. The act's protections have enabled us to work with our partners to recover

dozens of species, including the bald eagle, grizzly bear and American alligator.

But the number of species that have recovered is by no means a complete measure of the ESA's success. The act has also succeeded in preventing the extinction of hundreds of species, stabilizing populations and fostering voluntary conservation efforts for many others.

National wildlife refuges are an important part of the ESA's success.

Fifty-eight refuges were specifically established to protect listed species; 248 refuges are home to more than 280 endangered or threatened species. To cite just two examples, Driftless Area National Wildlife Refuge in northeastern Iowa is home to the Iowa Pleistocene snail; and Key Cave Refuge in northern Alabama provides habitat for gray bats, Indiana bats and cave crayfish.

As a child, I accompanied my father on trips to National Key Deer Refuge, "Ding" Darling Refuge, Blackbeard Island Refuge and others serving endangered and threatened species.

Without the National Wildlife Refuge System, many endangered species would not be making the recoveries they are. The dramatic comeback of the California condor could not have happened without Hopper Mountain Refuge Complex. Archie Carr Refuge continues to provide crucial habitat for nesting sea turtles.

But we can't achieve our conservation mission by providing habitat for threatened and endangered species

continued on pg 16

Chief's Corner

Where the Sky Is Naturally Blue

Twitter employees can use their laptops on the new 20,000-square-foot ninth-story deck and succulent plant garden at the company's San Francisco headquarters. Cool



Jim Kurth

perk, you think, but Twitter's one of those edgy, new media employers. On the other hand, New Jersey's BASF chemical company is an old-line corporation. Its employees now can hold meetings and

conference calls on plant-filled patios and quads. Executives at the venerable public

relations firm Ogilvy & Mather in New York can break from their office cubicles to take in Hudson River views on the company deck.

In years past, employees with some of the most progressive corporations boasted about foosball tables and free snacks. Now, they are bragging about outdoor workspace.

What's up?

Research shows people feel less stress and may even perform better with some fresh air. So companies are investing in open-air places for employees to meet, work or just clear their heads.

continued on pg 22

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

This newsletter is
published on recycled
paper using soy-based
ink.



Inside

Cooperative Cleanup

The U.S. Border Patrol and the U.S. Fish and Wildlife Service have removed three dozen abandoned vehicles from Cabeza Prieta Refuge in Arizona. Page 4

Urban Refuge Intern

Patuxent Research Refuge's first urban wildlife refuge intern is bringing a conservation message to schools. Page 5

Refuges' Value to Birds

The National Audubon Society's 2011-12 Christmas Bird Count report provides statistical data that demonstrate the importance of national wildlife refuges to birds. Page 7

FOCUS: Endangered Species

As the Endangered Species Act celebrates its 40th anniversary in 2013, refuges play a big role in conserving habitat to help such species recover. Pages 8-17

As Sandy Slammed Refuges, the Service Responded

By Ashley Spratt

Superstorm Sandy left its mark in late October not only on millions of people in densely populated areas along the Eastern seaboard but also on national wildlife refuges from North Carolina to Maine.

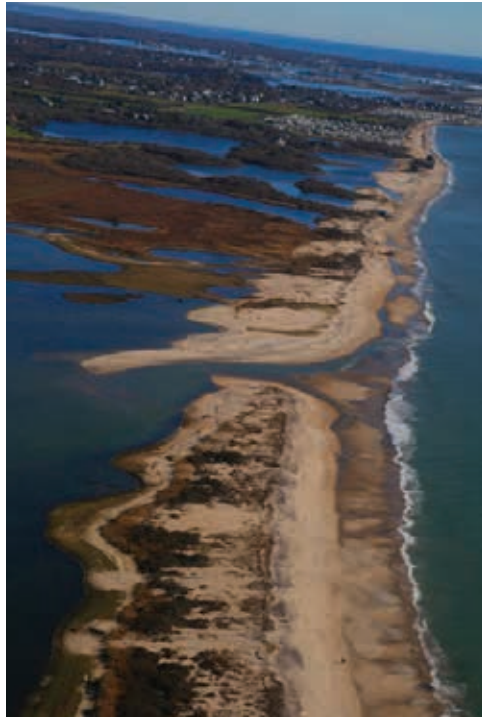
Among the public lands hardest hit by gale-force winds, Atlantic Ocean surges and related flooding were Edwin B. Forsythe National Wildlife Refuge, NJ; Chincoteague Refuge, VA; Prime Hook Refuge, DE; Long Island Refuge Complex, NY; and Rhode Island Refuge Complex.

Within days of the storm, U.S. Fish and Wildlife Service biologists, pilots, maintenance workers and emergency specialists from out of state journeyed to hard-hit areas to help colleagues clean up structural damage, downed trees, washed-out roads and more. Often, they spent nights in sleeping bags in refuge quarters without reliable electricity.

“With power resources and gas resources dwindling, it’s been a little bit of a dire week for us,” Long Island Refuge Complex manager Michelle Potter said seven days after Sandy’s landfall. “We have a crew of 17 people here from Massachusetts and Maine, and we are thrilled to have them here. They’ve been working like crazy cutting trees, repairing roofs and assisting with general refuge cleanup.”

Extensive Damage

The storm dislodged the observation deck from its foundation at Target Rock Refuge, part of the Long Island complex. On the New Jersey shore, much of popular wildlife drive at E.B. Forsythe Refuge was washed out, and an earthen dike between a freshwater pond and the ocean was breached. At Prime Hook Refuge, a 1,500-foot dune break left Delaware Bay saltwater in a freshwater pond, too. Farther south, roads leading to Chincoteague Refuge became impassible, and parts of the refuge’s beach and parking lots were washed away.



At Trustum Pond National Wildlife Refuge in Rhode Island, top, the storm breached the barrier between a freshwater pond and the Atlantic Ocean. At Target Rock Refuge on Long Island, NY, the storm dislodged an overlook deck from its foundation. (USFWS)

As crews cleared debris and made initial repairs to refuge visitor centers, headquarters and other structures, Service responders took to the air by helicopter to document damage.

Potter surveyed the Long Island complex during an aerial damage assessment made possible by the Service’s Southeast Region. “We noticed a lot more debris

washed up in storm wreck than we thought we had,” she said. “Numerous kayaks, boats, a refrigerator, a lot of garbage and a lot of trees were blown down [on refuge property]. Thankfully, our beach nesting habitat for plovers and least terns appears intact.”


The long-term ecological impacts on refuges are uncertain. A storm surge broke the barrier between the ocean and 160-acre Trustum Pond, the only undeveloped freshwater coastal pond in Rhode Island, resulting in a surge of saltwater intrusion.

Trustum Pond Refuge supports waterfowl and freshwater fish, including bass and perch. “Assessments will be necessary to monitor the storm’s impacts to the breadth of wildlife diversity here at the refuge in the long term,” said Janis Nepshinsky, a refuge outdoor recreation planner. The influx and receding saltwater flushed out freshwater fish species and dramatically lowered water levels.

Bird Migration Data

Caleb Spiegel, a Northeast Region wildlife biologist with the Service’s Division of Migratory Birds, said his program has been using satellite telemetry to document annual migration and winter movement patterns of seabirds like the red-throated loon, northern gannet and surf scoter. Such satellite tracking information is providing valuable data for assessing how migrating birds respond to hurricanes.

Spiegel found evidence that a northern gannet migrating down the New Jersey coast encountered the storm during peak intensity and turned back north to wait it out in place where Sandy’s effects were less severe.

As of early December, all refuges in Sandy’s path had reopened, at least in part, except for Pea Island Refuge, NC, and Sachuest Point Refuge, RI. They are closed indefinitely for repairs. 

Ashley Spratt is a public affairs specialist in the Northeast Region office in Hadley, MA.

Cooperative Cleanup in Desert Wilderness

By Tom Buckley and Sid Slone

Imagine boundless desert, mountains casting shadows over barren valleys once swept by lava, and saguaros cacti looming in stark profile above baked earth. Imagine a designated wilderness area almost the size of Rhode Island with no people and only one wagon track of a road. Imagine a place where plant and animal life persists, even thrives, despite searing summer temperatures and precious little rain.

Next, imagine three dozen abandoned vehicles littering that pristine landscape.

That, until recently, was Cabeza Prieta National Wildlife Refuge in southwestern Arizona.

Now, thanks to cooperation between the U.S. Border Patrol and the U.S. Fish and Wildlife Service, most of the cars are gone and the life remains.

The vehicles were there in the first place because Cabeza Prieta Refuge, which shares a 56-mile border with Mexico, was once a hotbed of smuggling. For years, vehicles crossed the Sonoran Desert carrying illegal drugs. Then, to curb drug smuggling and illegal immigration, the Border Patrol's parent agency, the Department of Homeland Security, stepped in and built a border barrier.

With the barrier's completion in 2009, illegal vehicle traffic was virtually eliminated. But previously abandoned cars and trucks lingered and continued to blight the refuge's fragile desert ecosystem, in which tracks made by vehicles or people can remain for hundreds of years.

The vehicles were identified for removal in Cabeza Prieta Refuge's 2007 comprehensive conservation plan because they were an eyesore, because they degraded the wilderness character and because potential liquid-pollutant leakage was a concern.

In consultation with the Service's Southwest Region office in Albuquerque,



Until the U.S. Fish and Wildlife Service and the U.S. Border Patrol took joint action last year, three dozen abandoned cars and trucks blighted the fragile desert landscape at Cabeza Prieta National Wildlife Refuge in southwestern Arizona. (USFWS)

NM, the refuge determined that the best method to remove the vehicles would be with a forklift or backhoe. However, refuge equipment and staff were limited. And the amount of time the equipment would disrupt the solitude of the designated wilderness was a major concern.


Cabeza Prieta Refuge, which shares a 56-mile border with Mexico, was once a hotbed of drug smuggling.

Then Steve Martin, the Border Patrol's Yuma Sector chief, generously offered some of his agency's staff and heavy equipment to help remove the vehicles—an offer Southwest Region Director Benjamin Tuggle gratefully accepted.

Using a Border Patrol four-wheel-drive forklift with large balloon tires to minimize soil disturbance and a refuge backhoe, last spring Service and Border

Patrol staff members quickly loaded 31 abandoned vehicles onto flatbed trucks and removed them.

Just three abandoned vehicles remain—in the western portion of the refuge, far from those that were removed. Two vehicles are scheduled to be removed via backhoe and flatbed truck this winter. The third vehicle poses a significant problem. It is wedged tight in a wash and would require a heavy-lift helicopter to pluck it out. The effort to remove the last one could be very costly, so plans are up in the air—so to speak.

Once all of the vehicles are removed, tracks created by the operation where there were none before will be raked out and the remaining trails created by the illegal traffic will be incorporated into a restoration program funded by the Department of Homeland Security. 

Tom Buckley is a Southwest Region public affairs specialist. Sid Slone is Cabeza Prieta National Wildlife Refuge manager.

Urban Wildlife Refuge Intern Brings Message to Schools

By Bill O'Brian

When it comes to treasuring the environment, 26-year-old Alex Fetgatter knows he is fortunate. His parents took him hiking, fishing and boating from a young age. Now, as Patuxent Research Refuge's first urban wildlife refuge intern, he is passing that outdoors ethic forward.

In cooperation with the refuge, this school year Fetgatter is bringing natural resources expertise to one of the nation's largest and most diverse school systems.

"I really enjoy working with the kids," he says. "I like the energizing feeling you get from knowing that you might be creating future environmental stewards."

The urban wildlife refuge internship is Patuxent Refuge manager Brad Knudsen's idea. Its main objective, he says, is to bring a conservation message to schools in accordance with *Conserving the Future* recommendation 13.

"We co-locate our biologists with other agency biologists. We co-locate our scientist/researchers with other agency scientist/researchers," Knudsen says. "Why not co-locate our environmental education staff with other EE staff and realize the same sort of synergy?"

Remarkable Diversity

The Patuxent Refuge internship is unusual because the refuge is in Maryland and Fetgatter is based an hour away in the Fairfax County Public Schools in Virginia. The school system and the refuge had worked together on outreach before, Knudsen says, so it made sense to collaborate on this partnership, too—especially given the demographics. The Fairfax County system, with 196 schools and 181,500 students, is the country's 11th-largest. And its ethnic diversity is remarkable: 43 percent white, 22.1 percent Hispanic, 19.3 percent Asian American, 10.4 percent African American and 4.6 percent multiracial.

The U.S. Fish and Wildlife Service funds the internship. The school system provides office space and daily

supervision for Fetgatter, a history major with two years' local experience in invasive species control.

Guided by the schools' environmental education coordinator, Elaine Tholen, Fetgatter spends 32 hours a week working with students and teachers on conservation projects.

One day Fetgatter might help a class dig a pond, cultivate a native garden, or set up a recycling or energy conservation effort. The next day he might help gather baseline data about the school district's wildlife habitat or environmental projects (gardens, woodlands, no-mow zones, etc.).

Each week, he mentors a high school environmental group that is building native plant gardens and reaching out to elementary schools; an outdoor science/literature group; a fourth-grade class that is planting a native garden in the shape of Virginia; and students studying nature's intricacies with a focus on change.

Leading by Example

"I try not to get up on a soapbox because I think that turns people off," Fetgatter says. Rather, he leads through example. He gives hands-on demonstrations. He encourages students to take ownership of projects. He explains how their mulch garden benefits the ecosystem or how invasive species cause ecological harm. "It shows them that this not happening just in Brazil. It's happening here. And it gets them to think, 'Maybe there is something I can do about it.'"



Alex Fetgatter, Patuxent Research Refuge's first urban wildlife refuge intern, works with Fairfax County (VA) public school third-graders on a project in which students across the Northern Hemisphere track spring's progress by documenting when tulips first sprout in various locations. (Elaine Tholen/Fairfax County Public Schools)

"Having an extra set of hands from the Fish and Wildlife Service is extremely valuable," says Tholen, who appreciates the enthusiastic, step-by-step project guidance Fetgatter offers students and teachers. His passion, she suggests, is contagious. That he is a Service employee wearing a Service shirt "adds a level of importance to what we're doing."

Which is exactly what Patuxent Refuge manager Knudsen has in mind.

"As it becomes increasingly difficult for school systems to fund field trips," he says. "I see the urban refuge initiative as a way to bring the refuge to the schools. My hopes are that hundreds, if not thousands, of people—only an hour away from Patuxent—will learn about the Service and the Refuge System. And, even more basic than that, they will learn about the nurturing and exciting experiences that await them in nature."



In Idaho, a Wetlands Refuge “in Transition”

By Susan Morse

Gaze across scenic Sandhole Lake at Camas National Wildlife Refuge as flocks of tundra and trumpeter swans wing west along the Centennial Mountains of southeast Idaho, and it’s easy to miss signs of a problem.

On a crisp fall day, Sandhole Lake is shimmering blue, unlike nearby Rat Farm Pond, dry for 15 years, and Spring Pond, wet only in spring. The precious water also draws pintail, geese, coot and sandhill cranes. Visitors train lenses on the birds and see the refuge fulfilling its mission—set in 1937—to protect and maintain waterfowl in a dry region.

“This is our ‘show-me’ place,” says refuge manager Brian Wehausen. “I’ve seen every species of North American waterfowl but two here.”

But changes in soil hydrology and farming methods are threatening Camas Refuge’s identity as a high-desert oasis for waterfowl.

The water table is at an all-time low, thanks to cyclic droughts and center-pivot irrigation. Motorized pivots, like the 75-plus that soak circles of farmland near the refuge, pull water efficiently from the ground.

Status Quo Untenable

Where the refuge once managed streams to keep 4,000 of its 6,000 acres under shallow water, it now can maintain only 2,000 to 3,000 wetland acres by diverting from Camas Creek and pumping groundwater. The refuge spends up to \$70,000 annually on electricity for pumping, but, cost aside, the work is problematic. Motor-driven pumps add to carbon emissions and deplete the shrinking Snake River Plain aquifer, one of Idaho’s most important freshwater sources.

Maintaining the status quo isn’t possible. However, without pumping, the wetlands would dry up, leaving nesting birds with no habitat.

“Camas is a refuge in transition,” says Southeast Idaho Refuge Complex project

leader Tracy Casselman. “We have to decide what wetlands we are going to fill and how we are going to fill them.”

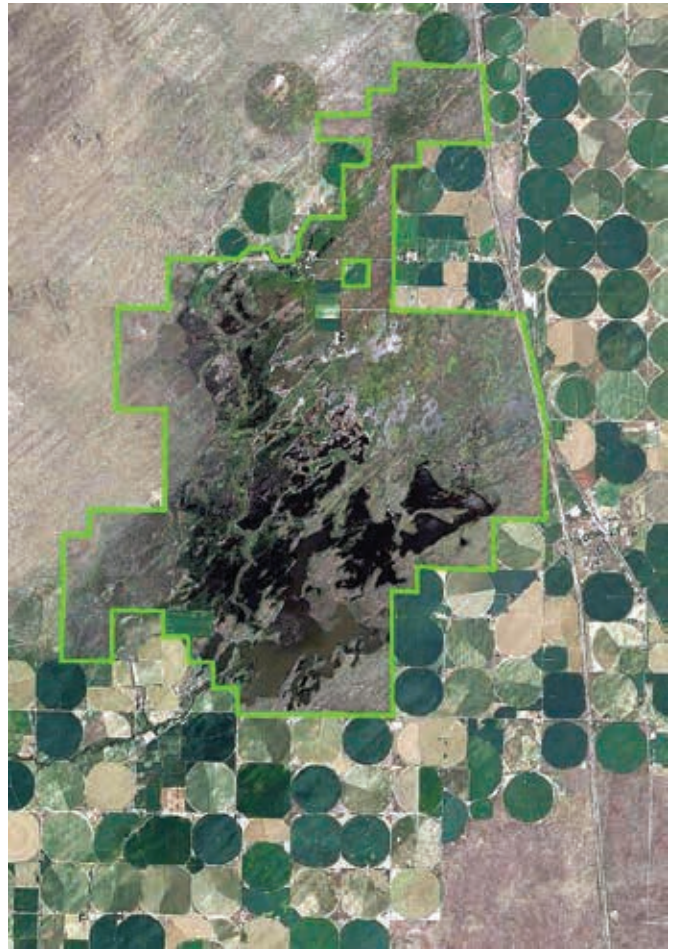
Wehausen agrees. To keep as much wetland as possible and reduce pumping costs, he says, the refuge must: 1) determine which areas can best hold water, and 2) move wells closer to them. Moving a well is a \$70,000 to \$100,000 undertaking, he says, but savings in pumping costs could justify the expense.

Geographic information system (GIS) modeling to help determine where to re-place wells has just begun. It will incorporate data from new soil, vegetation and topography surveys. The soil map pinpoints clay hydric soils—which hold water longer than porous, sandy soils. The vegetation map shows former wetlands that still retain water-loving plants like rushes and cattails that provide cover, food and nesting habitat for waterfowl and waterbirds. A LIDAR (Light Detection and Ranging) map details topography. Models also will examine water flow changes from a proposed Camas Creek channel restoration.

As outlined in the refuge’s draft comprehensive conservation plan (CCP) being readied for public comment, the models’ proposed solutions will be tested over the next 15 years.

There is another option, too. It came up in CCP discussions, Wehausen recalls:

“Some people were playing devil’s advocate, saying, *If it costs \$70,000 to pump water every year and the wetlands are all going away, and, politically, there’s not a hell of a lot we*



An aerial view shows the proliferation of center-pivot irrigation wells near Camas National Wildlife Refuge in eastern Idaho. This type of irrigation did not exist when the refuge was established in 1937. As new wells have spread, the water table has dropped and wetland acres have shrunk. (USDA / Natural Resources Conservation Service)

can do about it, why don’t we just make it into an upland refuge” that is not dependent on wetlands?

“We considered that,” he says. “What’s at stake is, eastern Idaho doesn’t have many wetlands left. If we lose this refuge, a huge chunk of wetland is gone. You’re going to hurt swans, cranes, ducks, geese, all wildlife. As a manager, I can’t give this up, not yet. I have to try to make it the best I can as a wetland refuge, knowing I’m not going to get everything back.”

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

When It Comes to Birds, Refuges Count in a Big Way

By Noah Kahn

This past holiday season, as they have since 1900, citizen scientists fanned out across America to count birds. As those birders finish up this year's Christmas Bird Count (CBC), the National Audubon Society's 2011-12 CBC report provides statistical data that demonstrate the importance of national wildlife refuges to birds.

At least 70 bird species have their country- or continent-wide high counts conducted at least partially on refuges. For example, nowhere else in North, South or Central America can a person find more snow geese than the 490,000 counted during the Squaw Creek National Wildlife Refuge CBC in western Missouri. The same is true for the 37,000 tundra swans at Mattamuskeet Refuge in coastal North Carolina; the 30,000 sandhill cranes at Muleshoe Refuge in west Texas; and the 3,600 red-throated loons at Back Bay Refuge along Virginia's southeastern coast.

The list goes on. Refuges in more than a dozen states and from all eight U.S. Fish and Wildlife Service regions host country-wide high counts for particular bird species.

"I have fond memories of visiting Sacramento National Wildlife Refuge every winter while I was growing up and marveling at the sight and sound of 100,000 snow geese picking up off the water at once," says National Audubon Society chief scientist Gary Langham. "The Christmas Bird Count data clearly show that refuges host enormous numbers of birds across the country."

CBCs are remarkably simple. Essentially, volunteers nationwide follow routes within a 15-mile diameter circle and count all the individuals of all the bird species they see or hear. Some people count birds at their backyard feeders, while diehards are traipsing the backcountry well before dawn.



Ross's geese over California. The continent-wide high tally of 22,000 individuals of the species was found during a 2011-12 Christmas Bird Count conducted at least partially on Merced National Wildlife Refuge in central California. (Steve Emmons/USFWS)

It all started when, at the urging of Audubon Society visionary Frank Chapman, 27 birders conducted 25 CBCs on Christmas Day 1900. A century later, more than 63,000 people participate over a weeks-long holiday period. In the 2011-2012 CBC season, people in 1,739 U.S. count circles observed more than 60 million birds of more than 700 species and sub-species.

A Meaningful Difference

The CBC numbers are proof positive that the National Wildlife Refuge System, a network of conservation lands and waters established in large part for migratory birds, is making a meaningful difference—and not just for waterfowl.

True, many waterfowl species have their high counts on CBCs encompassing refuges—the 22,000 Ross's geese at Merced Refuge in central California or the nearly 1,400 wood ducks at Pee Dee Refuge in the Piedmont of North Carolina, for example. But refuges also host national high counts for a variety of other bird types, including falcons, hawks, cranes, galliformes, loons, petrels, albatross, shearwaters,

boobies, tropicbirds, terns, plovers, sandpipers, dowitchers, rails, blackbirds, jays and flycatchers.

Merritt Island Refuge in Florida has the high count for federally threatened Florida scrub jays, Harris Neck Refuge in Georgia for clapper rails and Sabine Refuge in Louisiana for Forster's tern. Even the ubiquitous red-winged blackbird has its continent-wide high count on a refuge-centered CBC: a staggering 3.2 million at Squaw Creek Refuge.

"National wildlife refuges provide quality habitat in strategic areas for migratory birds," says Doug Brewer, manager at Virginia's Back Bay Refuge. "The CBC high counts for red-throated loons and king rails here show the importance of this refuge at a critical time of year." 

Noah Kahn is a manager in the Refuge System Division of Budget, Performance and Workforce. More information about birding and refuges is at <http://www.fws.gov/refuges/birding>.

For 40 Years, Refuges Have Been Vital to Recovery

By Valerie Fellows

From the snail darter and the Tellico Dam to the spotted owls and old-growth forest loggers, the Endangered Species Act has seen its share of controversy. Often since it was enacted on Dec. 28, 1973, the ESA has been called the world's most powerful law for species preservation, and with that title comes a lot of attention.

While the ESA has been credited with saving 99 percent of listed species from extinction and has put hundreds more on the road to recovery, it is still misunderstood by many. So, as the act celebrates its 40th anniversary in 2013, let's set the record straight.

Today, the ESA protects 1,400 domestic species and 614 foreign species. The story behind the decline of these species is much the same—one of habitat loss and degradation. The inevitable development pressures that accompanied our growth into a nation of more than 300 million people have threatened the health and well-being of native fish, wildlife and plants. Among other things, the ESA is trying to protect habitat and ecosystems that formed over eons and to reverse species declines that, in some instances, have been 200 years in the making.

One of the most important things the U.S. Fish and Wildlife Service does for endangered species is to conserve their habitat. That's where the National Wildlife Refuge System comes in.

Fifty-eight refuges were established to protect endangered species; 248 refuges are home to more than 280 endangered or threatened species. *Conserving the Future* makes clear that endangered species recovery is central to the Service's vision for planning and strategic growth of the Refuge System. The vision recognizes refuges' "key role in the recovery of several species, including the bald eagle, Aleutian Canada goose and brown pelican."



National wildlife refuges are home to more than 280 endangered or threatened species, including the threatened spectacled eider, which occurs at Yukon Delta National Wildlife Refuge and other refuges in Alaska. (Laura Whitehouse/USFWS)

This issue of *Refuge Update* celebrates ongoing endangered species conservation work that refuges are doing—such as for the namesake species at Mississippi Sandhill Crane Refuge, for Moapa dace at Moapa Valley Refuge in Nevada, for the Delmarva fox squirrel at East Coast refuges and for the blunt-nosed leopard lizard at Pixley Refuge in California.

Without the Refuge System, many endangered species would not be recovering. Endangered species recovery is complex and difficult work, often requiring substantial time and resources. Many of the species that have fully recovered were those originally listed under federal protection 40 years ago, including the American alligator, bald eagle and gray wolf.

But the number of species that have recovered and can be delisted is not a complete measure of the ESA's success. Stabilizing a species is also a success. So is preventing a species from going extinct. Since 1973, 25 species have recovered to the point that they no longer need ESA protection, two more

have been proposed for delisting, and nine more have recommendations for delisting. In addition, 25 species have been reclassified, three are currently proposed and 39 have recommendations for reclassification from endangered to the less critical category of threatened. Plus, 647 species are considered stable or improving. Hundreds of others have been prevented from going extinct.

Each one of these outcomes is a real measure of success.

Successes will continue because, as recommended in *Conserving the Future*, the strategic growth of the Refuge System will be guided by priorities identified in threatened and endangered species recovery plans that have identified land acquisition as a conservation component. 

Valerie Fellows is a communications specialist in the Endangered Species Program. A state-by-state listing of endangered species success stories is at <http://www.fws.gov/endangered/map/index.html>.



Big Leap for Little Fish at Moapa Valley Refuge

By Kendall Slee

For the Moapa dace—an endangered fish species found only in the thermal springs and streams feeding Nevada’s Muddy River—2012 was a banner year.

Last August, a snorkeling survey of the Moapa dace habitat counted 1,181 fish—a 65 percent increase from 2011. The population jump indicates that Moapa Valley National Wildlife Refuge habitat restoration efforts are helping the species recover.

The minnow-size Moapa dace is adapted to thermal spring waters in the Mojave Desert that can reach 90 degrees and have low oxygen levels, but the species has been struggling for survival because of habitat destruction and non-native competitors.

The small refuge 60 miles northeast of Las Vegas was established in 1979 to secure critical habitat for the dace. Initially the refuge protected just one spring and stream, restored the habitat and re-introduced the dace. From 1996 through 2006, the refuge gradually expanded to 116 acres and three thermal spring sources that are the Muddy River’s headwaters.

The dace population declined as nearby springs and streams were converted into resort swimming pools and hot tubs, or degraded from ranching use. The population dropped from 3,400 in 1994 to below 500 in 2008. As the refuge acquired acreage, removed hot tubs and concrete channel liners, and re-vegetated/restored stream channels to their condition before development, the fish gradually reclaimed the waterways.

As with other refuge endangered species recovery efforts, partnerships are essential. In 2007 the Southern Nevada Water Authority purchased a 1,220-acre ranch adjacent to the refuge and protected it as the Warm Springs Natural Area. The U.S. Fish and Wildlife Service and other federal and



Moapa Valley National Wildlife Refuge, 60 miles northeast of Las Vegas, was established in 1979 to secure critical habitat for the endangered Moapa dace. A snorkel survey last summer found a large increase in the species’ population. (Mark Hereford/U.S. Geological Survey)

state agencies offer technical and other assistance to restore the Muddy River tributaries on that property.

Restoration of streams flowing into and out of the refuge has allowed the Moapa dace to venture past refuge boundaries again. “The fish are now spreading out across all the available habitat,” says refuge manager Amy LaVoie. “In the past couple years they had been pushed up on the refuge.”

The Nevada Division of Wildlife (NDOW) has taken the lead in combating another challenging threat to the dace: blue tilapia.

That non-native fish entered the Muddy River system in the 1990s and ravaged native vegetation and fish with its voracious appetite. Tilapia has been eradicated from the refuge and other upper reaches of the system; NDOW is working to clear tilapia from the main stem of the Muddy River. This will lead to the next step in the dace recovery plan.

Once tilapia is eradicated, a fish barrier will be removed, allowing the dace to expand into the main stem river. “Only

when the dace can swim from the springheads to the Muddy River will they be able to live their natural wandering lifestyle and grow large and fertile,” says Lee Simons, a biologist in the Service’s Nevada field office.

Habitat restoration also benefits other endemic species adapted to the Muddy River’s warm waters, including the Moapa White River springfish, the Moapa pebble snail and three insects. Stream restoration benefits other native southern Nevada invertebrates, as well as riparian-dependent birds, bats, amphibians and reptiles.

As the long task of riparian restoration continues, LaVoie is cautiously optimistic about the dace’s recovery.

“We have a long way to go in terms of the number of fish, age classes and how they’re distributed throughout the system,” she says. “We need to continue to restore the habitat and ensure other threats such as the tilapia remain at bay.”

Kendal Slee is an Upstate New York-based freelance writer.

Refuges Benefit the Delmarva Fox Squirrel

By Tylar Greene

The endangered Delmarva fox squirrel is faring better today than it has been in half a century, thanks to national wildlife refuges along the Eastern seaboard.

Chincoteague National Wildlife Refuge has been particularly instrumental in the squirrel's revival.

"Delmarva fox squirrels were not at Chincoteague when the species was first listed" under the old Endangered Species Preservation Act in 1967, says Kevin Holcomb, a wildlife biologist at the Virginia refuge.

The squirrel's historical range stretched from central New Jersey south through eastern Pennsylvania and down the Delmarva Peninsula—so named because it includes parts of Delaware, Maryland and Virginia between the Chesapeake Bay and the Atlantic Ocean. But by 1967, largely because of forest clearing for agriculture, short-rotation timber harvests and over-hunting, the squirrel's distribution had decreased to 10 percent of that range.

To reduce the risk of range-wide extinction and increase species distribution, from 1968 to 1971 biologists translocated Delmarva fox squirrels to Chincoteague Refuge, starting a new population in its loblolly pine forest. A total of 34 squirrels from Blackwater and Eastern Neck Refuges in Maryland were relocated to Chincoteague Refuge. Common gray squirrels were trapped and removed to reduce species competition.

The Delmarva fox squirrel is larger than the common squirrel. It can be 28 inches long and weigh three pounds. It has a silvery gray body, white belly and full, fluffy tail. It feeds primarily on nuts, seeds and acorns from gum, oak, pine, maple, walnut and hickory trees. It is born in litters of one to six and can live for six years. Rather than jump from tree to tree, as common squirrels often do, Delmarva fox squirrels typically descend



Refuges along the East Coast have been important to the endangered Delmarva fox squirrel, which is larger than the common gray squirrel and has a full, fluffy tail. (USFWS)

a tree and travel on the ground to the next tree. Their preferred habitat is mature mixed hardwood and pine forest, which provides abundant food, cavities for dens and protection from predators.

Work Paying Off

Over the past four decades, Chincoteague Refuge has helped increase the squirrel's numbers. It manages forest habitat to maintain open understory, increase hardwoods and sustain loblolly pine. To reduce squirrel fatalities, it airs radio warnings to drivers and mows roadside grass to a safe height. It provides nesting boxes and monitors population trends on three refuge sites via trapping, tagging and, increasingly, field cameras. The work has paid off. The three sites' population estimates grew from 144 in 2001 to 226 in 2010, and, as the squirrels have expanded into other woodlands, distribution has widened substantially.

Blackwater Refuge still does its part for the squirrel, too. "In addition to managing and protecting habitat, Blackwater serves as a laboratory to aide in the species' recovery," says wildlife biologist Matt Whitbeck. "We work closely with the recovery team to guide monitoring efforts on the refuge and to provide locations

for research on the species." A breeding population also thrives at Delaware's Prime Hook Refuge, where the squirrel was reintroduced in 1986.

Since the 1967 Endangered Species Preservation Act listing, the squirrel's range has increased from four counties to 10. The current population of 20,000 covers 28 percent of the Delmarva Peninsula.

"National wildlife refuges have a unique role in the recovery of the Delmarva fox squirrel, including the support and protection of new populations and providing areas where we can learn more about this fascinating animal," says Cherry Keller, the U.S. Fish and Wildlife Service recovery lead for the species. "Our state partners and private landowners are also major partners in its recovery as most of its distribution is on privately owned farms and woodlands. But only on refuges do we have staff that will dedicate their time and effort to the monitoring, research and management for this species." 

Tylar Greene is a public affairs specialist in the Northeast Region office in Hadley, MA.



Refuge Helps Mississippi Sandhill Cranes Hang On

By Bill O'Brian

Mississippi sandhill cranes are among the rarest birds in North America. But they aren't as rare as they once were because of the Endangered Species Act and people like Jake Valentine and Scott Hereford.

Valentine was a long-time U.S. Fish and Wildlife Service biologist. He recognized in the 1970s, just as Interstate 10 was being planned across the southern United States, that the bird faced extinction if its habitat was not preserved. So he persevered through that era's "cranes and lanes" controversy to ensure that the bird was accommodated and that Mississippi Sandhill Crane National Wildlife Refuge was established.

Hereford has been a biologist at that refuge since 1990. Refuge manager Maury Bedford calls Hereford "a world-renowned expert on the bird who does a phenomenal job." Hereford has helped increase the Mississippi sandhill crane population from about 40 in the mid-'70s to about 110 today (including 25 breeding pairs). He estimates that without the Endangered Species Act there might be five individuals left.

The Mississippi sandhill crane is one of six subspecies of sandhill crane. It occurs in the wild in just one county, Jackson, tucked between the Gulf of Mexico and the Alabama border in extreme southeastern Mississippi.

This crane is distinguished from sandhill cranes of the Great Lakes, Plains, the Rocky Mountains and Canada genetically and in three observable ways. It is non-migratory. It is darker gray with a more visible white cheek patch. It favors coastal prairie and wet pine savanna rather than marsh.

The Mississippi sandhill crane stands about four feet tall and, like other sandhill cranes, has a bald red crown; flies with its neck outstretched; has a loud bugle call; has a pre-breeding, sub-adult period of three to eight years;

mates for life; rears its young for 10 months; and cannot perch in a tree.

The refuge's primary roles in the crane's recovery are to enhance habitat and augment the population with captive-reared juveniles. It does the former by using prescribed fire and mechanical treatments to maintain prairie and longleaf pine savannas, by creating shallow roosting ponds and by growing supplemental food. It does the latter by releasing about a dozen young birds onto the refuge each year in partnership with Louisiana's Audubon Species Survival Center and Florida's White Oak Conservation Center.

With encouragement from refuge manager Bedford, the local community increasingly is embracing the cranes and the ecotourism they represent. "Welcome to Gautier, MS" signs now feature a crane image, and the city's new slogan is "Nature's Playground." In addition, power companies have agreed to install



The namesake species of Mississippi Sandhill Crane National Wildlife Refuge and the refuge itself owe their existence to the Endangered Species Act. (Steve Hillebrand)

reflective bird averters on some lines, and adjacent landowners have grown to appreciate the cranes.

Challenges remain, though. Foremost are human population growth and its offshoots. Power lines and vehicles—

continued on pg 16



Dwarf Lake Iris

Michigan Islands National Wildlife Refuge

Joel Trick/USFWS



Hawaiian Monk Seal

Hawaiian Islands National Wildlife Refuge

James Watt

Refuges Are There for Them

Fifty-eight national wildlife refuges were established to protect endangered species; 248 refuges are home to more than 280 endangered or threatened species. The photographs on these two pages feature a handful of those species. Most of these species occur on more than one refuge.



Arroyo Toad

San Diego National Wildlife Refuge California

Will Flaxington



Higgins Eye Pearlymussel

Great River National Wildlife Refuge Illinois, Missouri

USFWS



Red Wolf
*Alligator River
National Wildlife Refuge
North Carolina*

Greg Koch



Sclerocactus Glaucus
Ouray National Wildlife Refuge Utah

Bekee Hotze/USFWS



Karner Blue Butterfly
Necedah National Wildlife Refuge Wisconsin

Joel Trick/USFWS

Grazing a Path to Survival at Pixley Refuge

By Ben Ikenson

When the Spanish settled the San Joaquin Valley in the late 1700s, it is commonly believed that they inadvertently introduced non-native grass seeds, which likely hitched a ride overseas in the fur and bowels of their livestock. Eventually, the Mediterranean grasses such as red brome and wild oats came to dominate much of the region—to the detriment of native flora and fauna.

Ironically, cattle are now helping undo some of the ecological havoc they may have originally helped create. While current grazing practices are often associated with habitat destruction for many species, the federally endangered blunt-nosed leopard lizard is not among them. In an unusual twist, grazing may help clear a path toward recovery for the reptile.

“Cattle grazing helps open up areas for the lizard to travel and feed,” says Nick Stanley, a deputy project leader at Kern National Wildlife Refuge Complex. “When the grasses get really dense, that’s a big problem for the lizard, which is desert-adapted, because it gets caught up and makes for easy prey by snakes, raptors and other predators.”

Stanley is charged with monitoring cattle grazing on about 6,000 acres at Pixley National Wildlife Refuge, part of Kern Refuge Complex. He conducts monthly checks and cattle counts throughout the grazing season, from November to April, and an end-of-season evaluation. With a handful of ranchers who pay a fee to use the acreage, the number of cattle clearing the grass ranges from 70 to 800.

And those ranchers are pleased to be able to maintain a tradition that predates the refuge’s establishment in 1959.

“Our families have been grazing cattle on what’s now refuge land since 1938 or ’39,” says rancher Stanley White. “Now it supplements other grazing lands we have,



The federally endangered blunt-nosed leopard lizard is endemic to central California. Paradoxically, grazing at Pixley National Wildlife Refuge appears to be aiding its recovery. (Steve Laymon)

and it helps keep the land in control for the blunt-nosed leopard lizard.”

The diurnal reptile is endemic to the semiarid grasslands, alkali flats and washes of central California. It is a large lizard: three to five inches long (excluding tail), with a triangular head, truncated snout, rounded body, granular scales and a tail longer than its body. It prefers flat, open spaces for running.

Indeed, the traditional grazing is considered among the best methods to help the lizard as well as two other endangered species—the Tipton kangaroo rat and the San Joaquin kit fox.

“Mechanical removal of vegetation is just not economically feasible, and, besides, it would be too intrusive to the habitat since the lizard burrows close to the ground surface” says Stanley. “And prescribed burns are not a good option since we have air quality issues in the valley as it is.”

Grazing is a low-impact way to clear the vegetation and reduce competition from invasive grasses with the native bunch communities.

But the lizard is not yet out of the woods—or, in this case, the grass—according to Brian Cypher, an ecologist with the Endangered Species Recovery Program at California State University, Stanislaus. Cypher and other biologists with the university have been monitoring lizard populations at Pixley Refuge since 1993. They have found that lizard populations are dramatically affected by the growth of these non-native grasses, especially after seasons of heavy rainfall.

“Although the lizard is doing reasonably well in remaining areas with good quality habitat, the overall amount of that habitat is still declining annually,” says Cypher. “Natural lands are still being converted to industrial and urban uses, and farmlands continue to pose major problems. The valley produces more than 300 crops, but this is what has encroached so much on the natural landscape, and why we have so many listed species here.”

Fortunately now, for at least some of these species, he says, “land that isn’t grown is pretty much grazed.”

Ben Ikenson is a New Mexico-based freelance writer.



At Mortenson Lake Refuge, Using Fire to Save a Toad

By Karen Miranda Gleason

“I never thought I’d be burning prairie to help a toad,” Felix Valdez said last spring. But that’s exactly what he was doing.

Valdez, a U.S. Forest Service fire management officer, was working with U.S. Fish and Wildlife Service managers and biologists, the multi-agency Wyoming Toad Recovery Team and other partners at Mortenson Lake National Wildlife Refuge, WY, to conserve the last known population of the Wyoming toad.

That toad, now the most endangered amphibian in North America, once flourished in the wetlands and rivers of southeastern Wyoming. By the mid-1970s, the population was in decline; in 1984, the toad was listed under the Endangered Species Act. The Nature Conservancy helped establish the refuge in 1993 to protect the species.

In April 2012, Valdez was the burn boss when a prescribed burn project to benefit the Wyoming toad formally kicked off at the refuge. The project is designed to give the native toad what it needs to survive: water and warmth.

Studies show the tiny toads require pockets of warm, shallow water to breed. Historically, the refuge used grazing to keep overgrown rushes in check, allowing plenty of sunlight to warm the waters. Over time, cattle stopped grazing thicker vegetation, which was unpalatable to them, so the refuge turned to prescribed fire. Without either grazing or recurring fire to prevent overgrowth on this high plains prairie, biologists are concerned that Wyoming toads won’t survive in the wild.

So, prescribed fire, with prescribed grazing, is part of a collaborative recovery plan to achieve self-sustaining populations and ultimately delist the species.

Experimental use of prescribed fire for the toad’s benefit at the refuge started in 2005. After that burn, the number of

toads increased initially but then declined by 2010. So, the recovery team determined, via adaptive management, that fire every three or four years would best maintain quality habitat.

By early 2012, fire managers approved a plan to burn up to 23 acres. They had a limited window of opportunity—just one week in April, when the weather

was right and the toads were still in hibernation. The plan, which involved Service staff from at least four states, outlined specific objectives, staff and equipment needed, and appropriate environmental conditions. Wind direction was a critical factor in timing the burn, to avoid smoke blowing into nearby wilderness or populated areas.

A Healthy Mosaic

Most of the lighting, monitoring and fire mop-up at Mortenson Lake Refuge was accomplished by seven firefighters—including engines and crews from Brown’s Park Refuge, CO, and Valdez’s home base, Medicine Bow-Routt National Forest, WY/CO. The fire cleared vegetation, created a mosaic of burned and unburned patches, and returned nutrients to the soil. Spring irrigation at the refuge then filled small shallow pools, all in time for the waking toads to start their annual call for mates.

The next burn at Mortenson Lake Refuge could occur as early as spring 2015. In the meantime, a captive-breeding



Prescribed burning is being used to help recover the endangered Wyoming toad at Mortenson Lake National Wildlife Refuge in southeastern Wyoming. As part of the effort, almost 40,000 captive-bred tadpoles and toadlets have been released at the refuge and other safe-harbor sites. (USFWS)

program—with toad populations held at Saratoga National Fish Hatchery, WY, the University of Wyoming’s Red Buttes Biological Lab and various zoos—is contributing to the species recovery effort. To date, almost 40,000 tadpoles and toadlets have been released at the refuge and other safe-harbor sites. Researchers continue to study the toad’s habitat requirements and the best strategies for releasing captive tadpoles and toadlets.

“Most important and exciting to me are the multiple partners working shoulder-to-shoulder,” said Mortenson Lake Refuge manager Ann Timberman “In my experience, this is the best way to deliver conservation on the ground, and the only way to get this toad recovered.”

Karen Miranda Gleason is a public affairs specialist in the Refuge System Branch of Fire Management at the National Interagency Fire Center in Boise, ID.

From the Director — continued from page 2

exclusively within our refuge boundaries. Hundreds of imperiled species depend on private lands for the majority of their habitat.

The *Conserving the Future* document acknowledges this reality, establishing a vision of the Refuge System as the centerpiece of broader landscape-scale conservation efforts. By working with our partners using the latest science, we can expand our conservation efforts beyond the boundaries of the System, using the System to link a network of protected lands and provide greater benefits to additional species.

The vision calls on us to prioritize future land acquisition and protection efforts, tying them to rigorous biological planning and conservation objectives developed in cooperation with state fish and wildlife agencies and implemented through effective partnerships. In this way, we can provide the greatest conservation benefits in the right places, regardless of whether we own and manage those places.

Threatened and endangered species are a prime beneficiary of this vision.

For example, the Everglades Headwaters National Wildlife Refuge and Conservation Area ultimately will protect, restore and conserve more than 100,000 acres of habitat on public



Driftless Area National Wildlife Refuge in northeastern Iowa is home to the endangered Iowa Pleistocene snail. Fifty-eight refuges were established to protect endangered or threatened species. (USFWS)

and private lands to benefit hundreds of rare species, including the Florida panther, Florida black bear, Florida scrub-jay, Everglades snail kite and Eastern indigo snake. These efforts will provide important linkages for migratory birds and several species of concern while enabling working families

to stay on the land and continue their own land stewardship.

The Refuge System will play a key role as we seek to accelerate species recovery and foster innovative conservation approaches. That's worth working for. 🦋

Refuge Helps Mississippi Sandhill Cranes Hang On — continued from page 11

including those on nearby I-10—imperiled cranes. Development fragments precious habitat and complicates habitat enhancement, especially prescribed burning. Predation by bobcats, raccoons, armadillos, coyotes and others is normal, but it has a disproportionately negative effect because of the cranes' small population and limited habitat.

Still, recovering the Mississippi sandhill crane, whose range once stretched hundreds of miles along the Gulf Coast,

is well worth the effort, according to Bedford and Hereford.

“Throughout history, cranes have been viewed as symbols of royalty,” says Bedford, who is leaving the refuge to become Southeast Region assistant deputy refuge chief. “Cranes have been painted on Egyptian hieroglyphics and other places as symbols of magic. Once you see and hear them, you’ll understand why we work so hard to recover the species.”

Herford's reasoning is more fundamental.

“It seems like I naturally root for the underdog, and this population hung on in one county in coastal Mississippi after others in Louisiana and Alabama disappeared,” he says. “It has been very satisfying to restore habitat and have the cranes come in and use it for nesting, roosting and feeding. ‘Build it and they will come.’” 🦋



Kilauea Point Refuge Has a Record Year for 'A'o Pairs

By Dennis Fujimoto

At least 11 breeding or prospecting pairs of 'A'o, or Newell's shearwater, were recorded at Kilauea Point National Wildlife Refuge last year. It is the most ever found on the refuge.

The 'A'o—a seabird listed as threatened under the Endangered Species Act—is found only on the Hawaiian Islands. Kaua'i, where the refuge is situated, is home to about 90 percent of the world's population. A true mariner, the bird spends most of its time at sea, where it roams for thousands of miles. It returns to land during the breeding season, which runs from April to November.

Currently, the majority of 'A'o nest in native habitat in the mountains, making the Kilauea Point population unusual in that the birds are breeding in a coastal area. The 'A'o is 12 to 14 inches, with a wing span of 30-35 inches. It has a glossy black back and white belly. Its black bill is sharply hooked at the tip. Its claws are well adapted for burrow excavation and climbing.

The refuge's population probably was established during a translocation project from 1978-80, when refuge and Hawaii state biologists brought 'A'o eggs out of the mountain colonies, where they were being eaten by non-native predators. To rear, the eggs were placed in the nests of 'U'au, or wedge-tailed shearwater, another native species.

Because the numbers of 'A'o were rapidly declining, the project aimed to establish a population in a relatively safe area that could be actively managed. The majority of birds fledged successfully early in the project, but the refuge's breeding population has remained small.

Kilauea Point Refuge was established in 1985 and expanded in 1988 to enhance seabird nesting colonies. Its ocean cliffs and open grassy slopes on an extinct volcano provide breeding grounds for migratory birds, including the 'A'o.



Kaua'i—the Hawaiian island on which Kilauea Point National Wildlife Refuge is situated—is home to about 90 percent of the world's population of 'A'o, or Newell's shearwater. (Brenda Zaun/USFWS)

In 2007, the state-funded Kaua'i Endangered Seabird Recovery Project, in collaboration with the refuge, set up a “social attraction” project to try and encourage more 'A'o to breed at the refuge.


This involved two audio speakers that play the bird's calls at night throughout the breeding season.

“Social attraction projects have been successfully used to attract endangered seabirds in many other countries, most notably New Zealand,” says Andre Raine, the Kaua'i project's coordinator. “By playing calls of these birds at night, new birds are drawn into the area to see what is going on. If they find the area suitable, [they] may return to breed in following years. This can be a vital conservation tool for this species in other areas on Kaua'i in the future.”

Five of the Kilauea Point Refuge 'A'o pairs were confirmed to have chicks last year, suggesting the breeding season at the refuge was successful. The pairs represent an important,

protected population of a species that has seen dramatic population declines of approximately 75 percent in recent years.

There have been many reasons for the decline, including predation by non-native, introduced species such as rats, barn owls and feral cats. Other problems are loss of breeding habitat to non-native plants and animals, the effects of light pollution and collisions with power lines.

“It is gratifying to work with a threatened species, which responds positively to management techniques,” says refuge biologist Kim Uyehara. “This suggests that the refuge can play an important role and people can make a difference in conservation and recovery of Hawaii's rare seabirds.” 

Dennis Fujimoto is a staff writer and photographer at The Garden Island newspaper of Lihue, HI. This article is adapted from an article that appeared in The Garden Island on Oct. 10, 2012.

Around the Refuge System

Minnesota

Before Upper Mississippi River National Wildlife and Fish Refuge visitor services manager Paula Ogden-Muse helped host a conference of black, Hispanic and female birders, nature photographers and educators at Minnesota Valley National Wildlife Refuge last fall, she thought reaching out to ethnic minorities would be all about turning people on to birds' relevance. But, she learned, it's more than that.

She learned about the psychology of refuge visits from ethnic perspectives. She learned that urban residents can be fearful of leaving the city limits, let alone visiting a refuge. She learned that lack of transportation is a huge barrier for would-be visitors. She learned that one local Somali resident thought the refuge involved refugees. She learned that some non-traditional birders have been reported to police as suspicious individuals simply for using binoculars and taking pictures.

More than 50 people attended the daylong, multi-generational conference.

Ogden-Muse's takeaway is that if the Refuge System wants to attract traditionally under-served people, it must care for people as well as wildlife. It must consider reaching out to churches, universities and other community organizations to educate urbanites and perhaps facilitate rides to refuges. It must encourage affluent birders who travel thousands of miles to see a rare bird to support birding locally. The Refuge System needs to hire minorities to have credibility among them. It needs to speak their language, be it Spanish or maybe even Somali or Hmong.

In essence, Ogden-Muse says, "if people's basic needs aren't met, the salvation of the red-cockaded woodpecker or any bird won't matter to them."

Alaska

- Kaktovik, a Beaufort Sea coast settlement within Arctic National Wildlife Refuge, launched a program in which local students give safety tips to visitors who come to view polar bears and, in search of that perfect picture, sometimes get too close for comfort.

The Kaktovik Youth Ambassadors are high school students in the community where many residents are Inupiat and most residents respect wild polar bears as both magnificent and potentially dangerous. During the two-month season, four youth ambassadors talked to 194 visitors from 15 countries, according to refuge visitor services supervisor Jennifer Reed.

Their tips to visitors are: 1) View bears only during daylight hours. Be in a group and in a vehicle or a boat. 2) Respect bears' personal space—avoid close encounters. 3) Stop your approach if a bear notices you. Allow it to resume what it was doing before your arrival.

"We're keeping people safe and keeping the bears less disturbed," says 16-year-old Madeline Gordon, a student in the program, which is the brainchild of Kaktovik residents. Another student, 17-year-old Archie Brower, thinks it's cool to see his community through the eyes of visitors, one of whom told him: "I think that it is awesome that you guys have such an interesting backyard."

- In an effort to get people outside and to raise the Refuge System's profile, the U.S. Fish and Wildlife Service regional office hosted the Blue Goose GeoTour, a series of 16 refuge-themed geocaches hidden at Anchorage city parks. A geocache is a hidden treasure that an individual finds by using a GPS device or smart phone. Geocaching is a family-friendly outdoor activity that blends technology, gaming and environmental discovery. Each Blue Goose GeoTour geocache featured one of Alaska's 16 national wildlife refuges. More than 65 people submitted entries to a kickoff contest for the event, which was the idea of Kristen Gilbert, the region's youth, partnerships and grants coordinator. The Anchorage Parks Foundation and GeocacheAlaska were partners. The geocaches will remain active year-round for geocachers to find.



Kaktovik, AK, a remote community within Arctic National Wildlife Refuge, has started the Kaktovik Youth Ambassadors program in which local students give safety tips to ecotourists in town to view polar bears. One day last fall 80 polar bears were observed nearby. (Susanne Miller/USFWS)

Texas

Two separate volunteer efforts have improved habitat near Trinity River National Wildlife Refuge. First, refuge wildlife biologist Laurie Lomas enlisted Texas A&M University students—in town on break last spring—to help remove invasive water hyacinth from a pond in the city of Liberty’s Municipal Park. With city permission, Lomas and the students spent a March day in kayaks removing all visible water hyacinth from the pond. Lomas herself continued for months to remove the invasive plants from the pond. “Today,” she said, “I am declaring the project over. It is hyacinth-free. The project was completed by student volunteer labor and was 100 percent chemical free. And on top of that, we had a blast ... The students got messy and mucky, one even went overboard on her kayak, but it was a great project.” Then, during National Wildlife Refuge Week, 35 volunteers from General Electric Corp. and others slashed through brambles and cypress knees to blaze a half-mile hiking trail from Municipal Park to a refuge bayou, where a future boardwalk could continue the trail. The refuge, which conserves almost 25,000 acres, is an hour northeast of Houston.

Michigan

An epizootic hemorrhagic disease outbreak killed 108 white-tailed deer at Shiawassee National Wildlife Refuge. The deer were found dead at the refuge in September and October. More than 11,000 deer were killed across Michigan in that period by the disease. It is spread by the bite of a midge, a small fly. The Shiawassee Refuge, whose deer population is generally 300 to 400, is one of three refuges nationwide collaborating with the Quality Deer Management Association to conserve wildlife on land near refuges (see November/December 2012 issue of *Refuge Update*).

Chesapeake Bay Refuges App

With iPhones in hand, visitors to refuges in the Chesapeake Bay region can now photograph and share sightings with a worldwide community of wildlife

Colorado




Rocky Mountain Arsenal National Wildlife Refuge has opened a nine-mile Wildlife Drive auto tour. The tour enables visitors to see bison, deer (mule and white-tailed), prairie dogs, waterfowl and various birds just minutes from downtown Denver. The route also provides access to a system of hiking and snowshoeing trails through grassland, woodland and wetland habitats. (Mike Mauro)

watchers. The free National Wildlife Refuges Chesapeake Bay app is available for download from the App Store. The app came online during National Wildlife Refuge Week. App users can post photos of plants and animals they find at Chesapeake Bay region refuges and tap into a global network of experts for information about the species. As postings accumulate, scientists and refuge managers will be able to view the data to see where and when species inhabit specific locations. The app was developed through a partnership between the Chesapeake Conservancy and National Geographic Society with the Service’s support. It incorporates the Project Noah wildlife photo-sharing service. Project Noah allows users to create “missions” to pursue, and the app features a mission for 11 Chesapeake Bay region refuges. The app includes maps, hours and guides for those refuges.

Partners in Conservation Awards

Two national wildlife refuge groups were among 17 organizations that received 2012 Department of the Interior Partners in Conservation Awards. The Everglades Headwaters National Wildlife Refuge and Conservation Area

Partnership was honored for efforts to conserve one of eastern North America’s last great wetland ecosystems. Everglades Headwaters National Wildlife Refuge and Conservation Area was established as the 556th refuge last January. It eventually will span more than 150,000 acres in central Florida and protect, restore and conserve habitat for hundreds of rare species, including the Florida panther, Florida black bear, Florida scrub-jay, Everglades snail kite and Eastern indigo snake. The Friends of Hackmatack National Wildlife Refuge Partnership was cited for efforts that involve citizens partnering with nonprofit organizations and federal, state and local governments to create the refuge on the Illinois-Wisconsin border northwest of Chicago. Last August, Secretary of the Interior Ken Salazar authorized establishment of the refuge, which will provide up to 11,200 acres of habitat for wildlife as well as recreational opportunities. 

On-the-Job Vocational Training

By Nancy Brown

Situated among the bison, elk and white-tailed deer at Wichita Mountains Wildlife Refuge, students are learning how to replace fuses, build cabinets, fix water pumps—and make a future for themselves.

Within the 59,020-acre Oklahoma refuge known for mixed grass prairie and glorious vistas is a Job Corps training center. It is one of 125 such centers nationwide. The Treasure Lake Job Corps has been housed on Wichita Mountains Refuge since 1964. TLJC originally was administered by the U.S. Fish and Wildlife Service but has been transferred to the U.S. Forest Service. The center includes military-style living quarters and a training facility where up to 180 students from across the nation spend 10 months to two years learning a technical trade.

Job Corps is a Department of Labor education/technical training program that annually trains approximately 100,000 students aged 16 and 24. At no cost to them, students can learn a career, earn a high school diploma or equivalent, and find a good job.

The Job Corps curriculum includes hands-on training and on-the-job labor. Last year, Wichita Mountains Refuge and TLJC expanded on that idea. Under the guidance of refuge maintenance supervisor Joe D'Arrigo and TLJC director Scott Prescott, the students were put to work on the refuge where they are housed.

"We've always had the students here as a resource, but this is a more formalized effort, an MOU [memorandum of understanding] that we've entered into with them," says Wichita Mountains Refuge manager Tony Booth. "Everywhere you turn you'll see a Job Corps project, good work done by these students and the many that came before them."

Booth estimates the students provided 360 hours of labor in a six-week period early last year, and the refuge expects a

similar contribution in 2013.

Brandon Prentice, 20, from nearby Lawton, OK, enrolled in TLJC in 2011 and took carpentry classes for 10 months before working at the refuge. Prentice, who joined Job Corps in search of a trade and to complete his high school education, appreciates the experience he's gotten on the refuge.

"In the classroom, someone's going to tear it up after you're done," he says. "But this is the real deal. It's like real work, and someone is going to see it."

TLJC instructors select students in training to become plumbers, carpenters, electricians or painters to work on the refuge, job-shadowing refuge staff on projects.

"I Applaud Them"

Wichita Mountains Refuge maintenance worker Randy Abbe graduated from TLJC in 2000 and was hired by Imperial National Wildlife Refuge, AZ. Abbe says Job Corps was "his last chance to do something." He returned to Wichita Mountains Refuge six years ago and now finds himself working alongside TLJC students in a mentoring role.

"It's tough for the students," he says. "You have to live 24/7 with other students, and I applaud them for deciding to do something with their lives. I volunteered at the refuge and got most of my training there."


Abbe and other refuge maintenance staff—including D'Arrigo, Mando Fabela, Tim Fischer, Russ Sandry, Mike



Refuge maintenance staff member Mando Fabela serves as mentor to Job Corps student Brandon Prentice at Wichita Mountains Wildlife Refuge in Oklahoma. (Russ Sandry/USFWS)

McKenzie, Billy Jones and Ron Fonville—have been hosting four TLJC students a week, rotating them in and out according to the projects and students available. The students have repaired a broken water line, refurbished living quarters, painted buildings, repaired fences, restored trails and built a volunteer break room. Refuge staff members closely supervise them while ensuring they gain real-life work experience.

"I just needed a couple of high school credits. I needed a trade," says Prentice, who is close to completing the program.

Contemplating future employment, he says: "I'll definitely check with the refuge. It's a piece of me, I guess. My mom really likes looking at the lake, and my brother keeps asking me where the fish are." 

Nancy Brown is a Service public outreach specialist for Texas/Oklahoma.

Grimes, Dyasuk and Trust for Public Land Receive Awards

Two dedicated U.S. Fish and Wildlife Service professionals and a long-time land conservation partner are the recipients of the 2012 National Realty Awards.

The winners of the three awards presented annually by the National Wildlife Refuge System Division of Realty are Richard Grimes of the Service's Pacific Southwest Region; Jon Dyasuk, a refuge interpreter in Alaska; and the nonprofit Trust for Public Land.

Dieffenbach Award

Pacific Southwest Region supervisory realty specialist Richard Grimes is the recipient of the Rudolph Dieffenbach Award. The award is given to a Division of Realty employee for significant contributions to the Service's land acquisition systems, operation or mission.

Grimes played a key role with The Nature Conservancy in acquiring the pending \$18 million, 1,905-acre Hidden Valley parcel within San Diego National Wildlife Refuge, CA. His extraordinary level of coordination and cooperation ensured that lands at risk for residential development came into the Refuge System, thereby further consolidating public land ownership in the highly urbanized San Diego area.

The transaction was particularly complex in light of funding sources, including \$8 million from Customs and Border Protection. Grimes's attention to detail—especially legal and legislative authority—was important in securing the transaction.

Land Legacy Award

Jon Dyasuk of Togiak National Wildlife Refuge in Alaska received the Land Legacy Award for significant contributions to the Service's mission. The award is given to a Service employee or volunteer who does not work in the realty function.

Dyasuk, an Alaska Native (Yupik Eskimo), has been a Service refuge interpreter at the 4.7-million-acre refuge for 25 years. He has provided



Jon Dyasuk, a U.S. Fish and Wildlife Service refuge interpreter at Togiak National Wildlife Refuge in Alaska, received the Land Legacy Award for significant contributions to the Service's mission. (USFWS)

invaluable support to Alaska Region realty specialists by acting as a bridge between the Service and Yupik landowners, most of whom are elders and do not speak English.

His contacts with the landowners and skills as a Yupik interpreter, along with his understanding of Alaska Native culture, are primary reasons for the success of the region's acquisition program at Togiak Refuge. Dyasuk has contributed to the acquisition of more than 6,000 acres within the refuge, including designated wilderness.


National Land Protection Award

The Trust for Public Land received the National Land Protection Award. It is given to private citizens, groups, organizations, corporations, public agencies and their employees or volunteers outside the Service—for contributions to land protection for fish and wildlife resources in partnership with the Service.

For decades, “the Trust for Public Lands has been one of our cornerstones that

further our agency's acquisition efforts,” Refuge System Headquarters realty chief Eric Alvarez said in presenting the award at last fall's Land Trust Alliance Rally in Salt Lake City. “TPL has helped us conserve over 300,000 acres with an estimated market value of over \$220 million. These acres have become part of the National Wildlife Refuge System.”

TPL is a national nonprofit that conserves land for parks, gardens, historic sites, rural lands and other natural places. It works from the inner city to wilderness, ensuring livable communities for generations to come. TPL has helped conserve land at more than 50 refuges.

Most recently, TPL has helped the Service conserve more than 3,000 acres at Valle de Oro Refuge, NM; Silvio O. Conte Refuge, which spans four New England states in the Connecticut River watershed; Umbagog Refuge, NH; and Edwin B. Forsythe Refuge, NJ. 

Bringing the Vision to Your Community — continued from page 1

strategic plan that seeks first to reach key audiences where they live; then increase online and in-person visits to wildlife refuges; and ultimately build the next generation of Refuge System supporters. The plan details a host of tactics—from marketing partnerships that engage the National Basketball Association, among other non-traditional partners, to traveling Refuge Live! activity centers and a Champions Academy for high school students.

Recognizing that there are eight times more annual volunteers than Refuge System employees, the Community Partnership implementation team is putting on the fast track creation of a “one-stop shopping” Web portal for staff and volunteers. That team also is working with the Interpretation and Environmental Education (I&EE) team to establish an ambassador program that will train employees to provide excellent customer service and strengthen community relations.

The I&EE team recognizes that “education programs are quickly evolving to ‘anytime, anywhere’ platforms.” The team’s draft strategy proposes an analysis of how environmental education (EE) programs are delivered. The team calls for development of a “rapid self-assessment tool” by June 2013 so wildlife refuges can evaluate their EE programs.


The strategy proposes establishment of EE “centers of excellence” and an online clearinghouse that highlights professional development opportunities and updates the visitor services career pathways handbook to reflect needs for Refuge System interpretation programs.

Other elements of the draft strategies for Interpretation and Environmental Education:

- teach awareness and understanding of natural resources by piloting unstructured discovery areas on some refuges.
- develop Web-based resources and video programming to guide how to deliver education programs.
- improve citizen science programming and stewardship by working with existing partners and programs.



The progress of each Conserving the Future implementation team can be followed at <http://AmericasWildlife.org/author/americaswildlife>. Comments about implementation plans can be e-mailed to ConservingtheFuture@fws.gov.

The Strategic Growth implementation team has completed a rapid top-to-bottom assessment of the status of all Refuge System land protection projects. The assessment includes the history of land acquisition and how it may shape the future. It also establishes a base line from which the team can work in creating new policy. Given the cost and time of expanding the Refuge System, the team must ensure that actions are valuable and the right choice for the American people. 

Chief's Corner — continued from page 2

Some corporations insist on outdoor space because employees do better when they have a variety of settings in which to work—including the great outdoors.

If some of America’s biggest employers have found that the outdoors is a boon to productivity and progress, it’s all the more reason for the National Wildlife Refuge System to expand its reach and improve environmental education offerings. We’ve already taken the first step with “Sowing Seeds of Wonder,” a draft strategic plan for improving environmental education, developed by the *Conserving the Future*

Interpretation and Environmental Education implementation team.

Among the proposals: more chances for the public to participate in citizen science with such partners as the Cornell Lab of Ornithology and Project BudBurst; development of a national visitor services “communications hub” to share educational resources, including lesson plans; more mobile learning platforms; and stewardship activities for local schools.

Wildlife conservation is the Refuge System’s fundamental mission. But we won’t succeed if we don’t inspire the American people—especially our

children—to connect with their wildlife heritage and become stewards of their natural resources. Wildlife refuges, integral to their local communities, are great places to broaden the nation’s conservation constituency.

After all, if the managers at Iowa law firm Foss, Kuiken & Cochran installed SkyCeiling—a faux skylight printed with images of a blue, sunny sky—to invigorate the office’s windowless reception area, imagine how thrilled they would be if their children could visit a real outdoor space—a national wildlife refuge—where the sky is naturally blue. 



Cody Wiig (red hard hat) and Cody Teske were part of a Maintenance Action Team (MAT) project last summer at Minnesota's Windom Wetland Management District in which farm silos were imploded to make way for prairie habitat restoration. MAT projects have proved more cost-effective than those done by private contractors. (Howard Paul/USFWS, Michael Gale/USFWS)

Teaming Up to Save Money, Share Skills, Boost Morale — continued from page 1

to expand the MAT program as a tool to stretch budgets and enhance field workforce capabilities. Field managers and area supervisors are urged to identify suitable MAT projects and provide equipment/staff for them.

A MAT is a group of U.S. Fish and Wildlife Service employees with maintenance skills, usually drawn from multiple field stations, temporarily brought together to work on a short-term construction, demolition or habitat restoration project that traditionally would be done by a private contractor.

In an era of tight budgets, MAT can help the Service reduce its \$2.4 billion deferred maintenance backlog. The work group has found that earth-moving MAT projects, such as levee and road construction, cost 40 to 60 percent less than if done by private contractors. Construction and demolition MAT projects cost 30 to 50 percent less. Rob Miller, chief of the Refuge System's Branch of Facilities and Equipment Management, estimates annual savings of more than \$2 million nationally.

"We're not paying a general contractor profit and overhead. We're not paying to rent equipment," he says. "We're not paying ... for all the layers and layers that are involved in most construction projects."

Miller also cites more efficient use of specialized equipment. Just as important, he says, are the training and morale boosts MAT participants receive.


MAT projects include some expert heavy equipment operators and some novices, "so the participants receive mentoring and training and concentrated time on equipment they may not have access to on a daily basis," Miller says. "It builds professional networks that are very valuable."

Warner, the Litchfield WMD mechanic, has been on nine MAT projects, including a tallgrass prairie restoration last summer at Minnesota's Windom WMD in which a crew imploded three silos, buried building foundations and removed invasive trees to erase traces of eight farm or homestead sites.

The MAT "operated like a well-oiled machine and accomplished far more than our original objectives ... on a project that would have cost us easily twice as much if we had contracted it out," says Windom WMD manager Todd Luke.

A typical MAT crew works 12 hours a day, seven days a week for at least two weeks. When the project ends, the camaraderie continues. Participants swap e-mail addresses and keep in touch.

Back at Litchfield, Warner supervised a team that built 10 parking lots at waterfowl production areas in two weeks "and saved the Service a ton of money," he says. Litchfield staff also built a 500-foot boardwalk. Skills for both tasks came from MAT experience.

"You gain confidence on these MAT details, and you bring that back to your station," Warner says. "The networking and the knowledge you bring back is just unbelievable." 

Heather Dewar is a writer-editor in the Refuge System's Branch of Communications.



RefugeUpdate

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



Meet us at www.fws.gov/refuges

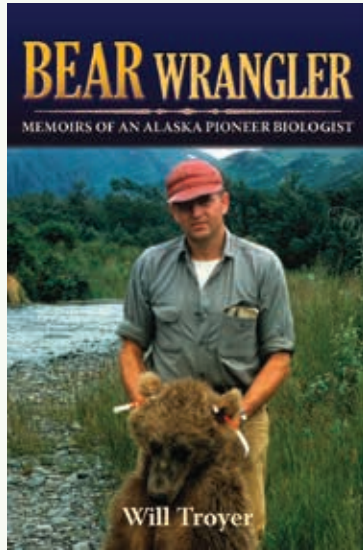
STANDARD PRESORT
POSTAGE AND FEES
PAID
U.S. DEPARTMENT OF THE
INTERIOR
PERMIT G-77

A Look Back ... Will Troyer

Will Troyer was born in 1925 in Indiana to an Amish/Mennonite family that drove a horse and buggy until he was about 10. A series of serendipitous moments led him to the National Wildlife Refuge System and his legacy as a bear wrestler.

An elementary school teacher sparked Troyer's interest in birding. A bulletin board notice at Oregon State University prompted him to head to Alaska, where he marked pink salmon fry for a commercial fishery. Then he found work as a wheel watchman on the Situk River. During a 30-year career with the Department of the Interior, he worked first for the U.S. Fish and Wildlife Service as a law enforcement officer and later managed Kodiak and Kenai National Wildlife Refuges. He conducted research studies on brown bear, moose, caribou, bald eagles and trumpeter swans, often flying wildlife surveys in remote Alaska.

In the 1950s, he pioneered the live trapping of brown bears for science. "Nobody knew much about bears. To get the information, we had to get some




Will Troyer, now in his 80s, is the author of three books, including Bear Wrangler: Memoirs of an Alaska Pioneer Biologist. He was a Department of the Interior employee for 30 years, many of them with the Refuge System.

ear tags in the bears, but no one had ever captured them. The first year I caught eight bears," Troyer said during an interview with the Alaska Trappers Association. He continued his work with bears for the National Park Service,

and spent seven summers as a bear photography guide along the Katmai Coast after retirement.

As manager of Kenai Refuge, Troyer initiated the canoe trails that are now nationally recognized. "A couple of times a week, I would just grab one of my assistants and my maintenance man and we would go out and cut portage from one lake to another," he recalled during an oral history interview by the National Conservation Training Center.

Kevin Painter, a Service regional environmental education specialist in Alaska, says Troyer was "ahead of his time, leading the way with innovative ideas and plans of action from wildlife research to visitor services."

Troyer received the prestigious Olaus Murie Award from the Alaska Conservation Foundation in 1987 for his life's work in wildlife conservation. He has written three books, *From Dawn to Dusk: Memoirs of an Amish/Mennonite Farm Boy*; *Into Brown Bear County*; and *Bear Wrangler: Memoirs of an Alaska Pioneer Biologist*. 

Follow the National Wildlife Refuge System on Facebook at www.facebook.com/usfwsrefuges and [Twitter@USFWSRefuges](https://twitter.com/USFWSRefuges).

Send Us Your Comments

Letters to the Editor or suggestions about *Refuge Update* can be e-mailed to RefugeUpdate@fws.gov or mailed to *Refuge Update*, USFWS-NWRS, 4401 North Fairfax Dr., Room 634C, Arlington, VA 22203-1610.