



RefugeUpdate

National Wildlife Refuge System

www.fws.gov/refuges



INSIDE: This year the U.S. Fish and Wildlife Service is celebrating the 100th anniversary of the Migratory Bird Treaty. Refuges provide vital habitat to migratory birds along the flyways of North America, including these mallards at Seedskadee National Wildlife Refuge in Wyoming. See the Focus section, which is titled “Helping Migratory Birds Fly” and begins on page 8. (Tom Koerner/USFWS)

A “Mini-Wetland” in a Parking Lot At Oregon’s Tualatin River Refuge

By Bill O’Brian

Environmental education, wildlife conservation and healthy hydrology converge at Tualatin River National Wildlife Refuge – in the parking lot.

For five years, the parking lot’s centerpiece, a sophisticated bioswale, has welcomed refuge visitors, hosted birds and pollinators, and filtered stormwater runoff before it enters the Tualatin River ecosystem near Portland, OR.

“That bioswale is like a mini-wetland,” says visitor services manager Kim Strassburg. “It is a model, and it is an example of something you can do in your own backyard.”

Refuge manager Erin Holmes concurs: “It provides an amazing opportunity for people to learn about native plants they can plant in their backyards. We’ve got nesting birds in there. It’s a great place for pollinators. It’s a little habitat for little critters.”

A bioswale is a manmade, gently sloped, vegetation-filled depression designed to remove pollution from surface runoff water. The Tualatin River Refuge bioswale is state-of-the-art. Completed in 2011, it and the surrounding parking lot cost roughly \$90,000, most of it American Recovery and Reinvestment Act money. Sustainable methods and materials – including warm-mix asphalt and permeable pavers – were

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Using Facebook To Connect

By Martha Nudel

Don’t let the U.S. Fish and Wildlife Service uniform fool you: Tom Koerner, refuge manager at Seedskadee National Wildlife Refuge since 2012, is a Facebook marketing maven.

The 26-year Service veteran uses the social media platform with the savvy of Mark Zuckerberg to make the 27,230-acre refuge better known in its southwestern Wyoming community – and to educate a new generation of conservationists. It’s working.

Jan. 1, 2016 post: *Ice conditions on the [Green] River have been changing over the last few weeks, and as a result the swans have moved around a bit. An ice jam above opened this stretch up right along the auto tour route near Highway 28. It was a perfect spot to watch trumpeter swans from*

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Chief's Corner

Look Up. That Bird Was Probably at a Wildlife Refuge

Well-known birder and author Kenn Kaufman said recently on Facebook, “National wildlife refuges protect some of the most amazing habitats for birds and other wildlife in the USA. These public lands represent a treasure for all Americans.”

I wholeheartedly agree.

Pick up any birding magazine or guide, and you're sure to see so many references to wildlife refuges that you will lose count. We all know the story of the brown pelican whose protection launched the National Wildlife Refuge



Cynthia Martinez

System in 1903 with the establishment in Florida of Pelican Island bird reservation – now known as a national wildlife refuge. More than 200 refuges have been established for migratory birds.

In our 113-year history, the National Wildlife Refuge System has made huge strides on behalf of migratory bird conservation. This *Refuge Update* celebrates the centennial of the Migratory Bird Treaty and related conservation from Bayou Sauvage Refuge in Louisiana and Tamarac Refuge in Minnesota to Rainwater Basin Wetland Management District in Nebraska and Sacramento Refuge in California.

Not only do millions of migratory birds find homes among the National Wildlife Refuge System's stunning array of marshes, wetlands, deserts, forests, great rivers and small prairies. They also find a home in the urban areas served by wildlife refuges. Not enough urban residents know that.

The Urban Bird Treaty program has helped make a difference. Cities today are filled with hawks, osprey, songbirds and more.


Now let's teach kids and families in big and small cities that when we talk

The Refuge System has been crucial in nurturing migratory bird species.

about migratory bird flyways, those are not far-off places. Flyways include places where millions of people live, city neighborhoods where people can see a breathtaking variety of birds. With effective communications, city residents will recognize that they can go to a nearby refuge to learn more about helping bird populations.

The Refuge System has been crucial in nurturing migratory bird species. State-of-the-art waterfowl management is practiced on thousands of waterfowl protection areas and hundreds of wildlife refuges. We've brought birds back to their historic ranges, increased populations, given visitors sights that they'll travel hundreds of miles to see – and helped sustain the economies of communities where birding is a passion.

Fewer people know that our federal wildlife officers are among migratory birds' best friends. They regulate migratory bird take and possession limits under international treaties like the Migratory Bird Treaty Act. They regulate hunting license capability to ensure that proper limits are met on particular migratory bird species. And they ensure that migratory birds have safe places to rest during non-hunting seasons as they work closely with sportsmen's groups, tribal law enforcement and state agencies.

Americans are learning that when they see birds in their communities, vast flocks on the wing, even some hummingbirds at their feeders, they have national wildlife refuges to thank. So, when you look up and experience the magnificence of a bird in flight, you might wonder which national wildlife refuge provided benefit to that bird. 

Refuge Update

Sally Jewell
Secretary
Department of
the Interior

Dan Ashe
Director
U.S. Fish and
Wildlife Service

Cynthia Martinez
Chief
National Wildlife
Refuge System

Martha Nudel
Editor in Chief

Bill O'Brian
Managing Editor

Address editorial
inquiries to:

Refuge Update
U.S. Fish and
Wildlife Service
Mail stop: NWRS
5275 Leesburg Pike
Falls Church, VA
22041-3803

Phone: 703-358-1858
Fax: 703-358-2517
E-mail:
RefugeUpdate@fws.gov

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Annual U.S. Fish and Wildlife Service-organized tours help CARE (Cooperative Alliance for Refuge Enhancement) representatives see national wildlife refuges in a more complete light. Page 6

Focus: Helping Migratory Birds Fly

In the year of the Migratory Bird Treaty's centennial, this issue celebrates refuges' role in conserving birds in North America. Pages 8-15

Correction

The nickname of Howard “Hawkshaw” Thornsberry, the co-inventor of the cannon-projected net trap, was incorrect in the November/December 2015 issue. The error has been corrected in online editions.

Thriving in Advancement of Conservation

By Jon Barnhill

All I could see were the steel-toed boots of a man laboring under a mammoth dump truck. An outstretched hand would appear periodically as he called for a certain tool. The young man's hands moved deftly among the myriad drives, gears, motors, hoses and wires. Soon, a smiling face, fresh with the optimism of youth, beamed up at me: "Fire it up, Dad."

The truck had not moved out of the Izembek National Wildlife Refuge shop for years. I hollered to congratulate the young mechanic. Too late. He was already moving to the next job.

For a dad to watch his son grow – then thrive – is about as satisfying as it gets. To witness that son taking command of his destiny becomes a moment to celebrate.

That happened last summer when my son, 25-year-old Grant, was forever changed after he volunteered on Izembek Refuge in southwestern Alaska.

Far too often, I had not been there for Grant when he was younger. As a career Navy serviceman, I deployed frequently.

In summer 2014, the U.S. Fish and Wildlife Service presented a chance for me to continue service to country: I took a seasonal maintenance position at Izembek Refuge near the tip of the Alaska Peninsula.

Grant is a recent college graduate who lives in Memphis, TN, about 1,000 miles from me when I'm in the Lower 48 during the off-season. He had a job that induced no sense of pride or satisfaction. He sought more but didn't know where to turn.

After my first season at Izembek Refuge, I knew exactly where he could find the direction he sought. Grant signed on as a 90-day volunteer, working in maintenance for summer 2015.

"I figured I would be treated as a pesky volunteer," Grant recalls. "Not so. From



Last summer, Grant Barnhill, left, volunteered to do seasonal maintenance work at Alaska's Izembek National Wildlife Refuge with his father and this story's author, Jon Barnhill. There, Grant found new direction. (Susan Gage/USFWS)

the start, I was made to feel like a valued member of the Izembek team. My work assignments were all central to the refuge's mission."

He became the go-to heavy equipment operator. For precision work, we turned to him. All things mechanical came intuitively to Grant, who replaced a rotting roof, installed doors where weather had taken its toll, and repaired trucks that were languishing in the shop.

After the permanent maintenance mechanic left, I took on the additional duties of planning, preparing and supervising the daily work. To my surprise and delight, our roles reversed over the course of Grant's time at Izembek Refuge. Grant took the lead on the planning and executing of projects. My son was thriving in the advancement of conservation.

I had carried no small amount of guilt for having missed some important milestones in Grant's formative years while I was career Navy. To have the opportunity to work shoulder-to-shoulder with him for three months, bonding not just father-to-son, but also man-to-man, was extraordinarily rewarding.

Grant left Izembek Refuge last summer, but Izembek Refuge didn't leave him. He's home now, searching for new and perhaps permanent ways to plug into the conservation workforce. He's found direction for his talents and energies. As for me, I recovered some of what I was certain was forever out of reach: precious time with my son. 🦋

Jon Barnhill was a seasonal maintenance worker at Izembek National Wildlife Refuge in summers 2014 and 2015.

Reaching New Audiences in Cities and Beyond

By Angelina Yost

Less than two years old, the Urban Wildlife Conservation Program is reaching audiences who were unaware of the U.S. Fish and Wildlife Service.

It's happening in industrial cities like Detroit and Yonkers, NY. It's also happening on lands not close to large urban centers, like J.N. "Ding" Darling Refuge, FL, and Shiawassee National Wildlife Refuge, MI, both of which have embraced the urban program's Standards of Excellence.

For decades, the Detroit River was one of North America's most polluted rivers. Today, the Detroit Riverfront Conservancy and Detroit River International Wildlife Refuge are creating gathering places for people and wildlife along that river and western Lake Erie. "That cooperative conservation is helping provide an exceptional outdoor recreational and conservation experience to nearly seven million people in the watershed," writes refuge manager John Hartig. "That, in turn, is helping develop the next generation of conservationists and sustainability entrepreneurs."

Although Wallkill River Refuge on the New Jersey/New York border is more than an hour from a large city, refuge staff is committed to engaging new audiences and willingly travels to participate in a community renewal partnership project in Yonkers. The partnership is reclaiming the industrialized Saw Mill River, creating and restoring riverside parks, and connecting the river to school pollinator gardens. The partnership also is working with a natural resources-oriented agricultural high school science class on community and refuge conservation projects. The idea is: High school students will mentor middle school students, who will mentor elementary school students. At year's end, the high schoolers will earn a certificate from Wallkill River Refuge, recognizing their


skills training and building their resumes for conservation careers.

"Ding" Darling Refuge in southwest Florida is taking the first Standard of Excellence, *Know and Relate to the Community*, to heart. When refuge staff members learned that cost and the presence of uniformed employees deterred local Spanish-speaking residents from visiting the refuge, they designed free events to make the refuge more inviting. They collaborated with a Spanish-language radio station to help craft messages and promote events like Family Fun Day and Art in Conservation Day. The station provided one free advertisement for every paid advertisement and was recognized as a major event sponsor. The events drew record numbers of Hispanic visitors.

Shiawassee Refuge has not been identified as one of the 101 urban refuges within a 25-mile radius of a population center of more than 250,000 people. That didn't stop Steve Kahl, manager of the central Michigan refuge, from being a champion of the fourth Standard of Excellence, *Be a Community Asset*. A small part of the 10,000-acre refuge is near a low-income, high-unemployment

neighborhood in Saginaw, a city of about 50,000. Kahl asked himself: "How could the refuge reach these under-served populations to go fishing or take a walk in a nice, serene setting rather than walk by vacant lots and boarded-up houses?" In response, the refuge hosts fishing events for local residents and is working with the community in a Federal Lands Livability Initiative [see January/February 2015 *Refuge Update*: <http://1.usa.gov/1Nq49Ja>].

Other communities – from Houston to Anchorage, Providence to San Diego and a dozen places in between – are finding creative ways to provide opportunities for urban residents to discover, appreciate and care for nature in their cities and beyond.

Hartig says it well: "It is critically important that a high priority be placed on reconnecting urban residents with nature as part of a long-term strategy to inspire individual respect, love and stewardship of the land/ecosystem to be able to develop a societal land/ecosystem ethic for sustainability." 

Angelina Yost is the Refuge System urban coordinator.



High school students from the Groundwork Hudson Valley Green Team are working with Wallkill River National Wildlife Refuge as part of the Urban Wildlife Conservation Program to help reclaim the Saw Mill River in Yonkers, just north of New York City. More about the Urban Wildlife Conservation Program and its Standards of Excellence is at <http://www.fws.gov/urban/index.php> (Groundwork Hudson Valley)

Forging Connections With Latino Communities

By Karen Leggett

“**F**ind the leaders in the community, and get them behind you,” says Birgie Miller, offering her number-one piece of advice for national wildlife refuges and Friends groups seeking to improve outreach to Spanish-speaking communities. Miller is executive director of the Ding Darling Wildlife Society, the Friends organization for J.N. “Ding” Darling National Wildlife Refuge in Florida.

Latinos are projected to be 25 percent of the U.S. population by 2050, and young people are the largest, fastest-growing segment of the Latino population. Last October, the U.S. Fish and Wildlife Service signed a partnership agreement with the oldest and largest Latino advocacy organization, the League of United Latin American Citizens. The partnership is intended to provide new opportunities for young people to experience nature and consider careers in conservation, engage families in outdoor recreation and build awareness of how wildlife conservation and health issues are connected.

Some refuges have been reaching out.

To get to know leaders in the Hispanic community near “Ding” Darling Refuge, Miller joined the Hispanic Chamber of Commerce and attended networking events. The Wildlife Society’s associate director Sarah Lathrop built a relationship with a local Latino radio station and then negotiated an advertising campaign for the refuge’s annual “Ding” Darling Days. Radio staff helped write the ads and played one free ad for every paid ad. The station, 97.7 Latino Radio, brought its van and played music. The outreach doubled the number of Spanish-speaking visitors to the refuge for those days.

The Wildlife Society has also had success with a high school nature photo contest, working with teachers to encourage students to compete. Entries can be taken outdoors anywhere in Florida, but



San Diego National Wildlife Refuge Complex reaches out to Spanish-speaking Girl Scouts by giving them ownership of special projects on the land. (Lisa Cox/USFWS)

Latinos are projected to be 25 percent of the U.S. population by 2050.

the award ceremony and photo display are at the refuge visitor center.

At Tualatin River National Wildlife Refuge in Oregon, the local Univision television affiliate interviewed a Spanish-speaking refuge volunteer and helped design a 30-second public service announcement for the refuge’s annual bird festival.

“We are crossing the language barriers with universally appealing PSAs that feature more pictures and music than talking,” says visitor services manager Kim Strassburg.

Tualatin River Refuge also publishes a Spanish web page (http://www.fws.gov/refuge/tualatin_river/un_refugio_para_todos.html) and includes bilingual bird guides and activities in Discovery Packs lent to visitors and after-school programs.

San Diego National Wildlife Refuge Complex is reaching Spanish-speaking families through their daughters. Sixty Girl Scouts from San Ysidro, CA, were the stars of a special event attended by Mexican and American conservation

leaders, performing as a color guard and showing the adults how to plant milkweed. “It was an insanely cool event,” says Lisa Cox, the refuge’s public information officer. “If you hand them a shovel and some plants and help them create a habitat, they have a connection and feel like it’s their land.” Mexican-born Irene Barajas – the leader of the 60 Girl Scouts – later spoke at a Watershed Summit organized by refuge manager Andy Yuen.

At Minnesota Valley National Wildlife Refuge, Patrick Bryant worked with the Bloomington, MN, school district’s cultural liaison for each major ethnic group as well as a diversity leadership group for older students. Bryant and Spanish-speaking intern Analuna Brambila invited the Latino Parent Association to hold its monthly meetings at the refuge, offered themed Nature Novice activities at after-school programs and created a hands-on monarch butterfly event at the neighborhood library.

“It was heartwarming to watch as, even indoors, children felt a profound connection to wild animals and their habitats,” says Brambila. 🦋

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

Refuges Come Alive on CARE Trips

By Martha Nudel

Seeing is understanding. That's the philosophy behind – and the outcome of – U.S. Fish and Wildlife Service-organized trips for members of CARE (Cooperative Alliance for Refuge Enhancement). Over the past decade, nine trips have taken CARE to various regions, including last October to five New England refuges.

“Over the years, a variety of resource challenges have been presented,” says Susan Recce, director of conservation, wildlife and natural resources for the National Rifle Association, one of 23 CARE member organizations. “In terms of refuge management, we really have seen an amazing variety of refuges. Even refuges in close proximity to one another can have very different challenges.” Ultimately, Recce says, the trips have given CARE a “better perspective” not only about management challenges, but also funding challenges.

CARE's steadfast aim is championing the Refuge System's budget needs on Capitol Hill.

The October trip took eight CARE representatives to:

- Umbagog Refuge, NH, which is doing active forest management using an innovative approach for wildlife,
- Silvio O. Conte Refuge, which spans the Connecticut River watershed across four states,
- Great Bay Refuge, NH, a former Air Force base whose habitat now benefits New England cottontail,
- Rachel Carson Refuge, ME, coastal habitat where climate change is becoming obvious, and
- Parker River Refuge, MA, where CARE representatives met with Friends and partners.

Previous trips have been to Louisiana and Mississippi, Wyoming, Montana and Idaho, New Mexico and Arizona, Florida, and Alaska. The Service organizes



Eight Cooperative Alliance for Refuge Enhancement (CARE) representatives went on a U.S. Fish and Wildlife Service-organized tour of five refuges in New England last fall, including New Hampshire's Umbagog National Wildlife Refuge. (Noah Kahn/USFWS)

the itinerary and provides ground transportation. CARE members pay for airfare, hotel and meals.

“This last trip highlighted the fascinating difference between what can be done when a refuge has staff as compared to refuges that don't have staff,” says Caroline Brouwer, director of government affairs for the National Wildlife Refuge Association, which chairs CARE. “But every trip has enabled CARE members to have a better idea of how wildlife refuges are run, how they work on the ground. It enables us to talk more intelligently on the Hill.”

Cam Witten, government relations and budget specialist with The Wilderness Society, went on the October trip and two earlier ones. And he's always learning.

“I hadn't visited any of the refuges that were part of the trip this time,” says Witten. “I am always impressed with how mission-focused staff are. In talking to us, they always come back to habitat objectives, to species conservation objectives.”

Witten and others pointed to timber management at Umbagog Refuge as an example of the biological expertise on wildlife refuges: “Umbagog staff

showed us the process of decision-making from the highest level down to the most granular decisions made. They walked us through the whole process, and clearly they had a justified process as they moved from one forest section, indicating habitat concerns and the timber sale goals for each area. They considered the species at every stop. The discussions clearly showed methodical thinking, and years and year of planning.”

The CARE trip – for Witten and others – made refuge stories come alive. “Once you get below the symbolic megafauna, communications is more difficult,” Witten says. “But CARE and the Refuge System are getting better at telling the stories that resonate with folks on the Hill, stories about what can be accomplished if certain funding levels are reached.”

Another benefit: relationship building. “We're practically spending 24/7 together as a group. There is a lot of turnover in CARE representatives, so this is a chance to get to know one another,” says Recce. “The trips really make a big difference. It's the first time I met Shaun Sanchez [deputy chief of the Refuge System], and it was a great opportunity to get to know him and other Refuge System staff.”

A “Mini-Wetland” in a Parking Lot at Oregon’s Tualatin River Refuge — continued from page 1

used in building the 54-space lot. It meets “low impact development” (LID) standards.

“As it relates to stormwater, LID means we are looking for ways to understand where polluted runoff is going and respond thoughtfully,” says Alex Schwartz, a U.S. Fish and Wildlife Service Pacific Region landscape architect who oversaw the bioswale’s design and construction. “We want to clean [the runoff] and slow it down as close to its point of origin as possible. To me, it means not passing the problem down the watershed in a pipe or with grassy swales, as has been standard practice for many years. LID means understanding the place and responding with your stormwater management scheme in a way that mimics the natural functions of the watershed.”

The bioswale’s 12,800-square-foot planted area collects, slows and filters runoff from about 26,000 square feet of tarmac/pervious pavers and from a refuge building roof. Three water control structures on three tiers under the bioswale slow runoff before it enters refuge wetlands and the river.

All of the bioswale’s plants are native to Oregon and can tolerate automotive runoff.

“There is a lot of nasty junk that potentially gets in there,” says Schwartz. Things like soot particles from exhaust, copper from brake pads, lead, tire rubber, motor oil and antifreeze. “It’s important to remember that besides dealing with automotive pollution, bioswales also help control the temperature and flow rate of impervious runoff, which can be higher than normal and have effects on macroinvertebrates, fish and wildlife. Facilities like this can help prevent stream incision and erosion, which in turn means healthier riparian areas in a watershed.”

In part because of inspirational signage such as “All life needs water ... We all live downstream” and a display explaining the bioswale’s purpose, the concept is a big hit with refuge visitors and a



When the lupine are in bloom, the bioswale in the parking lot at Tualatin River National Wildlife Refuge in suburban Portland, OR, is a sea of purple. The five-year-old bioswale, which collects, slows and filters stormwater runoff, is cared for by dedicated and knowledgeable volunteers. (Bill O’Brian/USFWS)

showcase for sustainable runoff management.

“We’ve had cities come and ask us about it,” says refuge manager Holmes. “They want to model it.”

Individuals are curious, too. “We get questions all the time,” says visitor services manager Strassburg. “People have come out and said, ‘Can you just talk to our apartment manager?’ I’ve had several of those. ‘What’s the name of the pavers you used?’ ‘How do I get those plants?’ ‘Where do you buy them?’”

But the key to ongoing success is two volunteer botanists at Tualatin River Refuge, Ginny Maffitt and Sandy Reid.



This display explains the purpose of the bioswale.

“They have rallied the troops, and they bring in the Master Gardeners [of Washington County] to have work parties” to maintain the bioswale, says Strassburg. “Without them, it would be very difficult to maintain and have it looking the way it does.” 🦋

Heightening Awareness in a Centennial Year

The U.S. Fish and Wildlife Service is celebrating the Migratory Bird Treaty centennial this year. Jerome Ford, a 29-year Service veteran, has been assistant director for the Migratory Bird Program since 2011. Here are excerpts from a recent *Refuge Update* interview with him.

Q. *What are the most critical threats to migratory birds in North America?*

A. Loss of habitat is at the forefront. Birds utilize different types of habitats. Even though we see them in a particular place and we may think that's where they carry on their entire life cycle, that is not the case. The other threat is climate change. Because of sea-

level rise, bird habitat along the seaboard is going to be inundated with water. Also, climate change is causing drought in other places where birds need moisture to find invertebrates for food and specific vegetation for cover. Climate change and habitat loss are probably the two greatest threats to birds.

Q. *What impact has climate change had on migratory birds? Can you give an example?*

A. In 2014, the red knot was listed [as a threatened species], and I think it is the only bird to ever be listed where climate change is a reason. Climate change has thrown out of sync the prey/predator relationship that the red

knots need, especially on the northern Atlantic seaboard, where they feed upon horseshoe crab eggs. The effects of climate change now have horseshoe crabs completing part of their life cycle earlier [in the year] than they have in the past. By the time the red knots migrate up from South America to where the horseshoe crabs are, the egg stage of the crabs' life cycle has completed. So red knots don't get a chance to use the horseshoe crab eggs to replenish their fat supply before they continue their migration into their breeding grounds northward. The lack of sufficient fat reserve will cause many red knots to perish eventually.

Q. *What are a couple of important things the Migratory Bird Program is doing this year to conserve bird populations?*

A. We are now doing what we have been doing for a very long time, and we do it fairly well – monitoring, surveying and using great science to model a variety of conservation scenarios. But I'd like to modernize our program by evaluating how we've done our business over the past 30 or 40 years and asking, "Is there a need for change?" We're calling it our modernization approach to become more effective and efficient. My hopes are that the resulting efficiencies and [financial] resources we save will translate into more on-the-ground conservation ... The other notable thing is the Migratory Bird Treaty centennial. Birds are often taken for granted a little bit among the general populace. I think people put all birds in one bucket. They don't know there are 1,027 species that are protected under the Migratory Bird Treaty Act. I believe people often see birds and hear them singing and conclude that birds are healthy and safe. In fact, some of the birds they hear may be imperiled. What we're trying to do with the 100th anniversary of the first Migratory Bird Treaty, which will be in August of this year, is to heighten awareness of the treaty and the protection it affords birds by creating



Each spring and fall, North American migratory birds travel hundreds, even thousands, of miles to and from breeding grounds and wintering grounds via four primary flyways. (North Dakota Game and Fish Department)



Rocky Mountain sandhill cranes soar over New Mexico's Bosque del Apache National Wildlife Refuge at sunrise. This species of crane typically winters in New Mexico and Chihuahua, Mexico, and nests in the northern Rockies. (Marvin de Jong)

opportunities for people to get engaged in the welfare and conservation of birds.

Q. *What role do national wildlife refuges play in protecting migratory birds, and how has that role changed in recent years?*

A. Most refuges, if I'm not mistaken, were established in part to protect migratory birds – in a lot of instances, waterfowl. I see wildlife refuges as being the hub for bird conservation within the Fish and Wildlife Service. Once we demonstrate what we're doing on our own Service lands, it's easier to start talking to our partners and other stakeholders about extending conservation initiatives across the landscape. And I don't think that's changed over the past few decades as the Service has tried to lead by example. However, I would like to see us increase the sales of the Duck Stamps at national wildlife refuges. So, if we can strengthen that relationship between the Migratory Bird Program and the Refuge

System, then that would be a win-win for both programs and for wildlife.

Q. *How can we better engage young people in bird conservation? How did you get involved with conservation?*

A. We believe in conservation through art. That's a mantra of our Junior Duck Stamp program. Kids love to doodle, draw and create with color. You look around my office [at framed wall drawings], you see three different pictures of the wood duck. They're colorful, beautiful birds. I think if we can get to youth early on and allow them a chance to experience the beauty of birds and how majestic birds can be in flight, then kids will make a lasting connection to the out-of-doors. It's that genuine connection to nature that I believe will keep kids forever interested in some form of conservation. I grew up on a small farm in northern Louisiana. We were taught that the land and all the animals that it supported was a gift to

us and we should respect it all and keep it healthy. I feel that I have an obligation to give back to the land.

Q. *How do states, nongovernmental partners and private landowners help the Service protect migratory birds?*

A. There is very little, if anything, that we do alone in the Migratory Bird Program. Everything that we do for bird conservation is done with partners. We develop hunting regulations with our state partners, and we coordinate hemispheric bird conservation as a member of the North American Bird Conservation Initiative [NABCI]. Whether it's Audubon, Cornell Lab of Ornithology, Fish and Wildlife Service, the Forest Service, American Bird Conservancy, the state partners, we're all part of a larger cooperative and collaborative conservation effort. 

Managing for Drought – and for Birds

By Ben Ikenson

The wetlands of the Sacramento National Wildlife Refuge Complex provide crucial foraging and roosting habitat for migratory birds along the Pacific Flyway, but prolonged drought has made resource management there more difficult.

The complex, in California's Central Valley, consists of five national wildlife refuges (Sacramento, Delevan, Colusa, Sutter and Sacramento River) and three wildlife management areas (Willow Creek-Lurline, Butte Sink and North Central Valley). Collectively, the 70,000 acres of wetlands on these lands represent some of the most intensively managed in the Refuge System. They offer a diversity of wetland habitats with a variety of water depths and vegetation along the Pacific Flyway, which extends from Central and South America to the Arctic.

These U.S. Fish and Wildlife Service wetlands are located near the center of the flyway near other wetlands managed by the state of California and more than 500,000 acres of rice fields. Together, they attract high densities of migrating and

wintering waterfowl such as northern pintail ducks, greater white-fronted geese and snow geese, as well as other wetland-dependent species such as tricolored blackbirds, white-faced ibises and giant garter snakes.

However, the drought that has parched California and much of the West for four years has taken a toll.

“We’ve seen vegetation changes to more invasive plant species and anticipate the trend to continue if the drought persists,” says Sacramento Refuge manager Steve Emmons. “The longer the drought lasts, the worse the changes will be and the longer it will take for the habitat to recover when the drought is over.”

Emmons hopes that by spring the snowpack in the Sierra Nevada will melt and restore area reservoirs. (Lake Shasta was at 30 percent of its capacity in early February, according to the complex website.)

Meanwhile, migratory birds continue to benefit from the refuges and wildlife management areas, thanks to coordination among different Service programs and help from partners,

including other refuges, federal and state agencies, and non-governmental organizations such as Ducks Unlimited and California Audubon. Water conservation and native grass restoration, a necessity that coincides with drought, have been the primary focus.

“We’ve become very strategic in terms of our water usage and management of our water timing,” says Emmons. “We typically flood wetland units in early fall but have been delaying flood-up and conserving water in other ways to maximize refuge wetland acres flooded over the last two years of the drought.”

While staff members have been able to use water conserved early in the season for later purposes to support migratory bird populations, Emmons says that “we have seen some reduction in the bird numbers on the refuges during this time, primarily a result of less-flooded agricultural fields in the surrounding area, which normally provide much of the foraging habitat for the area’s waterfowl.”

The complex also conducts mowing, disking, spraying and controlled burns. This discourages the spread of undesirable invasive and non-native vegetation, which can more easily out-compete native vegetation in times of drought, and encourages vegetation that benefits migratory birds. Specifically, the complex manages for smartweed, alkali bullrush, tuberous bulrush and swamp Timothy – some or all of which provide food for ducks, geese and other birds.

“The complex has been especially important in providing wetland foraging and roosting habitat that has been in short supply across the landscape,” says Emmons. “It’s also been important in providing food and spreading the birds out to prevent disease outbreaks.”

A wet spring wouldn’t hurt, either. 

Ben Ikenson is a New Mexico-based freelance writer.



Sacramento National Wildlife Refuge provides vital habitat to snow geese and other migratory birds along the Pacific Flyway. The refuge is part of a complex that includes 70,000 acres of wetlands. Prolonged drought has made resource management more difficult. (Steve Emmons/USFWS)



Rainwater Basin Wetland Management District in south-central Nebraska is a funnel point for migratory birds along the Central Flyway. An estimated 23.8 million ducks migrate through the district annually, or 61 percent of the midcontinent population of ducks. (Brandon Jones/USFWS)

Rainwater Basin Provides Critical Stopover Habitat

By Bill O'Brian

In a state known for cattle and corn, Nebraska's Rainwater Basin Wetland Management District (WMD) is critical habitat and a funnel point for migratory birds.

"The Rainwater Basin lies at the narrowest portion of the Central Flyway migration route. A 160-mile-wide region gathers up the millions of migrating ducks, geese, shorebirds and other water birds that have wintered along the Gulf Coast, across Texas and Mexico, and farther south," the Rainwater Basin Joint Venture website says. "To humans, it's a fascinating wildlife spectacle. To birds, this region is a vital resource – a linchpin in their annual life cycle."

The basin's name comes from clay-bottom field depressions that catch and hold rain and runoff water, according to Rainwater Basin Wetland Management District acting manager Brandon Jones.

One result for visitors is fabulous springtime birding and autumn waterfowl hunting.

The wetland management district conserves almost 26,300 acres of habitat on 61 U.S. Fish and Wildlife Service-owned waterfowl production areas and via more than three dozen conservation easements on private land in 21 south-central Nebraska counties. As with the National Wildlife Refuge System's 37 other wetland management districts, most funding to acquire habitat came from federal Duck Stamp revenue.

Rainwater Basin WMD "is critically important in providing mid-latitude stopover habitat for migrating birds during migration, specifically the spring migration," says Jones. He estimates that 23.8 million ducks migrate through annually, or 61 percent of the

midcontinent population. Ninety percent of midcontinent snow geese (2.6 million) and greater white-fronted geese (950,000) pass through. More than 86 percent of midcontinent sandhill cranes (375,000) do.

"Being a waterfowler at heart, my favorite birds are the ducks that migrate through, and out of those birds, the northern pintail would probably have to be my favorite because their courtship displays and rolling whistle call are some of my favorite sights and sounds to see," says Jones, who has been at Rainwater Basin WMD for four years.

To accommodate those millions of migratory birds, the wetland management district conducts a range of conservation actions to control invasive monolithic vegetation and promote diverse native vegetation in wetland and upland habitat. The actions include prescribed burning, private grazing, haying, pumping, reseeding, disking, shredding and tree removal.

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Working for a Warbler

By Peter Dieser

Since 1938, Tamarac National Wildlife Refuge has been an important breeding ground and sanctuary for migratory birds. Since 1987, the northwest Minnesota refuge has been vital to the reintroduction of trumpeter swans to the state. Today, Tamarac Refuge is leading the recovery of another avian species of concern, the golden-winged warbler.

The golden-winged warbler has suffered one of the steepest population declines of any North American songbird. In recent decades, about 60 percent of the bird's historical population has disappeared across its migratory range from the north-central/northeastern United States (summer) to Central and South America (winter).

Minnesota is a key state for the bird's conservation because up to half of the remaining population breeds there each summer. Tamarac Refuge has one of the highest densities of nesting pairs in the world.

“Due to ideal habitat conditions associated with a diverse and healthy forest, Tamarac Refuge has an abundant population of golden-winged warblers and a stewardship responsibility to lead the way in the golden-winged warbler conservation initiative by maintaining our resident population,” says refuge senior wildlife biologist Wayne Brininger.

The male is a breathtaking songbird, with yellow wing bars, a striking black throat patch and mask and a golden crown. The females are similar, though their yellow wing bars and crown are more muted and their mask and throat patch are gray. Only five inches long, this songbird requires diverse habitat to breed and forage.

The golden-winged warbler is often called a young forest specialist because it nests on the ground in deciduous forest openings, but it requires an even more diverse mix of young and mature habitat.



Tamarac National Wildlife Refuge, the American Bird Conservancy and the Red Lake Band of Chippewa are working together to restore and maintain habitat for the golden-winged warbler in Minnesota. The state is a prime breeding area for the species. The refuge is a prime nesting area. (Laura Erickson)

To nest, breed and rear young, the bird requires a mix of woody shrubs, singly spaced or clumped mature trees and open ground containing forb species, such as goldenrod, aster and milkweed. Nesting habitat must also be adjacent to mature deciduous forest, where the bird forages once chicks have fledged and nests are abandoned.

The forest openings are ephemeral (short-lived) habitat created through natural disturbances such as low-to-moderate fire and tree blowdowns or mechanical maintenance such as timber harvest and brush clearing. Because the golden-winged warbler requires a dynamic mix of forest types, its habitat serves other wildlife, too.

“Maintaining golden-winged warbler habitat also directly benefits numerous game and nongame species, including pollinators, small and medium mammals, songbirds and other species of concern in Minnesota, such as the American woodcock,” says refuge manager Neil Powers.

Since 2013, the American Bird Conservancy (ABC) and Tamarac Refuge have partnered to help restore and maintain golden-winged warbler habitat throughout northern Minnesota.

The partnership has restored 729 acres of high-quality nesting habitat on the refuge, and more is planned. With a grant from the Minnesota Outdoor Heritage Fund, ABC has restored an additional 1,053 acres of nesting habitat in the state. Up to 1,000 more acres per year on public lands in Minnesota are planned over the next decade.

In 2015, the U.S. Fish and Wildlife Service and the Red Lake Band of Chippewa signed a memorandum of understanding (MOU) to restore up to 1,000 acres per year of golden-winged warbler habitat on tribal lands. The MOU is effective for the next 12 years; the work will be done with assistance from ABC. This effort is a tremendous opportunity to continue to raise public awareness and improve golden-winged warbler habitat across northern Minnesota.

“We are proud of what we have accomplished here on the refuge,” says Powers, “but we are equally proud to be a part of a conservation community that continues to work together to maintain a healthy and diverse natural landscape throughout the state.”

Peter Dieser is a Minnesota-based public lands coordinator for the American Bird Conservancy.

Introducing New Orleanians to the World of Birds

By Bill O'Brian

Shelley Stiaes is New Orleans through and through. Thanks to her father, who introduced her to wildlife through boating, fishing and camping, she is also a conservationist through and through. And thanks to a college lecture given by her current boss two decades ago, she is now manager of four refuges, including Bayou Sauvage National Wildlife Refuge on the city's east side.

Stiaes, her colleagues and predecessors at the Southeast Louisiana National Wildlife Refuges Complex have been at the forefront of connecting urban Americans to nature for years. They helped make New Orleans the first Urban Bird Treaty city in 1999. They have partnered with the African American fraternity Phi Beta Sigma, the University of New Orleans, the Lake Pontchartrain Basin Foundation and Friends of Our Louisiana Refuges to bring young people to the refuges, which are in the U.S. Fish and Wildlife Service's Urban Wildlife Conservation Program.

The refuges' environmental education program, called "Habitat's Where It's At," is centered at Bayou Sauvage and Big Branch Marsh Refuges. The program, which attracted more than 5,700 participants last year, features a range of service learning projects that incorporate migratory bird education.

"The diversity of the wildlife found in the Gulf [of Mexico] is unique to the world," says supervisory refuge ranger David Stoughton. "Being at the end of one of the largest and longest migratory flyways contributes to that."

For young children, the environmental education program includes a migration game that shows hardships faced by birds traveling the Mississippi Flyway. "Some kids play the role of birds, and others are obstacles found along the way," says Stoughton. "Kids are designated as

"The diversity of the wildlife found in the Gulf is unique to the world."

'Weather,' 'Buildings' or other dangers to birds, each with a rule that dictates their movement. The game is essentially tag with lots of rules introduced to make it harder to move from start to finish."

For older children, nature walks include bird species identification. Among the birds that might catch their eyes are: brown pelicans (state bird of Louisiana), rose-breasted grosbeaks, indigo buntings, black-bellied whistling ducks, occasionally owls and hawks, and very occasionally cinnamon teal ducks.

"These young people will eventually grow up, and some will become politicians and business leaders," says Pon Dixon, the

Southeast Louisiana Refuges Complex deputy project leader who has been with the Service for almost 30 years. "The better they understand the Fish and Wildlife Service and other wildlife-related agencies, the better our chances are of keeping wildlife places viable."

Dixon connected Stiaes with the National Wildlife Refuge System. After he spoke about habitat restoration at Southern University's New Orleans campus in the 1990s, Stiaes signed up for a volunteer internship. And the rest is history. "It feels great to see her as the refuge manager of Bayou Sauvage. She grew up in the city of New Orleans and understands the culture and what is needed to get urban youth involved in nature. I am very proud of her."

Because of her managerial duties, Stiaes doesn't have as much direct contact with young visitors as she used to. But when she does, it's special.

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Black-bellied whistling ducks are among the migratory birds that a visitor might see at Bayou Sauvage National Wildlife Refuge in New Orleans. These ducks are short-distance migrants. (Lana Gramlich/ facebook.com/LanaGramlich)

Multi-Pronged Conservation Effort

Among the tools that help conserve migratory birds and their habitat are:

Federal Duck Stamps: 98 percent of the \$25 purchase price goes directly to help acquire and protect wetland habitat and purchase conservation easements for the Refuge System. <http://1.usa.gov/1JoeHFU>

Migratory Bird Treaty Act: Makes it illegal to take, possess, import, export, transport, sell, barter, offer for sale, or purchase any migratory bird, or the parts, nests, or eggs of such a bird without a valid federal permit. <http://1.usa.gov/1O03jmF>

Migratory Bird Conservation Commission: Considers and approves land and/or water recommended by Interior Secretary for purchase or rental by the U.S. Fish and Wildlife Service. <http://1.usa.gov/1KP29oe>

Urban Bird Treaty: Conserves migratory birds through education, hazard reductions, citizen science, conservation actions and habitat improvement strategies in urban/suburban areas. <http://1.usa.gov/1LRB1r1>

North American Wetlands Conservation Act: Increases bird populations and wetland habitat, while supporting local economies and American traditions such as hunting, fishing, birdwatching, family farming and cattle ranching. <http://1.usa.gov/1bg7qIJ>

Neotropical Migratory Bird Conservation Act: Addresses migratory bird population needs on a continental scale and conserves birds throughout their life cycles. <http://1.usa.gov/1zX179>

For more about the Migratory Bird Program, go to <http://bit.ly/1Q7jVJJ> [three-minute video]


Rainwater Basin Proves Critical Stopover Habitat — *continued from page 11*

“Burning and grazing are some of our most highly used management treatments because they mimic historical processes that would have occurred throughout the basins before European settlement,” says Jones. As the district’s website explains, “historically, bison and wildfire kept the wetlands open with annual plants growing during dry summer months and droughts. With bison gone and wildfires controlled, management has to be done to keep these wetlands in a condition favored by ducks, geese and other water birds.”

The Rainwater Basin Joint Venture and the Service’s Partners for Fish and Wildlife Program are critical to

conserving habitat. The joint venture – which includes local, state and federal agencies, nonprofits and landowners – provides technical assistance and pays for wetland enhancement, restoration and management on private and public land, among other actions. The Partners Program works with the joint venture and the wetland management district to help private landowners restore or enhance wetlands and obtain conservation easements.


One result for visitors is fabulous springtime birding and autumn waterfowl hunting.

“A network of functioning wetland and prairie plant ecosystems provides a native grassland mosaic that gives the local community a sense of pride and connection to the Great Plains flora and fauna,” the district’s website says. “The lands managed by the wetland management district serve as an example of land stewardship mimicking natural processes, and they provide an array of wildlife-dependent educational and recreational opportunities.” 

Introducing New Orleanians to the World of Birds — *continued from page 13*

One moment stands out. A while back students from two New Orleans high schools helped Stiaes with a restoration project to increase wetland forage for waterfowl. The students “waded knee-

deep in mud, and as a reward for their efforts I promised that I would bring them back in the spring so they could see what they did. In the spring we canoed out to the site, and the look of amazement

and accomplishment on their faces as they paddled around and through plants towering over their heads was priceless.” Soon, the students were telling people how they helped “feed the ducks.” 

Tiny Technology Helps Track a Tiny Bird

By Susan Wojtowicz

Technology is amazing. In the Northeast Region, technological advances are allowing the U.S. Fish and Wildlife Service to learn more about animal behavior to better protect animals. One example is nano-technology and the saltmarsh sparrow.

These are tough times for the tiny migratory bird. Its only homes, salt marshes along the Atlantic Coast, are increasingly scarce because of development and rising sea levels. With diminishing habitat, saltmarsh sparrow populations have been decreasing in recent decades. To determine how best to help the sparrows, researchers need to understand how the birds use the marshes upon which they rely. Unfortunately, this information is limited.

What researchers do know is that the sparrows migrate along the Atlantic Coast, from Maine to Florida, stopping almost exclusively in salt marshes. They forage for food on the ground and while climbing in grasses – eating insects, small snails, spiders, marine worms and other invertebrates. Unlike many songbirds, males do not have breeding territories; instead, they roam the marshes looking for females, who typically have one brood of two to six hatchlings per year.

Beyond that, many questions are unanswered.

“Very little is known about this species’ migratory pathways or migratory behavior, making conservation of the right habitats difficult,” says Kate O’Brien, a refuge biologist working to conserve saltmarsh sparrow habitat at Rachel Carson National Wildlife Refuge in Maine. “The Fish and Wildlife Service is responsible for monitoring and managing migratory birds, such as the saltmarsh sparrow, which travel regularly and freely between state and country borders. Because we are responsible for their survival during all phases of their life cycle, it is important for us to understand more about their behavior,

how they are using the marshes, and which locations are most important for their survival.”

Because a saltmarsh sparrow weighs about as much as eight pennies, tracking individual birds has been difficult. Traditional tracking devices are much too large and heavy. However, researchers from several Northeastern refuges and partners are using tiny technology to find out what these birds are up to.

The Motus tracking system uses nano-tags, extremely lightweight miniature radio transmitters. All nano-tags transmit at the same frequency, but each tag has an identifiable pulse. A network of towers along the Atlantic Coast picks up the pulse when a tagged bird flies within 12 kilometers of a tower.

“We are able to leverage the power of partnerships to form a network of hundreds of towers placed along flyways,” says O’Brien. “Bird Studies Canada, numerous state agencies, federal wildlife refuges and universities can all work together to create a monitoring network that nobody could accomplish alone.” Saltmarsh sparrow project partners include Rachel Carson, Parker River and Stewart B. McKinney Refuges, the Rhode Island Refuge Complex, the universities of New Hampshire and Connecticut, and the Saltmarsh Habitat and Avian Research Program.




Because saltmarsh sparrows are small, tracking individual birds has been difficult. Traditional tracking devices are too large and heavy. Now researchers in the Northeast are using nano-technology to track the birds’ migratory habitats and behaviors. (Brian C. Harris)

Other bird species, bats and butterflies also are being tracked using the nano-tag system. Data are downloaded and shared with researchers and conservationists.

What does this mean for the saltmarsh sparrow?

The Service is not sure yet. Data are just beginning to come in. However, scientists are already discovering amazing things. For example, preliminary data show that a few saltmarsh sparrows flew from Rachel Carson Refuge to the Connecticut coast, more than 150 miles, in just one day.

As nano-technology reveals more about the behavior of these tiny birds, the Service will be able to answer questions it only hypothesizes now. 

Susan Wojtowicz is visitor service specialist at Silvio O. Conte National Fish and Wildlife Refuge in New England.

Around the Refuge System

Texas

Trinity River National Wildlife Refuge, in the southeast part of the state, plans to dedicate a new 500-foot boardwalk in March. The boardwalk was built with the help of several partners and more than 1,000 hours of free labor by the AFL-CIO Union Sportsmen's Alliance. The "green" boardwalk – spanning a low-lying section of the Knobby Knees Trail – will connect eight to 10 miles of recreational trail to nearby Liberty. Refuge manager Stuart Marcus voiced pride in the project, achieved despite flooding. The refuge saw 95 inches of rain in 2015 – an all-time record. "We will feel ecstatic when we get this boardwalk completed," said Marcus in January, when the Trinity River was still three feet above flood stage. "It will be something we really worked hard at getting done." Teams from the Union Sportsmen's Alliance worked manually on weekends hand-carrying supplies, jack-hammering metal poles through concrete blocks, mounting railings and installing the boardwalk's wooden deck. Other project partners included the City of Liberty, Friends of Trinity River Refuge, the American Hiking Society and the Texas Department of Parks and Wildlife. Volunteers from local schools also helped out.

California

An intentional levee breach reintroduced tidal water to inner Bair Island at Don Edwards San Francisco Bay National Wildlife Refuge for the first time since the area was diked off for agriculture in the 1880s. The breach culminated a \$7.5 million restoration project overseen by the U.S. Fish and Wildlife Service that will enable the 1,500-acre site, the largest undeveloped island in South San Francisco Bay, to grow back into the marshland it was 150 years ago. "This project is a key piece of the puzzle in restoring the lost wetlands around the bay," said Anne Morkill, manager of the San Francisco Bay National Wildlife Refuge Complex.

Washington-Oregon

Federal wildlife officer Josh Hindman and his police service dog, Ukkie,

recently became the ninth law enforcement canine team in the Refuge System. Because Ukkie, a two-year-old Belgian malinois, was born and bred in Holland, he doesn't understand English yet. As a result, Hindman gives commands in Dutch – or a version of it. "A Dutch person might not agree with me, but it's Dutch," Hindman told Northwest Public Radio this winter. Hindman and Ukkie are based at Mid-Columbia River National Wildlife Refuge Complex, which includes eight refuges and Hanford Reach National Monument. Hindman and Ukkie are available for deployment across the Pacific Region. Ukkie offers protection for Hindman, especially in isolated places at night. "It's almost like there are two officers out there," Hindman says. Ukkie can search for illegal drugs and other articles. He

can track people. And he's very social, the ideal temperament for a canine who interacts often with hunters and their Labs. "He's a hyper ball of energy, but very controlled," says Hindman. "I love the companionship of a dog to ride along with. And he doesn't get tired of your jokes."

Georgia

The South Georgia-North Florida Fire Initiative, which includes Okefenokee National Wildlife Refuge, received the 2015 Pulaski Award. It is the second time in a decade that the refuge and its partners were recognized for their wildland fire management work. The initiative brings together government agencies, private and commercial landowners, non-government organizations and other groups



Federal wildlife officer Josh Hindman and Ukkie are the ninth law enforcement canine team working in the Refuge System. They are based at Mid-Columbia River National Wildlife Refuge Complex in Washington and Oregon. (USFWS)

interested in wildfire protection. A spin-off team from the initiative strives to educate the public about the importance of fire in longleaf pine restoration. The success of the initiative is attributed to all partners' willingness to work where the most good can be accomplished, regardless of ownership. "The value is in knowing that when we must act, we are better prepared to defend our communities, our homes and our livelihoods," says Okefenokee Refuge project leader Michael Lusk. The award is given annually by the National Interagency Fire Center.

Maine

Staff, Friends and volunteers removed seven dumpsters' worth of marine debris, largely metal lobster traps, from the shoreline at Maine Coastal Islands National Wildlife Refuge in three days over the past six months. That's more than 19,000 pounds of debris. The work was completed by dozens of volunteers, including students from Unity College; people from The Nature Conservancy; the Maine Island Trail Association; the Service's Old Town Ecological Services Office; Friends of Acadia; and neighbors. Four mainland units and acreage on 60 islands comprise the refuge. The cleanup cleared .66 miles of the Petit Manan Point unit's beaches.

Alaska

Moose have colonized areas of western Alaska where they had not been observed previously. This development and climate change present new challenges at Togiak National Wildlife Refuge and elsewhere. Moose numbers at and near the refuge have increased from fewer than 10 observed during surveys in the early 1980s to more than 1,600 moose in 2011. For years, biologists have estimated moose numbers by conducting low-level aerial surveys in winter. This method has worked well because, historically, the refuge was completely snow-covered, and moose could be seen easily against the white background. In recent years, however, snowfall has decreased. Brown moose on a brown landscape are difficult



Climate change is affecting aerial surveying of moose at and near Togiak National Wildlife Refuge in Alaska. Historically, the refuge was snow-covered, and moose could be seen easily against the white background, as shown above. In recent years, however, snowfall has decreased, and moose cannot be reliably detected. (Andy Aderman/USFWS)

to spot and accurately count from the air, ultimately making it difficult to make solid hunting-season decisions and science-based management decisions. Scientists are predicting less snowfall in the area over the long term as a result of changing climate. Statisticians and wildlife biologists from the Service, Alaska Department of Fish and Game and University of Alaska Fairbanks are working to improve their ability to estimate moose abundances. Moose are an important subsistence resource and have been shown to play a central ecological role.

Nevada

The new visitor center at Desert National Wildlife Refuge received a 2015 Department of the Interior Environmental Achievement Award. The 10,524-square-foot Corn Creek Administrative Office and Visitor Center,

which opened in 2014, was honored as a "superlative example of zero net-energy, sustainable design in the Mojave Desert."

New Jersey

Great Swamp National Wildlife Refuge and the Trenton chapter of Phi Beta Sigma hosted two dozen young people from urban neighborhoods at a kickoff event at the refuge designed to introduce the youth to the variety of careers available on refuges. The Sigma Beta Club is a youth auxiliary arm of Phi Beta Sigma, a service fraternity that is partnering with the Service. The event last November was also intended to establish a personal connection among the youth, their advisers and refuge staff. The day included a behind-the-scenes tour of the wildlife biology, visitor services and maintenance programs. Friends of Great Swamp and several other New Jersey-based Service staff members helped with the event. 

Tom Koerner's Tips

- “People like certain species more: moose, trumpeter swans, bald eagles. They like muskrats a lot less. But I try not to let that affect what I post. I at least give people a little something to think about muskrats – how they are an important part of the ecosystem.”
- “My core value as a manager is providing the best habitat I can. So I try to mix in habitat messages – in between pretty pictures.”
- “People in general aren’t that enthusiastic about plants. Nonetheless I post about sago pond weed, which is important for trumpeter swans, and Wyoming big sagebrush, which is important to greater sage-grouse, Brewers sparrows and pronghorns.”
- “Carry a camera wherever you go. Service people are out checking water levels, doing work every day on wildlife refuges. They see all these incredible things in their work, but they don’t have their camera!”
- “I take 75 percent of my photos out of the truck window. A moose will stand 30 yards away and give you five seconds. Those moments don’t last. If you are looking for your camera in the back seat, it’s too late.”
- “Most refuges have at least one budding photographer. Set them free!”
- Accuracy matters. “I learned early that if you say it is a red-tailed hawk, make sure it is a red-tailed hawk. If you do have an error in your post, admit it and tell people, ‘I appreciate you helping us get it right.’”



On the SeedsKadee National Wildlife Refuge Facebook page, manager Tom Koerner uses photos like this, which he takes himself, to “pass on information about why we manage the way we do.” (Tom Koerner/USFWS)

a vehicle for the last 15 minutes of light and the swans were very cooperative. This pair flew in from downstream to join a group of feeding swans. By the next day, this area had frozen over again and the swans had moved upstream to other open stretches of the River.

“I first thought of connecting with my nieces and nephews, and I knew they communicated through Facebook, so I signed up. But I still didn’t get it,” Koerner recalls. “There would be posts about what someone was cooking for dinner, and I wasn’t really interested that you’re having broccoli. So I canceled my account.”

That didn’t last long.

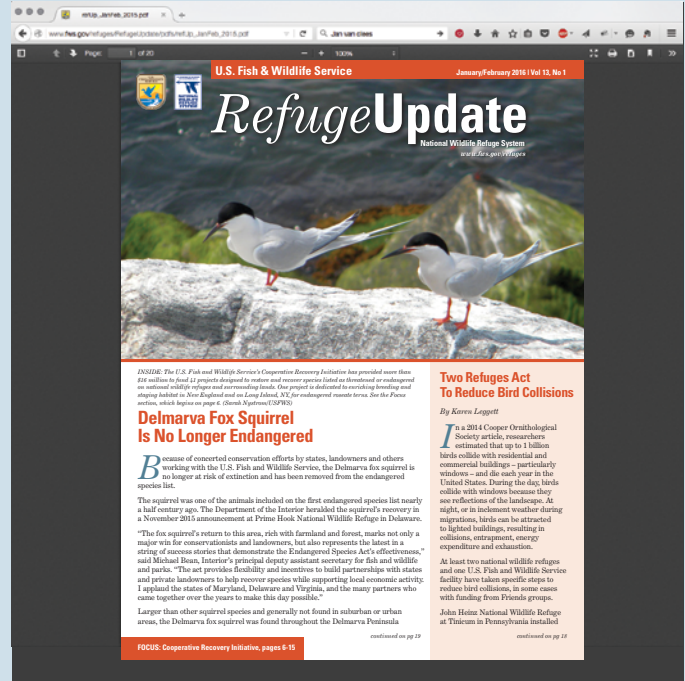
“I was thinking that I didn’t give it enough of a try,” especially for refuge use rather than personal use, he says. “I was taking all these photos for work, but I wasn’t using them in the ways that I could.” So, he enlisted assistant refuge manager Katie Theule’s help and signed up again. “I wanted to increase awareness of the resources on our refuges and along the way, pass on information about why we manage the way we do. I also wanted to share what we get to see and experience every day.”

We're Going Online ... Please Come Along With Us!

In a move to save money and trees, the U.S. Fish and Wildlife Service will discontinue *Refuge Update* as a printed newsletter. The May/June 2016 issue will be the final printed edition.

Beginning in July, comprehensive stories or multimedia presentations will be posted on the National Wildlife Refuge System homepage (<http://www.fws.gov/refuges>). Each story will be heavily promoted on social media.

In addition, we plan to compile selected presentations into an electronic newsletter that will be distributed via e-mail.



Here's How to Sign Up

To receive the electronic newsletter, *please send your e-mail address to RefugeUpdate@fws.gov as soon as possible.* Thank you!

Koerner and Theule share Facebook responsibilities and schedule posts in advance in their free time. They focus on good photos – “If you don’t include a photo, nobody reads it” – but they message about sound science and effective habitat management. And they make the posts personal.

Dec. 29, 2015 post: *If you would have told me that anything eats mature Russian thistle (i.e. tumbleweed), I would have probably said “shure...” This plant has tiny sharp spines all along its branches. Any time I walk through it, I can feel it jabbing me in the shins and if I pick it up*

without gloves, a tweezer is needed later that night to get the spines out. I watched this mountain cottontail from the office window dismantle this thistle piece by piece and eat it. There were plenty of other plants around to eat, but this is the one it wanted. I am reminded almost daily that the rules don't always apply.

“I live on the refuge. I start work at sunrise. I might go out in the evening to check on the critters and their responses to habitat management. And I always have my camera,” Koerner says. The impact of the refuge’s Facebook page has been measureable – but not based just

on “likes.” The impact is measured by community feedback.

Sweetwater County commissioners tell Koerner they’ve heard comments about the refuge from constituents, who follow the Facebook page. Local news sites share posts. The mayor of Green River and the county tourism bureau follow the page.

“I’ve heard comments across the community. We are educating far more people than just those who visit,” Koerner says. “Using Facebook is going where the people are.”



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A Look Back ... Assateague Lighthouse



Chincoteague National Wildlife Refuge preserves the Assateague Lighthouse on Virginia's coast. The lighthouse, built in 1867 to warn Atlantic Ocean travelers of dangerous shoals offshore, is listed on the Virginia Historic Register. The lighthouse is owned by the U.S. Fish and Wildlife Service. Tours are managed by the Chincoteague Natural History Association, the refuge Friends organization. The U.S. Coast Guard maintains the light as an active navigational aid. (Janice and Nolan Braud/JNBPhotography.com)

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