



# RefugeUpdate

National Wildlife Refuge System

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*INSIDE: Fog shrouds the prairie pothole landscape at Moldenhauer Waterfowl Production Area, part of Kulm Wetland Management District. The district is proactively and systematically conserving grasslands and wetlands in North Dakota. See the Focus section, which is titled “Strategically Conserving Habitat” and begins on page 6. (Krista Lundgren/USFWS)*

## Urban Refuge Partnerships Launched In Anchorage, Atlanta and Springfield

**T**he U.S. Fish and Wildlife Service launched three new Urban Wildlife Refuge Partnerships and named five new Urban Bird Treaty cities in July. The moves are designed to increase opportunities for city residents to connect with nature and engage thousands of volunteers in restoring local environments.

The new Urban Wildlife Refuge Partnerships – in Anchorage, AK; Atlanta, GA; and Springfield, MA – join 14 other cities with such partnerships. All are collaborative efforts to provide residents of demographically diverse cities with fresh opportunities to get outdoors, experience nature in the urban environment and develop an appreciation of wildlife conservation.

The new Urban Bird Treaty cities are Atlanta; Baltimore, MD; Pittsburgh, PA; New Haven, CT; and McAllen, TX. They join 21 similarly designated cities. The Urban Bird Treaty – formally known as the Urban Conservation Treaty for Migratory Birds – works with cities and partners to conserve migratory birds through education, citizen science and conservation action in metropolitan areas.

The new partnerships all are part of the Service’s Urban Wildlife Conservation Program. They were made possible by the 2015 Five Star grants from the National

## “Big, Bold, Scary Step” Pays Off for Endangered Deer

By Bill O’Brian

**S**ometimes disaster prompts urgent action that leads to success.

Managers and biologists at Julia Butler Hansen National Wildlife Refuge for the Columbian White-tailed Deer along the Columbia River in Washington state had been talking since the 1980s about translocating some deer to Ridgefield Refuge to increase the endangered species’ range and survival odds.

In 2013, an emergency forced them to do it. The result is success.

The Columbian white-tailed deer is a subspecies. Its Lower Columbia River distinct population segment

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# From the Director

## Reimagining Landscape Conservation

Imagine for a moment that the Refuge System didn't exist, and you were asked to create a nationwide network of protected areas for wildlife.



Dan Ashe

How would you begin, and what do you think this network would look like when you finish?

I expect you'd start by working to identify available blocks of land and water that can support healthy populations of fish, wildlife and plants. You'd probably want to connect those blocks to support greater carrying capacity and species diversity.

I'm also willing to bet that your ideal Refuge System would initially look much like the current one. After all, the Refuge System was designed to meet the needs of wildlife on the landscape. Willie Sutton robbed banks, as he said, "because that's where the money is." To put things in equally blunt terms, we've created refuges where they are *because that's where the wildlife is*.

Of course, we don't have a blank canvas in front of us, and the easy and obvious choices were made long ago. We now face intensifying landscape-scale challenges, including accelerating habitat fragmentation and loss, climate change and invasive species. And we must address those threats and others in an increasingly complex political, social and economic environment. That's why more and more, the land acquisition strategies used to create the Refuge System are unsustainable in its second century.

Forward-thinking Refuge System leaders have recognized that we can't succeed unless we work with others to conserve and connect a nationwide mosaic of public and private lands. They see the Refuge System as a proving ground for strategies to conserve healthy landscapes. And they support expanding the Refuge System's reach in strategic, cost-effective ways that benefit both wildlife and people who share these landscapes.

As this issue of *Refuge Update* demonstrates, visionaries at all levels of the Refuge System are thoughtfully implementing a blueprint for the

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## Chief's Corner

### Our Choices Make a Difference

Choices. We make choices every day at every level. In fact, "choices" was a topic at the U.S. Fish and Wildlife Service Directorate's meeting in August.



Cynthia Martinez

Service staff in the field choose how to spend time and where to expend resources. Such choices drive our management decisions – the very foundation of habitat management and wildlife conservation on national wildlife refuges.

The National Wildlife Refuge System Leadership Team has made difficult choices over the past three years.

The way in which we strategically grow the Refuge System is a choice. The stage was set in *Conserving the Future* for development of the strategic growth policy that ensured the future growth of the System be conducted within a landscape concept.

Wildlife does not recognize boundaries. So habitat corridors are incredibly important, especially in light of a changing climate. Landscape conservation design is intended to assist

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# Refuge Update

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*Visionaries at all levels of the Refuge System are strategically conserving habitat to have the greatest impact possible.* Page 6-14

### South Side to Riverside

*Wildlife biologist Jeramie Strickland is taking his conservation message from Chicago to Upper Mississippi River National Wildlife and Fish Refuge – and vice versa.* Page 15

# Heavy-Duty Cooperation on Equipment Safety

By Bill O'Brian

The U.S. Fish and Wildlife Service employees who operate heavy equipment such as bulldozers, excavators and backhoes are behind-the-scenes folks whom visitors to national wildlife refuges and other public spaces often take for granted. In fact, heavy equipment operators are vital to making America's public lands the envy of the world.

Their earth-moving work is fundamental to building and maintaining observation platforms, kiosks, fishing piers, trails and tour route roads. These operators also help on a range of habitat restoration projects that benefit wildlife on refuges.

Maneuvering those gigantic rigs properly is critical to operator and visitor safety.

In February, the National Park Service (NPS) paid a high compliment to national coordinator John Blicht and the regional coordinators who run the Fish and Wildlife Service's heavy equipment training program. The NPS asked four Service specialists to teach NPS instructors how to train NPS field employees in the safe operation of heavy equipment.

An example of Department of the Interior interagency cooperation, this train-the-trainer instruction took place at Lake Mead National Recreation Area, an NPS site east of Las Vegas.

It happened because Sarah Polzin, training manager with the NPS Office of Learning and Development, adopted the Service training for NPS use. After hearing about what she considered to be the excellent Service training, she thought, "Why start again from the very beginning when they're doing basically the same thing?"

Polzin likes that the Service mandates specialized training and that individuals are assessed. "This is not proficiency training. It's not going to teach them to dig a ditch more quickly," she says. "It's



Maintenance specialist Clint DeMenge uses a backhoe to load soil at Rydell National Wildlife Refuge in northern Minnesota. The U.S. Fish and Wildlife Service is helping the National Park Service in training matters related to the safe operation of heavy equipment. (Chuck Shire/USFWS)

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## *Fish and Wildlife Service specialists are teaching National Park Service instructors how to train field employees in the safe operation of equipment.*

making sure they are doing all the safety checks they should be doing and staying within the operation limits of the piece of equipment."

The Service's heavy equipment train-the-trainer program, which has existed since the 1970s, was revamped in recent years. Polzin helped tighten the instruction agenda and made NPS online resources accessible to Service trainees.

Blicht, Midwest Region heavy equipment coordinator Dale Pittman, Mountain-Prairie Region coordinator Wade Briggs and Service safety instructor Michael McAllister of Kodiak, AK, worked with Polzin to train the NPS trainers at Lake Mead.

The instruction helps prepare heavy equipment operators for encounters with visitors. "We talk about how to interact with people who may want to stop them while working and ask questions," says Blicht. "Many times visitors will walk up out of nowhere – even in closed areas – because they are curious. We teach the operators to always keep an eye out for this scenario. Safety to the public is a top priority that is taught in both the train-the-trainer course to the instructors and from instructor to employee."

Beyond safety, this training is fiscally and demographically important.

Fiscally, says Polzin, "if it ends up in fewer injuries and better-maintained equipment, it's going to cost the taxpayer less."

Demographically, public lands wage-grade professionals are retiring at a rapid rate, and training their young successors in timely fashion is a massive job. 

# Effects of Flooding Linger on at Least 9 Refuges

By Justin Jacques

What many have called the worst flood in Texas history inundated that state and neighboring states in May and June. The death toll was 46. To outsiders, the devastation may be a distant memory, but at least nine national wildlife refuges in Texas, Oklahoma and Louisiana still face millions of dollars in infrastructure damage.

“In 100 years of recorded history, we’ve never had a flood that’s lasted this long. It’s slow, steady and won’t go anywhere,” Stuart Marcus, manager of Trinity River National Wildlife Refuge, TX, said in July. “Usually we have not enough water. This year, we just had too much.”

At the refuge 50 miles from Houston, Marcus and his staff saw alligators swimming outside the window of the visitor center. For five weeks, the refuge, which is just 45 feet above sea level, was under five to eight feet of water, forcing closure to the public. While no workers were hurt and no property or equipment was significantly damaged, local wildlife suffered. Mammals and reptiles were forced to higher ground in search of food, and some were hit by cars near the new habitats.

Flooding halted construction of an eco-friendly boardwalk. Construction, which had begun in March, is expected to resume in September. Trinity River Refuge re-opened in July. At Hagerman Refuge north of Dallas, damage was more severe and closure lasted longer.

“We anticipate some roads will require major rehabilitation, while heavy maintenance will suffice on others,” Hagerman Refuge manager Kathy Whaley said in July. “I expect we’ll lose a significant number of trees due to the extended period of flooding they have endured.”

The refuge includes part of Lake Texoma. Its water levels rose about 27 feet above usual by June 1, when approximately 85 percent of the refuge was underwater,



Floodwaters overwhelm the Champion Lake Public Use Area at Trinity River National Wildlife Refuge after the height of the deluge. A few days earlier, the pier’s railing was submerged and water came up to the bottom of the refuge sign. (Stuart Marcus/USFWS)

including 22 miles of roads and trails. The visitor center, which closed on May 17, re-opened in August.

Water at Hagerman Refuge was draining slowly – about six inches a day – in late July. Despite stagnant floodwaters, wildlife quickly adapted. Herons and egrets thrived because of the dramatic increase in the size of Lake Texoma, their main foraging ground.

In southwestern Oklahoma, while Wichita Mountains Refuge remained open without interruption, flooding destroyed the homes of two employees. On May 23, Joe D’Arrigo, Randy Abbe and their families had to abandon their homes on the refuge when water permeated the ground floors and was rising quickly. Both families lost all possessions but have successfully resettled – the D’Arrigos on higher refuge ground, and the Abbes in nearby Cache, OK.

“We were amazed at how quickly the flood occurred. The water rose very rapidly, leaving flood victims little time to evacuate. It’s lucky that there was no loss of life,” said refuge manager Tony Booth.

Elsewhere in Oklahoma: Tishomingo and Little River Refuges were almost completely underwater in early June; near Sequoyah Refuge a dam was breached in late May; Deep Fork Refuge trails were damaged; and Washita Refuge was traversable only by airboat for a time.

In central Louisiana, at Red River Refuge on June 8, the river crested at 38 feet above flood stage, highest since 1945. While no refuge facilities sustained serious damage, miles of trails were submerged, roads and levees will need to be repaired or replaced, and parts of the refuge remained underwater in August.

“We had to move a few summer camp activities to higher ground because of the flooding, but at least that made canoeing a little more exciting for the kids,” refuge manager Pat Stinson said.

At almost all refuges, the water levels must recede further before damage to infrastructure and facilities can be fully assessed. 🦋

Justin Jacques is an intern in the Refuge System Branch of Communications.

# As Alaska Warms and Burns, Refuges Are Stretched Thin

By Andrea Medeiros and Sara Boario

**I**t was a Monday afternoon in mid-May 2014, and Andy Loranger, manager of Kenai National Wildlife Refuge, was meeting with 30 seasonal employees about to begin work in one of the busiest corners of Alaska. The Kenai Peninsula, also known as “Alaska’s Playground,” hosts nearly 1 million visitors a year, many of them drawn by the spectacular wildlife viewing and recreational opportunities on the refuge.

Just after 4 p.m., Loranger’s meeting was interrupted by a phone call. A refuge biologist had spotted a plume of smoke on the refuge just east of the community of Soldotna. The Funny River Fire, as it came to be called, would grow to almost 200,000 acres, the second largest ever recorded on the peninsula.

“A fire of this complexity and scale makes it hard to keep a foot in your day job,” Loranger said. “The fire started in close proximity to communities and under dry and windy conditions, and we supported our local and state partners in all efforts on the flanks of the fire where people, property and other values were at risk. This involved many refuge staff serving in fire management, law enforcement, public information and resource advisor roles as well as providing logistical support to firefighting efforts.”

Loranger and partners were still sorting through the impacts of the Funny River Fire this year when, on June 15, another fire erupted. The Card Street Fire quickly moved onto the refuge, threatening the popular Skilak Wildlife Recreation Area, forcing closures and displacing recreationists and campers during the busy summer season. For the safety of visitors and firefighters, federal wildlife officers patrolled the area over the fire’s duration.

The Kenai Refuge was one of 11 national wildlife refuges in Alaska hit by fire this year. As of early August, approximately 1.5 million acres of refuge lands had burned across Kenai, Arctic, Innoko,

Kanuti, Nowitna, Selawik, Tetlin, Togiak, Koyukuk, Yukon Flats and Yukon Delta refuges.

It’s part of a larger pattern as the state gets warmer and dryer, consistent with climate change models. Over the past two years, the fire season in Alaska started unusually early. And, as of early August, with several weeks in the 2015 fire season to go, slightly more than 5 million acres had burned in the state. The season was approaching the record set in 2004 of 6.6 million acres burned.

Twenty-four wildfires burned more than 300,000 acres at Yukon Delta Refuge alone. The vast network of lakes and rivers on the refuge includes the two largest rivers in Alaska, the Yukon and Kuskokwim, and provides thousands of miles of migration, spawning, and rearing habitat for 42 species of fish. The refuge is more water than land, but even here, the heavy fire season took precious time away from an already short field season.

“We had Chinook salmon telemetry, caribou and shorebird surveys disrupted by the fires, due to direct threat, poor visibility and bad air quality,” said refuge manager Neil Lalonde.

Not all of the wildfires warranted suppression. In fact, Alaska’s boreal forests benefit from fire. However, all fires require monitoring, and millions of dollars have been spent by state and federal governments on fire response. U.S. Fish and Wildlife Service staffs across all 11 affected refuges were impacted as they readjusted field schedules and increased coordination with the Alaska Fire Service and Alaska Division of Forestry. Looking at the climate trends, refuge staff is concerned about what the future holds.

“Even after much of the Kenai has burned,” Loranger said, “there’s still a lot of risk out there.”

*Andrea Medeiros is a public affairs specialist and Sara Boario is assistant regional director for external affairs in the Alaska Region office in Anchorage.*



*This is one of two dozen wildfires that burned more than 300,000 acres at Yukon Delta National Wildlife Refuge this year. (Matt Snyder/Alaska Division of Forestry)*

## “It’s Like Picking the Best of the Best”

**E**ric Alvarez, a 24-year veteran of the U.S. Fish and Wildlife Service, has been Division of Realty chief since 2001. During that time, the Service’s approach to conservation and land acquisition has evolved. Here are excerpts from a recent *Refuge Update* interview with him.

**Q.** *What does the phrase “strategically conserving habitat” mean to you, and how is it important to the mission of the Service and the Refuge System?*

**A.** “Strategically” means: with an end in mind and wanting to do something with limited resources. Basically, that’s what we have. We don’t have enough money to do everything we want to do, so we have to think strategically about what we need to conserve. With the science that we have available, and as more comes along, we’ll be able to make better decisions. It’s like picking the best of the best. We can’t keep growing without some end plan in mind. That’s why the [*Conserving the Future*-directed] strategic growth policy [<http://1.usa.gov/1KkvM20>] is important because it, for the first time ever, narrows the focus of the Service ... Before, anything and everything was fair game. This focuses a lot more on priority habitats for migratory birds, endangered species and waterfowl.



**Q.** *In your two-and-a-half decades with the Service, how has the concept of strategically conserving habitat changed?*

**A.** Strategy by its very nature is dependent on the leadership. Different leaders I’ve worked with in the past have had their own focus and goals. And that changed from administration to administration. The difference now is that we have a policy that says: “This is what we will do” ... It was developed by a group of very intelligent individuals and professionals, both within the Refuge System as well as other programs in the Service.

**Q.** *How does land acquisition figure into efforts to strategically conserve habitat on a landscape scale?*

**A.** Land acquisition is implementation. The planning piece, the strategic growth policy, sets the stage and the direction. The acquisition piece is just mechanics. It’s filling in the dots within the outside [refuge] boundary that has already been

established by the biologists and our planning staffs. Ideally, now with the policy, every new or expanded project is going to require a landscape conservation design (LCD), which by its nature is landscape level. The LCD comes first. Then we do planning based on that LCD to establish or modify a boundary. Once that boundary is established by approval of the director, then you start the acquisition piece.

**Q.** *How is the strategic growth policy – adopted more than a year ago – affecting land acquisition decisions and processes?*

**A.** By having a focus, we can rank each refuge based on those three strategic growth priorities – migratory birds, waterfowl and endangered species. We’ve developed the Targeted Resource Acquisition Comparison Tool (TRACT) that ranks projects based on those three targets ... This is an informative tool to assist the director ... It’s been utilized now for two years, and it’s something that’s going to constantly be evolving because currently we don’t have all of the science.

**Q.** *Over your tenure as realty chief, what has been the trend in land acquisition funding? How do you expect the federal Duck Stamp price increase to \$25 to affect land acquisition?*

**A.** When I came in as the realty chief, we had hit an all-time high of about \$107 million in 2001-2002 appropriations for the Land and Water Conservation Fund. Since then, it's been trending downward. In the current Congressional climate, where federal acquisitions are not very highly thought of, things are down significantly, but we've tailored our workforce, as well as the expectations for acquisition, to meet the available funding. It was \$47.5 million in [fiscal] 2015, and the President's request for [fiscal] 2016 is \$58.5 million. Regarding the Duck Stamp price increase, once it is all rolling in – by about June of next year – we expect about \$14 million more in revenue for waterfowl acquisition ... Yes, the bill directed that the increase go toward easement acquisitions, but we do the bulk of our land acquisition these days through easements anyway.

**Q.** *What role do conservation easements play in enabling the Service to strategically conserve habitat?*

**A.** Easements are an amazing way to conserve a lot of land for less cost ... Basically it works in places where large intact landscapes require very little manipulation by the Service in order to meet the habitat objectives. It could be, for example, a wetland or grassland easement for birds and waterfowl to nest on. The relatively short time period that [the birds] are there ... doesn't impact the landowner's use, and it maintains the lands' working nature – farms, forests, ranches ... It prevents fragmentation of the habitat. Where we're buying conservation easements in areas that are prone to development, we're keeping the refuge and its boundaries more intact while keeping those working lands working.



*Easements are an increasingly effective way for the Refuge System to conserve important habitat in places like the Flint Hills Conservation Area in Kansas, above. The Refuge System strategic growth policy focuses on priority habitats for migratory birds, waterfowl and endangered species, such as whooping cranes at Aransas National Wildlife Refuge in Texas, opposite page top, and Moapa dace at Moapa Valley Refuge in Nevada, opposite page bottom. (Photo credits: above and Moapa dace, USFWS; whooping cranes, Klaus Nigge)*

**Q.** *The Service is working to connect people in urban areas with natural resources stewardship. What role does strategically conserving habitat play in that arena?*

**A.** We have a number of refuges whose mission includes education and outreach, and those [often] are connected to urban centers. It's very important to maintain some momentum going at some of those refuges for acquisitions. The best classroom is a classroom that you can experience. That's why having refuges near urban centers is very important. But at the same time it doesn't necessarily mean – because of the limited funding we have – that we need to run out and create a whole bunch of refuges near urban centers just for that purpose.

That's where [Urban Wildlife Refuge] Partnerships come in: Other protected lands – be they state, local or county – can reach the same constituency and create that outdoor classroom.

**Q.** *Is there anything about strategically conserving habitat you'd like to add?*

**A.** Strategic growth is relatively new. Officially, it's a year old. But it's been talked about for longer than that. The [2011 *Conserving the Future*] vision conference was its genesis, but actually it dates back to the National Wildlife Refuge System Improvement Act [of 1997] and the [1998 *Fulfilling the Promise*] Keystone conference ... That was the first time in our history that we said: "This is what we're going to focus our conservation on." 

## Monitoring Birds to Preserve Grassland

By Bill O'Brian

Looking west from atop a mesa near Muleshoe National Wildlife Refuge in Texas, you can see New Mexico 15 miles away. Looking east, “you can tell that it was probably one of the areas where the Native Americans used to hunt buffalo,” says project leader Jude Smith. “It’s an expanse of grass with a handful of trees. It kind of makes you feel small when you look across it.”

He compares the landscape to Africa.

“Everybody wants to go to Africa to look at the plains, and see all the plains animals, but if they come out here they’re going to see those animals,” Smith says. “They’re going to see their native wildlife, minus the bison.” If they look closely and know where to look, he continues, they’ll see pronghorn, mule deer, quail, all kinds of other birds, eagles in winter.

Smith and staff at Muleshoe Refuge and two satellite refuges – Grulla Refuge in New Mexico and Buffalo Lake Refuge in Texas – hope to lead the way in conserving that vast grassland landscape. They are looking to the Refuge System Inventory and Monitoring (I&M) Program to help do it.

A 15-year I&M plan for Muleshoe and Grulla Refuges has been in place since 2013; Buffalo Lake’s should be finalized next year. “In developing a plan, what we aim to do is help refuges focus and prioritize their surveys,” says Southwest Region I&M zone biologist Bill Johnson, who is based at Buffalo Lake Refuge. “It’s their plan. Surveys in it should augment the refuge’s mission and strengthen its most significant conservation contributions.”

Most significant here are grassland birds, lesser prairie-chickens and the mid-continent population of sandhill cranes.

“As we moved into the I&M, I wanted a more quantitative survey, so we could look at it over time and draw



Working with the Refuge System Inventory and Monitoring (I&M) Program and numerous partners, Muleshoe and Grulla National Wildlife Refuges are conducting surveys of grassland birds, lesser prairie-chickens and mid-continent sandhill cranes to help conserve habitat in western Texas and eastern New Mexico. Above, cranes take flight at Muleshoe Refuge. (Christena Stephens)

conclusions,” say Smith, a native of nearby Clovis, NM, who has worked at Muleshoe Refuge since 2003. “What we had going before wasn’t randomly haphazard, but it wasn’t really quantifiable.”

Texas Tech University, Texas Parks & Wildlife Department, U.S. Geological Survey, Natural Resources Conservation Service, Great Plains Landscape Conservation Cooperative (LCC) and the U.S. Fish and Wildlife Service’s Science Applications program are contributing funding or expertise to various I&M surveys. Although no data have been analyzed and no reports have been issued, anecdotally Smith has gained preliminary insight.

Regarding grassland birds, Smith has learned that Cassin’s sparrows are far

more numerous than previously believed, and scaled quail and Northern bobwhite quail weathered recent drought years well. Grassland bird data are to be analyzed by next spring.

So far, lesser prairie-chicken surveys have been visual only and off-refuge. Still, Smith has been surprised by the birds’ numbers because shinnery oak grassland, their favored habitat, is not nearby. The birds, a federal threatened species as of last year, “have been around here for 80 years, but we’ve never really studied the habitat they’re in,” he says. “We’re trying to figure out what they’re using and how they’re using it.”

Regarding sandhill cranes, “what we’ve found out is that these cranes are harder

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# Proactively Protecting Grasslands and Wetlands

By Bill O'Brian

**M**ick Erickson is a North Dakota guy who knows now is the time to act – aggressively.

He knows socioeconomic forces are squeezing waterfowl and migratory bird habitat across the Prairie Pothole Region. He knows market pressures are imperiling grasslands vital to birds such as northern harrier, grasshopper sparrow, clay-colored sparrow, chestnut collared longspurs, upland sandpiper, western meadowlark, bobolinks and sharp-tailed grouse. Rapid price increases of corn, soybeans and other commodities are accelerating the conversion of grassland and native prairie pastureland to cropland.

He knows similar pressures are shrinking wetlands vital to mallards, pintails, blue-wing teals, gadwalls, northern shovelers, avocets, grebes, cormorants, marbled godwits, willets, sandpipers and others. Large-scale drain proposals, intensive agriculture, drain tile, pipelines, road construction and potential changes to the Farm Bill are intensifying pressure to drain wetlands – or could.

He also knows the math at North Dakota's Kulm Wetland Management District, which he has managed since 2005. While the district has 45,379 acres conserved in fee-title land on 201 waterfowl production areas (WPAs), it has more than four times as many acres conserved in easements – about 130,000 acres in wetland easements and about 60,000 acres in grassland easements.

So, Erickson has made strategically acquiring easements an urgent priority.

“Approximately 50 percent of wetlands and over 90 percent of grasslands on private lands are currently unprotected in the district. We have no control over what the price of commodities or land will be in the future. We do not know what future Farm Bills will look like, whether swampbuster/sodbuster protection will still exist or whether federal crop



*Hochhalter Waterfowl Production Area is one of 201 WPAs in Kulm Wetland Management District in North Dakota. In recent years, the district has concentrated on acquiring easements to conserve grassland and wetland habitat for waterfowl and birds. (Krista Lundgren/USFWS)*

insurance will still require conservation compliance and protection of wetlands and grasslands,” he says. “However, we do have control over where we work and how much effort we expend to protect productive landscapes.”

Erickson and biologist Chris Swanson – who recently became an assistant refuge supervisor in the U.S. Fish and Wildlife Service's Southeast Region – built that urgency into Kulm WMD's habitat management plan. That plan to conserve native grasslands, optimize waterfowl production and provide habitats that support healthy migratory bird populations includes two prongs. First, it uses sound science to prioritize what land to conserve via easements. Second, it pinpoints willing landowners interested in selling easements on their land.

The science piece is common among wetland management districts. It relies on sophisticated spatial models involving Habitat and Population Evaluation Team (HAPET) “thunderstorm maps,” grassland cover maps and bird-density models to determine a parcel's conservation value. [See March/April 2012 *Refuge Update*: <http://1.usa.gov/1IHljts>]

The landowner approach is more specific to Kulm WMD. Since 2010, it has involved sending almost 2,300 detailed letters to landowners whose properties are of high conservation value and following up with more than 1,100 phone calls, often after normal working hours.

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## Fee-Title vs. Easement

The terms “fee-title” and “conservation easement” arise often in discussions about strategically conserving habitat.

In the context of National Wildlife Refuge System conservation, fee-title means the U.S. Fish and Wildlife Service owns the land or waters in question outright via purchase or donation.

Fee-title acquisition typically provides public opportunities for hunting, fishing and other wildlife-dependent recreation – if such recreation is found to be compatible with the conservation mission.

A conservation easement is a voluntary legal agreement between a private landowner and the Service that permanently limits uses of the land to protect its conservation value. Under an easement, the landowner retains ownership and management of the land, and can sell the land or pass it on to heirs. But an easement remains in force perpetually, ensuring that land will not be subdivided or developed. Most Service easements are compatible with ranching and other agricultural operations. Unlike fee-title acquisition, easement acquisition generally does not provide public access.

## Landscape Conservation Through Participatory Design

By Rob Campellone

Landscape conservation design dates back to the 1960s and the subsequent research of Robert MacArthur, E.O. Wilson, Jared Diamond and others. While the LCD concept goes far beyond the National Wildlife Refuge System, it is central to the 2013 Conserving the Future-inspired report “A Landscape-Scale Approach to Refuge System Planning.”

But what is LCD, and why is it important to refuge managers and others in the U.S. Fish and Wildlife Service?

LCD is an integrated, collaborative and holistic process grounded in the interdisciplinary science of landscape ecology, the mission-oriented science of conservation biology and the art of design. It is a stakeholder-driven process that integrates societal values and interests with the best-available science to devise approaches that protect biodiversity and ecosystem services, and increase resilience and sustainability. The goal of LCD is to produce strategies that support sustainable populations of fish and wildlife of interest to a given landscape’s stakeholders.

LCD requires the Service to think beyond the traditional conservation community stakeholders, such as other federal land management agencies, states, tribes and non-governmental organizations. LCD includes those stakeholders, to be sure. But, in line with Department of the Interior Secretarial Order 3330, it also takes into account entities with an economic stake in a landscape – residential, energy and transportation developers, for instance.

“Stakeholder engagement is absolutely essential” says Silvio O. Conte National Fish and Wildlife Refuge manager Andrew French, who is participating in the North Atlantic Landscape Conservation Cooperative’s Connecticut River Watershed LCD. “Engagement helps stakeholders like the Refuge System and other landscape stewards



Mike Spindler, manager at Alaska’s Kanuti National Wildlife Refuge, has found the Northwest Boreal Landscape Conservation Cooperative and the landscape conservation design process vital to working with U.S. and Canadian stakeholders: “Nearly everyone understands we must take care of the water in the Yukon River,” above. (Randy Brown/USFWS)

understand and visualize how their past and future conservation actions could combine with new strategies to contribute to a broader landscape vision that is well-informed and supports a sensible balance between resilient conservation outcomes, quality recreation and sustainable economic activities.”

Landscape conservation cooperatives (LCCs), the national network of 22 public-private partnerships whose vision is to sustain natural and cultural resources at landscape scales for future generations, are fundamental to LCD.

“As refuge managers, we need to be thinking 50 years into the future – assessing threats to refuge resources that are developing outside refuge boundaries and finding opportunities to work with others to address those threats while we still can,” says Mike Spindler, the manager of Alaska’s Kanuti National Wildlife Refuge. “The LCC is a great forum to bring stakeholders with divergent ideas together to discuss them.”

Spindler has found the Northwest Boreal LCC and the LCD process vital to working with tribes and other stakeholders in the United States and Canada on matters related

to Chinook salmon. “Nearly everyone understands we must take care of the water in the Yukon River,” he says. The LCC also has helped inform decisions related to the Dalton Highway and the Trans-Alaska Pipeline, both of which cross six watersheds that flow into Kanuti Refuge.

The 2013 report (<http://1.usa.gov/1N9SgCC>) notes that LCD is both a process and a product – an adaptively managed product that must be modified periodically by all stakeholders based on the results of their collective implementation, monitoring and evaluation. In that regard, LCD is the application of strategic habitat conservation on a landscape scale.

LCD identifies a desired future condition, conservation and development tradeoffs, and multi-jurisdictional implementation strategies. When delivered in coordinated fashion, strategies derived from LCD meet societal values and needs while maintaining ecological integrity and biodiversity.

LCD can be especially useful in addressing stressors such as climate change. Although most federal resources

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# Fitting Pieces Together in Montana

By Rob Bundy

**B**enton Lake National Wildlife Refuge Complex is truly complex.

Headquartered near Great Falls in west-central Montana, the complex is responsible for a 12-county area roughly the size of Maine that includes two refuges (its namesake and Swan River), three conservation areas, four easement programs and a wetland management district. Its landscapes span the Continental Divide – wetlands and mixed-grass prairie eastward; forests, intermountain grasslands, rivers and lakes westward.

The primary mission is to identify unfragmented expanses of private lands that have high potential to contribute to landscape-scale conservation. Fortunately, the complex houses eight U.S. Fish and Wildlife Service programs that help do it. The complex administers more than 200,000 acres enrolled in private lands easements, a number that is growing. The conservation areas are vital, and each has a distinct personality.

**Blackfoot Valley Conservation Area**, established as Blackfoot Valley Wildlife Management Area in 1994, was expanded in 2010 to cover nearly 825,000 acres of the Blackfoot River watershed. Local conservationists and landowners have a “keep working lands working” vision that uses non-development conservation easements as an alternative to outright sale. Easements proceeds can enable landowners to purchase adjacent lands, thus expanding working ranches for the next generation (allowing mom and dad to retire). Easements contain limited management restrictions. Ranchers decide how best to graze, and some timber harvest is permitted. Service personnel meet with landowners annually to strengthen relationships.

Easements conserve riverine habitat for grizzly bear and fish, while maintaining ranching heritage. The Blackfoot



*Rocky Mountain Front Conservation Area in Montana includes easements on 130,336 acres that conserve habitat for grizzly bears, grassland birds and an assemblage of wildlife (minus Plains bison) present since the Lewis and Clark era. (Dave Hanna/The Nature Conservancy)*

Challenge, a partnership that includes landowners, government agencies and non-governmental organizations that started it in the 1990s, exemplifies the concept. The Service oversees 65,000 acres under easements, just a fraction of the lands conserved by federal, state and non-governmental partners in the valley.

**Rocky Mountain Front Conservation Area** was established in 2005 – largely because of Blackfoot Valley success – as one of the Refuge System’s first easement-only units. The front, which was recognized in the top 1 percent of remaining U.S. habitat by The Nature Conservancy, retains the assemblage of wildlife (minus Plains bison) present since Lewis and Clark. The conservation area includes ranch lands, primarily. These lands, with views of the iconic Rocky Mountain Front, are in high demand for retirement and recreation. The complex oversees easements on 130,336 acres that conserve habitat for grizzly bears,

grassland birds and the historic wildlife assemblage. Many easements are on land that resident families have ranched for generations.

**Swan Valley Conservation Area**, established in 2011, is complicated. Unlike the other two conservation areas, in which the complex works mostly with ranchers, the Swan River watershed is based mostly on timber and recreation. Properties are typically small and expensive. Development is closing important grizzly bear migration corridors. Conserving intact riverine systems for grizzlies also will benefit native fish such as bull trout and westslope cutthroat. The conservation area now includes only one 80-acre donated easement, but the complex is working with the Swan Ecosystem Center to build a community presence.

The overall recipe is simple: Have the right people in the right places where strong conservation advocacy can be

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American avocets wait out a storm in a wetland at North Dakota's Kulm Wetland Management District. Large-scale drain proposals, intensive agriculture, drain tile, pipelines, road construction and potential changes to the Farm Bill are intensifying pressure to drain such wetlands – or could. (Krista Lundgren/USFWS)

## Proactively Protecting Grasslands and Wetlands

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“Timing is crucial. Funding is limited,” says Erickson. “We need to be as efficient and proactive as possible in finding those areas with highest percentage of grass, high wetland densities, and are at highest risk of being converted to cropland.”

The result is 284 newly signed wetland easements and 54 newly signed grassland easements, and offers being made on an additional 297 wetland easements and 113 grassland easements.

Kulm WMD's overall approach rests on a three-tiered pyramid in which acquiring/protecting easements is top

priority, enhancing/restoring private land is second, and managing WPAs is third. Erickson, who has spent his entire 30-year Service career at North Dakota wetland management districts, believes the Kulm approach is applicable across the Prairie Pothole Region.

After all, he says, “in North and South Dakota alone, [the Service] owns approximately 451,000 acres of waterfowl production areas. However, we have over 2.7 million acres of easements protecting crucial wetland and grassland habitat. That's six times the amount of fee-title land.”

## Landscape Conservation Through Participatory Design

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historically have gone toward climate science and mitigation, adaptation is beginning to drive global response. One goal of adaptation is to conserve ecological systems through the development of robust protected area networks. A tenet of adaptation is that the legal authorities, expertise and management capability needed to achieve landscape-scale conservation goals are

found not within any single agency or organization but across groups of diverse stakeholders. That's where LCD comes in. LCD represents a shift from traditional “stove-piped” planning and implementation to innovative “integrated” design.

*Rob Campellone is the Refuge System's national landscape conservation design policy advisor.*

## Fitting Pieces Together In Montana

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nurtured. However, making it work requires trust, savvy and positivity.

Conservation pioneers in the Service's Partners for Fish and Wildlife Program have spent decades building trust through community involvement. By becoming a voice in the community, they have helped realize landscape-scale conservation.

The Service Realty Program and non-governmental partners have supplied political savvy, expertise and patience. The delicate architecture of intricate land deals can erode rapidly. It takes informed professionals to keep them on track. It also takes the positive attitude often expressed by rancher and Blackfoot Challenge chairman Jim Stone: “Environmentalists and landowners agree on the issues about 80 percent of the time. Let's focus on the 80 percent.”

*Rob Bundy is project leader at Benton Lake National Wildlife Refuge Complex in Montana.*

# “Prairie Arks” in Morris Wetland Management District

By Bruce Freske

Three-and-a-half million acres, an area over 60 miles wide and 80 miles long, in Minnesota’s tallgrass prairie region. How do you conduct effective conservation in such a vast landscape? Staff at Morris Wetland Management District (WMD) discussed this question with renewed earnestness last decade as high commodity prices fueled accelerated destruction of the prairie ecosystem.

Fortunately, in 2008, just as prairie conservation was entering its darkest hours in a generation, Minnesota voters approved the Clean Water, Land & Legacy Amendment. Recently, Legacy funding has delivered more than \$100 million annually for conservation projects in Minnesota and will continue to provide funding for another 20 years, thus offering a tremendous conservation opportunity.

Just as fortunately, there are now many planning tools available that have greatly increased the effectiveness of efforts to enhance and restore functional prairie pothole landscapes. They include the Morris WMD Prioritization Tool, WMD focus areas, Minnesota Prairie Conservation Plan core area maps, and Habitat and Population Evaluation Team (HAPET) “thunderstorm maps,” so named because their display resembles a Doppler radar image of a thunderstorm.

Rothi Waterfowl Production Area shows how these tools work together. It is identified by the prioritization tool as a “showcase” WPA, a category given to only 15 of the district’s 248 waterfowl production areas. As the highest designation, showcase WPAs are priorities for management actions such as prescribed fire and grazing, noxious weed control and invasive tree removal.

The HAPET thunderstorm map, a model predicting the number of duck pairs an area can support, predicts that Rothi WPA will support 40 to 50 pairs of ducks per square mile. This is quite good for



*Monarch butterflies adorn blazing star in western Minnesota, where Morris Wetland Management District is working with an array of tools and partners to help strategically enhance and restore functional prairie pothole landscapes. (Tally Hamilton/USFWS)*

Minnesota. Rothi WPA is also in the Big Stone Moraine Prairie Core Area, which directs state funds to the region for prairie conservation and is in the heart of the district’s 100-square-mile Otrey-Odessa Focus Area. Beyond Rothi WPA, the focus area includes 10 other WPAs, dozens of conservation easements and other protected lands. Together, they have built a functional prairie ecosystem of approximately 10,000 acres of nearly contiguous protected lands. I refer to this as a “prairie ark.”

The prairie is certainly a rich land for man. It can be a rich land for prairie life, too, if humans allow prairie wealth to include more than money, and if we in conservation build prairie arks.

This is a land always changing from one week to the next – with a kaleidoscope of colors, flowers of every style imaginable, and styles beyond imagination, the white pasque flower, red prairie smoke, orange lilies and purple blazing star adorned with monarch butterflies. In the fall, yellow goldenrods and gentians dressed in their electric blue are nestled among red prairie grasses waving in the wind.

This is a land of wetlands of every size and shape with flocks of ducks, geese, swans, blackbirds and grebes – and the prehistoric call of sandhill cranes in the distance. An upland sandpiper stands like a sentinel on a lone granite boulder, a glacial erratic, encircled by a low swale gouged into the earth by thousands of years of itchy bison looking for a good scratch. Countless marble-sized balls inflate across a shallow wetland as chorus frogs collectively call to one another.

Most other conservation partners in the prairies of Minnesota now routinely use HAPET thunderstorm maps as well as the Minnesota Prairie Conservation Plan to help prioritize acquisition and management efforts. With persistence, careful planning and coordinated efforts, these prairie arks will ensure that future generations experience the magic of the prairie. 🦋

*Bruce Freske is Morris Wetland Management District manager. District wildlife biologist Sara Vacek and Partners for Fish and Wildlife Program biologist Alex Galt contributed to this article.*

## Monitoring Birds to Preserve Grassland—*continued from page 8*



*The vast, arid grassland landscape of west Texas is punctuated by saline lakes such as Upper Goose Lake at Muleshoe National Wildlife Refuge. (Wyman Meinzer)*

to catch than anywhere else they've tried to catch them. Our cranes are a lot more cagey," says Smith. Still, based on radio telemetry, he's learned that the cranes generally stay closer than previously believed in winter, within 12 miles. That's important, because 80,000 to 90,000

cranes winter near Muleshoe and Grulla Refuges before migrating to northern Canada and Siberia to nest. On-refuge abundance data should be available next spring, but off-refuge data about movements and landscape use are at least four years away.

The surveys' goal is to inform how the refuge and, potentially, private landowners can better manage grassland habitat – via prescribed burns, grazing, invasive grass removal and planting of native grass – for the benefit of grassland birds, cranes and lesser prairie-chickens. For cranes, long-term habitat management will also involve off-refuge croplands and how to sustain crane numbers in the face of pending landscape changes driven by energy development, climate change and declining water resources. For grassland birds, refuge survey data will roll up into the Rocky Mountain Bird Observatory's multi-agency IMBCR (Integrated Monitoring for Bird Conservation Regions) project and be available to partners.

Smith says he wants the I&M projects to continue for several years "because we have this horrible tendency to study something for two years" – the length of a typical graduate study – and then stop. "If we base any kind of landscape conservation design, or a land protection plan for expansion, just on two good years, we're going to protect too small a landscape." 🦅

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## From the Director — *continued from page 2*

strategic growth of the System designed to identify and prioritize land acquisition to have the greatest conservation impact. They're working hard with partners to set science-driven, achievable landscape protection goals, utilizing wildlife refuges as fulcrums to expand our conservation footprint far beyond refuge boundaries.

Many refuges are already developing effective landscape conservation designs with landscape conservation cooperatives, taking advantage of the leveraged support and specialized expertise that these partnerships provide. Together,

they are driving resources and actions toward shared priorities to magnify their collective conservation impact.

I know that for many, adopting this approach has occurred in fits and starts – and that's okay. Designing, implementing and evaluating landscape-scale conservation strategies isn't easy. That's why we're working to build additional capacity to help. We hosted a Strategic Habitat Conservation Practitioners Forum at the National Conservation Training Center in May, and are working with attendees to foster

and support a Service-wide Community of Practice. By learning from one another and encouraging innovation and strategic risk-taking, we can move the needle on landscape conservation and reach the critical mass necessary to drive transformation across the Service.

I'm inspired by the great work spotlighted in this issue, as I hope you will be. Building on these and other successes, we can reimagine the Refuge System for the 21st century. 🦅

# Bringing the South Side to the Riverside

By Ed Britton

Growing up on Chicago's South Side isn't the typical childhood background of a U.S. Fish and Wildlife Service biologist. That's the beauty of diversity: A range of upbringings can spark a dream to pursue a career and create a passion to inspire others to appreciate and conserve natural resources.

Welcome to the dream of Jeramie Strickland, a wildlife biologist at Upper Mississippi River National Wildlife and Fish Refuge's Savanna District in Illinois.

The South Side's mean streets didn't encourage Strickland to pursue education. It was family support and community involvement that pushed him to overcome challenges. Today, family relationships and community support for others continue to be his priorities.

Strickland completed a bachelor of science degree at Delaware State University in 2004, with internships at Purdue University, Michigan State

University and the University of Namibia in Africa. He earned a master of science degree from Iowa State University for research on spatial and temporal dynamics of nest predation in painted turtles.

As a graduate research assistant at Iowa State's turtle camp from 2006 to 2008, Strickland mentored high school and undergraduate students by designing research projects focusing on reptiles and amphibians at Upper Mississippi River Refuge's Thomson Natural Research Area. His dedication to educating others, especially bringing inner-city and urban youth groups to the refuge to learn about natural resources, caught the attention of refuge staff. That's when Strickland's dream became a reality.

After working in the former Federal Career Intern Program and the Service's Career Discovery Internship Program, in August 2009 Strickland became the Savanna District's first wildlife biologist.

His list of accomplishments is extraordinary.

He has spearheaded a comprehensive study to manage, conserve and restore populations of the Illinois state threatened ornate box turtle. Using a combination of management tools – including automatic receiving units for radio telemetry, ultrasound diagnostics to identify female ovulation, and a head-starting program to increase hatchling survival – he has helped reestablish a viable population of ornate box turtles on Illinois' largest sand prairie at Upper Mississippi River Refuge's Lost Mound Unit. After starting with only three turtles in 2008, the refuge expects to attain its population management goal of 100 turtles in 2016.

Strickland's research has benefitted the scientific community, with findings published in a variety of journals and scientific periodicals.

He has facilitated numerous partnerships that promote workforce diversity. He serves on advisory boards and committees for the Institute for Broadening Participation and its Minorities Striving and Pursuing Higher Degrees of Success in Earth System Science program. He is a mentor with the Ecological Society of America's SEEDS (Strategies for Ecology Education Diversity and Sustainability) program. He helped start Iowa State's Turtle Camp Research and Education in Ecology (TREE) program, which enables high school and college students from diverse backgrounds to conduct ecological research on the refuge. He partners with high schools throughout Chicagoland and Chicago's Fishin' Buddies to bring inner-city youth to the refuge for environmental education.

He serves with the Midwest Region's diversity recruitment team and Mentoring Development Program, the Refuge System's Ambassador Program team and the Career Discovery Internship Program. He has worked closely with the National Conservation



Wildlife biologist Jeramie Strickland talks turtles at Upper Mississippi River National Wildlife and Fish Refuge with Fishin' Buddies from Chicago. Strickland is passionate about inspiring others – particularly urban youth – to appreciate natural resources and wildlife. In 2014, he received The Wildlife Society's Diversity Award for his innovative programs to further diversity in academic enrollment and employment. (Louise Clemency/USFWS)

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# Around the Refuge System

## Louisiana

The U.S. Fish and Wildlife Service has proposed removing the Louisiana black bear from the list of threatened species under the Endangered Species Act. The Louisiana black bear is a subspecies of American black bear unique to Louisiana, western Mississippi and eastern Texas. When it was listed under the Endangered Species Act in 1992, the three known remaining breeding subpopulations were confined to the bottomland hardwood forests of Louisiana in the Tensas, Upper Atchafalaya and Lower Atchafalaya River basins. Today, those sub-populations have increased in number and have stable-to-increasing growth rates. Additional breeding subpopulations are forming in Louisiana and Mississippi, providing a healthy long-term outlook. The Louisiana Department of Wildlife and Fisheries, Natural Resources Conservation Service, University of Tennessee, Black Bear Conservation Coalition, private landowners and Tensas River National Wildlife Refuge have played roles in the recovery.

## Florida

A leading Cuban ecologist worked in July at Florida Panther National Wildlife Refuge with researchers from Illinois College to inventory, monitor and ultimately begin a new chapter of critical conservation work for the revered ghost orchid. Ernesto Mujica of Cuba's Ministry of Science ECOVIDA Research Center helped document ghost orchids at the refuge and is working with students to create geo-spatial databases for long-term monitoring. The work parallels the techniques Mujica uses to monitor ghost orchid populations in Cuba. The refuge has collaborated for 15 years with Illinois College and the University of Florida to improve understanding of the complex relationships between Florida's native orchids and their ecosystems. Mujica's participation would not have been possible without the recent thaw in U.S.-Cuba diplomatic relations.



*Tensas River National Wildlife Refuge has played a big role in the Louisiana black bear's recovery. The U.S. Fish and Wildlife Service is proposing to remove the bear from the list of threatened species under the Endangered Species Act. (Pam McIlhenny)*

## Michigan

Refuge manager John Hartig recently wrote a book titled "Bringing Conservation to Cities: Lessons From Building the Detroit River International Wildlife Refuge." It tells how innovative partnerships are making nature part of everyday urban life in a watershed that is probably best known as the site of the automobile capitals of the United States and Canada. "Today, the cleanup and recovery of the Detroit River represent one of the most remarkable ecological recovery stories in North America," Hartig wrote in a blog (<http://wildread.blogspot.com>) about the refuge, which is a Service priority urban wildlife refuge.

## North Dakota

American white pelicans returned to Chase Lake National Wildlife Refuge in near-record numbers this summer, but only one island was available on which they could nest. Rising water levels swallowed one of the two main nesting islands at the refuge, home of North America's largest colony of white pelicans. The primary nesting island for the pelicans also is shrinking, but refuge biologist Alisa Bartos was not concerned.

"We're not at all worried," she said.

"There is still a lot of space out there and a lot of bare ground." An aerial count in mid-June showed about 27,000 breeding adults, based on about 13,250 nests. The count is among the highest recorded at the 4,385-acre refuge; the record is 35,466 in 2000.

## Wisconsin

This nesting season for endangered whooping cranes at Necedah National Wildlife Refuge was the most successful since the refuge began working to establish a self-sustaining population in 2001. A new method, known as forced re-nesting, helped result in the largest number of healthy chicks in a season at the 76-year-old refuge. Twenty-seven nesting pairs produced 24 chicks; 16 nests hatched at least one egg. Three chicks are still alive. "We've gotten further than any other whooping crane re-population effort in 15 years," said refuge biologist Brad Strobel. Forced re-nesting involves researchers taking eggs from whooping crane nests that are unlikely to be successful before the annual emergence of black flies. The chicks are then transferred to captive-rearing facilities.

“Hatching chicks is one part of the solution,” said Strobel. “Seeing those chicks fledge and later return as mature adults to raise their own offspring will complete the picture.” The whooping cranes are part of a captive-reared flock known as the Eastern migratory population; they nest in Wisconsin and winter in the Southeast.

### Illinois

Middle Mississippi River National Wildlife Refuge wildlife specialist John Hartleb and biologist Ken Dalrymple discovered a state record pecan tree while surveying the refuge’s Horse Island division. Some measurements of the pecan tree, which was certified as a record by Illinois officials, are: 69.2-inch diameter at breast height, 18.11-foot circumference and 108-foot height. Middle Mississippi River Refuge – headquartered in Rockwood, IL, about 70 miles south of St. Louis, MO – conserves floodplain habitat important to migratory birds, native fish and other species. The refuge consists of seven island divisions in Illinois and Missouri.

### North Carolina

An agreement was reached in June regarding the replacement of a bridge at Pea Island National Wildlife Refuge. The state Department of Transportation (NCDOT), state Department of Environment and Natural Resources and Federal Highway Administration reached the agreement with Defenders of Wildlife and the National Wildlife Refuge Association. The agreement will allow NCDOT to replace the Herbert C. Bonner Bridge with a new parallel bridge. Under the agreement, NCDOT will consider options that would move vulnerable portions of NC Highway 12 out of Pea Island Refuge and into Pamlico Sound. “We are pleased that NCDOT and its partner agencies will consider additional options for NC 12 that will provide safe, reliable transportation by avoiding the areas where erosion and washouts shut down the road in its current location. This is a win-win for the refuge and everyone who relies on NC 12,” said Julie

Youngman, senior attorney with Southern Environmental Law Center, which represented the two conservation groups. Refuge manager Mike Bryant said, “We are encouraged by the news and, as always, ready and willing to work with the agencies involved in the planning of the future options that would avoid impacts to refuge resources.”

### Delaware

Work to restore marshes at Prime Hook National Wildlife Refuge has started, the first phase of a \$38 million project to build storm and sea-level-rise resilience into the natural landscape. The project will repair breached marshes and reconstruct severely damaged shoreline, including critical dune restoration. It will also restore approximately 4,000 acres of back-barrier tidal marsh. Once the marsh drainage work is complete, a second phase, expected to start in October, will pump in 1.1 million cubic yards of sand along 7,000 linear feet of shoreline and fill deep cuts formed during Hurricane Sandy and other storms. The work is funded by the Disaster Relief Appropriations Act of 2013 through the Department of the Interior.

### Florida

Bart Rye, a prescribed fire/fuels technician at St. Marks National Wildlife Refuge, has been awarded the Service’s second annual National Fire Safety Award. Rye was honored for his idea

that fire crews carry Global Positioning System (GPS) transmitter collars, like those worn by his hunting dogs. The collars, first tested on the 70,000-acre refuge in spring 2014, allow fire line supervisors to more easily locate firefighters, vehicles and aircraft working on prescribed burns spread over large areas. GPS technology allows a user to visually track up to 20 moving targets with distinct colors and symbols on a single hand-held receiver screen, with data refreshed every five seconds.

### Legends and Beacon Award Winners

The American Recreation Coalition selected its 2015 Legends and Beacon Award winners. Walter Tegge, recently retired visitor services manager at Back Bay National Wildlife Refuge in Virginia, was chosen as the Service recipient of the Legends Award for contributions in the field of outdoor recreation. Tegge was cited for his work in developing a tram program through the refuge that provides visitor access to False Cape State Park. Lisa Cox, park ranger at San Diego National Wildlife Refuge Complex, was chosen as the Service recipient of the Beacon Award, which recognizes innovative use of technology. Cox was honored for building and maintaining separate websites for the complex’s four refuges, as well as performing live updates on social media via Facebook, Twitter and Flickr. 🦋



*An agreement has been reached regarding the replacement of this bridge at Pea Island National Wildlife Refuge in the Outer Banks of North Carolina. (Wikimedia Commons)*

## Urban Refuge Partnerships — continued from page 1

Fish and Wildlife Foundation, which generated \$2.35 million in direct contributions and matching funds from local partners. The Service contributed \$540,000 to this year's projects.

“The Urban Wildlife Conservation Program was created because we believe the future of conservation depends on engaging people in natural resource stewardship. That is especially true of the millions who live in America's biggest cities,” said Service Director Dan Ashe. “These grants will make a huge difference in reaching new communities by creating local partnerships with the Service in neighborhoods across the country. The benefits will be felt for generations.”

The Anchorage Urban Wildlife Refuge Partnership will help restore 30 miles of streams, engage urban youth and families in wildlife conservation, mentor urban and rural youth ambassadors to promote shared perspectives, and engage nontraditional partners to achieve conservation and urban community development objectives. The partnership is designed to foster unity among future urban/rural conservation leaders.

Via the Atlanta Urban Wildlife Refuge Partnership, the South Fork Conservancy and scientific partners will



*Young volunteers and South Fork Conservancy executive director Sally Sears, far right, clear pine saplings near Peachtree Creek in Atlanta. The conservancy is a major partner with the U.S. Fish and Wildlife Service in the newly established Atlanta Urban Wildlife Refuge Partnership. (Bill Head/South Fork Conservancy)*

collect and analyze data about plant and animal populations and water quality at the degraded confluence of the north and south forks of Peachtree Creek about six miles north of downtown. Partners, including the Service, will build creek access and engage underserved communities in monitoring and sustaining current restoration and green infrastructure efforts.

The Springfield Urban Wildlife Refuge Partnership is designed to involve students and adult residents in the creation of a network of conserved habitats in the Connecticut River

watershed of central New England.

The 14 previously established Urban Wildlife Refuge Partnerships are in Albuquerque, NM; Baltimore; Chicago, IL; Denver, CO; Houston, TX; Los Angeles, CA; New Haven, CT; New Orleans, LA; Pharr/San Juan/Alamo, TX; Philadelphia, PA; Providence, RI; Santa Barbara, CA; Seattle, WA; and Yonkers, NY.

For more information about the Urban Wildlife Conservation Program, go to <http://www.fws.gov/urban>. 🦋

## Chief's Corner — continued from page 2

in the planning of new or expanding refuges within this paradigm and the entire conservation estate. When we work beyond our boundaries, it only makes sense to engage with our partners and our neighbors. Many of them have passion for conservation unrivaled to any we have ever seen.

Determining biological priorities and wildlife objectives is integral to the future growth of the Refuge System. These priorities and objectives should be grounded in science. However, at the end of the day, we still have to make choices about which priorities and which

objectives we will spend resources on. These choices determine which habitat types we will add to the conservation estate to be managed within the Refuge System.

Refuge managers – in accordance with the National Wildlife Refuge System Improvement Act and often listening to the public – also make choices when they propose expanded or new appropriate recreational opportunities. Increasing hunting and fishing opportunities for the American people is foundational to the Refuge System. We should always be looking for such opportunities.

Additionally, we should consider the communities in which our refuges are located and look for opportunities to engage. Engaging the younger generation is especially important; young people are the future of our country and the future of conservation. It's okay to make that choice.

We make choices every single day. Those choices make a difference. I encourage you to think about which choices influence the decisions you make each and every day. Thank you for everything that you do for people and for wildlife conservation in this country. 🦋

## “Big, Bold, Scary Step” Pays Off for Endangered Deer — continued from page 1

is culturally significant to the Cowlitz tribe, was abundant in Lewis and Clark’s time, and was listed as endangered in 1967.

Julia Butler Hansen Refuge was established in 1972 to protect the deer. However, a recent levee failure along the Columbia threatened to put the refuge’s mainland under seven feet of water. “With tidal fluctuations, the entire refuge, all of its facilities and the Columbian white-tailed deer were at risk,” says project leader Jackie Ferrier. “That’s why we made the big, bold, scary step to translocate up to half of the population” to Ridgefield Refuge, 50 miles upriver.

Helped by 100 volunteers and the Service’s Cooperative Recovery Initiative, staff from both refuges moved 88 Columbian white-tailed deer to Ridgefield Refuge over three years. It was a labor-intensive, time-sensitive effort that involved amending the comprehensive conservation plan; writing environmental assessments; negotiating an animal damage management plan with Washington, Oregon and private landowners; trapping deer in small groups at Julia Butler Hansen Refuge (mostly in drop nets); and tranquilizing, examining, tagging and transporting them.

In 2013, only 25 of 37 translocated deer survived the year, which was lower than normal survival. “That was, for me, quite troubling,” says Ridgefield Refuge project leader Chris Lapp. Coyotes, a resident species, were the primary cause of that mortality. So a predator control plan was implemented to remove some coyotes, and survival of both adults and newborn fawns improved. In 2014, 16 of 21 translocated deer survived; this year, 25 of 30 have survived. At least 20 fawns born at Ridgefield have survived since translocation began. Recently, forward-looking infrared (FLIR) videography estimated 85 Columbian white-tailed deer at or near Ridgefield Refuge.

Lapp, who was initially reluctant about the translocation project, credits refuge



*This tagged and radio-collared Columbian white-tailed deer was relocated from Julia Butler Hansen National Wildlife Refuge for the Columbian White-tailed Deer to Ridgefield National Wildlife Refuge, 50 miles upriver in Washington state. (Bill O'Brian/USFWS)*

staffs, the Cowlitz tribe, Washington and Oregon Departments of Fish and Wildlife, private landowners and volunteers for the success: “The level of communication and collaboration to tweak and refine capture and transport methods to make this an extremely efficient project was impressive. I tip my hat to all of them. It’s been an amazing thing to be part of.”

Thanks to the translocations and a new setback levee, the species is making good progress. In addition to the new Ridgefield sub-population of 85 deer, there are three secure sub-populations at or near Julia Butler Hansen Refuge: about 100 deer on refuge mainland, 155 on the refuge’s Tenasillahe Island and 230 on private Puget Island. Beyond that, there are roughly 250 on unsecure private lands.

All of which gratifies Julia Butler Hansen Refuge biologist Paul Meyers.

“This is a huge step,” he says. “We’ve been trying to establish another sub-population on protected land for about 40 years, but the levee failure created a sense of urgency that pushed us over the hump.”

In the meantime, both refuges are enhancing deer habitat for the long term. Julia Butler Hansen Refuge is mowing, grazing and replanting forage to suppress invasive reed canary grass, which is

unpalatable to the deer. Ridgefield Refuge, which is primarily wetlands and grasslands, has planted more than 30,000 trees (ash, alder, cottonwood, fruit) and shrubs (snowberry, red osier dogwood) in recent years to increase habitat for Columbian white-tailed deer.

“We want to make them happy here,” says Ridgefield Refuge biologist Alex Chmielewski. “We don’t want to give them any reason to leave.”

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## South Side to the Riverside

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Training Center’s Division of Education and Outreach to promote workforce diversity.

In 2014, he received The Wildlife Society’s Diversity Award for his innovative programs to further diversity in academic enrollment and employment.

Strickland’s passion for working with young people – urban youth in particular – is critical because he believes that the future depends on how well we, as a nation, conserve and manage our natural resource habitats and wildlife.

*Ed Britton is project leader of Upper Mississippi River National Wildlife and Fish Refuge’s Savanna District in Illinois.*



# RefugeUpdate

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## A Look Back ... David Hickok

Called a scientist, maverick and visionary, David Hickok led the team that mapped Alaska and became one of the architects of the Alaska National Interest Lands Conservation Act (ANILCA) of 1980 that designated many of the refuges, parks and wilderness areas in Alaska.

As a teenager, Hickok dreamed of going to the U.S. Naval Academy. But he was a champion gymnast who broke his back at age 16, so he limped to the New York State College of Forestry at Syracuse University and spent his career outdoors, often using a cane. His U.S. Fish and Wildlife Service career began in 1950 at Missisquoi National Wildlife Refuge in Vermont. He worked at several other refuges before he landed in Washington, DC, as assistant chief of resources. He wrote the public land order for Arctic National Wildlife Refuge and recommended expansion of refuge roads on the Kenai Peninsula. Little did he know then how big a role he would play in the future of Alaska public lands.

Part of that role was convincing the Service that Alaska was important. He



*David Hickok (1924-2011), left, had an outsize role in Alaska public lands management during and after his U.S. Fish and Wildlife Service career. With him above in 1972 is Jacob Adams of the Arctic Slope Regional Corporation, which today governs nearly five million acres and has 12,000 Inupiat Eskimo shareholders representing eight villages in the remote Arctic Slope region. (Arctic Environmental Information and Data Center)*

recalled during an oral history interview that he repeatedly reminded Service colleagues that “the Dust Bowl is over! There was much more in this world than just ducks.”

After the 1964 Alaska earthquake, President Lyndon Johnson appointed Hickok to the Federal Field Committee that produced a massive study on “Alaska Natives and the Land.” By now, Hickok had left the Service but not Alaska. He directed the Alaska Sea Grant Program and created the Arctic Environmental Information and Data Center at the University of Alaska Fairbanks. The work of Hickok and his team, including writer and filmmaker Nan Elliott, is credited with providing the scientific information needed to make valuable land use designations in Alaska.

Hickok was known for his talent for transferring knowledge among Alaska Native cultures and others. He made sure, for example, that ANILCA provided for the harvest of traditional subsistence resources in wilderness areas. Hickok “understood the idea of wilderness,” wrote Stephen Haycox, a University of Alaska history professor.

When Hickok died in 2011, Elliott wrote: “Thank you for a life ferociously and generously lived.” 

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