



RefugeUpdate

National Wildlife Refuge System

www.fws.gov/refuges



INSIDE: For adventurous visitors, Kenai National Wildlife Refuge in Alaska offers an exceptional recreation opportunity: fishing in designated wilderness. See Focus section article on Page 16. (Steve Hillebrand)

America's Great Outdoors Offers Chances For "Complete Community Engagement"

By Bill O'Brian

New Jersey and Michigan are so vested in the Obama administration's America's Great Outdoors initiative that each state has doubled up.

The Connecticut River is so vested in AGO that four New England states' projects are devoted to a blueway along it.

Interior Secretary Ken Salazar is so vested in the initiative that he or a designee is calling AGO project leads—many of them national wildlife refuge managers—to check in.

The Secretary "is completely enthusiastic about it," says U.S. Fish and Wildlife Service AGO coordinator Tamara McCandless, "to the point of having, for the first time I have ever seen in my career, direct conference calls with the project leaders at the field level. And he knows each and every one of the projects; he wants to hear about them; he knows who the project leads are at the field level. And he really wants to see project success in every state."

President Obama launched AGO in 2010 as a 21st-century conservation partnership with the American people. The initiative is ramping up this year. The administration's aim, says McCandless, is to focus the public on conservation goals and recreation

continued on pg 24

Vision Work Plans Chart Path Beyond Business as Usual

"You got to be careful if you don't know where you're going, because you might not get there," said New York Yankees catcher Yogi Berra.

The Refuge System knows just where it's going, thanks to the *Conserving the Future* vision. Now, the nine implementation teams have written work plans on how to implement most of the vision in five years.

The work plans are online at <http://AmericasWildlife.org>, as are team member blogs, social networking opportunities and the 24 *Conserving the Future* recommendations. There is a work plan for every recommendation.

The work plans were completed just as Anna Harris, a U.S. Fish and Wildlife Service economist since 2009,

continued on pg 10

From the Director

Promoting Tourism

As everyone knows, money doesn't grow on trees. But judging from the economic figures, money does appear to sprout up in communities around our refuges.



Dan Ashe

Recreation in national parks, refuges and other public lands led to nearly \$55 billion in economic contribution and 440,000 jobs in 2009, according to a study by McKinsey & Company.

It's no surprise then that the White House is promoting domestic and international travel opportunities throughout the United States.

As President Obama said, "More money spent by more tourists means more businesses can hire more workers. That's

why we're all here today—to tell the world America is open for business; and to take steps to boost America's tourism industry so that we can keep growing our economy and creating more jobs."

And it helps us reach more people, showing the public that what we do really does affect them personally. There is no downside.

The United States has national treasures that are considered wonders of the world. But the U.S. market share of spending by international travelers fell from 17 percent to 11 percent of the global market from 2000 to 2010. Some of this was because of security requirements imposed after 2001. But we can do better.

As stewards of some of the most breathtaking wildlife and habitat in the world, we can help promote tourism—and we already do.

continued on pg 26

Chief's Corner

Taking Land Ethic to Sea

I hope you will read the story about Academy Award-winning director James Cameron's historic voyage to the bottom of the Mariana Trench in this issue of *Refuge Update*. It is a fascinating story of exploration and science.



Jim Kurth

I am becoming more and more convinced that the marine national monuments we manage protect some of the most incredible and important wildlife and wild places on the planet. They also

present us with a great challenge to expand our view of conservation to include huge areas of ocean.

How do we undertake inventory and monitoring work and conduct scientific investigations on a scale so vast—beyond any we have done before? It will require partnerships on a similarly large scale.

The question reminds me of the early 1980s, when we were excited about protecting the huge new refuges created by passage of the Alaska National Interest Lands Conservation Act (ANILCA) and at the same time faced the challenge of trying to figure out how to staff and manage such expansive acreage. Look at what we have done in Alaska over the past three decades.

Our refuge stewardship is some of the best in the world. We have done some of the best science in the U.S. Fish and Wildlife Service on Alaska wildlife

continued on pg 26

Refuge Update

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Inside

Weird Winter For Whooping Cranes

For partners working to bring endangered whooping cranes back from near-extinction, 2011-2012 was a winter when the weather—and the big birds themselves—called the tune.
Page 4

Climate Change

An educational exercise in Washington state and a strategy statement from Washington, DC.
Pages 6-7

FOCUS: Recreation on Refuges

The pleasures and responsibilities of hunting, fishing, birding, geocaching and photography at national wildlife refuges. Pages 10-20

Refuges Through the Eyes Of a Wilderness Fellow

"Wilderness in the Northland is a place where the conditions are so rugged that one must actually become a little bit wild in order to embrace them," writes Rachael Carnes, a 2011 National Wildlife Refuge System Wilderness Fellow. Page 27



For a study of panthers and their prey, about 70 remote cameras are surveying Florida Panther National Wildlife Refuge night and day. From left, a panther uses a log as a scratching post; an uncollared female triggers a camera; a large young male, as evidenced by its fading spots, walks with its mother. (David Shindle and Larry Richardson/USFWS)

Monitoring Florida Panthers 24/7

By John Pancake

The sun beat down hard and hot on the track through the piney Florida flatwoods, and the cat didn't sense the biologist's truck creeping along.

"It was a hot day, and her tongue was kind of hanging out. I was 15 feet behind her on a dirt road, and *finally* she heard my vehicle. And she bolted off in woods. And I got out and I walked down the road along the edge. And she'd walked in about 20 feet. And she looked at me. I got that feeling that she recognized what I was, and then she was just *off*. Within half a second, she disappeared."

Larry Richardson, a supervisory biologist, has worked at Florida Panther National Wildlife Refuge for 22 years to make sure panthers don't disappear forever.

It's not easy. Panthers are rare, shy and more active at night. In two decades of prowling their habitat, Richardson has encountered them in the wild just 11 times. Understanding how to help the endangered panther requires patience and ingenuity.

The latest tool is a two-year study using a network of about 70 remote trail cameras that are triggered by heat or movement. When an animal passes during the day, the cameras take a picture and a 30-second video. At night, they take a flash image. (The Naples Zoo provided

\$15,000 for equipment; U.S. Geological Survey scientists at Maryland's Patuxent Research Refuge are analyzing data.)

The study's goal is to learn more about panthers and their prey. Panthers will take rabbits, wild hogs, feral dogs, opossums, even a bear cub. On the refuge, their main targets are white-tailed deer, so helping panthers means helping deer. It's tough to count deer in the refuge's vast slash pine stands, cypress domes, mixed swamps and prairies. Aerial surveys don't work well in woods. The cameras should provide some answers.

Establishing a Baseline


Southwest Florida Refuge Complex project leader Kevin Godsea says the refuge already has data showing that yearly prescribed burns of a quarter of the refuge create habitat that draws deer and the big cats within three days. Now biologists hope the camera study will help establish a baseline census so trends are easier to detect.

Florida panthers are one of America's rarest large mammals, but they have made a remarkable comeback. In the mid-1990s, only 25 to 35 breeding cats remained. The animals were so inbred that survival seemed unlikely. Introducing eight female Texas cougars changed that. They bred with Florida panthers and produced 30 kittens. Today, Florida has 100 to 160 panthers; about a dozen use the refuge as part of their home range.

The panther will be a managed species for years to come. Now, lack of space, not a restricted gene pool, is the problem. The 26,400-acre refuge, 20 miles east of Naples, is a key corridor among state and federal lands that provides a haven for the cats from encroaching development. Threats remain. Cats are too often killed on highways. Sometimes male cats, which can have home range of 200 square miles, kill rivals in territorial disputes. That normal phenomenon intensifies when habitat is scarce.

Godsea says establishing panthers in areas farther upstate is the next step. Panther researchers understand that building public support for such conservation efforts is vital.

"I got into this business because I love animals," says Richardson, "but I'm in the people-management business. And if I want to save panthers, it's convincing folks that it needs to be done. I'm not going to do it on my own. It has to come from everybody ... that is the brutal reality."

Research like the camera study may help convince people that panthers need more space. 

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

“It Was Just a Weird Winter” for Whooping Cranes

By Heather Dewar

Sometimes nature does what we expect. Other times, events remind us that “wildlife management” can be an oxymoron.

For partners and national wildlife refuges working to bring endangered whooping cranes back from near-extinction, 2011-2012 was a winter when the weather—and the big birds themselves—called the tune.

Typically most of North America’s migratory whooping cranes winter in one of three places: Aransas National Wildlife Refuge in Texas, the customary winter home of the wild, naturally migrating western flock; or Chassahowitzka and St. Marks Refuges in Florida, chosen by the Whooping Crane Eastern Partnership as wintering sites for the mostly captive-born eastern flock.

But in January, four times more eastern whooping cranes were in Indiana (40) than in Florida (10). Wheeler Refuge was hosting unexpected guests: nine juvenile whooping cranes that were migrating behind an ultralight when they stopped near the Alabama refuge and would fly no farther.

And while most of the western flock made it to Aransas Refuge, groups of whooping cranes were confirmed in Oklahoma; in Kansas, where a Dec. 26, 2011, sighting at Quivira Refuge was the latest on record; and in Nebraska, where cranes were seen on the Platte River in January.

No one knows why the cranes splayed out across the continent’s midsection. But experts think they took advantage of a warm winter, staying wherever they found ice-free roosts and food.

“It was just a weird winter,” said St. Marks Refuge manager Terry Peacock, a member of the Whooping Crane Eastern Partnership rearing and recovery team. St. Marks Refuge had been the first Florida stop for the Operation Migration ultralight and its Wisconsin-reared cranes. But when this year’s flock wouldn’t budge from Alabama, the team changed the destination to Wheeler Refuge.



These juvenile whooping cranes, part of the captive-hatched eastern flock, spent the winter at Wheeler National Wildlife Refuge in northern Alabama rather than at Florida refuges. (William R. Gates/USFWS)

Whooping cranes are most loyal to their nest sites, Peacock said, and the young birds must make that return journey on their own in spring. By halting the whooping cranes at Wheeler Refuge, the team hoped to help them make it safely back to Wisconsin, she said. “It was disappointing for us, but we knew it was the best thing for the birds.”

Over the past decade, Wheeler Refuge has become a crane magnet, with thousands of sandhill cranes and several adult whooping cranes overwintering there, said refuge manager Dwight Cooley.

“The cranes have picked this place out on their own, so it’s obviously got what they need,” said Operation Migration wildlife technician/pilot Brooke Pennypacker. The refuge closed a popular trail to create a nighttime roost, but by day visitors could see the whooping cranes from an observation tower.

“This has worked out very well,” Pennypacker said in April, just days before the young birds headed north.

The worst drought in Texas history caused some western whooping cranes to stay north or spread out along the Gulf Coast, said Aransas Refuge manager Dan Alonso.

In January, refuge marshes were as salty as seawater, driving blue crabs, a staple of the cranes’ diet, into deep water where they were unreachable. Refuge staff burned 13,210 acres to create new feeding grounds and re-conditioned 10 abandoned windmills and stock ponds to provide drinking water.

Aransas Refuge surveys peaked at 245 birds, compared to 281 in 2010-11, but Alonso said the cranes’ dispersal and a new survey protocol means the numbers aren’t comparable.

“Although this was a harsh year, these are the conditions under which these birds evolved,” he said.

The eastern flock’s tally of 107 birds was close to last year’s, but biologists couldn’t locate 15 of them in early April.

Still, “it’s good to see that the birds can respond to changing conditions, and that we have good conditions for them throughout the Southeast,” said Bill Brooks, a U.S. Fish and Wildlife Service wildlife biologist working on whooping crane recovery. “They’re showing us that the habitat can support a larger population.”

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

Refuge System Facilitates Filmmaker's Dive Expedition

Academy Award-winning director and National Geographic Explorer-in-Residence James Cameron had the cooperation of the National Wildlife Refuge System this spring when he made a historic dive to the ocean floor near Marianas Trench Marine National Monument and oversaw an unmanned dive within the monument.

The marine national monument, which includes Mariana Trench and Mariana Arc of Fire Refuges, is managed by the U.S. Fish and Wildlife Service in coordination with the National Oceanic and Atmospheric Administration (NOAA).

The dive expedition, known as *DEEPSEA CHALLENGE*, took place in a custom-built, 24-foot-long submersible that Cameron co-designed. Although best known for directing films such as *Titanic* and *Avatar*, Cameron is also an avid explorer.

The Service issued two refuge special use permits authorizing the James Cameron expedition to work in Marianas Trench Marine National Monument.

Cameron's team worked with the Service in planning dives that complied with monument and refuge conservation mandates. Expedition members assisted the Service during the manager's review of the applications for scientific exploration and filming by providing scientific publications about human effects on the deep sea and advising on practices to minimize potential effects of future exploration of the monument. NOAA experts also commented on the proposals.

On March 25, Cameron completed a nearly seven-mile dive in the submersible to Challenger Deep, the deepest place known on Earth. On April 4, Cameron's

team sent an unmanned lander to explore the second-deepest place, Sirena Deep, within the monument's Trench Unit, which is part of the Refuge System. (Challenger Deep is not within the monument.)

Sirena Deep is remarkable for its steep walls, distinctive geologic features and life forms not documented elsewhere at such depth, more than 30,000 feet. The deepest areas of the Mariana Trench are likened to an inverted chain of islands, where each "peak" points downward, but like islands, each feature can be geologically and biologically different.

Understanding what exists in the trench and how life survives in such extreme environments is essential to its ongoing conservation management as a marine national monument.

The Service issued two refuge special use permits authorizing the Cameron expedition to work within the monument. The permits allowed the collection of scientific specimens and samples and the making of video-audio recordings, but they also stipulated measures to minimize possible impacts. For example, the submersible had to be rinsed with freshwater between dives to reduce the slim possibility of introducing a microorganism from one dive site to another.



Susan White, the superintendent of Marianas Trench Marine National Monument, with James Cameron in front of the filmmaker's submersible, DEEPSEA CHALLENGER, in mid-March before his historic manned dive. (USFWS)

"The Marianas Trench Marine National Monument protects one of the most unique ocean environments in the world. It is a place we know precious little about," said Refuge System Chief Jim Kurth. "But we do know one fact, irrefutably: These natural resources are unique and irreplaceable. I can't think of a more important message that Mr. Cameron's exploration will send to his legions of young fans. After all, it's their legacy that he is giving us a lens into. We are committed to be good stewards of this incredible place." 🐙

At McNary Refuge, Making It Fun to Conserve

By Amanda Fortin

It was a cold, gray Saturday last winter at McNary National Wildlife Refuge in eastern Washington state as teams of visitors, volunteers and staff raced over frozen ground pretending to save animals on a melting polar icecap.

Participants in the simulated exercise about reducing carbon emissions were given a card with an activity printed on it. They had to decide if the activity would increase or decrease greenhouse gases. Each team member would then run down and pin it to the corresponding board. As the boards filled up with things like “pack my own lunch bag with reusable containers” (decrease) and “using disposable water bottles” (increase), small toy animals—including a gorilla, a frog and a tiger—looked on from a nearby chunk of ice.

Part of a Second Saturday program, this was the first climate change-oriented event ever at the 15,000-acre refuge about 220 miles southeast of Seattle.

“People in this part of the state don’t seem to be as aware of climate change as the rest of the Northwest,” said Jaynee Levy, a visitor services specialist at Mid-Columbia National Wildlife Refuge Complex, which includes McNary Refuge, “and it is a problem we all must learn about, so we can be proactive in combating it.”

Refuge staff members anticipate that climate change soon will challenge their conservation mission. Heidi Newsome, wildlife biologist at the complex, says that increased carbon dioxide levels likely will contribute to more and faster-growing cheat grass, the main invasive annual grass on the refuge and primary fuel for wild fires in the shrub-steppe landscape.

Debbie Jennings, a volunteer who has spearheaded the Second Saturday program at McNary Refuge for a decade, started off the day by asking participants what they wanted to know about climate change. Specific answers varied, but almost everyone wanted to know if people can do anything about it.

Steve Ghan, a climate scientist from the Department of Energy’s Pacific Northwest National Laboratory, replied in a way that all children and adults could understand. When he wasn’t showing entertaining videos such as “The Power of Poop,” in which cartoon animals on Mount Kilimanjaro demonstrate how methane is converted into energy, he was giving tips about reducing emissions.

“Global warming is something that affects everyone,” said Ghan. “It’s a multi-generational problem, so we need to get the kids started on it and they can adapt their lifestyle to reduce CO₂ emissions.”

Jessica Burden, a mother of two, agreed: “This is a message that is already part of our daily lives. As a parent, I try to make it fun to conserve.”

Climate change is “a multi-generational problem, so we need to get the kids started on it and they can adapt their lifestyle to reduce CO₂ emissions.”

Changing old ways of thinking is only one challenge refuge staff members face. “Unfortunately, we don’t have the resources to continue to expand the Second Saturday program,” Levy said. “We will only have six Second Saturdays” in 2012.



During an educational event about climate change at McNary National Wildlife Refuge in Washington, Eva Fischer, 4, pins a tag to a board of daily activities that will increase greenhouse gases. (Amanda Fortin/USFWS)

Despite cutbacks to the Second Saturday program, Levy and Jennings hope to add future climate change events to the refuge’s education center calendar. “I am glad we got to do this event today,” Jennings said. “We got some important messages across.”

Tristan Carter, 7, and his friend Eva Fischer, 4, certainly seemed to get the message.

When Levy asked what they will remember most about the day, Tristan shouted, “C means carbon, and everything is carbon! When carbon gets trapped, it heats everything up and makes it harder for life.”

Eva simply smiled and held up her prize for participating in the CO₂ activity: a new reusable lunch bag. 🦋

Amanda Fortin is a Student Career Experience Program (SCEP) intern in the Pacific Region office in Portland.

A Climate Adaptation Blueprint for the Refuge System

By John Schmerfeld

This winter the Obama administration offered the draft *National Fish, Wildlife and Plants Climate Adaptation Strategy*, produced by federal, state and tribal representatives and coordinated with other climate change adaptation efforts at national, state and tribal levels. It provides a blueprint for effective steps that can be undertaken by the National Wildlife Refuge System, and other managers, over the next five to 10 years as part of the nation's overall response to a changing climate.

Implementing consistent adaptation strategies throughout the Refuge System will be challenging, primarily because refuges are not experiencing climate change uniformly across the continent.

Some refuges, such as those in Alaska, already have seen massive biotic shifts. Warmer temperatures have boosted populations of the spruce bark beetle on the Kenai Peninsula. In turn, these pests have devastated four million acres of forest over a 15-year period. Shifts in fire regimes and ecological function are of primary concern in these forests. Alaska also is experiencing unprecedented loss of glaciers, sea ice and permafrost. Each problem brings new adaptive management challenges.

Coastal refuges are on the front line of climate change adaptation implementation.

Acute sea-level rise has required immediate adaptive management using imperfect data *today*. Perhaps not surprising then, coastal refuges also face complex socioeconomic and political challenges that management decisions present to nearby coastal communities. Conflict tends to stem from differences in understanding of the science, the magnitude of habitat and infrastructure destruction, and the immediate need for progressive resource management decisions.

These management challenges are unlikely to diminish anytime soon. Over

the past century, the Refuge System has invested millions of dollars in more than 180 coastal refuges. Challenges that require balancing conservation concerns with socioeconomic concerns will continue to arise at refuges in distinct and increasingly complex ways. It is then critically important to anticipate opportunities to engage partners, communities and stakeholders within the broad context of holistic coastal planning.

Perhaps the greatest challenges faced by the Refuge System in considering climate change adaptation will occur at inland refuges where impacts may be subtle or slower to resolve.

Managing for phenological and abiotic changes at landscape and hemispheric scales must become a hallmark of Refuge System planning. Phenological changes include disruption of predator-prey cycles, the timing of plant flowering, fruiting and budding, the shifted timing and patterns of migratory species that rely upon these habitat services, and increased incidence of invasive species, fire and wildlife diseases. Abiotic changes such as shifts in hydrological, precipitation and temperature regimes must be considered.


Thoughtful analysis of the interplay among these biotic and abiotic variables in our vulnerability assessments will facilitate more effective long-term comprehensive conservation planning. The Refuge System has proved its ability to plan competently for the five- to 15-year conservation span. However,



In addition to addressing localized indications of climate change—such as sea-level-rise-related saltwater intrusion into pocosin habitat at Alligator River National Wildlife Refuge in coastal North Carolina—the author says “managing for phenological and abiotic changes at landscape and hemispheric scales must become a hallmark of Refuge System planning.” (Steve Hillebrand)

planning into a 40- to 80-year time frame is a different matter. We must improve our effectiveness at long-range planning now.

Climate adaptation planning cross-cuts everything the Refuge System does. Understanding this, *Conserving the Future* implementation teams are thoughtfully embedding climate change considerations into all work plans. It is fortuitous that the strategy and *Conserving the Future* have been published in tandem. These two vision documents provide the basis for a critically important adaptation blueprint for the Refuge System.

In the words of late U.S. Fish and Wildlife Service Director Sam Hamilton, “we must act now, as if the future of fish and wildlife and people hangs in the balance—for indeed all indications are that it does.” 

John Schmerfeld is the Refuge System's national climate coordinator. Information about the National Fish, Wildlife and Plants Climate Adaptation Strategy is available at <http://www.wildlifeadaptationstrategy.gov>.

Using Ice to Help Conserve Culture

By Ken Sturm

Missisquoi National Wildlife Refuge in Vermont had a complicated problem this past winter, and a good man for the job came up with an ingenious solution to it—an ice bridge.

The primary problem was that a Native American cultural site containing artifacts from the Abenaki tribe and others needed protection from Missisquoi River erosion. Erosion was washing archaeological history downstream. In 2010 alone, 20 feet of bank eroded along the site. Something had to be done.

Natural Resources Conservation Service engineers—with approval from U.S. Fish and Wildlife Service engineers, the Abenaki tribe and the Vermont Division for Historic Preservation—developed a protective design using rip-rap rock.

The refuge was able to acquire rock to begin the project last fall, but it was on the wrong side of the river. A refuge barge normally used to move materials on the river was inoperable because August 2011 flooding had marooned it in silt. Presented with this secondary problem, I, as refuge manager, figured that we'd have to wait for a permit to free the barge before moving any rock.

However, Joe Bertrand—a native Vermonter, an Abenaki tribesman and an equipment operator at the refuge for the past 10 years—had a different idea: Under proper conditions, we could move the rock quicker and cheaper to the other side of the river via an ice bridge.

Having no ice bridge experience, I naturally was reluctant to approve driving dump trucks full of tons of rock over a frozen river. I soon learned, though, that the science of ice loading is advanced. Leonard Zabilansky of the U.S. Army Corps of Engineers Cold Regions Research Engineering Laboratory in New Hampshire said air/ice temperature, ice thickness and ice sheet buoyancy over the river water were the key safety factors.



As refuge biologist Judy Sefchick-Edwards closely monitors conditions, a dump truck carries tons of rip-rap on an ice bridge that equipment operator Joe Bertrand built at Missisquoi National Wildlife Refuge in Vermont to transport rock across the Missisquoi River for a project to conserve a Native American cultural site. (Ken Sturm/USFWS)

Timing was everything. The ice needed to be built up quickly to the necessary thickness. So, from early January to mid-February, Bertrand spent a dozen cold afternoons/evenings diligently pumping river water onto the waterway's frozen surface at a selected place to increase ice thickness thin layer by thin layer. It had to be 20 degrees or colder for the new layer to freeze properly, he learned. One evening, it was five-below zero.

Regional Support

Eventually, Bertrand built up an average of 16 inches of ice across the section, enough to allow us to move 15 tons across at a time if all other conditions were met. Fifteen tons is a lot, but we had 1,500 tons to move. One equipment operator could not do it, so we called for regional support.

Bill Starke, the Service Northeast Region heavy equipment coordinator, secured funds to rent two dump trucks and an excavator to load rock. He also arranged for equipment operators Stephen Zadroga of Eastern Massachusetts Refuge Complex and Kirk Cote of Aroostook Refuge in Maine to help Bertrand.

On February 13 and 14, as refuge biologist Judy Sefchick-Edwards and I

monitored ice temperature, buoyancy and load conditions, Bertrand, Zadroga and Cote hauled rock across our ice bridge. “We didn’t mess around,” said Bertrand. “We worked until 11:30 that first night,” after starting at 8 a.m. They moved about 900 tons (60 truckloads) in two days before the weather warmed to an unsafe level.

“They did an awesome job,” Bertrand said of Zadroga, Cote and the regional support. “It never would have happened without them.”

The project won’t be completed for a few more years because there are at least 600 tons more rock to move and funding is not expected until 2013.

Nonetheless, it satisfies Bertrand to play a role in conserving a cultural site that holds documented artifacts—pottery sherds, whetstones, chert tools and arrowheads—from a settlement his forebears inhabited some 1,500 years ago.

“I’ve hunted it and fished the Missisquoi my whole life,” he said. “Some of my earliest memories are on the refuge.”



Ken Sturm is manager at Missisquoi National Wildlife Refuge.

Refuges Earn High Marks With Visitors

An overwhelming percentage of visitors to national wildlife refuges in 2010 and 2011 were favorably impressed with the recreational opportunities, education and services on these public lands, according to a national survey released this spring. An average 90 percent of respondents gave consistently high marks to all facets of their refuge experience.

The peer-reviewed survey, commissioned by the U.S. Fish and Wildlife Service and conducted by researchers with the U.S. Geological Survey, evaluated responses from more than 10,000 adult visitors surveyed at 53 of the country's 556 refuges between July 2010 and August 2011.

More than 45 million people visited national wildlife refuges in 2011.

“When you visit a refuge and see for yourself the amazing web of life this natural landscape protects, it's hard not to come away impressed,” said Service Director Dan Ashe. “You begin to understand what a treasure we Americans have at our doorstep. For most people, that appreciation deepens when they learn what staff are doing to conserve their wildlife heritage. We're thrilled that visitors also recognize and appreciate the efforts of Refuge System staff to make their visits rich and enjoyable.”

Of survey participants:

- 91 percent reported satisfaction with recreational activities and opportunities.
- 89 percent reported satisfaction with information and education about the refuge.
- 91 percent reported satisfaction with services provided by refuge employees or volunteers.
- 91 percent reported satisfaction with the refuge's job of conserving fish, wildlife and their habitats.

Some survey participants also volunteered enthusiastic comments,



In a recent national survey, 91 percent of respondents reported satisfaction with recreational activities and opportunities on refuges. Here, a group enjoys Charles M. Russell National Wildlife Refuge in Montana. (Brett Billings/USFWS)

such as this one: “Refuges make me aware that I am a part of the American experience and not just an observer. Nowhere else do I feel such a deep sense of connection with the land, the plants and the wildlife. Visiting a refuge is truly a spiritual experience.”

“Refuges make me aware that I am a part of the American experience and not just an observer.”


Among the most popular refuge activities visitors reported were wildlife observation, bird watching, photography, hiking and auto-tour-route driving. Most visitors also reported viewing refuge exhibits, asking information of staff or volunteers and visiting a refuge gift shop or bookstore.

Visitors reported varying support for the use of alternative transportation, such as boats, buses or trams, to get from point to point on a refuge. Some refuges are exploring these methods to reduce their

carbon footprint. Most respondents (65 percent) said they would be likely to use a boat on refuge waterways or an offsite parking lot that provides refuge trail access. Just over half (51 percent) said they would be likely to use a bus or tram that runs during a special event. Most said they were unlikely to use a bus or tram or a bike share program.

Many (59 percent) respondents described themselves as repeat refuge visitors. More than a third of visitors (42 percent) said they lived within 50 miles of a refuge they visited.

The survey was conducted under the Government Performance and Results Act of 1993, which mandates federal agencies to undertake periodic reviews of program performance.

Findings from a second phase of the survey, covering another 20 refuges, are expected in 2013. The Service will use survey results to help guide refuge transportation, facilities and services planning. USGS wildlife biologist Natalie Sexton was the lead researcher on the report. 

Focus . . . Recreation on Refuges —

Conserving the Future

Last year, hundreds of U.S. Fish and Wildlife Service employees and partners forged the *Conserving the Future: Wildlife Refuges and the Next Generation* vision for the National Wildlife Refuge System. This year, we collectively are implementing that vision.


In 2012, *Refuge Update* is presenting a series of Focus sections devoted to the implementation. The sections emphasize and parallel the realms of various *Conserving the Future* implementation teams.

This Focus section, titled Recreation on Refuges, centers on the work of the Hunting, Fishing and Outdoor Recreation team as it pertains to recommendations 17 and 18 of the vision.

Recommendation 17: The Service will work closely with state fish and wildlife agencies to conduct a review of its current hunting and fishing opportunities, especially opportunities currently offered for youth and people with disabilities. Based on this review, the Service and states will work cooperatively to prepare a strategy for increasing quality hunting and fishing opportunities on national wildlife refuges.

Recommendation 18: Support and enhance appropriate recreation opportunities on national wildlife refuges by partnering with state fish and wildlife agencies, other governmental bodies, conservation organizations and businesses; and by updating relevant policies and infrastructure.



The Focus section includes articles about the pleasures and responsibilities of hunting, fishing, birding, geocaching and photography on refuges. 

Vision Work Plans Chart Path Beyond Business as Usual — *continued from page 1*

took the implementation helm. In her previous job, Harris interpreted national survey data about fishing, hunting and wildlife-associated recreation. She brings to the implementation coordinator position a history of working closely with a host of partners, including the Association of Fish and Wildlife Agencies and the State Organization for Boating Access. She holds an undergraduate degree in agribusiness management and rural development from West Virginia University and a master's degree in agricultural and applied economics from Virginia Tech.

Among the work plans' highlights are:

- A proposed 2013 meeting of managers of urban wildlife refuges to give Service staff a chance to learn about best practices in managing such places. Key partners and Friends would be invited.
- Proposed geo-spatial analysis and mapping of the Refuge System to see

where wildlife refuges are located in relation to the nation's population centers and where population growth is expected in the next 20 years.

- A strategic communications plan, designed with the help of a marketing firm, to increase Americans' understanding of the Refuge System as essential to the nation's quality of life and health.
- Development of standards of excellence for urban refuges, and establishment of a data-driven, transparent process to identify 10 urban areas where the Refuge System should have a presence.

The Community Partnerships implementation team surveyed refuge managers about best practices they use in working with volunteers, Friends and partners. The team recommends developing a handbook, or how-to guide, about those practices.

That team also recommends a revamped Web site to recruit volunteers; a social media platform where volunteers can connect with refuges and Friends; and expanded mentoring and training to develop and nurture vibrant Friends groups and community partnerships for each staffed refuge.

"In today's world of multimedia, around-the-clock communications—with people checking their Facebook as they text on their smartphones and search for new apps on their tablets—strategic conservation communications must go the extra step into marketing," the Communications implementation team said.

Striving to go beyond the way government usually works is evident in all of the work plans.

If you have questions or comments about Conserving the Future, you can send them to ConservingtheFuture@fws.gov.



“The First 10-State, One-River, 100-Event Celebration Ever”

By Bill O'Brian

Ask Cindy Samples why she loves to kayak and canoe on the Mississippi River, and you instantly get a sense of why she and others are excited about the America's Great Outdoors Summer of Paddling 2012.

“The Mississippi is legendary,” Samples tells you. “It's Tom Sawyer and Huck Finn. It's the heart of America, and everyone knows this river by name. It's a working river. It's a river you can step across at one end, and one that canoes and kayaks can't navigate down in the gulf.”

Furthermore, the long-time park ranger at Upper Mississippi National Wildlife and Fish Refuge says: “The river changes. It's different every time I go out. If I paddle a trail in spring, I might not be able to paddle the same route in fall. High water, low water—or beavers decide they like the trail, too, and build a dam across it.”

Summer of Paddling 2012 is a series of events on the Mississippi for new and experienced paddlers. More than 100 events are to be hosted by federal, state and local entities in the 10 states along the river—Minnesota, Wisconsin, Iowa, Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi and Louisiana. There are almost three dozen National Wildlife Refuge System units on or near the 2,350 miles of river from Lake Itasca in Minnesota to the Gulf of Mexico beyond New Orleans. Most are planning to host events.

Summer of Paddling's primary goal, Samples says, is to connect people with America's Great Outdoors, the Obama administration initiative designed to focus the public on conservation goals and recreation activities nationwide.

“Summer of Paddling 2012 didn't just come from my experiences as a young boy on Lake Tahoe,” Upper Mississippi Refuge project leader Kevin Foerster blogged on the event's Web site,



Summer of Paddling 2012 is a series of more than 100 events along the Mississippi River for new and experienced paddlers. Here, kayakers navigate the backwater Nelson Dike Canoe Trail at Upper Mississippi River National Wildlife and Fish Refuge in Wisconsin. (Ed Lagace/USFWS)

SOP2012.org. “It all started one day during a conversation with Cindy Samples. We reminisced about the importance of paddling to our lives and wanted to make paddling accessible to others.”

There never has been anything quite like it on the Mississippi.

“This is the first 10-state, one-river, 100-event celebration ever held,” says Samples. “Many of the events are annual events. They just have never been marketed together.”

More than a dozen-and-a-half partners and sponsors are affiliated with Summer of Paddling, including state departments of natural resources, private companies, Friends groups, the National Park Service, the U.S. Army Corps of Engineers, non-governmental organizations and the Mississippi River Connections Collaborative.

Summer of Paddling events will include water trail grand openings; celebratory large group paddles, such as Floatzilla and the Great River Rumble; night paddles; guided paddles with authors, songwriters and federal conservation specialists; and more.

“We are using Facebook to promote SOP2012, so we are gaining friends every day,” says Samples. “We have businesses, a guy who is going to paddle the entire river and many, many canoeists/kayakers interested in participating.”

SOP2012.org gives individuals a chance to set goals for themselves via a Pledge to Paddle page. Among its entries are: “I pledge to paddle in each pool of the Upper Mississippi River National Wildlife and Fish Refuge” ... “After I finish the Paddle with a Park Ranger event in Winona, MN, I'm going to pick up 5 pounds of trash from the river” ... “I pledge to take my niece with me to a Summer of Paddling 2012 event. She loves watching wildlife!” ... “I pledge to paddle with my 4 & 2 year old sons on the Mississippi & Rock Rivers. Fostering a love of the outdoors and environmental stewardship can never start too early.”

The most rewarding aspect of organizing Summer of Paddling, says Samples, has been “finding an activity—paddling—that all partners can embrace and participate in whether large or small, main channel or backwater, or bayou events. This celebration fits everyone.”

Focus . . . Recreation on Refuges —

The Joy of Duck Hunting

By Sarah Fleming

I'm a duck hunter. I have been since I was a girl growing up in Canada. I can't think of any other place I'd rather be on a crisp November morning than watching the waterfowl flight over the marshes at Montezuma National Wildlife Refuge with my wet dog at my side.

The area around Montezuma Refuge in central New York state annually supports more than 500,000 mallards, 100,000 Canada geese, 25,000 American black ducks. It regularly hosts more than 1,000 individuals of more than 25 species.

So, what is it that enables the Montezuma Refuge area to attract so many waterfowl, and why do I value hunting so much?

Let's take those questions one at a time.

Montezuma Refuge is at a crossroads along the Atlantic Flyway for waterfowl and other migratory birds from as far northwest as Alaska and as far northeast as Newfoundland, migrating through wetland-rich Upstate New York.

The region supports a diversity of habitats, and thus an abundance of wildlife species. What I love is that you never know what you might see on a given day. That is why the Montezuma Refuge area is so popular for wildlife viewing. The refuge staff works tirelessly to ensure that the area is managed to maximize wildlife benefits. You are assured to see an abundance of birds, whether they are flying overhead or landing in your decoys.

In addition, cooperation among the U.S. Fish and Wildlife Service, the New York State Department of Environmental Conservation and private landowners ensures the mosaic of habitats. The corridor of well-managed wetland habitat from the Cayuga Lake (south of Montezuma Refuge) through the refuge north to Lake Ontario makes central New York a waterfowler haven.

As to why I enjoy hunting: I was fortunate to grow up in a home in rural North Bay, Ontario, where outdoor adventures were encouraged, even in the depth of winter, when temperatures reached minus-40 degrees Fahrenheit.

One of my earliest memories of waterfowl hunting is hiking through the neighbor's wetland, where only days before my dad had dragged a picnic table so I could stay high and dry during the hunt. I remember Dad asking whether I really wanted to wear my bright purple coat to go hunting. In hindsight, that probably was not the best choice for sporting apparel (birds flared, and we never took a single shot), but I got to use Dad's duck call for the first time.

I remember Dad asking whether I really wanted to wear my bright purple coat to go hunting. In hindsight, that probably was not the best choice for sporting apparel.

It was more about spending time in the marsh than about going home with a limit of ducks.

Today my quality time in the marsh is spent with my husband and my six-year-old lab, Ruddy (named after my favorite duck). Our annual hunting trips help to



In New York state, an estimated 3 percent of individuals authorized to hunt migratory game birds are women. The author—with her dog, Ruddy, at Montezuma National Wildlife Refuge—is among them. (Michael Schummer)

supplement our food resources, and they are very much a part of who we are.

I think it is because of my supportive family, and positive experiences playing in and around wetlands, that I choose my career path. My work with Ducks Unlimited helps to conserve wetland habitat today, tomorrow and forever for the benefit of birds, wildlife and people.

Trust me, there is no better feeling than watching a marsh awake, “center-stage” in a duck blind, and experiencing the morning flight of mallards, black ducks and wood ducks. To know that what you just experienced was made possible by the wetland restoration efforts of yourself, the organization you work for, your conservation-minded partners and friends makes it all the more rewarding.



Sarah Fleming is a Ducks Unlimited regional biologist based in Jordan, NY.

Wheelchairs and Whitetails

By Ben Ikenson

Like many men from rural southern Illinois, Jim Dawe started hunting as a boy with his dad. For nearly five decades, he collected scores of trophies without accident—until 2005. Now 63, the retired U.S. Army first sergeant recalls the November morning he set out on his property, as he often did, hoisting his compound bow and climbing the steel ladder to the 12-foot platform to await his quarry. But this time Dawe began feeling uneasy, lightheaded. Preparing to descend, he slipped from the ladder's top rung and fell backwards to the ground, breaking his spine. Without cell phone or the ability to move, he was stranded for 14 hours until neighbors found him. He spent the next several months in a hospital.

"I didn't know if I was going to live, let alone hunt again," he says.

Dawe did survive, but not unscathed; he's paralyzed from the waist down. But he can still bag an 11-point deer, thanks to Crab Orchard National Wildlife Refuge, on the northern edge of the Ozark foothills west of Marion, IL, not far from Dawe's home. For the past 24 years, the refuge has hosted a whitetail deer hunt for the disabled the weekend before Thanksgiving.

"It's something we really look forward to," says Dawe, who has participated the past four years.

His hunting partner Ron Reed lost a few toes to diabetes, which makes walking difficult. "I always say, 'Between the two of us, we've got one good leg,'" quips Dawe. "But he's a hell of a friend. He carries my gear. He really works his butt off."

As do the volunteers who organize the program.

"If we need any help," Reed says, "we just call 'em up. They'll help track a deer, field dress it ... they'll even load it up for you at the end of the day."



Jim Dawe displays his harvest after a hunt at Crab Orchard National Wildlife Refuge. This November, the southern Illinois refuge will host its 25th annual whitetail deer hunt for the disabled. (Neil Vincent/USFWS)

Managed entirely by the refuge's volunteer program, the hunt would be impossible without the individuals who work so tirelessly. They maintain blinds and mow areas around them to facilitate access; they camouflage the blinds before the hunt; and they help any way they can during the hunt.

He's paralyzed from the waist down. But he can still bag an 11-point deer, thanks to Crab Orchard National Wildlife Refuge.

"Everyone's assigned their own blind, and they have to stay there, but the area is ideal—there's a lot more deer there than the rest of the refuge," says Robert Bush, a retired coal miner who has led volunteer efforts since the event began in 1988.

Bush conceived of the special hunt after the refuge manager asked for a favor. "He knew I liked to deer hunt and asked if I'd take a handicapped guy out with

me," he says. "So I did, but we couldn't find a good place close to the road. We didn't get any deer and were both a little disappointed."

Bush suggested the refuge could improve access for disabled hunters; the refuge manager put him in charge; the program was born. "And it's just been growing ever since," says Bush.

Crab Orchard Refuge has provided fertile ground to nurture its growth. Much of its terrain suits the program. Flat roadbeds that date from World War II—when Dawe's former employer, the U.S. Army, owned the refuge land and manufactured munitions on it—offer plenty of wheelchair-friendly acreage.

The refuge also encompasses much cropland, thus emphasizing the value of hunting as a management tool. "The hunt helps keep deer populations healthy while protecting farmland," says refuge park ranger Neil Vincent. "We benefit, and so do the hunters."

Bush says the success of this mutually beneficial arrangement wouldn't be

continued on pg 20

Focus . . . Recreation on Refuges —

Geocaching: Guidance for High-Tech Adventures

By Karen Leggett

Global Positioning System (GPS) technology offers exciting recreational opportunities to reach new and tech-savvy audiences—and the Refuge System has guidance about organizing and monitoring these high-tech activities.

In traditional geocaching, the most widely practiced GPS recreational activity, a geocacher places objects, coins or a logbook at a certain location, pinpointed with GPS coordinates that are posted on a Web site such as *geocaching.com*. Other geocachers are challenged to find the treasure and leave new items to be discovered.

Burying, placing or removing a physical cache on a national wildlife refuge is illegal, largely because sensitive natural or historic resources could be damaged. Refuge managers must follow established regulations to determine if a proposed geocaching activity is appropriate and compatible. GPS use is acceptable within refuge wilderness areas, for example, but competitive public events—such as a large geocaching event—are prohibited. Ideally, geocaching proposals should be considered as part of the comprehensive conservation planning (CCP) process.

Geocaching.com is very supportive of refuge limitations. Caches are off-limits if they are buried, deface property or are located in areas sensitive to extra traffic, such as archaeological and historic sites. If alerted that an unapproved physical cache has been left on a refuge, *geocaching.com* may disable the activity and alert users.

Many refuges are already designing carefully adapted geocaching programs, sometimes following the philosophy established by the Geological Society of America at *earthcache.com*: “Earth itself offers its own treasures to uncover and endless opportunities for exploration, discovery and learning.”



Youth Conservation Corps members play a geocaching game at Sacramento National Wildlife Refuge, CA. (USFWS)

Take Me to a Refuge

Upper Mississippi National Fish and Wildlife Refuge (IL, WI, MN, IA) and Sacramento National Wildlife Refuge, CA, were among the first to bring geocaching to refuges about four years ago by distributing stuffed birds and blue goose-shaped coins equipped with small metal tags that can be tracked at *geocaching.com*. New and veteran geocachers took the birds or coins to other refuges and left them in a specially designated box or canister near the refuge for the next geocacher to find.

One stuffed mallard named Mel has traveled more than 20,000 miles, including a stop in Istanbul, Turkey. An Oregon family took Remy, a stuffed red-winged blackbird, to five refuges. He was recognized online by a father-son team in Wisconsin and taken to Hanalei National Wildlife Refuge on the Hawaiian island of Kauai, where a honeymooning couple recently picked it up.

Several refuges, including Sacramento and Humboldt Bay Refuges, CA, Desert National Wildlife Refuge, NV, and Arthur R. Marshall Loxahatchee National

Wildlife Refuge, FL, have created scavenger hunts using hand-held GPS units that are lent to visitors. Geocachers follow clues to particular locations on the refuge where they learn something new, complete a task or answer questions.

Ridgefield Refuge, WA, and its Friends group use biological and archaeological GeoAdventures with middle school field students and Scout troops. GPS coordinates lead hikers to a hawthorne tree with woodpecker evidence, a giant oak tree, the swans in Boot Lake, a basalt quarry and the Cathlapotle Plankhouse, which was constructed to resemble the houses described by Lewis and Clark when they visited the area more than 200 years ago.

“The goal,” says a Pacific Region guide to geocaching, “is to reach across the demographic of traditional and untapped refuge visitors through the growing family-friendly recreational activity known as geocaching.” 🦋

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

Wildlife Experts Who Know How to Shoot (Photos)

By Alison Howard

It cannot be said that the waterfowl at Sacramento National Wildlife Refuge Complex in California are more photogenic than waterfowl anywhere else. It can be fairly said, however, that its waterfowl are among the most photographable.

That's because three refuge employees have combined their vocation (wildlife conservation) with their avocation (wildlife photography). Separately and together, they've spent more than two decades creating optimum venues and opportunities for photographers, from professionals to point-and-shooters.

The crown jewels of the program are four photo blinds, which serious photographers can reserve for an entire day. But it also includes several less time-intensive features that draw serious and casual photographers alike—auto-route viewing lanes, strategically located observation decks, loafing islands where birds linger. Photography tours into areas usually closed to the public are conducted regularly, too.

Outdoor recreation planner Denise Dachner says the effort began with former project leader Gary Kramer, now an outdoor writer and photographer, who set out to upgrade all the public recreation activities at the complex, including photography. It is being carried on by refuge managers Steve Emmons and Mike Peters, also avid photographers. “When you have staff with strong interests,” Dachner says, “programs are enhanced through their passions.”

Each blind, turnout and deck “is in the right aspect,” project leader Dan Frisk says, “because staff knows the birds’ flight patterns and how light behaves. The program is managed through the eyes of photography and wildlife experts.”

At Sacramento Refuge, the largest of the complex's five refuges at 10,819



A greater white-fronted goose descends upon Colusa National Wildlife Refuge, part of Sacramento Refuge Complex. Photography has been an avocation of refuge managers at the California complex for years. (Mike Peters/USFWS)

acres, viewing lanes have been carved out along the six-mile auto tour so photographers can pull off the road and shoot out the window, using the car as a blind. Loafing islands were created to encourage birds to rest. Two park-and-stretch areas and a multi-level viewing platform have been added.

The 4,567-acre Colusa Refuge has a shorter auto route and a single-level deck—which is nevertheless “one of the best viewing sites in our entire complex,” Frisk says. That was proved this winter when a rare falcated duck appeared in early December and stayed until early February, bringing 14,000 people to a refuge that usually counts winter visitors in the low thousands.

At Sacramento River Refuge's Llano Seco Unit, a short, meandering trail has two multi-level viewing platforms, offering valley-to-foothill vistas and an array of photo possibilities.

The photo blinds are used less often—one day a week or so to avoid disturbing the birds. Emmons, who came to Sacramento Refuge 15 years ago, upgraded the two original blinds there. Peters, who arrived three years later, secured private funding for a photo blind at Colusa, and Emmons then expanded on Peters' designs to replace the Sacramento blinds and build a new one at Delevan Refuge. Two of the blinds are wheelchair accessible, and all four are so popular that a lottery system was established. Each year, Emmons and Peters put in their bids for reservations with those of about 40 visitors.

But Emmons says it doesn't always take a deck or a blind to make a big difference: “We're constantly looking. We'll say, ‘What if we put a log here or a snag there?’ Sometimes we'll just weed-eat a little opening to give a nice clean shot.”

continued on pg 20

Focus . . . Recreation on Refuges —

The Allure of Fishing in the Kenai Wilderness

By Janet Schmidt

Kenai National Wildlife Refuge is known as “Alaska in miniature” because of its varied habitats. A river runs through it, too—the Kenai River, where the sockeye and king salmon fishing is legendary. Angling for salmon in that river is the experience that most visitors seek. But for an adventurous few, the refuge offers an exceptional opportunity: fishing for Arctic char in wilderness.

Of the 1.92 million acres within the south-central Alaska refuge, 1.32 million are Congressionally designated wilderness.

The Kenai Wilderness is punctuated with hundreds of small lakes. More than 350 miles of established trails simplify travel into much of this backcountry, including the Swanson River and Swan Lake national recreation canoe trails. Planning and executing a trip into wilderness, whether for one day or several days, takes work. However, venturesome visitors are aptly rewarded with spectacular scenery, solitude and fishing for a combination of species rarely found in the United States.

Jack Dean says there is nothing like fishing still, clear water on a densely forested lake in wilderness and having Arctic char take your lure.

“They’re hard fighters with lots of endurance—and excellent eating, better than rainbow [trout] or coho [salmon],” he says. “In three hours, you can portage



Jack Dean, a retired Service fisheries biologist, says there is nothing like fishing still, clear water on a densely forested lake in wilderness at Kenai National Wildlife Refuge in Alaska and having Arctic char take your lure. (USFWS)

your canoe to the lake of your choice and have enough fishing time to be successful. The only people you usually see are those you take with you.”

Dean, a retired U.S. Fish and Wildlife Service fisheries biologist, says that most of the char are in the two-pound range, but he has caught his share of three-pounders. According to Dean, who now volunteers his services to study the species, Arctic char are closely related to salmon and lake trout. They are so similar that anglers often mistake char for more common Dolly Varden trout.

Arctic char are found in the lakes throughout the Swanson River and Swan Lake canoe trails and are most easily caught in spring, when the air is warmer than the water. During the fall, as air and water temperatures decrease, the char again become more available, having spent the summer in the deeper, colder water. September also finds a significant spawning run of coho or silver salmon occurring in the creeks connecting the canoe trails. “But,” says Dean, “in the spring you are fishing before the mosquitoes come out.”

While visitors enjoying the canoe trails must take care to preserve wilderness value and character, recreational activities are—contrary to widespread belief—permitted in wilderness. In fact, the Wilderness Act of 1964 explicitly states that wilderness “has outstanding opportunities for solitude or a primitive and unconfined type of recreation” and “shall be devoted

to the public purposes of recreational, scenic, scientific, educational, conservation and historical use.”

To help preserve wilderness quality for all, visitors must follow some simple regulations when fishing within the canoe trails of the Kenai Wilderness. There are three entrances to the canoe trails, all adjacent to the road system. Groups can be no larger than 15 people, and everyone is required to register at one of the three entrances before launching. It is advisable to leave a trip plan with family or friends before beginning your journey because there is no cell phone reception. Boat motors, chainsaws and other motorized items are not allowed, nor are wheeled (or mechanical) vehicles, such as bicycles or canoe carts. There are no developed campgrounds within the canoe trail system.

All of which seems a small price to pay for a potential fishing trip of a lifetime. 🦋

Janet Schmidt is supervisory park ranger at Kenai National Wildlife Refuge.

Two Refuges That Work Especially Hard for Birders

By Jennifer Anderson

When you think of all of the magnificent places to see birds on the Refuge System's 150 million acres of land and waters, Kootenai National Wildlife Refuge in Idaho and Reelfoot National Wildlife Refuge in Tennessee-Kentucky might not come immediately to mind.

However, those two refuges are doing a lot to attract and serve birders from their local areas and, occasionally, from farther afield.

Reelfoot Refuge

Reelfoot Refuge is a major stopover and wintering area for waterfowl on the Mississippi Flyway.

As many as 200 bald eagles land in the area each winter, joining the 23 nesting pairs. To help visitors spot eagles, the refuge provides driving tours.

In addition to eagles, the 10,428-acre refuge near the Mississippi River in northwestern Tennessee-southwestern Kentucky hosts more than 115 waterfowl species, including pintails, gadwalls, widgeons, hooded mergansers, mallards and American white pelicans. Warblers and other songbirds are common in spring.

Reelfoot Refuge has worked hard to enhance bird-watching activities,



Reelfoot National Wildlife Refuge in Tennessee-Kentucky is a major stopover for waterfowl on the Mississippi Flyway. Here, snow geese and white-fronted geese share foggy habitat. (Tara Dowdy/USFWS)

although “a lot of people just are not aware of what we’re doing,” says refuge education and volunteer coordinator Tara Dowdy.

The refuge has a 200-foot boardwalk over Reelfoot Lake that leads to an overlook designed to accommodate birders. A second viewing tower overlooks moist soil units—excellent food sources for waterfowl.

For birders who like to paddle, the refuge last spring established three circuit trails that launch from Reelfoot Lake. Fifty colored stakes in the water help paddlers stay on course; this summer the refuge plans to install 17 interpretive signs highlighting wildlife likely to be spotted.



A mountain bluebird perches at Kootenai National Wildlife Refuge in Idaho. The refuge is along a 280-mile U.S.-Canada driving tour known as the Two-Nation Birding Vacation. (Stan Bousson)

At the refuge's annual Migration Celebration during National Wildlife Refuge Week in October, 100 or so visitors enjoy a hayride with stops at moist soil units and hardwood forests to learn waterfowl identification and wood duck banding.

The refuge, which maintains bluebird and wood duck boxes and a pollinator garden, also is affiliated with seven bird-related citizen science projects, many of them run by the Cornell Lab of Ornithology.

Kootenai Refuge

The situation is similar at Kootenai Refuge in the panhandle of Idaho 20 miles south of the Canadian border. “We’re not thought of for birding,” says refuge manager Dianna Ellis. “People come here to see moose.”

But birding opportunities are plentiful. And the 2,774-acre refuge, whose 1964 establishment was funded by Duck Stamps sales, has been gaining a reputation as a bird-watching destination.

continued on pg 20

Focus . . . Recreation on Refuges —

Why Is Cooperation With the States Important?

Kim Trust, a 19-year U.S. Fish and Wildlife Service veteran, last fall was named chief of the National Wildlife Refuge System's Branch of Wildlife Resources. Before coming to the Washington Office, she held various positions in the Alaska Region. Here are excerpts from a recent *Refuge Update* interview with her.

Q. *Recommendations 17 and 18 of Conserving the Future mention working closely with state fish and wildlife agencies to provide hunting, fishing and other recreation opportunities on refuges. Why is such cooperation important?*

A. Both the states and the Service have legal responsibilities to provide wildlife conservation on their lands and, where appropriate, provide recreation if it complies with our laws and requirements. Oftentimes, we have lands adjacent to state lands; we have resources that are potentially co-managed by the states and the federal government. It's important to work with the states not only so we're fostering good partnerships but also so we're managing wildlife in a comprehensive way.

Q. *What are the most challenging issues the states and the Service face regarding hunting on refuges?*

A. Our laws are different, and they can be potentially contradictory. Sometimes the mission statements of the state agencies are not exactly aligned with our mission statements. So, trying to identify common ground and overcoming those challenges can be pretty complicated and complex. A bigger issue is the changing landscape of America and what people do in terms of recreation. Hunting and fishing have always been the backbone of the Service and a lot of the state resource agencies. Now, with folks spending more time on computers and more time indoors ... I think keeping people in touch with natural resources and wild places—that's a challenge that both the states and the federal government face.



"If state agencies are working with kids and we're working with kids, conservation will benefit into the future and keep us connected with the folks who use our resources," says Refuge System wildlife resources chief Kim Trust. Here, youngsters fish with nets at Two Ponds National Wildlife Refuge in Colorado. (Sherry James/USFWS)

Q. *Can you give an example where a state and the Refuge System have shown extraordinary cooperation on hunting, fishing or recreation issues?*


A. The Minnesota Clean Water, Land and Legacy Constitutional Amendment sets aside 3/8 of one percent of all state sales tax for outdoor heritage, clean water, parks and trails, and arts and cultural heritage purposes. Litchfield Wetland Management District, the Minnesota Department of Natural Resources and other conservation partners—Ducks Unlimited, Pheasants Forever, The Nature Conservancy—have preserved hundreds of acres surrounding Pelican Lake, a Minnesota DNR wildlife-designated lake outside Minneapolis. Per law, lands purchased under that program must be open for hunting and fishing.

Q. *How does such cooperation benefit both the states and the Refuge System?*

A. If we continue to work cooperatively to engage people on state lands and on federal lands, we're going to have a constituency that will support the

Refuge System, support the Fish and Wildlife Service, support conservation. If state agencies are working with kids and we're working with kids, conservation will benefit into the future and keep us connected with the folks who use our resources.

Q. *As the Service implements Conserving the Future, what is the most important thing the Refuge System needs to keep in mind when balancing its mission with the needs of hunters and fishers?*

A. History tends to get lost as the newest techno-gadget or whiz-bang activity comes along. I think the Service and the Refuge System are built on the backs of hunters and fishers and those people who really use the resource—really appreciate the land for what it provides in terms of recreation and also in terms of feeding the spirit, feeding the soul. As we move forward into the future, we have to make sure that we recognize and pay homage to our past. 

“An Awesome Job” All the Way Around

By Bill O'Brian

The numbers are impressive. More than 1,545 miles of trail inventoried on 234 U.S. Fish and Wildlife Service units, most of them national wildlife refuges. More than 142,000 trail feature points collected. More than 15,400 volunteer hours logged. More than \$48,000 in AmeriCorp education credits earned. Almost 189,000 air miles and 90,000 terrestrial miles traveled in 49 states and Puerto Rico. All in 10 months.

That's what the 10 Student Conservation Association interns and two SCA staff members who made up the Service National Trails Inventory Project team did last year.

The ambitious project, part of a multi-year effort to inventory and assess trails, was a great service to the National Wildlife Refuge System.

Based in Boise, ID, and overseen by SCA staff members Alex Olsen and Tyler Lobdell, the project was conducted under the auspices of the Refuge System roads program and the U.S. Department of Transportation's Federal Lands Highway Program. The well-traveled interns collected data about trail surfaces, grades, slopes, lengths, bridges, boardwalks, benches, culverts, signs, observation decks, drainage, erosion, obstacles and more. This year, after the information is reviewed, it will be uploaded to Federal Lands Highway Program servers and various Service databases.

The project was a great opportunity for the young conservationists, too.

It gave them an up-close-and-personal introduction to the Refuge System that few people receive. One of the SCA interns, Michael Mullaley, recently reflected on what the trails inventory experience meant to him.

“I absolutely had no idea there were over 500 wildlife refuges. Prior to this

position, I had only heard of the Arctic National Wildlife Refuge,” he said. “Now I know the Refuge System stretches to every state, Puerto Rico, the Caribbean and the Pacific. Plus, much to my excitement, I discovered Tualatin River Refuge is only 30 minutes away from my home in Portland.”

The trails inventory adventure provided him with many memorable moments.

Like the time he had to don full-body waders at Cypress Creek Refuge in southern Illinois “to cross a 200-foot section of trail that was flooded up to my chest.”

National View of Trail System

Or the time he helped inventory a trail at San Bernardino Refuge along the U.S.-Mexico border fence in Arizona. “There I stood at a conservation, political and social junction,” he said. “It was a very powerful moment.”

Or the time he hiked 15 miles through pine forest on the Florida National Scenic Trail at St. Marks Refuge. The trek left him with “15 ticks embedded in my ankles” and was incredibly beautiful.

“With the sounds and sights of civilization far away,” he said, “we journeyed peacefully through some absolutely gorgeous wilderness, thoroughly enjoying the tranquility and appreciating how lucky we were to have such an awesome job.”



Student Conservation Association intern Mike Mullaley celebrates after finishing up some U.S. Fish and Wildlife Service National Trails Inventory Project work at Hobe Sound National Wildlife Refuge in Florida. The project was a partnership among the Service, the SCA and the Federal Lands Highway Program. (Alexandra Aaker/Student Conservation Association)

Not only did the SCA interns have an awesome job, they *did* an awesome job, too, according to Service national trails coordinator Nathan Caldwell.

“They’ve added real data, real information about a broad range of issues involving Service trails,” said Caldwell, who noted that the young interns did it largely unsupervised, working in pairs during three-week stints on the road. “It gave us a national view of our trail system and how it’s changed since our last inventory in 2007.”

Mullaley said he is proud of his role in the inventory because he knows “that my work will help refuges get funding to develop and repair their trail system. Ultimately, this work is beneficial for visitors and helping to bring people out to these wonderful places.”

For more information about the interns' U.S. Fish and Wildlife Service National Trails Inventory Project experience, go to <http://www.thesca.org/fwsniw11>. 

Wildlife Experts Who Know How to Shoot (Photos) — continued from page 15

And Peters says he no longer considers the blinds “the main thing.” They require getting up early, hauling equipment and sometimes putting on hip boots—more effort than most people can expend. “Hundreds more people take pictures from the viewing deck,” he says. “It’s not that important that they get great pictures. It’s more important that they get out and experience the outdoors that way.”

He and Emmons are working to extend prime photo opportunities beyond the waterfowl season. “The program keeps growing year by year,” Emmons says. “Between the two of us, we keep pushing.” 🦅

Alison Howard is a Virginia-based freelance writer and editor.



A pair of snow geese prepare for landing at Sacramento National Wildlife Refuge. (Steve Emmons/USFWS)

Two Refuges That Work Especially Hard for Birders — continued from page 17

In 2006, Ellis joined representatives from other regional organizations to create the Two-Nation Birding Vacation. The 280-mile self-guided driving tour extends from British Columbia through northern Idaho and eastern Washington along a national scenic byway. More than 250 species of birds along the Pacific Flyway migrate through the area.

“The refuge is highlighted in all of the maps and travel guides,” she says, citing in particular the 2009 Rand McNally Road Atlas *Best of the Road* trips.

The Friends of Kootenai National Wildlife Refuge sponsor bird walks

on the third Saturday of each month. Last year, the refuge dedicated its first photo blind in honor of International Migratory Bird Day. The Friends hope to fund a second one soon.

Through a partnership with the U.S. Forest Service, last year the refuge restored a quarter-mile path to a 100-foot waterfall lined with cliffs that are ideal for viewing black swifts.

The refuge’s 4.5-mile auto tour road can be driven, biked or, in winter, cross-country skied. A compact disc that details likely bird sightings is available to visitors, and future plans include

installing interpretive panels along the route as well as an eagle cam and viewing tower.

“We’re continually making improvements,” Ellis says. “For most of us, this place is our second home.” 🦅

Jennifer Anderson is a frequent contributor to Refuge Update.

Wheelchairs and Whitetails — continued from page 13

possible without Vincent’s willingness to accommodate the volunteer effort. “Everything we’ve ever asked for or needed, there’s never been any hemming or hawing,” says Bush. “Neil’s been able to provide.”

With the hunt growing in popularity, the Illinois Department of Natural Resources now runs a lottery to

determine 25 individuals who participate each year. Dawe has been lucky to have been drawn the past few consecutive years. Still, he’ll soon prepare his application for the next one—the refuge’s 25th—and is as giddy as a kid about to hunt with his dad.

“I sure hope I get to do it again,” he says.

For those of us who can, let’s keep our fingers—and toes—crossed for him.



Ben Ikenson is a New Mexico-based freelance writer.

Alaska Sweeps Service Science Awards

Alaska national wildlife refuges were well represented when U.S. Fish and Wildlife Service Director Dan Ashe announced the Service's 2011 Science Leadership and Rachel Carson award recipients.

Jeff Williams of Alaska Maritime National Wildlife Refuge received the Science Leadership award, and the biology program at Kenai Refuge won the Rachel Carson group award.

Williams, a wildlife biologist, is responsible for inventory, monitoring and research on the 3.3-million-acre Aleutian Islands Unit of Alaska Maritime Refuge. Stretching more than 1,000 miles west of mainland Alaska and with more than 200 named islands, the Aleutians support several million breeding seabirds and various endemic species.

The Aleutians also contain many volcanoes. Williams leads a team of volcanologists, botanists, soil scientists, entomologists and seabird biologists studying the biological recovery of Kasatochi Island after a 2008 eruption covered the island in a thick layer of volcanic material.

Williams is also the chief scientist aboard the largest research vessel in the Service, *M/V Tiglav*, and has collaborated with an array of scientists investigating marine and terrestrial resources around the Aleutians.

The Science Leadership award recognizes exceptional scientific accomplishments that have lasting influence on the management of fish and wildlife resources.

The Rachel Carson group award went to a Kenai Refuge biology program team that includes Ed Berg, Matt Bowser, Toby Burke, Rick Ernst, Todd Eskelin, Mark Laker, Dawn Magness and John M. Morton.


The Kenai Refuge biologists were cited for leading from the field in developing a scientific approach that will direct the refuge's strategic response to climate change. In addition, they were honored for having made significant contributions



The biology program at Kenai National Wildlife Refuge in Alaska won the Rachel Carson group award. The biologists, clockwise from top right, are Dawn Magness, Rick Ernst, John Morton, Ed Berg, Mark Laker, Toby Burke, Todd Eskelin and Matt Bowser. (USFWS)

to Department of the Interior climate change initiatives at regional and national levels.

The Carson individual award was presented to Jeffrey Olsen, a geneticist with the Service, also in Alaska. Olsen was honored for career-long scientific excellence.

The Rachel Carson awards are given to individuals and groups who provide key scientific support for innovative conservation efforts on behalf of federal, state and private conservation organizations. 



Jeff Williams, wildlife biologist at Alaska Maritime National Wildlife Refuge, received the Science Leadership award. (USFWS)

Around the Refuge System

New York-New Jersey

A team of scientists led by a former U.S. Fish and Wildlife Service biologist has identified a new species of leopard frog in the New York metropolitan area, including at Great Swamp and Wallkill River National Wildlife Refuges in New Jersey. Jeremy Feinberg—a Rutgers University PhD candidate who was a term employee affiliated with Long Island's Wertheim Refuge from 2002-2005—first identified the new frog by its mating call. "It's pretty undramatic," Feinberg told a television reporter, "but for a trained biologist, you notice it and it sounds very different."

Genetic testing has confirmed that the frog—which had been confused with both northern and southern leopard frogs—is a new species. The new species has not yet been named. Feinberg and his colleagues announced their findings in the May issue of *Molecular Phylogenetics and Evolution*. In that article, which focused on genetic documentation of the new species, the discovery team wrote that "species endemic to the Northeast require swift management attention to preserve what biodiversity still remains in the region. Our study revealed a new leopard frog species in the midst of this highly developed region of the U.S., suggesting that the densely populated Northeast still harbors cryptic biodiversity that remains to be discovered." Feinberg said his team plans this spring to publish a more comprehensive article that will include an ecological/biological description of the frog and "formally introduce it to the world as a new species with a name."

Washington

Visitation at Nisqually National Wildlife Refuge on the southern end of Puget Sound increased by one-third in the year following completion of the Nisqually Estuary Boardwalk Trail. The boardwalk trail was completed in February 2011. It was the capstone to a 12-year, \$12

million delta restoration project and the subject of a November/December 2010 *Refuge Update* article. In the fiscal year that ended on Sept. 30, 2011, refuge visitation exceeded 200,000, 33 percent more than the previous year. "I've had so many people tell me, even ones who were unhappy, that they like it the way it is now. It's so dynamic with the tidal changes," refuge manager Jean Takekawa said. "We still think visitation will subside at some point, but right now it's showing no sign of letting up. People are coming back because it is so different every time."



A new, yet-to-be named species of leopard frog has been identified in the New York metropolitan area, including at Great Swamp and Wallkill River National Wildlife Refuges in New Jersey. (Colin Osborn/USFWS)

Florida

The secretive mangrove cuckoo is getting a lot of attention at J.N. "Ding" Darling Refuge. Researchers with the nonprofit Ecostudies Institute are fitting up to 20 birds with backpack transmitters to track their movements for a year. "We want to find out what habitat elements are critical to them," says John Lloyd, a senior research ecologist with the institute. "They're here breeding and vocal March through July. Then they quit being vocal. Do they get quieter or are they moving?" Lloyd says information about the bird is "remarkably incomplete because it is so difficult to get into places where it lives. As far as we know,

there's never been any banded." At "Ding" Darling Refuge, Lloyd says, it's possible to drive through "reasonably intact mangrove forest where we know there are birds." The mangrove cuckoo is the rarest of six mangrove landbird species. The study's progress can be followed at <http://www.facebook.com/EcostudiesInstitute>.

Massachusetts

Parker River National Wildlife Refuge is awarding up to 10 grants of \$500 to \$1,000 each in its new Slow the Flow campaign that encourages local property owners to implement green landscaping projects that benefit the Plum Island Estuary's ecological health. The estuary drains a 230-square-mile watershed. The refuge and a land trust protect most of the estuary's wetlands. Nonetheless, the watershed is subject to development threats. Many rivers feeding the estuary suffer from severe water loss. Paved surfaces increase storm water runoff, which may contain pollutants. Climate change may lead to intense, frequent storms that could increase pollution input and hotter, drier summers could cause low- or no-flow water situations.

These factors degrade shellfish beds, fish populations and salt marsh habitats. By changing habits relating to water and fertilizer use, landowners can improve the estuary's health. "I got the idea to connect organic landscaping to wildlife conservation after listening in on various presentations at our visitor center," says Parker River Refuge wildlife biologist Nancy Pau. "While a lot of people were talking about reducing their carbon footprint, there was a missed opportunity to educate the public about their nitrogen footprint. The nice thing about nitrogen footprint is that it's local [by watershed], and people can see the benefits of their actions."

More information is at <http://www.pieslowtheflow.com/pages/GrantProgram.htm>.

Arizona-California

Havasu National Wildlife Refuge hosted its first Archery Day in March. Fifth- and sixth-graders from nearby schools took part in the event, which refuge visitor services manager Al Murray hopes will become annual. Many young people “don’t have access to outdoor activities,” Murray said. “It’s an activity that is relevant to a wildlife refuge. One of the six priority public uses is hunting. Hunters help us maintain wildlife populations for native and non-native species. Archery is the hook to get the kids excited and interested, to find out learning is fun. It’s just a way to get them motivated to become learners.” After taking a safety course and receiving instruction, 140 students used real bows and arrows to shoot at foam animals and fish targets. Murray, who patterned the Archery Day idea after a similar event at Deep Fork Refuge in Oklahoma, received his certification as an archery instructor at the National Conservation Training Center last summer.

North Carolina

The state utilities commission approved a proposed 49-turbine wind farm near Pocosin Lakes National Wildlife Refuge. The commission said it didn’t have legal authority to reject the Pantego Wind

Florida



From mid-January to late April, four conservationists made a 1,000-mile expedition from Everglades National Park to Okefenokee National Wildlife Refuge in southern Georgia to increase public support for the Florida Wildlife Corridor project. Traveling by kayak, stand-up paddleboard, bicycle, horseback or on foot, bear biologist Joe Guthrie, photojournalist Carlton Ward Jr., filmmaker Elam Stoltzfus and conservationist Mallory Lykes Dimmitt traversed the heart of the recently established Everglades Headwaters National Wildlife Refuge and Conservation Area. Here, Guthrie paddles in Lake Kissimmee. More information about the expedition can be found at www.FloridaWildlifeCorridor.org. (Carlton Ward Jr./CarltonWard.com)

Energy Facility, but it also said that the wind farm must obtain state and federal environmental permits and meet other conditions before proceeding—although no other permits appear to be required at this point. In a Dec. 6, 2011, letter to the commission, and in an article in the March/April 2012 issue of *Refuge Update*, Pocosin Lakes Refuge manager Howard Phillips had recommended that the wind energy project be delayed until its likely impact on thousands of tundra swans that roost at the refuge could be studied.

Recovery Champions

Refuge staff members working with polar bears in Alaska, Nihoa millerbirds in the Pacific and piping plovers on the Atlantic Coast won Service’s 2011

Recovery Champion awards. Arctic National Wildlife Refuge visitor services supervisor Jennifer Reed and Alaska regional wildlife biologist Susi Miller were cited for helping to avert people-polar bear conflicts. At Papahānaumokuākea Marine National Monument, a recovery team released 24 endangered Nihoa millerbirds on Laysan Island, culminating decades of work to save the species from extinction. The team captured the birds on the island of Nihoa and transported them to their new home on Laysan. Project leaders, law enforcement officers, visitor services specialists, biologists, and maintenance and administrative staff at coastal refuges from Maine to Virginia were honored for work with the piping plover. 🦋

Service Is Lead on 39 AGO Projects

The Department of the Interior America's Great Outdoors Fifty-State Report identified 101 collaborative projects (two per state; one in the District of Columbia) to be completed in 2012. The U.S. Fish and Wildlife Service is lead agency on 39 of them, described here.

Alabama—Gulf Coast Restoration. Support military area conservation.

Colorado—Rocky Mountain Greenway Project. Link trails and Rocky Mountain Flats, Rocky Mountain Arsenal and Two Ponds National Wildlife Refuges.

Connecticut—Connecticut River Blueway. Improve river access, national blueway designation, integrate with downtown Hartford.

Delaware—Delaware National Bayshore. Expand access to and conserve bayshore.

Florida—East Central Regional Rail-Trail Project. Construct 50-mile trail linking waterways and enabling public land access.

Illinois—Hackmatack Refuge. 23,000-acre refuge near Chicago to engage urban residents and protect wildlife corridors.

Indiana—Wabash River-Healthy Rivers Initiative. Acquire conservation easements and restore 94-mile stretch of floodplain.

Iowa—Southern Prairie Pothole Refuge. Add 5,000 acres to Dunbar Slough wetlands, preserve as a refuge.

Iowa—Loess Hills. Conservation easements, implement conservation plans, cultural resource management.

Kansas—Flint Hills Legacy Conservation Area. Establish easement-based conservation area with potential visitor center.

Louisiana—Urban Waters Initiative. Construct fishing pier at Big Branch Marsh Refuge.

Louisiana—Restore Lake Pontchartrain Basin. Create marshland in Bayou Bonfouca.

Maine—Penobscot River. Dam removal to restore access to spawning grounds for sea-run fish.

Maine—Keeping Maine's Forests. Promote forest stewardship by connecting conservation agencies, timber and recreational fishing industries.

Massachusetts—Connecticut River Blueway. Improve regional access to river by establishing water trail.

Michigan—Detroit River. Waterfront park to engage underserved urban youth in conservation.

Michigan—Detroit River. Engage underserved youth through public access to waterfront.



Four New England states' America's Great Outdoors projects are devoted to a blueway, or water trail, along the Connecticut River. The projects are being coordinated by Silvio O. Conte National Fish and Wildlife Refuge manager Andrew French. More information about the AGO initiative is at <http://americasgreatoutdoors.gov>. (Norm Olson/USFWS)

Minnesota—Upper Minnesota River Watershed. Improve access along river and infrastructure in adjacent parks/trails.

Montana—Crown of the Continent. Land acquisition/conservation easements to preserve working land/wildlife corridor.

Nebraska—Platte River Access. Continue/expand recreation access program.

America's Great Outdoors — continued from page 1

activities across the United States and to link those goals and activities with the First Lady's Let's Move! program and one of its subsets, Let's Move Outside!

AGO is an umbrella effort. The Service is directly involved in at least four of its facets:

- The *Fifty-State Report* projects.
- An urban work group that encourages federal/state interagency coordination, leveraging of resources and improved communication/collaboration with local partners on new and existing urban green space, parks, river trails and public access.
- Five large landscape projects that support similar cooperation on

landscape-level conservation. The projects (and lead agency) are: Northern grasslands (Service); longleaf pine (Department of Defense); Southwest desert (Department of the Interior); Northeastern forest (USDA's Natural Resources Conservation Service); Crown of the Continent (U.S. Forest Service).

- A river initiative focusing on national blueways and river restoration/recreation.

Refuges have roles in all elements of AGO, but the Refuge System's presence is most apparent in the *Fifty-State Report's* 101 conservation projects (two per state; one in the District of Columbia). The Service is lead agency on 39 of the

projects. Many have refuge connections. The Connecticut River, New Jersey and Michigan projects typify them.

The Connecticut River effort involves the states of Massachusetts, Vermont, New Hampshire and Connecticut. The project's lead is Silvio O. Conte National Fish and Wildlife Refuge manager Andrew French, who is engaging local governments, Friends and communities in the Connecticut's 7.2 million-acre watershed. Beyond establishing a national blueway along the river, McCandless says, the project's overarching goal is to achieve conservation objectives not only through outright land acquisition but also through easements, restoration, education and recreational access to the river.

New Hampshire—Northern Forest. Expand conserved lands in forest.

New Hampshire—Silvio O. Conte Refuge. Critical land acquisitions to increase wildlife habitat.

New Jersey—Barnegat Bay. Add 1,019 acres to increase public access to waterways.

New Jersey—Barnegat Bay. Boardwalk, launch areas and other recreational improvements to aid waterfront access and link bay and Edwin B. Forsythe Refuge.

New Mexico—Price's Dairy (Middle Rio Grande Refuge). Protect 570 acres in Albuquerque area as community gateway to outdoors and preserve migratory bird habitat.

North Carolina—East Fork Tract Mountain Bog. 2,200+ -acre bog is one of the most important unprotected natural areas in Southern Appalachians.

North Dakota—Missouri River Forest Restoration Project. Engage youth in tree planting on state/private lands.

North Dakota—Dakota Grassland Conservation Area. Acquire easements on 2 million acres of native/prairie habitat.

Ohio—Northeast Ohio Wetland Project. Conserve critical migratory bird habitat along Lake Erie.

Oregon—Willamette Valley Conservation Plan. Involve landowners in conservation agreement governing fast-developing region and valuable habitat.

South Carolina—Longleaf Pine Focal Area. Create protected area to conserve rapidly vanishing natural resource.

South Dakota—Dakota Grassland Conservation Area. Acquire easements on 2 million acres of native/prairie habitat.

Tennessee—Paint Rock River Watershed. Connect protected lands in watershed into broader refuge that encompasses ecosystem.


Texas—Rio Grande Watershed. Acquire conservation easements to protect key land in watershed.

Texas—West Galveston Bay. Construct estuarine nursery habitat to mitigate damage of human impact.

Utah—Bear River Migratory Bird Refuge. Experiential, conservation-oriented programming for school groups.

Vermont—Winooski River Watershed Project. Conserve critical floodplain protection areas and engage local communities on watershed management plans.

Vermont—Connecticut River Blueway. Establish new access points and designate the river as a national blueway to enhance recreation opportunities.

West Virginia—Canaan Valley Refuge. Use conservation easements to create greater connectivity among protected lands. 



Two young crabbers show off their catch at Big Branch Marsh National Wildlife Refuge near New Orleans. A fishing pier is to be built at the refuge as part of an America's Great Outdoors urban waters initiative. (Steve Hillebrand)

“I think we know as scientists that we’re never going to restore or protect a river the size of the Connecticut without working up in the watersheds, where you are dealing with first-, second-, third-order streams,” she says. “And when you get to that level, to protect those systems, you really are talking about complete community engagement.”


Both of New Jersey’s projects are designed to connect state and locally owned lands along a conservation corridor upstream in the watershed of coastal Barnegat Bay, and to enhance recreation in that corridor. The projects’ lead is Edwin B. Forsythe Refuge manager Virginia Rettig.

Both of Michigan’s projects endeavor to “foster urban youth appreciation of the Detroit River and try to engage and interest a whole new generation of folks, and perhaps inspire them to look for jobs in the conservation/recreation/resource management arena,” says McCandless. The city of Detroit and the National Park Service are among partners interested in the projects, which are led by Detroit River International Refuge manager John Hartig.

McCandless estimates the Service has invested \$34 million in fiscal year 2012 toward the 39 projects, all from existing funding sources. “There’s no new money,” she says, but that may change next year.

One overall AGO objective is to show tangible results this year, McCandless says. The White House Council on Environmental Quality is measuring success and is sending progress reports to the President.

AGO is a great opportunity for refuges to work across agencies and with the states, McCandless says. It’s also a chance to leverage Refuge System conservation.

“Many of those projects are refuge priorities,” she says. “Having a dual tag of refuge priority and America’s Great Outdoors priority only brings more attention and highlight to advancing those projects across the landscape.” 

From the Director — continued from page 2

Bosque del Apache National Wildlife Refuge in New Mexico hosts its annual Festival of the Cranes every November. Up to 10,000 people join the celebration of sandhill cranes in just one week.

Nonlocal visitors (93 percent) to Bosque del Apache Refuge spent an average of \$64 per person per day in the local area in 2010; local visitors (7 percent) spent an average of \$41 per person per day, according to preliminary findings from a U.S. Geological Survey report.

J.N. “Ding” Darling Refuge on Florida’s Sanibel Island draws more than 700,000 people each year to see the refuge’s many birds, including white pelicans, roseate spoonbills, anhingas and wood storks.

Spending by refuge visitors was estimated at nearly \$14 million in 2011. Money from those visitors also generates another \$26 million in economic activity and supports an estimated 264 jobs, according to our latest numbers.

Refuges from Chincoteague in Virginia to Kenai in Alaska regularly engage the public and welcome visitors to the lands we manage, but we cannot rest on our laurels.

A White House task force co-chaired by Secretary of the Interior Ken Salazar will focus on strategies for increasing tourism and recreation jobs by promoting visits to our national treasures, including refuges. Refuge System deputy chief Cynthia Martinez ably represents the Service on this task force.



J.N. “Ding” Darling Refuge on Florida’s Sanibel Island draws more than 700,000 people each year to see the refuge’s many birds, including white ibis. (Jim Mathisen/USFWS)

Spending by refuge visitors was estimated at nearly \$14 million in 2011. Money from those visitors also generates another \$26 million in economic activity and supports an estimated 264 jobs, according to our latest numbers.

National wildlife refuges are more than habitats conserved for wildlife. They are also living museums, of sorts. The sandhill crane, for instance, is the oldest known bird species still surviving, according to

the International Crane Federation. If that’s not a national treasure worth seeing, I don’t know what is. 🦩

Chief’s Corner — continued from page 2

refuges. We have learned the importance of working closely with Alaska’s native people in a shared stewardship of fish, wildlife and habitat. Our wilderness stewardship and land ethic have deepened and grown. We have more work to do in all those areas, but I am very proud of our remarkable progress.

Now we must use the same creativity and imagination to bring about a new era in

the Refuge System, one during which we become leaders in ocean conservation.

The National Wildlife Refuge System Improvement Act of 1997 gives us a great framework. The conservation purposes of the marine national monuments come first, but compatible uses will be allowed. Scientific exploration will be an exciting way people will use these monuments, and

we need to assure it is done right. We need to learn how to tell the story of these places. We need to expand Aldo Leopold’s land ethic into the oceans.

Around the world, the need for ocean conservation is becoming more urgent. We can and must help to lead this effort. 🦩

Two Refuges Through the Eyes of a Wilderness Fellow

By Rachael Carnes

When I first arrived at Agassiz National Wildlife Refuge in northern Minnesota as a Wilderness Fellow last summer, I acknowledge I was shocked by the remoteness. Although I had studied the environment as an undergraduate and graduate student, I was raised in cities and my classroom learning could take me only so far. I had been prepared intellectually for thinking about wilderness concepts and issues, but not for the on-the-ground reality.

I wasn't ready for the bugs. Or the bobcats, bears and other critters lurking in the woods. The half-hour drive (one way) for groceries was a jolt. The stark nighttime darkness left me stumbling into things on occasion.

My assignment, as one of 10 National Wildlife Refuge System Wilderness Fellows in 2011, was to spend six months at two refuges and help jump-start the process of wilderness character assessment on lands managed by the U.S. Fish and Wildlife Service. Because it was the program's pilot year, our objective was to complete a baseline assessment at each assigned refuge.

The monitoring framework was designed to begin to quantify the often-intangible concept of wilderness. Specific measures of wilderness character were created for each refuge. Data records of the measures were entered into a national database that may help inform future adaptive wilderness management practices.

My problem in those early days was that I had not realized that, to obtain information for monitoring wilderness, a land manager—or a fellow—must trek through hell and high water to get it.

When I was told that Agassiz Refuge's remoteness was nothing compared to that of Seney Refuge in the Upper Peninsula of Michigan (my next destination), I realized that I had to adjust to this new lifestyle as quickly as possible. I tried to do so in



At Seney National Wildlife Refuge in Michigan, the author writes, "the ground hardens with frost and the trees put forth a colorful protest before relinquishing their leaves to a silent winter." (Rachael Carnes/USFWS)

a straightforward manner. By fully recognizing the amazing opportunity I was being given to live amid such raw beauty and solitude, I learned to find entertainment all around me. From a sauntering bull moose and a howling pack of wolves to the reach of the Milky Way and the vibrancy of the Northern Lights, I was truly blessed to see sights that many people only dream of.

There is an enticing conflict between the majesty of the natural world and its harsh reality.

I suppose it is no surprise to those accustomed to the wilderness and wildlife of the Great Lakes states that there is a mysterious intensity in these northern bounds of American civilization, emanating from a strange juxtaposition of beauty and struggle. There is an enticing conflict between the majesty of the natural world and its harsh reality.

You may observe a scenic forest from a distance, but up close you may not always be able to see past the cloud of mosquitoes and horse flies, and the groin-pulling mud holding your boots.

In the end, though, the difficulties pursuant to Agassiz's swamp or Seney's bog are what make them so beautiful.

Wilderness can mean different things to different people.

For me, the Agassiz 4,000-acre wilderness is a bog, where the only audible sounds are produced by birds and insects, and footsteps are absorbed in the moss-covered ground. In Seney's 25,100-acre wilderness, the ground hardens with frost and the trees put forth a colorful protest before relinquishing their leaves to a silent winter.

Wilderness in the Northland is a place where the conditions are so rugged that one must actually become a little bit wild in order to embrace them. It is a place where even a short foray can make you feel stronger, and perhaps even a bit wiser, than you were before. 🦋

Rachael Carnes recently received a master's degree in environmental management from the Nicholas School of the Environment at Duke University.



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A Look Back ... Robert W. Hines

Bob Hines is the only U.S. Fish and Wildlife Service employee ever to hold the title national wildlife artist. He had no formal training and no college degree, but he did have a keen eye and an uncanny ability to render what he saw with precision and beauty. A search of the Service's Digital Image Library brings up multiple pages of his paintings and drawings.

Born in Ohio in 1912, Hines began drawing pictures to comfort his mother after the death of an infant daughter. His mother died young; his father encouraged Hines' interests in animals and scouting. Eventually, Hines would illustrate three merit badge handbooks for the Boy Scouts. Long before that, he was a staff artist for what is now the Ohio Department of Natural Resources.

In 1946, his painting of five redhead ducks was selected for the Migratory Bird Hunting (Duck) Stamp. "If I had worn a vest, I'd have popped all the buttons," said Hines, who never lost his feeling of ecstasy over the award. When he was offered a position in Washington, DC, with the Service in 1948, his wife




As a national wildlife artist for the Service, Bob Hines (1912-1994) created hundreds of renderings, including this acrylic painting of an American goldfinch.

stayed in Ohio to raise their children and Hines went to work for Rachel Carson—who had written the press release about the record-breaking sales of Hines' winning stamp.

Hines and Carson were colleagues and friends for years; he illustrated her

1955 book *The Edge of the Sea* as well as countless Service publications. Hines also initiated a standardized process for selecting the annual Duck Stamp, turning it into an open competition with exacting standards. After retiring from the Service in 1981, he created the cover art for the first several issues of *Bird Watcher's Digest*.

To mark the 100th anniversary of Hines' birth this year, the Rutherford B. Hayes Presidential Center (www.rbhayes.org) in Fremont, OH, is exhibiting *The Wildlife Art of Bob Hines*. The exhibit, which runs through Aug. 14, was created with guidance from John D. Juriga, author of the new biography *Bob Hines: National Wildlife Artist*.

Former Service director Lynn Greenwalt, who frequently sought out the quiet of Hines' studio, wrote the foreword to Juriga's biography, noting that Hines' "talent was formidable and his work legendary ... He lived a life of adventure and notable accomplishment, without fanfare and little fame." 

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