



RefugeUpdate

National Wildlife Refuge System

www.fws.gov/refuges



INSIDE: Twenty-five years ago, 21 trumpeter swans were released at Tamarac National Wildlife Refuge in Minnesota. Now, with more than 6,000 trumpeter swans in the state, the species' recovery is a conservation landmark. Story on page 8. (Kathleen Curphy)

A Harrowing Tale Worthy of "Shark Week"

By Amanda Fortin

The U.S. Fish and Wildlife Service and The Nature Conservancy routinely team up at Palmyra Atoll National Wildlife Refuge. Twenty months ago, however, the agencies joined forces at the remote Pacific refuge in a way that was anything but routine. Together, they administered urgent first aid to TNC diver Kydd Pollock after he suffered a vicious shark bite nearly 1,000 miles from the nearest doctor or hospital.

The amateur triage was so dramatic that the Discovery Channel is scheduled to air a reenactment of it in August during its wildly popular annual Shark Week.

Nov. 11, 2010, began normally for Pollock. He and four other divers, including refuge manager Amanda Meyer, were collecting data about the Napoleon wrasse on the reef terrace, about 2½ miles from Palmyra Atoll's research station. Soon, though, the divers noticed a pregnant gray reef shark caught in one of their nets.

"The shark was tangled and beginning to roll around in the net to try and escape it," Pollock recalls. He and his colleagues freed the shark, and considered their work with the animal done.

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First Research, Now Some Vision Products

Having completed much of their foundational work and research, the *Conserving the Future* implementation teams this summer are beginning to put some of their products out for public input. Those products, the teams' work plans and more are available at AmericasWildlife.org.

Working with Spectrum Communications, a marketing/public relations consultant, the Communications implementation team soon will post its draft strategic communications plan. The final plan is due in April 2013. To comment on the draft, people can join the social network at AmericasWildlife.org and go to the Communications team group to take part in a virtual conversation—much like the back-

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From the Director

Choosing the Best Path for Conservation

I hear a similar refrain as I visit regional and field offices: “I’ve never been busier.”

No matter how dedicated our people are – and they are intensely passionate and professional – they are very overextended. And they are struggling against enormous conservation challenges – climate change, invasive species and a growing human population that is fueling competition between wildlife and people for water, land, food and space to live.

We simply can’t address these enormous conservation challenges with the tools and the thinking of the past.

Recognizing this, the U.S. Fish and Wildlife Service in 2006 endorsed



Dan Ashe

strategic habitat conservation (SHC) as the Service’s management framework for making decisions about where and how to deliver conservation efficiently with our partners to ensure sustainable wildlife populations in the face of 21st-century challenges.

As we all know, however, the sheer number of species for which the Service and states are responsible makes designing and conserving landscape-scale habitats impractical on a species-by-species basis.

Even with an unlimited budget, we’d run ourselves ragged. And budgets will be increasingly limited. I know that working harder isn’t the answer. We are already working as hard as we can. Harder than we should. Our pace is unsustainable.

What we need to do is work smarter, and put our efforts and resources where they will do the most good.

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Chief’s Corner

Making Our Presence on This Good Planet Sustainable

This spring, I had the honor of speaking at the commencement of my alma mater, the University of Wisconsin-Stevens Point. Here is some of what I told the graduates:



Jim Kurth

I want to start with a story about a trip to one of my favorite places—the Firth River Valley in the Arctic National Wildlife Refuge.

Compared to the razor-edged peaks in the heart of the Brooks Range, the Firth River Valley is handsome at best. Her hills roll more gently; a brushy ruggedness belies the peaceful nature of the place.

We were walking along the edge of the river, slipping in and out of the willows and onto gravel bars as the river laughed at our stumbling. Large piles of droppings chocked full of bright red berries reminded us we shared this land with grizzly bears. Shed moose antlers occasionally marked our way. A bird flew low along the horizon to the south. Someone quickly identified it as a hawk owl.

I had read a report of a biological reconnaissance of the Firth that had taken place some 15 years earlier. The report noted that a hawk owl was found nesting in nearly the exact location we were exploring. I thought that my hawk owl could be the grandson or great-

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Refuge Update

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Conservation Friends for Life

An interview with Refuge System Chief Jim Kurth and Service Midwest Region deputy regional director Charlie Wooley, who have known each other for 48 years. Pages 4-5

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Refuge visitors, in a recently released survey, express concern about the impact of climate change on fish, wildlife and plants. Page 6

FOCUS: Partnerships That Work

Partners—be they states, non-governmental organizations, Friends, volunteers, Indian tribes or others—contribute immeasurably to the Refuge System and its conservation mission. Pages 10-19

Bitter Lake Refuge Is 75

Bitter Lake Refuge in southeastern New Mexico has been conserving extraordinary biological diversity for three-quarters of century. Page 23



This hillside vista at National Elk Refuge in Wyoming is a favorite spot of outreach and visitor services specialist Lori Iverson. (Lori Iverson/USFWS)



Bison on the prairie help make Fort Niobrara National Wildlife Refuge in Nebraska a special place, writes refuge manager Alan Whited. (USFWS)

Two Vintage Western Refuges Turn 100

Fort Niobrara National Wildlife Refuge in north-central Nebraska and National Elk Refuge in the Greater Yellowstone Ecosystem of Wyoming both are celebrating their 100th anniversaries this year. Fort Niobrara was designated as a refuge by executive order on Jan. 11, 1912, as a “preserve and breeding ground for native birds.” Its purpose was expanded later that year to include bison and elk. National Elk Refuge was established by an act of Congress on Aug. 10, 1912, “to provide winter habitat and preserve the Jackson elk herd.”

Below are essays—by Alan Whited, refuge manager at Fort Niobrara, and Lori Iverson, outreach and visitor services specialist at National Elk Refuge—about what makes these two classic Western refuges extraordinary.

Fort Niobrara Refuge

The sandhills of northern Nebraska are one of the best-kept secrets in the country. Fort Niobrara Refuge is a special place where you can hear the sounds of the Niobrara River (a National Wild and Scenic River) flowing through the canyons, buffalo bellowing, elk bugling and prairie dogs barking as


eagles fly lazily above and below you. It’s a place where on horseback in the spring you can stop and see the waves of a tan ocean rolling across the sandhills, while being overwhelmed by the sweet smell of wild plum blooming, turkeys gobbling, prairie grouse dancing and newly born bison calves bouncing around their mothers, all on the same day. The Fort is also a place where you can see northern, eastern, southern and western plant and animal species occupying the same space. Its most special attribute—as is the case with all refuges, in my opinion—is the people who work here. The staff at Fort Niobrara has approximately 335 years of cumulative conservation experience, primarily with the U.S. Fish and Wildlife Service. All of our employees have bought into our purpose, take tremendous pride in what we do, and definitely will leave a part of themselves at the Fort forever.

– Alan Whited

National Elk Refuge

Last August, I responded with a fire crew to a report of a smoldering tree on the northwest side of the refuge. Ironically, it was a repeat of the previous August, when lightning struck in the same location. The lightning and I have

something in common: It’s my favored spot on the refuge, too—a place where I find myself wanting to return. The hillside is interspersed with sagebrush and aspen trees and accessed by a rough two-track road used primarily by seasonal irrigators in the summer and hunters in the fall. From that vantage point, one can look down onto grasslands dotted with sagebrush, the swells of the Gros Ventre River and, occasionally, a herd of bison. Cars on the busy highway are hidden from sight. Far from development, the only sounds are leaves quaking in the breeze and the songs of birds. The 25,000-acre refuge is a stronghold in the Jackson Hole Valley, an area awash in tourism and demands for development. Without protected places like the refuge, the valley’s rich diversity of wildlife and supporting habitat would face additional challenges with possible long-term impacts—a trend that began a century ago. The Service’s mission here has never been more important than it is today. We had some thunder and a few flashes of lightning just yesterday afternoon. Perhaps I’ll go for a reconnaissance outing this morning. I know a good spot.

– Lori Iverson 

Q&A Interview: Two Conservationists Who've Been Friends Since 1964

Refuge System Chief Jim Kurth and U.S. Fish and Wildlife Service Midwest Region deputy regional director Charlie Wooley have known each other for 48 years. They met as third-graders in Columbus, OH; played high school football together; first visited Alaska together in 1975; graduated from the University of Wisconsin-Stevens Point together in 1978. They have never served at a field station together, but when Wooley was a biologist at the Panama City, FL, fisheries office in 1979, he alerted Kurth to his first Service job—a Mississippi Sandhill Crane National Wildlife Refuge position. This spring, Wooley received a Department of the Interior Distinguished Service Award and Kurth received a UW-Stevens Point outstanding alumnus award. Here are excerpts from a recent *Refuge Update* interview with them.

Q. *How did your path into conservation evolve when you were a young man?*

Kurth: Charlie and I spent a lot of time in the out-of-doors. We used to skip out of high school and go fishing. That love of being out-of-doors was part of it. The environmental movement was also just starting, and we were probably among the first generation of Service people who had both a love of the outdoors—of hunting and fishing—combined with a concern over the environment and ecological change.

Wooley: The other activity that we had access to was a land-grant university, the Ohio State University ... There was actually a university that had courses in conservation and biology, wildlife and fishery management. There was a field of study right in line with our personal interests [even though neither graduated from Ohio State].

Q. *How would you summarize your personal philosophy of conservation?*

Wooley: It's pretty simple for me. It's making a difference. I've always had a strong sense of trying to make the world a better place for the next generation. I think that we in the conservation



Service Midwest Region deputy regional director Charlie Wooley, left, and Refuge System Chief Jim Kurth met in third grade in Ohio. They have been Service colleagues for 33 years, although never at the same field station. (Todd Harless/USFWS)

movement are always looking to provide something to somebody else. I've always viewed the work that the Service does as an opportunity to do that.

Kurth: Any of us who are graduates of UW-Stevens Point have a strong founding in the land ethic that Aldo Leopold talked about. You can't live in that part of the world and go to that institution without it becoming a bedrock of your conservation philosophy. Our philosophies have evolved. The role of people in conservation is very different than when I first started. We used to feel that the way to keep wildlife first on refuges was keeping people out. We've learned that when people can use and enjoy wild places and wildlife, they're going to become stronger supporters of the conservation movement.

Q. *In the time you have known each other, what are the most important changes in the conservation field?*

Kurth: Certainly, the role of technology is huge. I was on my fifth refuge before I had a computer on my desk. We've also seen, as there are more people and more of the land is fragmented, that we have to work at landscape scales. To set up a refuge and it be an island in a sea of development isn't going to be a successful way of conservation. So, we

have to work at landscape levels and figure out how to have core protected areas that are buffered with easements or other working landscapes so we can have the scale and connectivity in habitat to ensure sustainable populations of fish and wildlife.

Wooley: I'm going to turn it back a little bit and say there are some things that haven't changed. There have been some people that Jim and I looked up to early in our careers who were conservation heroes: [former Service Director] Lynn Greenwalt; [current Director] Dan Ashe's dad, Bill. There are people like them in the Service and the conservation movement today, too—the same kind of incredible personalities and strengths of character. That ethic is being passed on.

Q. *In that time, what are the most important changes in the Service itself?*

Wooley: We've learned that there's a certain responsibility that comes as you get into upper level management situations. Probably the most important is hiring and advancing good people. We've really done a good job in the Service starting about 15 years ago with training programs at NCTC. Getting good people into training programs, recruiting them into the Service, keeping them in the Service, and then letting

them develop into leaders. We take a lot of pride in that.

Kurth: We've made significant progress in being more diverse. We have a long ways to go yet. But it was pretty much a white male organization when we started, and I'm really proud today when I look at our Service Directorate, at the deputies group, at project leaders at meetings. We are coming to be more diverse. It was important to recognize in our *Conserving the Future* vision that, if we want to have a conservation constituency, we have to have more role models who come from all segments of society.

Q. *What are the biggest challenges to conservation that have arisen?*

Kurth: To me, there's certainly this two-fisted problem of accelerating change to the climate systems and a growing population that continues to fragment the landscape.

Wooley: One of the more frustrating things is: We make progress in one arena and, as we're making progress there, another issue pops up that we hadn't anticipated. I mean, we would never have been talking about climate change 20 years ago; then we were talking preserving endangered species, recovering species, protecting habitat. There's a certain sense of frustration in

all these environmental perturbations we're trying to solve.

Kurth: When we were in college, I don't think either of us would have ever believed that the New England cottontail now would be in worse shape than gray wolves in Wisconsin are. Gray wolves were considered extirpated in Wisconsin then, and now . . .

Wooley: . . . they're de-listed, off the endangered species list.

Kurth: We've recovered grizzly bears and wolves and bald eagles and pelicans and alligators, and yet there's a whole host of other species now threatened with extinction. The challenges continue to change and emerge.

Q. *Jim, what is the one word you would use to best describe Charlie as a friend and a conservationist?*

Best. He's my best friend, and he is certainly one of the best in the conservation business. He is a renowned biologist and an accomplished conservationist. There just aren't many better in the business.

Q. *Charlie, what is the one word you would use to similarly describe Jim?*

Tenacious. I would have used "best," too, if it hadn't been taken already. There have

been some very difficult situations that Jim's been in as a professional that he has handled remarkably well. There have been political pressures that have taxed his environmental philosophy, his moral compass and the tremendous amount of environmental ethics that he has welling up in him, but he hasn't cracked.

Q. *What conservation goal would you like most to attain in the rest of your Service career?*

Wooley: It's been remarkable the last three years to be part of the Obama administration's Great Lakes Restoration Initiative. Instead of an initiative, I'd like to see it become permanent, so that the American public and the Canadian public have an opportunity to see the Great Lakes restored. It takes a long time. It takes dedicated funding.

Kurth: What I'm most excited about doing in this phase of my career is helping to build the next generation of conservation leaders, to find the right people and to encourage them, to help them in any way I can to aspire to lead our Service and our conservation efforts. It's very much about the people to me at this stage. I really enjoy, more than anything, seeing talent blossom. 🦋



Charlie Wooley: "We've learned that there's a certain responsibility that comes as you get into upper level management situations. Probably the most important is hiring and advancing good people." (Charles Traxler/USFWS)



Jim Kurth: "We used to feel that the way to keep wildlife first on refuges was keeping people out. We've learned that when people can use and enjoy wild places and wildlife, they're going to become stronger supporters of the conservation movement." (Deborah Rocque/USFWS)



Seventy-one percent of survey respondents said climate change poses a serious threat to wildlife and habitat. Here, beach erosion exposes loggerhead sea turtle eggs in a nest at Cape Romain National Wildlife Refuge in South Carolina. (Billy Shaw)

Climate Change Concerns Most Refuge Visitors

Visitors to national wildlife refuges are concerned about the impact of climate change on America's fish, wildlife and plants—as well as the habitat that supports them, according to a survey released in late May by the U.S. Fish and Wildlife Service.

The survey also shows strong support for efforts to help native species adapt to changing climate conditions, such as those being implemented by the Service and its partners.

Seventy-one percent of the more than 10,000 visitors to national wildlife refuges who took part in the survey—designed and conducted by the U.S. Geological Survey in 2010 and 2011—believe that climate change poses a serious threat to wildlife and habitat. About 74 percent agree that addressing climate change effects on wildlife and wildlife habitats will benefit future generations.

More than half of the refuge visitors surveyed indicated a high level of interest and personal involvement in climate issues. More than two-thirds (69 percent) agreed that addressing climate change impacts could “improve our quality of life.” Nearly half of visitors

surveyed (46 percent) expressed interest in learning from refuges what they could do to help address the effects of climate change on wildlife and habitat.

Economic considerations factored into visitors' assessments. More than two-thirds (71 percent) agreed that “it is important to consider the economic costs and benefits to local communities when addressing climate change effects on fish, wildlife and habitats.”

“The results of this survey underscore the Service's responsibility to ensure that we use the best science to understand and anticipate the impacts of a changing climate in order to safeguard fish, wildlife and plants and the important benefits and services they provide,” said Service Director Dan Ashe. “We recognize the serious threats that climate change and other environmental stressors pose to wildlife, and we're working with our partners to address these immense challenges using the latest science-driven approaches.”

The Service's work with conservation partners includes:

- Leading development of a National Fish, Wildlife and Plants Climate

Adaptation Strategy to guide government-wide wildlife adaptation partnerships over the next 50 to 100 years.

- Developing an innovative carbon sequestration program in the Lower Mississippi Valley in partnership with The Conservation Fund, American Electric Power Company and Entergy Inc., that is also restoring native habitats to bolster populations of wildlife and migratory birds. The project has added more than 40,000 acres of habitat to the National Wildlife Refuge System and reforested more than 80,000 acres, sequestering 30 million metric tons of carbon over the project's 70-year lifetime.
- Helping create a network of locally driven, solution-oriented landscape conservation cooperatives that will allow federal, state and local partners to develop shared science capacity to inform conservation actions that help priority species and habitats withstand the impacts of climate change.

The survey is available at <http://pubs.usgs.gov/ds/685/DS685.pdf> 

A Hands-On Approach to Habitat Restoration

By Bill O'Brian

On a gorgeous spring Thursday in northern Virginia, Lisa Bright is beaming as she stands in an Occoquan Bay National Wildlife Refuge field displaying a Japanese knotweed root she has just yanked from the ground.

Bright loves ridding the landscape of Japanese knotweed, Japanese honeysuckle and other invasive plants. She loves spreading the word about ecological balance. She loves the interrelationship of species. And she cherishes botanical diversity.

That is why Occoquan Bay Refuge has entered into an agreement whereby Bright and Earth Sangha—a largely volunteer nonprofit organization she and her husband, Chris, co-founded—are attempting to restore the mostly monotypic 12-acre refuge field to native meadow.

The refuge views the effort as an experiment—a chance to see if Earth Sangha's manual labor-intensive, herbicide-light approach to invasive species control and habitat restoration will work. The Refuge System invasive species program, which is funding the venture, sees it as a pilot project to learn more about engaging volunteers in restoring refuge lands.

“Some of the techniques they come up with might be useful for other projects here or elsewhere. If they are, I'll consider this project a success,” says refuge manager Greg Weiler.

“They have the willingness to tackle the job. Lisa and Chris know native plants and have extensive experience doing this kind of thing,” says refuge outdoor recreation planner Marty McClevey. “Lisa is very purist in what she wants restored into the meadows here. I admire that.”

Earth Sangha has 260 members and a network of 800 local volunteers. “We work in the spirit of Buddhist practice,” its Web site says, “but our members and volunteers come from a wide variety of religious and secular backgrounds.”



Earth Sangha co-founder Lisa Bright does invasive species work at Occoquan Bay National Wildlife Refuge in Virginia. “We want to do ecological work on the ground, not policy,” she says of her nonprofit organization. (Bill O'Brian/USFWS)



Fifth-graders, from left, Llewellyn Dortch, Madison Manning and Linnea Sullivan help remove invasive grasses at Occoquan Bay Refuge. (Bill O'Brian/USFWS)

The nonprofit runs a nursery containing 40,000 plants of 220 species, all native to Piedmont or coastal Virginia within a 50-mile radius of its Fairfax County base. Earth Sangha means “Earth community,” and the organization's ethic is not to own land itself but rather to restore public lands.

“We want to do ecological work on the ground, not policy,” says Lisa Bright. “There's lots of policy. We want to do something.”

At Occoquan Bay Refuge, Earth Sangha has taken on the daunting restoration task because, says Bright, “on the East Coast, naturally occurring native meadow is almost nonexistent now.”

The five-year, \$70,000 project is in its second year. Last year, Earth Sangha and its trained volunteers surveyed the field to understand its vegetation and began removing invasives by hand. This year, they continue to remove invasives manually with limited herbicide spraying help from the refuge. They also will plant a small test plot. Next year, wider native planting is planned—some with golden rod and boneset seeds Earth Sangha will collect by hand at the refuge.

The project's goal is to remove invasives, control native-but-overly-dominant Eastern gamma grass and replant a diverse meadow of native grasses and forbs that will be desirable habitat for songbirds and breeding grassland birds. The current gamma grass-dominated field is not attractive to such birds.

“We're a different kind of contractor,” says Bright. “We don't come out one time to do the job. We constantly over time bring volunteers out to do the job.”

Bright also brings out students. On this gorgeous Thursday, a dozen or so fifth-graders from private Browne Academy in nearby Alexandria are helping out.

“At first, I worried about making sure the kids would be productive for Lisa,” says science teacher Mike Sasso, “but then I realized that it was all about exposure, exposing them to the restoration process.”

Bright agrees.

“We try to maximize education for kids, but it's not that they help me that much,” she says.

Rather, they see insects, butterflies, birds, varied vegetation, the openness of the refuge. “And they say, ‘Could I get a job here? It would be cool if I do this kind of work every day and for the rest of my life.’”

Trumpeting 25 Years of Success at Tamarac Refuge

By Ben Ikenson

John James Audubon preferred pens made from the quills of trumpeter swans to depict the fine lines in the feet of bird species, including, in all likelihood, the trumpeter swan. The irony may not have been lost to the famed naturalist-painter, considering the bird was severely overhunted during his lifetime.

With luminous white plumage and a wingspan that can reach eight feet, the world's largest waterfowl made an easy target. Its flesh fed countless pioneer families. Its skins were manufactured into powder puffs. Its fine, rough feathers were fashioned into fountain pens.

The reason the bird wasn't overly threatened by the demands of a growing millinery trade in the early 1900s, as was the whooping crane, is that "by then, there just weren't a lot of trumpeters left in the heart of their original range across Canada and the north-central U.S.," says Carrol Henderson, nongame wildlife program manager for the Minnesota Department of Natural Resources. "By 1885, they were completely extirpated from Minnesota."

A full century later, in 1987, Henderson played a prominent role in a moment marking a dramatic turnaround for the state-listed threatened species. He released 21 trumpeter swans—derived from a small flock in Montana—at Tamarac National Wildlife Refuge in northwestern Minnesota.

Dissected by three rivers and encompassing more than 42,000 acres of northern hardwood forest, coniferous forest and tallgrass prairie, "the refuge seemed to have all the right components—diversity of wetland types, lots of surrounding public and tribal land, relatively few power lines," he says. "Our odds, we thought, were good here."

Indeed. Over the past 25 years, a total of 358 captive-raised trumpeter swans have been released in Minnesota (98 directly at the refuge). Swan numbers are increasing at an annual rate of 16 to 18



A trumpeter swan nests at Minnesota's Tamarac National Wildlife Refuge, where the species' recovery began in 1987. There are now 6,000 trumpeter swans in the state. (Kelly Blackledge/USFWS)

percent. Fears that the species would vanish, leaving only an Audubon illustration as proof of its majesty, have subsided; with more than 6,000 trumpeter swans now in the state, the recovery is a conservation landmark.

"The public has grasped onto this as a true success story, like the bald eagle," says Tamarac Refuge wildlife biologist Wayne Brininger. "Especially around here, people are really attached to the bird."


In fact, state taxpayers have helped finance the success story. While Tamarac Refuge was purchased with funds from federal Duck Stamp sales a few years after the Duck Stamp program was established in the 1930s, the state's coffers were never abundant enough to easily fund management for nongame species like trumpeter swans.

"We were the poor stepchild," says Henderson, who reports the statewide budget for nongame conservation from 1977 to 1980 was less than \$30,000 per year. Established in 1980, a nongame wildlife checkoff program on state income tax forms came to provide a dependable funding source, through which taxpayers

now annually donate more than \$1 million, a portion of which goes to trumpeter swan recovery.

In turn, the trumpeter swan is proving its worth. For instance, the city of Monticello, northwest of Minneapolis, purchased a vacant lot adjacent to an area on the Mississippi River used by wintering trumpeters. Crowds now gather on crisp winter mornings for the spectacle—and the symphony—of upward of a thousand trumpeting swans alighting on the water.

"Even if you're not all that interested in wildlife, you're interested in seeing these guys," says Henderson.

What was once a major liability, the bird's conspicuousness is now a valuable selling point for its own conservation. At Tamarac Refuge's recent annual bird festival, Henderson, Brininger, and others offered presentations celebrating the recovery program's 25th year. Of course, thanks to the program, festival goers needn't have gone far to see the actual birds themselves. 

Ben Ikenson is a New Mexico-based freelance writer.

Gardening for Butterflies

By Suzanne Valencia

On the first butterfly walk I took many years ago, the leader said, “If you build it, they will come.” As with mouse traps and baseball fields, this has proved to be true at Pelican Island National Wildlife Refuge on Florida’s Atlantic Coast.

In 2004 and 2005, students from Pelican Island Elementary School helped plant the butterfly garden at the refuge—and since then the butterflies have come.

Over the years, the garden has attracted an array of them, including white peacock, zebra longwing, monarch, red admiral, checkered white, great southern white, various skippers, eastern black swallowtail, dainty sulphur, cloudless sulphur, phaon crescent, queen, Gulf fritillary, mangrove buckeye and painted lady.

All of which is heartening to me because I guided those grade-school students almost a decade ago as they put the plants into the ground—each specimen native to our area.

In that time, I have seen up close how fascinating butterflies are.

They will come for the nectar to almost any plant that has blossoms, but if you want them to breed, you also need host plants. Each species of butterfly usually has one particular plant on which it will lay its eggs. That is the plant that the emerging caterpillars will eat and that imparts chemicals to the caterpillar for protection against predators.

How do butterflies find that particular plant? How do they sense and find the nectar? They have ultraviolet vision that allows them to see it. Butterflies can recognize flowers’ ultraviolet patterns not visible to humans.

And how do they find their way to Florida from colder climes? One thing is clear: Butterflies certainly are tougher than they look.

Sustaining a garden for them takes a fair amount of organization and a great amount of help. In the early years, I



A painted lady alights on a native plant in the butterfly garden that the author oversees as a volunteer at Pelican Island National Wildlife Refuge in Florida. (Glen Bain)

most often worked alone. But since the refuge began subscribing a few years ago to Volgistics, an online volunteer management software service, I have been able to send out messages, as needed, to about 900 potential volunteers. I schedule garden workdays according to my free time. A core group of volunteers—Larry and Faye Anderson, Hedy Von Achen, Ken Gonyo and John Boltz—are as dedicated to the garden as I am.

We concentrate our efforts from fall to spring because Florida’s summers are just too hot and buggy to spend time in the garden. Keeping the weeds under control is a major problem; everything goes wild if we turn our backs for very long. And, of course, the wildflowers seed themselves wherever they want, so it is difficult to maintain order in the garden.

In addition to seeing the variety of butterflies, one of the delightful aspects of working in the garden is seeing the

birds in the pond next to it. We have an assortment of wading birds: wood storks, roseate spoonbills, white ibis, great blue herons, tri-colored herons, little blue herons, great American egrets, snowy egrets, brown pelicans and, in winter, white pelicans and ducks too numerous to mention. Some days it is hard to concentrate on the weeding.

We have a wonderful time talking to visitors from all over the world who come to stroll on the paths through the garden. They are delighted to hear the story of Pelican Island National Wildlife Refuge and the butterfly garden. And we are delighted to tell that story—because when it comes to the garden and its butterflies, my volunteer gardeners and I are like proud parents. 🦋

Suzanne Valencia is a volunteer at Pelican Island National Wildlife Refuge in Florida and a member of the refuge’s Friends group, the Pelican Island Preservation Society.

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.

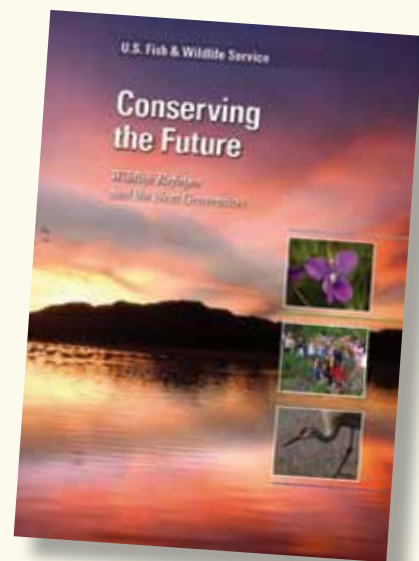
This Focus section, titled Partnerships That Work, centers on the objectives of the Community Partnerships team as

they pertain to recommendations 11 and 12 of the vision.

Recommendation 11: Develop and nurture active and vibrant Friends groups or community partnerships for every staffed refuge or refuge complex.

Recommendation 12: Develop a national strategy for recruiting, coordinating and supporting a more self-sustaining volunteer corps, while creating new opportunities for community involvement in implementing refuge priorities.

The Focus section includes articles about some—but by no means all—Refuge System partnerships that work well. 



First Research, Now Some Vision Products — continued from page 1

and-forth that helped develop the *Conserving the Future* vision.

The draft communications plan proposes that the National Wildlife Refuge System expand its reach first by meeting Americans on their own turf—whether that’s a shopping mall, sports arena, community center or local library—and then fostering a tsunami of support by creating buzz online and distinctive programs at wildlife refuges. Corporate and nonprofit partnerships are key elements.

Among the Communications team’s goals is doubling the number of people who encounter refuges—on the ground and virtually. Today, more than 45 million people visit refuges annually, and the Refuge System Web site draws about 200,000 visitors a month. The plan partially grew out of stakeholder interviews and online listening that identified the Refuge System’s reach and barriers to attracting diverse audiences.


The Urban Wildlife Refuge Initiative implementation team held three days of meetings in late June to discuss urban initiatives and potential collaborative

opportunities with key conservation partners. The team, which already has superimposed a map of the Refuge System on a map of U.S. population centers, now is identifying elements of excellence that make existing urban refuges successful. The team hopes to convene an urban refuge summit in 2013, inviting about 100 refuge staff and partners.

About 80 percent of Americans live in urban areas, but relatively few of the nation’s 556 wildlife refuges are located there.

“The Refuge System now spans the continent and reaches across oceans, providing safe homes for our nation’s fish, wildlife and plants,” says the *Conserving the Future* document. “But despite our broad geographic reach, we face challenges in connecting with all Americans. We struggle to remain relevant to urban citizens who have competing priorities and few outside experiences; we strain to find ways to connect with young Americans who are technologically fluent but deficient in nature experiences ...”

In other realms, the Interpretation and Environmental Education implementation team has made creation of an ambassadors program a priority, the Planning team is surveying refuge staff about how to improve and best implement comprehensive conservation plans (CCPs), and the Community Partnerships implementation team is surveying nearly 100 refuge managers to identify best practices for attracting and managing volunteers, Friends and partners. The Community Partnerships team plans to develop an online tool to help management, and it seeks to improve the Web presence for volunteers, Friends and partners.

To comment on proposed products and approaches, join the social network at AmericasWildlife.org and watch the conservation conversation flow. In addition to team work plans and Facebook/Twitter feeds, the Web site now features the Refuge System on Pinterest—one of the newest popular social networks—too. 

A Dozen Partners Restore One Ancient Ecosystem

By Stacy Shelton

The next generation of biological carbon sequestration work is taking place at three national wildlife refuges near Albemarle Sound in North Carolina and Virginia with help from almost a dozen partners.

The refuges—Alligator River, Great Dismal Swamp and Pocosin Lakes—are bound by an ancient ecosystem called pocosin, the Algonquin Indian word for “swamp on a hill.” The refuges comprise 375,000 acres, the largest ownership of pocosin wetlands in the eastern United States.

Beneath forests of pond pines, white cedars and a dense shrub understory, the chocolate-colored soils are layered with thousands of years of slowly decaying organic material. The most precious ingredient in these pocosins, or peatlands, is the carbon-rich peat soil.

Despite comprising only three percent of Earth’s land area in places that include Alaska, Canada and Russia, “peatlands hold one-third of the world’s carbon,” Curtis Richardson of the Duke University Wetland Center said at a partner meeting this spring at Pocosin Lakes National Wildlife Refuge. Richardson is leading cutting-edge research at the refuge to quantify peat soil carbon storage.

The goal of keeping that carbon locked away has rallied a long list of U.S. Fish and Wildlife Service partners playing important science or funding roles. They include The Nature Conservancy (TNC), The Conservation Fund, the states of North Carolina and Virginia, the National Oceanic and Atmospheric Administration, the U.S. Geological Survey, the Environmental Protection Agency, and Duke, Christopher Newport and North Carolina State universities.

Sara Ward, an ecologist with the Service’s Environmental Contaminants Program in the Raleigh ecological



When pocosin wetlands like this one at Great Dismal Swamp National Wildlife Refuge dry up, carbon is released and fire hazard is increased. An ambitious multi-agency project to re-wet pocosins at Great Dismal Swamp, Pocosin Lakes and Alligator River Refuges is underway. (Stacy Shelton/USFWS)

services field office, compared the effort to an old-fashioned barn-raising. “With limited budgets, we’re pulling together lots of different resources, looking for help and ways to help our partners.”

Under natural conditions, the peat soaks up rainfall and the carbon remains stable, locked away in the deep soils that reach 12 feet or more below the surface.

The goal of keeping that carbon locked away has rallied a long list of U.S. Fish and Wildlife Service partners playing important science or funding roles.

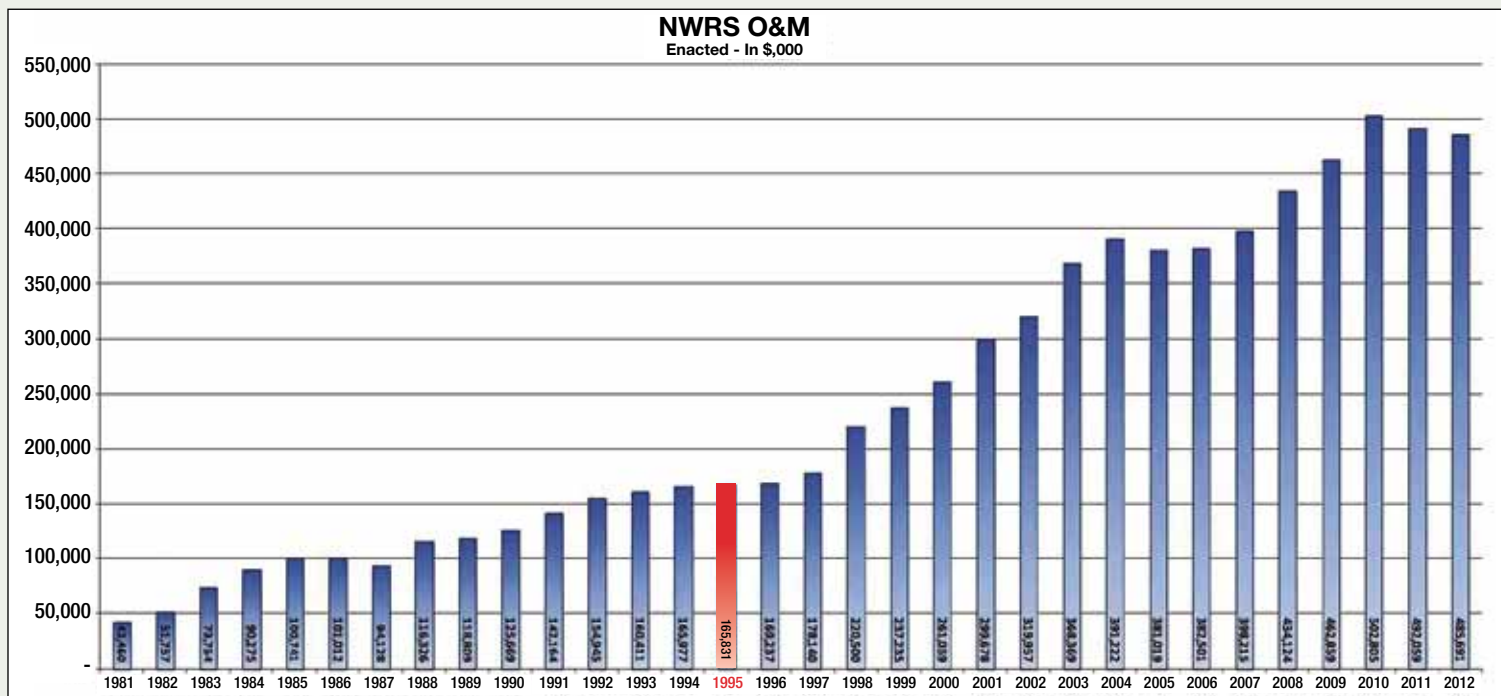
But starting in the 1700s, swaths of Albemarle Sound were ditched and drained for farms and pine plantations. George Washington was a famous early proponent of the practice to harvest Atlantic white cedar and bald cypress from Great Dismal Swamp.

Without enough water, the peat dries up, releases carbon (a climate-changing greenhouse gas) and becomes a fire hazard. While healthy pocosins need periodic fire, drainage makes them vulnerable to severe fires that burn underground, particularly during drought years. Last year, fires ignited in Alligator River and the Great Dismal Swamp Refuges burned about 52,000 acres combined. In addition to the ecological and greenhouse gas impact, the fires are costly: Fire suppression at the three refuges has cost more than \$50 million since 2008. Furthermore, the loss of soil and associated elevation makes these low-lying coastal refuges more susceptible to sea-level rise.

The solution is to return the water to the peatlands and mimic natural seasonal fluctuations by installing water control structures in some of the thousands of ditches. In addition to storing carbon, re-wetting the pocosins is good for wildlife, water quality, nearby human communities and increased resiliency to climate change.

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Focus . . . Partnerships That Work



This chart shows the growth of the National Wildlife Refuge System operations and maintenance budget since 1981. The Cooperative Alliance for Refuge Enhancement (CARE), which advocates for Refuge System funding, was established in 1995. (USFWS)

CARE: All for One, and One for All

By Bill O'Brian

Question: Do Defenders of Wildlife and the National Rifle Association ever agree on anything?

AnsWER: Yes. At each annual strategy meeting of the Cooperative Alliance for Refuge Enhancement (CARE) since 1995, Defenders and the NRA have agreed on the precise number of dollars Congress should allocate to the next year's National Wildlife Refuge System operations and maintenance budget.

CARE is an umbrella group of 22 politically diverse nonprofit organizations that support funding for national wildlife refuges. It is 100 percent budget-oriented.

"We don't weigh in on policy priorities or specific programmatic priorities or anything of that nature," says Evan Hirsche, president of the National Wildlife Refuge Association, which chairs CARE. "The only reason the CARE group works is that we're advocating for

one single number for operations and maintenance funding."

CARE's member organizations realize that, regarding the Refuge System budget, "we need to increase the size of the loaf and not fight over the leftovers, so that all interests are well served," says the NRA's Susan Recce. "The hunting community has been tied at the hip with the Refuge System since the days of Teddy Roosevelt."

"Defenders belongs to CARE because sound management of the National Wildlife Refuge System is a top priority for wildlife conservation in our nation. Without adequate funding, the Refuge System cannot meet its mission," says Defenders' Mary Beth Beetham. "When members of Congress see a coalition of groups that don't often agree on other issues, it sends a powerful message on the importance of the common goal being advanced. This is especially true in this time of sharp polarization on so many issues."

The 22 Members

Twenty-two nonprofits belong to the Cooperative Alliance for Refuge Enhancement (CARE): American Birding Association; American Fisheries Society; American Sportfishing Association; Association of Fish and Wildlife Agencies; Congressional Sportsmen's Foundation; Defenders of Wildlife; Ducks Unlimited Inc.; Izaak Walton League of America; Marine Conservation Institute; National Audubon Society; National Rifle Association of America; National Wildlife Federation; National Wildlife Refuge Association; Safari Club International; The Corps Network; The Nature Conservancy; The Wilderness Society; The Wildlife Society; Trout Unlimited; U.S. Sportsmen's Alliance; Wildlife Forever; Wildlife Management Institute.

More information about CARE is at <http://www.fundrefuges.org>.

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Land Partners: “We Couldn’t Do Our Job Without Them”

By Bill O'Brian

Eric Alvarez clearly knows his way around what he calls the U.S. Fish and Wildlife Service “conservation estate.”

As he discusses land acquisition, he exudes passion for the mission. He tosses out surprising numbers, arcane real estate terms and the occasional trigonometry reference. But, mostly, he makes clear his appreciation of the contribution that non-governmental organization land partners have made to the National Wildlife Refuge System.

“I don’t think we could have accomplished what we’ve accomplished without NGO partners,” says Alvarez, chief of the Refuge System Washington office Division of Realty since 2002 and a Service realty employee since 1991. “We couldn’t do our job without them.”

Alvarez is referring to NGOs like The Nature Conservancy, The Conservation Fund, the Trust for Public Land, Ducks Unlimited, Pheasants Forever—and local land trusts.

Most of the Refuge System’s 150 million acres came from the public domain (U.S. land never conveyed from federal ownership) or from other federal agencies, including the Defense Department. Since its 1903 founding, the Refuge System has purchased only 7.4 million acres. Of those purchases, 60 percent were via fee title acquisition, whereby the Service owns all or most rights to the land; 40 percent were via easements, primarily wetland, grassland and non-development easements.

The NGOs help with those purchases in myriad ways.

When a landowner is unwilling or unable to deal directly with the Service, NGOs can be pass-throughs. When the Service doesn’t have funds and a landowner wants to sell immediately, NGOs can buy and hold the property until the Service



Non-governmental organizations routinely help the U.S. Fish and Wildlife Service acquire land. The Trust for Public Land bought a huge tract in New Hampshire’s Androscoggin River headwaters and is selling it off to federal and state conservation agencies, including the Service for Umbagog National Wildlife Refuge. (USFWS)

can buy it from them. NGOs can buy land and donate it to the Service. NGOs can facilitate land exchanges. By law, the Service can’t sell refuge lands, says Alvarez. However, NGOs frequently help the Service trade low-resource-value land for high-resource-value land.

“Non-Federal Dollars”

Alvarez ticks off recent examples of NGOs making a difference.


The Nature Conservancy, which had been working for more than a decade to restore central Florida habitat, “provided a lot of the science and was the driving force behind” the Everglades Headwaters National Wildlife Refuge and Conservation Area’s establishment, says Alvarez, as was the National Wildlife Refuge Association.

When the Service recently decided to direct 70 percent of Migratory Bird Conservation Fund land acquisition money to the Prairie Pothole Region, Ducks Unlimited committed to matching up to \$50 million for wetland and grassland conservation. “Those are non-federal dollars,” Alvarez notes.

Other examples: The Trust for Public Land buying a huge tract in New Hampshire’s Androscoggin River headwaters and selling it off to federal and state conservation agencies, including the Service for Umbagog Refuge. Pheasants Forever obtaining land through Minnesota state grants and donating it for Northern Tallgrass Prairie Refuge. The Nature Conservancy buying a large tract for Glacial Ridge Refuge, MN, and slowly selling it to the Service “at a huge bargain price.” The Conservation Fund stepping in similarly at Red River Refuge, LA, and Neches River Refuge, TX. The list goes on.

“There’s the tangible impact that the NGOs have had, meaning acres that they’ve bought directly and donated or facilitated the purchase of,” says Alvarez. “But then there’s the intangible piece of it where they work with Congress and localities to get funding, help us with planning and generate goodwill in the communities.”

And there’s the trigonometry piece, too.

“Federal budgets for land acquisition are relatively small, and they are very variable,” Alvarez says. “Imagine a sine wave—peaks and valleys, peaks and valleys—NGOs are kind of the leveling off of that sine wave. They tend to fill in some of those valleys and, at times, add to the peaks.” 

Focus . . . Partnerships That Work—

Montana and the Service Join Forces for Arctic Grayling

By Kendall Slee

The U.S. Fish and Wildlife Service and Montana Fish, Wildlife & Parks are teaming up at Red Rock Lakes National Wildlife Refuge for the benefit of an endangered population of Arctic grayling.

This spring—as part of a labor-intensive, federal-state partnership that began with testing early last decade and will continue at least through 2014—biologists introduced about 69,000 fertilized Arctic grayling eggs into Elk Springs Creek at the refuge. Over three to four weeks, they monitored the growing gametes and checked for grayling hatched in previous years. The partnership’s goal is to reestablish a viable spawning population in the creek.

Arctic grayling is a freshwater fish in the same family as salmon, trout and whitefish. The Upper Missouri River population in Montana was classified as a distinct population segment and added to the candidate list under the Endangered Species Act in 2010. Arctic grayling in Montana are the last surviving endemic populations in the contiguous 48 states. Reestablishing the Arctic grayling into historical spawning streams, including Elk Springs Creek, is a goal in the refuge’s comprehensive conservation plan (CCP).

A nearby Montana Fish, Wildlife & Parks (FWP) hatchery is providing key expertise toward that objective, extracting eggs and sperm from a healthy population of Arctic grayling in Red Rock Creek on the refuge.

“They show up here with their electro-fishing crew the night before the grayling are expected to spawn. They extract eggs from the females and mix them with sperm from the males. That’s a really technical thing that they do,” says refuge manager Bill West. Success depends on precise predictions of spawning and careful execution. Fertilized eggs are transferred to Elk Springs Creek and



U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks biologists use an electroshock probe to collect Arctic Grayling from a creek at Red Rock Lakes National Wildlife Refuge in preparation for collection of live eggs. (James N. Perdue)

placed in remote site incubators, which provide surrogate nests along the creek.

The state is also relying on the Red Rock Creek population to help it establish a brood stock of Arctic grayling in a nearby lake on national forest land using a similar approach.


Service biologist Glenn Boltz is leading the Elk Springs Creek grayling reintroduction with advisory assistance from Service and Montana FWP geneticists about how to establish a diverse, viable gene pool in the brood stock and within Elk Springs Creek.

Such close-knit partnerships make sense for federal and state wildlife agencies with missions to conserve the same resources, says John Kennedy, chair of the Association of Fish and Wildlife Agencies’ State-Federal Relations Committee and deputy director of the Wyoming Game and Fish Department.

“It is in the best interest of our agencies, our publics and the fish and wildlife resources we are mandated to conserve, to develop and maintain strong relationships and partnerships and achieve shared success,” says Kennedy,

who adds that strong partnerships depend on trustful relationships and minimal jurisdictional debates between federal and state agencies.

To lay the groundwork for this project, the refuge restored Elk Creek as riparian habitat by, in 2009, draining a human-made pond that had been blocking the spawning path of Arctic grayling on the creek for decades. This caused some concern for the trumpeter swan, which nests on the refuge. While staff does not believe the pond’s demise has hurt the swan, the refuge continues to monitor the trumpeter population. Such balancing acts involving species of concern are part of the challenge of managing a refuge, West says.

As for the Arctic grayling, their viability in Elk Springs Creek will be judged by the genetic diversity and numbers within their populations. Generally, Boltz says, biologists designate a population as viable if there are at least 500 fish and 50 spawning individuals per year, which has not yet happened in this case. 

Kendall Slee is a Colorado-based freelance writer.

Shaping Conservation Careers One Young Person at a Time

By Bill O'Brian

Andrea Johnson is 22. Thanks to the Student Conservation Association's Tribal College Internship Program, she has her sights set on a dream job.

"I want to go to FLETC for training and be a [U.S. Fish and Wildlife Service] law enforcement officer and an archaeologist on the side – a dual function kind of thing," she says, referring to the Federal Law Enforcement Training Center. "We really have only one Earth. Once it's gone, it's gone. Enforcement is key."

Johnson, a Costanoan Indian and rising senior at California State University-Stanislaus, fed her yearning for a conservation career as an intern last summer at Seedskaadee National Wildlife Refuge in Wyoming. She is just one of the 1,097 youth the Service hired in 2011 with the help of more than 70 third-party partnerships. Those partner youth worked almost 340,000 hours last year on more than 300 Service units, most of them refuges.

The Service offers many in-house programs for youth, such as SCEP (Student Career Experience Program), STEP (Student Temporary Employment Program) and YCC (Youth Conservation Corps). The partnerships discussed here go beyond those internal programs. Almost half of the youth who work on Service-related projects are hired by third parties under cooperative agreements with field stations and regional or national offices, according to a Service 2011 employment report, *Youth in the Great Outdoors: Experiences of a Lifetime*.

The third-party partners usually handle recruiting, pay and other administrative tasks so Service staff can concentrate on providing youth with meaningful conservation opportunities.

The partnerships offer young people "practical skills, training and mentoring

that hopefully will lead to some kind of employment in a conservation-related field, whether it's with us or others," says National Wildlife Refuge System Washington office visitor services chief Kevin Kilcullen, who notes that "there are a lot of people with their fingers in this pie that help shape these youth employment programs."

Two highly visible partners are The Corps Network—which represents more than 150 local conservation corps across the country—and the Student Conservation Association (SCA).

Workforce Diversity

Two SCA entities—the tribal intern program and the Career Discovery Internship Program (CDIP)—help address *Conserving the Future* recommendation 22: "Within the next 10 years, make our workforce match the diversity in the civilian labor workforce. Recruit and retain a workforce that reflects the ethnic, age, socioeconomic and cultural backgrounds, and language diversity of contemporary America."

The CDIP, founded in 2008 under the leadership of Northeast Region assistant refuge supervisor Lamar Gore, introduces culturally and ethnically diverse college freshman and sophomores to conservation.

Alyssa Rooks, a rising junior at Atlanta's Spelman College and a CDIP intern last summer at Monomoy Refuge in




Andrea Johnson and refuge seasonal biological technician Bryce Ahlers conduct a perimeter check at Seedskaadee National Wildlife Refuge. Johnson, a Costanoan Indian, was a Student Conservation Association tribal intern at the southeastern Wyoming refuge in 2011. (Kolby Magee /USFWS)

Massachusetts, says, "it definitely shaped my career path. Even if I don't end up pursuing [a conservation career], it's something that will be in the back of my head that I carry with me."

Rooks, an English major with journalism/communications concentration, says she'll never forget the passion of everyone associated with Monomoy Refuge and how she was pressed into duty "outside her comfort zone" to help wildlife biologists with common tern and piping plover fieldwork.

And Johnson, an anthropology major minoring in criminal justice and environment studies, says she'll always treasure Seedskaadee Refuge's riparian, wetland and upland shrub habitat "especially when the sun is coming up or going down."

"It's nice and peaceful," the 2011 tribal intern says. "I don't know really how to explain it. I enjoyed the scenery just knowing that it was my backyard for the whole summer." 

Focus . . . Partnerships That Work— Desert Refuges and Tribes Build Rapport—and More

By Alyson Mack and Wendy Smith

When Newe and Nuwuvi tribe members visited Ash Meadows National Wildlife Refuge several years ago, a bighorn ram crested a hilltop to watch them. Similarly, an entire herd greeted them last fall. But when a ram showed up this spring, a time when sheep normally are absent from the refuge, the group fell silent. The ram came, the elders said, because “he heard a familiar language.”

The tribe members are part of the Newe/Nuwuvi Working Group—a partnership among the U.S. Fish and Wildlife Service, the Newe (Western Shoshone) and Nuwuvi (Southern Paiute) nations, The Mountain Institute and Portland State University. Facilitated by Jeremy Spoon and Richard Arnold, the group collaborates on interpretive planning and resource management projects at Desert National Wildlife Refuge Complex in southern Nevada. Spoon is a research associate at the institute and an assistant professor of anthropology at the university; Arnold is chair of the Pahrump Paiute tribe.

Tribal consultation occurs on various refuges in various forms, but this working group process provides federal agencies with a decidedly cooperative approach to tribal involvement. It underscores building rapport that extends beyond mere policy compliance.

“Most agencies typically conduct ‘check the box’ consultation, where they often only consult with the tribes as much as dictated by federal laws,” says Spoon. “Our process of both formal and informal consultation and involvement helps build real relationships and achieve mutually agreed upon outcomes.”

Arnold and Spoon accomplish this through transparency and meaningful discussions. Before tribes share information on any project, there is an informed-consent meeting, which



The Newe/Nuwuvi Working Group regularly consults on projects at Desert National Wildlife Refuge Complex in Nevada. Here, members of the group visit the life-giving Crystal Spring at Ash Meadows Refuge. (Wendy Smith/USFWS)

explains to participants the intended use of the information and states their right to withhold or retract information. “We always make sure to have full review of our materials by both the federal agencies and the participating Native American nations,” Spoon says. “This transparency is a vital component of our work.”

Empowerment is also a key component. Spoon stresses the importance of federal agencies contacting tribes in a government-to-government manner, rather than simply relying on the individuals they know. “It is up to the Native American nation to choose who participates in a project,” he explains. “Empowering Native American representatives to collect information from their own people is a good strategy to build trust and rapport.”

“I Feel Serenity”

The working group is helping to guide interpretation for a new visitor contact

station at Pahrnatat Refuge and is scheduled to conduct a traditional pine nut harvest at Desert Refuge this fall. The group is also working with the Service and the U.S. Forest Service on a consultation handbook and a collaborative resource management plan for future projects, including interpretive exhibits, visitor facilities and restorations. Involvement from initial project planning through to completion is crucial for a sustained partnership, Spoon says. “Collaboration on exhibits at one time can shift to working on educational programming or resource management at another. The rapport built is vital for our partnerships to continue.”

For some working group members, the experience is invigorating. “I am amazed how the group functions and talks genuinely about the importance for us to be back on this land,” one tribal participant recently told Spoon. “This has been a renewal of the past. Seeing how [the refuge] is being protected, I feel serenity.”

For the Service, the process produces results it couldn’t achieve alone. And it enables the Service to tell more complete stories honoring the vitality of Newe and Nuwuvi cultures.

For all involved, the partnership is a learning process. Newe and Nuwuvi look to bighorn as teachers in life, showing the way to knowledge and wisdom. Perhaps that bighorn ram last spring was reminding the working group of an important lesson in partnerships: Never stop listening for the sound of a familiar language. 🦋

Alyson Mack is a visitor services specialist at Ash Meadows National Wildlife Refuge. Wendy Smith is a visual information specialist at Desert National Wildlife Refuge Complex.

Friends, Aided by Foundation, Boost Refuges' Reach

By Alison Howard

When Friends of Tampa Bay National Wildlife Refuges was looking for a boost in its first few years, it turned to the National Fish and Wildlife Foundation. A \$5,000 NFWF grant enabled the group to buy a computer and projector for presentations; develop a Web site; print a brochure, business cards and bookmarks to distribute at festivals, and acquire two kayaks for better bird counts.

When Friends of Kootenai National Wildlife Refuge in Idaho needed help spreading the word about birding activities, it turned to the foundation. A \$1,500 NFWF grant resulted in a professionally created Web site, now the Friends' primary link with its members and widespread rural community.

When Friends of Las Vegas National Wildlife Refuge in New Mexico wanted to expand its environmental education program in elementary schools, it too turned to the foundation. A \$4,986 NFWF grant—more than matched by many local partners—enabled Friends volunteers to make “pre-visits” to 12 classrooms before bringing students to the refuge for field trips.

NFWF program manager Teal Edelen says its Friends grant program has been “extremely successful,” making more than 350 grants worth \$2.6 million to facilitate the start-up and growth of Friends groups.

The foundation, created by Congress in 1984, is funded by Congressional appropriations and its many partners, which include private companies, the U.S. Fish and Wildlife Service and other federal agencies. NFWF program manager Teal Edelen says its Friends grant program has been “extremely successful,” making more than 350 grants worth \$2.6 million to facilitate the start-up and growth of Friends groups.



Gallinas Canyon is visible from an overlook on the southern edge of Las Vegas National Wildlife Refuge in New Mexico. The refuge's Friends group used a 2010 National Fish and Wildlife Foundation grant to educate elementary school students about the natural beauty of the area. (Jo Rita Jordan)

But Edelen says NFWF contributes more than money, participating in proposal-writing workshops that help Friends “find other grant opportunities and other partners.”

With the help of NFWF and the Refuge System, says national Friends

work that wouldn't otherwise get done. Their contribution to the Refuge System is huge.”

Friends of Tampa Bay Refuges started in 2005 with 30 members, received its grant in 2008 when it had 76 members and now has 150. Board member Barbara Howard says the NFWF-funded communications tools and publicity materials raise the Friends' profile. The kayaks provide a more accurate count of the birds on Pinellas Refuge's nine islands, eight of which are closed to the public.

The monthly count used to be done by powerboat, skirting each closed island. “Once, we were trolling the perimeter of Tarpon Key when 25 pink roseate spoonbills flew right up out of a lagoon. We would've missed all those birds.” Now Friends members get a permit to paddle in. “It's a neat thing to do,” Howard says, “and it gives us a better idea what's there.”

Friends of Kootenai Refuge restarted three years ago, says board member

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Focus . . . Partnerships That Work—

Friends, Aided by Foundation, Boost Refuges' Reach — *continued from page 17*

Allen Rose, a 30-year refuge volunteer. The Web site created with NFWF funds enables its 150 members and local residents “to see what we’re up to,” he says, “and gives us a place to post our bird lists” from field trips, which draw worldwide hits. “It makes us more professional. It instills pride in our organization.”

Friends of Las Vegas Refuge used its 2010 grant to bring 270 well-prepared fourth- and fifth-graders to the refuge with a professional environmental educator, and the program continues on a smaller scale. The volunteers’ classroom pre-visits “enhance the learning experience,” says board member Sonya Berg, and busy teachers

gratefully embrace a program that fits schools’ curricula. “My kids have had their eyes opened even more to the beautiful nature of the Las Vegas area,” one teacher wrote on the Friends’ Facebook page. “They are so excited to return!” 🦋

Alison Howard is a frequent contributor to Refuge Update.



Friends of Kootenai National Wildlife Refuge in Idaho used a National Fish and Wildlife Foundation grant to create a Web site. The site enables its 150 members and local residents “to see what we’re up to,” says volunteer Allen Rose. “It makes us more professional. It instills pride in our organization.” (Stan Bousson)

A Dozen Partners Restore One Ancient Ecosystem — *continued from page 11*

TNC is attracting donors and recently matched a \$250,000 investment by the Service to restore the hydrology at Alligator River and Great Dismal Swamp Refuges. Pocosin Lakes Refuge has already restored 20,000 acres of pocosin wetlands, which are retaining an estimated 130 million pounds of carbon

annually. That’s equivalent to 11,000 cars’ emissions. Restoration of 15,000 more acres is planned.

Katherine D. Skinner, executive director of TNC’s North Carolina chapter, said “understanding and restoring the hydrology on [Alligator River and Great

Dismal Swamp Refuges], in addition to the work in place at Pocosin Lakes Refuge, is monumental to advance good conservation and minimize the effects of climate change as much as possible.” 🦋

Stacy Shelton is a public affairs specialist in the Southeast Region office in Atlanta.

CARE: All for One, and One for All — *continued from page 12*

CARE was founded in the mid-1990s—before the National Wildlife Refuge System Improvement Act of 1997, which identified the Big Six priority public uses. “Today we just take it for granted that the hook-and-bullet crowd and the environmental crowd are aligned around conservation interests,” says Hirsche, “but at that time, not so much. And so you had a number of these organizations that didn’t play particularly well in the sandbox.”

Now, as CARE members, they meet monthly and they get along—to refuges’ immense benefit.

Asked to cite CARE’s major accomplishments, Hirsche and Refuge Association colleague Desiree Sorenson-Groves point out that in fiscal 1994 the Refuge System budget was roughly \$166 million; in 2012 it is \$485.7 million.

“So you can see after the CARE group forms, gets organized, starts collaborating with Fish and Wildlife in documenting costs, suddenly we see a radical uptick in funding beginning in 1998,” says Hirsche, who also credits Friends’ advocacy for the monetary increase.

Hirsche and Sorenson-Groves mention more specialized budgetary successes, too—such as the roles CARE and Friends

groups have played in pushing for Refuge System natural disaster damages (particularly since Hurricane Katrina in 2005) and for American Recovery and Reinvestment Act funding for refuge construction projects.

And Sorenson-Groves highlights a spillover benefit.

“Because of the questions that CARE has asked in trying to get at the right answers, we have helped you, the Fish and Wildlife Service, have a better idea of your own needs,” she says. “That is one of the biggest things that I think we’ve done.” 🦋

Scouts vs. Invasives

By Tina Shaw

In the process of testing a pilot invasive species merit badge on a beautiful weekend this spring at Litchfield Wetland Management District in central Minnesota, more than 100 Boy Scouts from across the Midwest also tested themselves and lent a hand to U.S. Fish and Wildlife Service prairie restoration efforts.

The potential merit badge aims to immerse Scouts in understanding why non-native plants and animals are so damaging to native animals and their habitats. The badge challenges Scouts to think locally, regionally and globally about the natural world. And, in the case of Litchfield WMD, it gave Service land managers help on the ground, removing non-native eastern red cedar.

The Scouts came prepared for the weekend, with a working knowledge of invasives and a fair amount of research under their belts. They were at Randall Waterfowl Production Area, one of the most recently acquired WPAs at 35,875-acre Litchfield WMD, to test the merit badge for nationally significant relevance and, as important, for the fun factor that Boys Scouts of America expects of all merit badges.

It appears to have passed on the fun count.

One young Scout loved “lopping and dropping” the eastern red cedar. “I like the hands-on part,” he said, “Getting out and learning outdoors is so much better than in a classroom.”

As for relevance, less than one percent of the original tallgrass prairie in Minnesota remains, and the Service’s Midwest Region is keenly focused on bringing prairie back. Much of the remaining prairie and its plants and animals are threatened by loss of habitat, with a primary threat being the invasion of aggressive, non-native trees.

The Scouts involved in this pilot project removed hundreds of small red cedar trees on two privately owned native prairie sites where the Service has been working with the landowners through the Partners for Fish and Wildlife Program.

Landowners and the Service have been

working together strategically to restore prairie by removing invading trees, returning fire to the existing grassland and implementing managed grazing where appropriate. The community service learning aspect of this pilot merit badge is part of Litchfield WMD’s larger restoration plan, with the Scouts cutting cedar in preparation for planned prescribed burns later this year.

“A Conservation Organization”

Getting youth outside and learning about restoration work firsthand is a personal passion for district manager Scott Glup.

“This is special for me because my family and I are actively involved in Scouting,” he said. “I’m very youth driven, and introducing young conservationists to our newest waterfowl production area is a major goal of mine.”

Scoutmaster Brian Reiners of the North Star Council of Boy Scouts of North America worked hand in hand with Glup and other Service personnel to make the weekend event a reality.

Scouts and the Service are perfect partners, Reiners says: “Scouting is a




Litchfield Wetland Management District manager Scott Glup explains wetland and prairie restoration to Boy Scouts who tested a proposed invasive species merit badge at the district this spring. (Tina Shaw/USFWS)

conservation organization, and we believe in putting the outing in Scouting.”

He says that the proposed merit badge is important because, “while we have other biology merit badges, we don’t have anything that highlights the problem of invasive species as a centralized issue.”

More than half of Minnesota’s remaining tallgrass prairie, grasslands and wetlands are on private land. To preserve this remaining habitat and to protect the trust species that use it, the Service must work with private landowners to manage their lands to benefit native species.

Final approval of the merit badge by a Boy Scouts of America panel will take six months to two years, according to Chris Trosen, a wildlife biologist at St. Croix WMD in Wisconsin who is involved with the project. 

Tina Shaw is a public affairs specialist in the Midwest Region office in Bloomington, MN. More information about invasive species is at <http://www.fws.gov/invasives/faq.html>. More about the proposed merit badge is at <http://www.scoutmasterbucky.com>.

Around the Refuge System

Florida

J.N. “Ding” Darling National Wildlife Refuge unveiled an interactive touchscreen display at its visitor/education center this spring. The display, which has the feel and utility of a personal computer screen, is a hit, according to supervisory refuge ranger Toni Westland. “Everybody’s using it,” she says, “but kids especially are always gravitating toward the technology.” The capstone of the display is an interactive U.S. map that a user can touch to learn of the refuges in any of the 50 states. The four North American migratory bird flyways overlay the map, which is accompanied by an audio clip about the Refuge System’s mission, history and scope. The touchscreen also includes slideshows, descriptions and/or audio-video clips about Jay Norwood “Ding” Darling; the Duck Stamp program; the refuge Friends group; and waterfowl wood sculptor Jim Sprankle. Perhaps most popular, though, is a waterfowl wood carvings display. When a user touches a bird image on that display, “that bird comes to life in front of you,” says Westland. While the bird’s call plays on audio, a split screen shows the carving, a photo of the bird, a “wow! fact” about the bird and flyway information. Importantly, says Westland, the entire display, which was funded the Friends group (the “Ding” Darling Wildlife Society), is bright, flashy and strategically located in a spot where the refuge’s 700,000 annual visitors can’t miss it.

California

The volunteer program at San Diego National Wildlife Refuge got a nice boost in May. The Earth Discovery Institute received a \$103,000 grant from a San Diego Association of Government’s TransNet Environmental Mitigation Program to assist the refuge and its partners with community and volunteer events. Volunteers have helped the 9,000-plus-acre refuge plant native grasses and shrubs from seed in uplands near its vernal pools; clean up trash; install fencing; repair trails; plant acorns

of coastal live oak and Engelmann oaks; install nest boxes for burrowing owls and bluebirds; and otherwise improve habitat, according to refuge manager Jill Terp. That work, facilitated by the Conservation Biology Institute, has benefited at least 16 listed species and more than 40 locally sensitive species, Terp said. The new grant will help the refuge “leverage our limited staff and funding—and that of our partner agencies—by having a dedicated coordinator who does volunteer/outreach work on our behalf,” she said. “More important to me, we’re developing the public’s appreciation of the amazing biological diversity of San Diego that our landscape-level regional conservation program [the Multiple Species Conservation Program] was created 15 years ago to protect.”

Mountain-Prairie Regional Refuge Chief

Matt Hogan, assistant regional director for Migratory Birds and Wildlife and Sportfish Restoration for the Mountain-Prairie Region, has been named the region’s refuge chief. Over the past year, he also has served as the region’s America’s Great Outdoors coordinator; working on a number of large landscape conservation initiatives. Previously, Hogan was executive director of the Association of Fish and Wildlife Agencies (AFWA) in Washington, DC. Before that, he worked for the Service and the Department of the Interior in several leadership roles in Washington.

Michigan

Detroit River International Wildlife Refuge this spring acquired Sugar Island, an uninhabited 30-acre island



Two students use the touchscreen U.S. map at J.N. “Ding” Darling National Wildlife Refuge in Florida. The interactive map provides information about refuges nationwide. (Toni Westland/USFWS)

that had been privately owned. The island—purchased for \$434,100 with Great Lakes Restoration Initiative funding—will be closed to the public, except perhaps during hunting seasons. A proposed hunting plan is under review. “This significant addition to the refuge permanently protects the island for fish and wildlife populations, and helps protect our internationally renowned ‘natural capital’ that enriches our quality of life and is a gift to future generations,” said refuge manager John Hartig. The refuge includes more than 5,700 acres along 48 miles of the lower Detroit River and western Lake Erie.

Oregon

The Service and several partners have been presented with the Oregon 2012 Fishery Team of the Year Award for the Ni-les’tun Tidal Marsh Restoration Project at Bandon Marsh National Wildlife Refuge. The 418-acre tidal marsh restoration project was completed last summer under the direction of Oregon Coast Refuge Complex project leader Roy Lowe. It is the largest tidal marsh restoration project ever constructed in Oregon and is benefiting a host of estuarine-dependent fish, particularly salmonids, which include coastal cutthroat trout, juvenile Chinook salmon and threatened coho salmon.

In addition to the Service, partners recognized included the Federal Highway Administration, the Coquille Indian Tribe, the Confederated Tribes of Siletz Indians, Oregon Department of Fish and Wildlife, Ducks Unlimited and the Estuarine Technical Group of the Institute for Applied Ecology. The Oregon chapter of the American Fisheries Society presented the award.

Show Me!

New pocket guides for Upper Mississippi River National Wildlife and Fish Refuge (Wisconsin, Iowa, Illinois, Minnesota) and St. Croix Wetland Management District (Wisconsin) give visitors a handy way to identify what they are seeing. Friends of the Refuge Headwaters helped produce a full-color glossy guide to common species at Upper Mississippi River Refuge. Friends sold half of the first printing of 1,000 to other Friends groups along the river as well as to such organizations as the Minnesota Marine Art Museum and the National Mississippi River Museum and Aquarium. The guide includes a scannable code leading to the refuge Facebook page. At St. Croix WMD, a Friends auto tour birding guide describes wildlife, waterfowl production and wildlife management areas. The guide includes history, birds of interest, difficulty of hikes, driving directions, helpful advice and tidbits about conservation, Friends projects and management practices such as prescribed burns and grazing.

Perchetti, Minch Receive Awards

Two Refuge System employees—one from each coast—have been honored for their work in the field.

Sandy Perchetti, volunteer and community partnership coordinator at New Jersey's Edwin B. Forsythe National Wildlife Refuge, is the Service 2012 Legends Award recipient. The award recognizes Perchetti for achievements in bridging the gap between children and the outdoors. Last year, Perchetti lead the creation of an outdoor Children's Nature Discovery

Virginia



An osprey carrying nesting material soars over Occoquan Bay National Wildlife Refuge this spring. The refuge is 20 miles south of Washington, DC, at the confluence of the Potomac and Occoquan Rivers. (Megan Peritore)

Area at the refuge. The area is a safe, user-friendly and fun place where parents and children can be introduced to the outdoors. To reinforce the connection with nature, natural materials are used throughout the area, which includes arrowheads, puzzles, digging screens, rain sticks, a nature art table, a discovery table, natural picnic tables, tree blocks, benches, a natural balance beam, a nest-building station and a discovery tunnel. The Legend Award is presented annually by the American Recreation Coalition, in partnership with the Service, National Park Service, Bureau of Land Management, Bureau of Reclamation, Forest Service, U.S. Army Corps of Engineers and the Federal Highway Administration.

Carmen Minch, an outdoor recreation planner at San Francisco Bay National Wildlife Refuge Complex, has been chosen as a Beacon Award winner by the American Recreation Coalition. The Beacon Award is given annually to federal land management agency employees who stand out in the field of information and technology. Minch was recognized for incorporating technology into interpretive and recreational programs, public outreach and other visitor services at the refuge complex. She has increased the complex's use of Global Positioning

System (GPS) technology, social media, quick response (QR) code projects, touchscreen exhibits and partner Web sites to reach new and diverse audiences. She also has inspired numerous high-tech events at the refuge complex. Her article about partnering with iNaturalist.org on Don Edwards San Francisco Bay Refuge's first BioBiltz appeared in the March/April 2012 issue of *Refuge Update*. Most recently, Minch received a Friends group grant to bring WiFi to the complex's visitor facilities. Wireless will allow staff and visitors to use a range of programs that utilize apps and other online tools. 

150-Year-Old Homestead Act History Lives on Refuges

By Susan Morse

The landmark law that fueled a Western land rush, helped define the American spirit and inadvertently triggered the Dust Bowl turned 150 this year. And across the West, settler cabins that owe their existence to the 1862 Homestead Act stand testament to their owners' luck and perseverance ... or hardship and failure.

Several of these historic homesteads are on national wildlife refuges.

At some sites visitors can find a complete, stabilized or preserved structure. At others, they can find a "sagging remnant of log walls," says National Wildlife Refuge System visitor services specialist Shannon Heath. Regardless, she says, the discoveries will "bring to mind the struggle of pioneer settlers who came to the West in search of freedom and new beginnings on land that demanded backbreaking toil for limited yield."

Passed by Congress on May 20, 1862, the Homestead Act promised 160 Western acres to each settler who agreed to cultivate them for five years. Eligibility was limited to citizens (or prospective citizens) 21 and older who had never fought the government (thus excluding Confederate soldiers). Women and minorities also could claim land—a first.

Demand was so great the United States handed over 10 percent of its land—270 million acres—to private citizens. But harsh conditions forced many settlers to quit. Some failed or unclaimed land parcels ultimately became refuges.

Here are some historic homesteads in the Refuge System:

Whaley Homestead, Lee Metcalf Refuge, MT. The 1885 farmhouse of retired Indian agent Peter Whaley and wife Hannah is made of logs covered in clapboard. Period farm implements are scattered nearby, as if their operators just took a break. "If you close your

eyes, you can envision how those people lived 150 years ago," says refuge outdoor recreation planner Bob Danley. "It's pretty incredible." The house is closed, but visitors can approach it.

Shambow Homestead, Red Rock Lakes Refuge, MT. On land claimed by homesteaders Levi and Mary Jane Shambow, Levi and son William built an unusual house of vertical log walls, now covered in asphalt siding. Levi operated a nearby stage stop en route to Yellowstone National Park. The house is closed, but can be opened upon visitors' request.

Last Chance Ranch, Sheldon Refuge, NV. George B. Hapgood regarded this 19th-century homestead, which he built near a high desert spring, as his last chance to raise livestock. To the original wood plank walls he later added a stone addition. The refuge rehabilitated the ranch house exterior in 2000-01. Visitors can enter the ranch; the interior is unfurnished.

Anna Flook Homestead, Hart Mountain Refuge, OR. Kansas housekeeper Anna Flook built a log cabin, then a schoolhouse on this plot with a creek in central Oregon's high desert. Land records refer to her as Mrs. Anna Flook but contain no mention of a Mr. Flook. The refuge plans to seek funds to stabilize and interpret the structure.

Whitcomb-Cole Cabin, Conboy Lake Refuge, WA. The homestead cabin,



The Last Chance Ranch at Sheldon National Wildlife Refuge in northern Nevada is so named because the owner of the 19th-century homestead regarded it as his last chance to raise livestock. (USFWS)

restored about 10 years ago, is open to the public.

Hartnett Homestead, Little Pend Oreille Refuge, WA. Visitors can enter the stabilized Charles Hartnett barn, located close to the refuge headquarters. The refuge plans to install an interpretive panel and make the property a driving-tour stop. It is also seeking funds to complete restoration work.

Miller Ranch, National Elk Refuge, WY. Each year from about Memorial Day to Labor Day, visitors can enter three rooms of the 19th-century ranch of Grace and Robert Miller, restored with period furnishings. A fourth room is a bookstore. When, in the early 20th century, growth of nearby Jackson disrupted elk migration and elk began starving, Robert Miller helped bring the issue to public attention and push for winter feeding of the animals. 🦋

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

Conserving Extraordinary Diversity for 75 Years

By Floyd Truetken

What do the Golden Gate Bridge, comedian Bill Cosby, the Appalachian Trail and Bitter Lake National Wildlife Refuge have in common? All were “born” in 1937.

For 75 years, Bitter Lake Refuge in southeastern New Mexico has served an important role not only as habitat for thousands of migratory birds but also for an almost-unparalleled number of rare resident species, including the Koster’s spring snail, the Pecos Puzzle sunflower and more than 100 documented dragonfly and damselfly species.

This year’s annual Dragonfly Festival, hosted by Friends of Bitter Lake National Wildlife Refuge Sept. 7-9, will celebrate the double-winged insects, the state of New Mexico’s centennial and the refuge’s 75th anniversary.

Originally designated Carlsbad Bird Refuge in 1935, Bitter Lake Refuge at first glance appears as a desolate, barren landscape dotted by occasional sumps, sparse grasses and shrubs. Look closer and you will realize that the geologic features, bubbling springs and rare desert wildlife make the refuge a true oasis. In fact, several designations—Globally Important Bird Area, National Natural Landmark and Ramsar International Wetland of Importance—pay homage to the tremendous value of this transitional area between the Chihuahuan Desert and Southern Great Plains.

The 24,536-acre refuge’s namesake, Bitter Lake, is a large playa that early explorers deemed “bitter” because of its alkaline appearance. Little did they realize that the lake and similar waters support a wonderful diversity of creatures, including a marine algae that normally is found only in lagoons along the Gulf of Mexico.

Situated along the floodplain of the winding Pecos River, Bitter Lake Refuge is dotted by sinkholes—water-filled cavities caused by groundwater from the Roswell Artesian Aquifer dissolving the gypsum deposits above. That same

aquifer bubbles to the surface along the refuge’s western edge, providing water and habitat for several resident threatened and endangered invertebrate, fish and plant species. And a recent oxbow re-connect on the river is showing encouraging signs for use by the threatened Pecos bluntnose shiner.

The original office, quarters and garages were built by the Civilian Conservation Corps (CCC) in the late 1930s. The CCC, which was based from a permanent camp on the refuge, also built many of the water control structures, delivery systems and impoundments, several of which are intact and in use today.

Bitter Lake Refuge, like many rural refuges was and continues to be a source for “social” events. Years ago, town folk attended the annual carp fry sponsored by the refuge. In fact, the refuge was a major freshwater fishery as a result of past wetland management practices that held deep water in the impoundments.

Salt cedar control and eradication has become a major focus in recent decades. An American Recovery and Reinvestment Act project funded large-scale removal in 2009, and the replanting of native cottonwood and willow trees shows encouraging benefits. Salt cedar control continues today and a songbird-banding project will measure bird responses to the changes in vegetation structure.



The variegated meadowhawk dragonfly is among more than 100 dragonfly and damselfly species that have been documented at Bitter Lake National Wildlife Refuge. Its annual Dragonfly Festival, Sept. 7-9, will celebrate the double-winged insects, the state of New Mexico’s centennial and the refuge’s 75th anniversary. (Bill Flynt)

Since 1937, 18 managers, numerous staff and many Friends and volunteers have witnessed the ebb and flow of the refuge processes. Currently, a severe drought that started in the spring of 2011 is stressing the refuge’s habitat and wildlife. But as James Montgomery, who in 2003 won the national refuge volunteer award and still studies and monitors sandhill cranes, small mammals and terns, said recently: “Although this is the toughest drought that I have seen, these natural hardships have shaped the character of the refuge for so long, and you just have to wait out the cycles.”

Floyd Truetken is refuge manager at Bitter Lake National Wildlife Refuge. More information about the refuge’s 75th anniversary is at <http://www.friendsofbitterlake.com>.

Texas Refuge Shares Its Wildland Fire Expertise

By Nancy Brown

After a devastating wildfire season last year in central Texas, Balcones Canyonlands National Wildlife Refuge has been helping prepare local fire departments for what could be another active season. Concern over the fire season prompted many city, county, state and federal agencies throughout the region to sign up for the refuge's free basic wildland firefighting course.

"We've been offering wildland firefighter training to local fire departments for more than a decade," said Eric Krueger, U.S. Fish and Wildlife Service fire operations specialist and course coordinator. "With last year producing the single most destructive wildfire in Texas' history, we had a lot more interest in the course this year."

In central Texas alone, last year's Bastrop fire burned almost 32,400 acres, destroyed nearly 1,700 homes and businesses, and forced 5,000 residents to evacuate.

Since 2001, Balcones Canyonlands Refuge has partnered with local fire departments to host the course. Participants historically have been local firefighters and emergency services personnel. Priority always has been given to departments near the refuge. This year, because of the great interest, the refuge offered the course twice, and 56 participants from across the region took part in classes and field-training exercises in January and March.

"It was really neat to put it all in perspective, not just sit through a PowerPoint for 40 hours," said one of the participants, Tim Robeson, a lieutenant with North Lake Travis Fire-Rescue. After the participants completed the course's classroom portion, they spent a day at the refuge practicing their newly learned skills, including a live fire exercise. "You take class after class after class and some guys never do get to go out after a training, so the field exercise was invaluable."



Kevin Carter, assistant fire management officer at Balcones Canyonlands National Wildlife Refuge in Texas, instructs a local urban firefighter about the use of a drip torch in fighting wildfires. (Nancy Brown/USFWS)

As an urban firefighter, Robeson said, the wildland course gave him new ideas on how to do his own job more effectively.

Urban firefighters depend primarily on water from standard fire trucks, known as brush trucks. "But Fish and Wildlife uses a lot of hand crews and machinery to fight fire, like bulldozers and maintainers," he said. "You aren't always going to be able to get in with a brush truck, so now we look at different strategies and tactics."

Most of the course instructors were Service wildland firefighters based at Balcones Canyonlands Refuge who regularly fight wildfires in rugged Hill Country terrain.


"We were taught by instructors with real experience, and that was really unique," said Robeson.

The Hill Country landscape consists of shallow canyons situated among open grasslands, Ashe juniper forests and dense growths of scrub trees called shinnery. One management priority for the Balcones Canyonlands Refuge fire crew is to conduct prescribed burns to help maintain the oak shinnery for the benefit of the black-capped vireo, an

endangered bird that builds its hanging nest in the refuge's low-growing oaks.

The refuge was established in 1992 to conserve the nesting habitat of the black-capped vireo and golden-cheeked warbler, another endangered bird that nests exclusively in central Texas. During nesting season, these two birds can be found within the refuge's Ashe juniper and oak woodlands.

In addition, the refuge is about 45 minutes northwest of fast-growing Austin, whose urban area is rapidly expanding into the wooded hillsides. To this end, refuge firefighters work closely with communities to ensure homes have defensible space. Their efforts have resulted in the nearby city of Lago Vista becoming a Texas Firewise Community.

"We work really closely with these local fire departments and help each other out a lot," said Krueger. "We want to get as many qualified wildland firefighters as possible because it's not only good for our neighbors, it's good for the refuge and the wildlife that depends on it." 

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

Home Values Higher Near Wildlife Refuges

A peer-reviewed national study, released late this spring, shows that, in urban areas across three regions of the country, owning a home near a national wildlife refuge increases home value and helps support the surrounding community's tax base.

The report is the first national study to analyze wildlife refuges' impact on land values. Researchers based their findings on 2000 U.S. Census data.

According to the study, conducted for the U.S. Fish and Wildlife Service by economic researchers at North Carolina State University, homes located within half a mile of a refuge and within eight miles of an urban center were found to have higher home values of roughly seven to nine percent in the Southeast; four to five percent in the Northeast; and three to six percent in the California/Nevada region.

“National wildlife refuges are public treasures that protect imperiled wildlife and delight visitors,” said Service Director Dan Ashe. “These findings remind us that refuges also boost community health, sometimes in unexpected ways. National wildlife refuges enrich local communities—even in a lean economy—and generate revenue.”

Calculated in 2000 dollars, the 14 refuges in the Southeast examined in the study added \$122 million to local property values. The 11 refuges studied in the Northeast added \$95 million. The 11 refuges studied in California/Nevada added \$83 million.

The researchers surmised that refuges boost property values in the selected regions because refuges protect against future development while preserving scenic vistas and other “natural amenity benefits associated with open spaces.”

Researchers did not include data from the Midwest, Southwest, Rocky Mountains and Northwest, where refuges tend to be located farther from urban centers than in the Northeast, Southeast and California/Nevada




John Heinz National Wildlife Refuge at Tinicum, not far from the heart of Philadelphia, is one of 36 wildlife refuges that were part of a study that showed owning a home near a refuge increases the home's value. (Derik Pinsonneault/USFWS)

regions. Most refuges in the mountain and south-central portions of the country either failed to meet study criteria or were affected by factors that make assessing their impact difficult, such as their location in a river floodplain or near the border with Mexico.

“Our wildlife refuges are strong economic engines that generate and

“These findings remind us that refuges also boost community health, sometimes in unexpected ways. National wildlife refuges enrich local communities—even in a lean economy—and generate revenue.”

support jobs in communities across the country,” said Refuge System Chief Jim Kurth. “When President Obama signed an executive order earlier this year to promote travel and tourism in the United States he was affirming that investing in our refuges and promoting them to visitors—from here and around the world—can contribute to both an improved National Wildlife Refuge System and economic growth for local communities.”

The lead researcher on the new report, titled “Amenity Values of Proximity to National Wildlife Refuges,” was Laura O. Taylor with North Carolina State University. The full report is at: <http://www.fws.gov/refuges/about/pdfs/NWRSAmenityReportApril2012withCovers8.pdf> 

From the Director — continued from page 2

That is where surrogate species selection comes in.

“Surrogate species” is a commonly used scientific term for system-based conservation planning that uses a species as an indicator of landscape habitat and system conditions. Through such a planning process, the Service will work with partners through a science-based process to identify a species or other conservation planning targets that can best represent the landscape conditions and habitat needs of larger groups of species.

SHC starts with robust biological planning, and surrogate species selection is a practical first step to answer the questions of planning for what and how many.

We have developed draft technical guidance that helps answer some of these questions. As an agency, we will be collectively refining and improving

the draft guidance and learning how to apply the species selection process in the next several months.

I know that many of you are probably unsure what all of this means for you, but we will make it work. Indeed, we must. A big part of its success rests on your shoulders.

“Surrogate species” is a commonly used scientific term for system-based conservation planning that uses a species as an indicator of landscape habitat and system conditions.

We are planning conversations between you and Service leadership, regional workshops and other opportunities for

you to ask questions and make your ideas known.

It will not be easy. We have a tough challenge at a time when our budget will remain flat at best, and in real dollars will continue to decline.

Some of these changes and the challenges can be overwhelming, and, as we all know, change is rarely easy.

But these days I am reminded of what anthropologist Margaret Mead said: “Never doubt that a small group of thoughtful, committed, citizens can change the world. Indeed, it is the only thing that ever has.”

We, along with our partners and friends, are that small group of committed citizens ready to make a difference for fish, wildlife and plants. Let’s roll up our sleeves and get to work changing the world. 🦅

Chief’s Corner — continued from page 2

granddaughter of that bird seen 15 years earlier.

Had hawk owl lived here when Columbus discovered a new world? No doubt about it. Had hawk owl seen the scimitar cat and the short-faced bear? Did hawk owl hear the thunder of the mastodon? I didn’t know.

Hawk owl had connected me to the landscape in a way that both recalls and predicts our evolutionary destiny. A sense of our primeval past had merged with a consideration of what lies ahead for our species and our planet—and for hawk owl.

I tell this story today because, in this, another timeless moment, we also reflect on the past and look to the future.

While the paths you are choosing differ, each and every one can be approached with an attitude of humble service. Consider what you want to do, not what

you want to be; what you want to give, not what you want to get. It is through the nature of your service rather than your choice of discipline that you will find happiness and fulfillment.

My career and life’s work have been about conserving the nature of America, her wild places and wildlife. The foundation for that work was laid during my years here.

I felt great joy and excitement exploring the wild places of Wisconsin. I remember seeing my first bald eagle at Big Sand Lake near Phelps, hearing the bugling call of sandhill cranes at Necedah, watching prairie chickens on their booming grounds at Buena Vista. That sense of place kindles a desire to be thoughtful stewards of the land and water and the wild creatures that live therein.

I find it astonishing that even my field, the conservation of America’s natural

resources, is controversial and divisive. There is nothing more conservative than the conservative use of our natural resources, nothing more progressive than building a sustainable future for our nation and our planet. They are the same thing. The new greatest generation must build bridges not walls. I hope you are that new generation.

I hope the university will, in the year 2046, ask one of you to ascend this stage and address the graduating class. I hope you will report that you not only kept our world free, but that you made our presence on this good planet sustainable, that you kept it livable for our species—and for hawk owl. Tell them how you did it through your hard work and your humble service, your innovation and thoughtful stewardship, through your fearlessness. 🦅

The entire speech is available at http://www.fws.gov/refuges/Kurth_Commencement_Speech.

A Harrowing Tale Worthy of “Shark Week” — continued from page 1

“We saw her swimming away slowly,” Pollock says, “but she was obviously disoriented, and started to swim back toward the net.”

Pollock dove down to gather a remnant of the net so the shark wouldn’t become tangled again. Then, he says, “I saw movement out of the corner of my eye. So I looked over my shoulder, and all I saw was an open mouth full of teeth coming down on me.”

The shark bit Pollock twice over the top of his head and facemask. “On the second bite, it began to shake me violently and I remember thinking, ‘This is really happening,’” he says. The shark then backed off, spat out the intact mask, only to return and make a third glancing bite across Pollock’s nose and left eye before finally swimming away.

Still conscious, but “pretty out of it,” Pollock made it to the surface and was helped into the dive support vessel.

“All I could think of when I saw him was the need to get him the best care possible as quickly as possible,” says Meyer, who sped Pollock back to the research station.

Ned Brown, TNC’s field station manager at Palmyra Atoll, was on duty when the dive team radioed in. “They didn’t say much, just that Kydd was bitten and needed help,” says Brown, who recalls quickly assembling medical supplies.



Palmyra Atoll National Wildlife Refuge manager Amanda Meyer attended to Pollock’s shark-bite injuries with remote instructions from doctors thousands of miles away. “I had sewn up plenty of fish,” she says, “but never a human!” (The Nature Conservancy)



Kydd Pollock, a veteran Nature Conservancy diver, observes a shark in the Pacific Ocean. Before Nov. 11, 2010, he had never been bitten by a shark. (The Nature Conservancy)

When Pollock reached the research station with his wounds wrapped in a towel, Meyer and Brown wasted no time.

Brown called Pacific International Maritime Medical Services (PIMMS), an Oregon-based agency that provides remote care to shipping vessels. Over the next 2½ hours, doctors on the phone walked Meyer and Brown through each step of emergency care for Pollock’s injury.

Meyer, who is also Pollock’s girlfriend, alternated between needle-wielding and providing moral support. “It was so tough because I wanted to tend to his wounds and hold his hand at the same time,” says Meyer, who administered lidocaine

injections as Pollock’s lacerations were being sutured.

After each set of sutures, Meyer and Brown downloaded a photograph of their progress to a computer and sent it to PIMMS for further instruction.

“The whole situation seemed very calm on both ends,” says PIMMS operator Clint Kennedy. “Everyone was collected and, although this was the first time our company has instructed on a shark bite, the Palmyra team seemed experienced and in control.”

Meyer, Pollock and Brown agree that, under the circumstances, things went smoothly—although Meyer doesn’t consider herself medically experienced.

“I have wilderness first aid and CPR training, but by no means am I a medical doctor,” she

says. “I had sewn up plenty of fish, but never a human!”

Pollock was back on the job two days after the bite, the only one he has incurred in 21 years of diving. He has fully recovered from his injuries. All that remain are faint scars and added respect for Meyer.

“She worked efficiently and bravely with the team to get me taken care of,” Pollock says. “I couldn’t have asked for better care.” 🦋

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



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A Look Back ... Fred Staunton

Fred Staunton was raised on his family’s ranch in Roundup, MT, and he finished his 31-year U.S. Fish and Wildlife Service career in Montana, as manager of Charles M. Russell National Wildlife Refuge. But he became passionate about waterfowl when he worked at Long Lake Refuge in North Dakota and then Waubay Refuge in South Dakota in the 1940s.

Staunton was concerned that federally funded programs to drain prairie potholes for farming were affecting the migratory waterfowl population. His annual counts showed fewer breeding pairs each year. He was convinced that ducks and geese needed small, isolated potholes of water for courtship and breeding—not just big lakes. But the U.S. Soil Conservation Service continued to help farmers drain the land.

In 1949, Staunton found the added ammunition he needed in an article by Clay Schoenfeld in *Field & Stream* magazine: “That USFWS man deserves special mention because it was really he who blew the whistle on the ditchers and drainers ... No small credit should be




Fred Staunton in the mid-1940s, an era when he was a pioneer in recognizing the value of Prairie Pothole Region wetland habitat to waterfowl.

accorded refuge manager Fred Staunton in first identifying and documenting the wetland habitat base so essential to United States waterfowl production in the Prairie Pothole Region.”

Not long after, the Soil Conservation Service stopped subsidizing wetland drainage. In 1958, Congress created the Small Wetlands Program by amending the 1934 Migratory Bird Hunting and Conservation Stamp Act to allow proceeds from the sale of Duck Stamps to be used to protect waterfowl habitat.

Through acquisition or easements, the program protects small wetlands called Waterfowl Production Areas, primarily in the Prairie Pothole Region. The first WPA was purchased in 1959 in Day County, SD—the same county where Staunton began his surveys about 15 years earlier.

Staunton died in 1986 at age 79 on a ranch he operated near Big Timber, MT. The Prairie Pothole Region he worked so hard to protect now produces 50 percent of all breeding ducks in the United States. A permanent exhibit at the National Conservation Training Center in West Virginia titled, “Small Wetlands, Big Mission,” honors Staunton’s vision for the Small Wetlands Program. 

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Send Us Your Comments

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