



RefugeUpdate

National Wildlife Refuge System

www.fws.gov/refuges



INSIDE: Rivers are the lifeblood of the nation and of numerous national wildlife refuges. Upper Mississippi River National Wildlife and Fish Refuge spans 261 miles and four states—Minnesota, Wisconsin, Iowa and Illinois. Here, an angler enjoys a refuge slough off the main channel of the Mississippi River near Savanna, IL. See Focus section. (Stan Bousson)

Two Years After Madison, Conserving the Future Takes Shape

By Anna Harris



Two summers ago, the U.S. Fish and Wildlife Service ratified its vision for the National Wildlife Refuge System at the *Conserving the Future: Wildlife Refuges and the Next Generation* conference in Madison, WI.

Several themes emerged from the July 2011 gathering: recognition of the nation's changing demographics; the impact of a changing climate; the need for landscape-scale conservation; the necessity of unprecedented collaboration; and the fundamental importance of scientific excellence.

The bold ideas from Madison inspired the entire Service and challenged the Refuge System to look at our work differently. Today, nine teams of Service employees are taking tangible steps to make *Conserving the Future* a reality.

The Urban Wildlife Refuge Initiative team has identified new opportunities in underserved markets. The team received more than 60 nominations for Urban Wildlife Refuge Partnerships and has selected eight as pilots.

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Study Finds Steep Decline In Amphibians

A new U.S. Geological Survey study, using data collected at national wildlife refuges and other sites, finds a steep drop in the numbers of frogs, toads and salamanders across the country. The study shows widespread species declines even in protected areas such as refuges.

On average, amphibian populations studied vanished from habitats at a rate of 3.7 percent each year. At that rate, these species would disappear from half of their current habitats in about 20 years. More-threatened species disappeared from their studied habitats at a rate of 11.6 percent each year. At that rate, these species would disappear from half of their current habitats in about six years.

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From the Director

Welcome, Secretary Jewell

The past few years have been a time of immense change for the U.S. Fish and Wildlife Service as we have begun to transform our organization to meet the enormous conservation challenges of the 21st century.



Dan Ashe

We are proud of our heritage—more than 150 years of “Conserving the Nature of America,” led by visionaries such as “Ding” Darling and Rachel Carson, and driven by the work of thousands of past and present conservation professionals.

But we have to be more efficient and effective to sustain and expand our successes in the face of increasing habitat fragmentation and degradation, a changing climate and other growing global conservation challenges. That’s why we’ve put so much effort into

developing our surrogate species approach to strategic habitat conservation and into implementing *Conserving the Future* for the Refuge System.

I know our new Secretary of the Interior, Sally Jewell, will help us achieve our conservation mission despite obstacles in front of us.

She will surely carry on the great legacy of former Secretary Ken Salazar. Secretary Salazar was, and is, a friend not only to me but to the entire Service. He was at our side in Madison in July 2011 when we set our course for the Refuge System. Under his leadership, we established 10 national wildlife refuges. He energized President Obama’s America’s Great Outdoors initiative and spearheaded the National Blueways System.

History will regard him as a conservation hero, and he leaves an outstanding legacy to Secretary Jewell.

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Chief’s Corner

Our Vision Is Focused

I can hardly believe it has been two years since we held the *Conserving the Future* conference in Madison, WI. I think back on that event when I need inspiration. There were so many powerful speeches, so much enthusiasm and so much hope for the future. It was a lot of work, too.



Jim Kurth

It was a stressful week for me personally. My mother called Wednesday morning to tell me Dad had been moved to hospice. I thought I

was going to have to leave that day. He rallied a little bit, so I stayed. I was with him the following Thursday when he died.

Life gives us all moments that are inspirational and precious, others that are difficult and defining. But we always have to move forward. We have done a great job of capturing the spirit of Madison in our vision document, *Conserving the Future*. More important, we have made great progress in implementing that vision. Our Urban Wildlife Refuge Initiative is taking shape; our strategic growth policy is under Directorate review; a new communications strategy has been drafted; our Inventory and Monitoring program is growing. The list of accomplishments is impressive. You can find out more at AmericasWildlife.org.

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Refuge Update

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Major rivers are the lifeblood of numerous national wildlife refuges. Pages 8-15



To protect and restore critical habitat for the endangered Guam rail and other wildlife, Guam National Wildlife Refuge is installing a multi-species barrier fence around 125 acres of native forest. The Guam rail is a flightless bird that was extirpated from Guam in the 1980s and now is bred in captivity. (Ginger Haddock/USGS Guam BTS Project, Jennifer Cruce/USFWS)

Fencing in Forest on Guam

By Jennifer Cruce

In the western Pacific Ocean, on the largest island in the Marianas Archipelago, invasive species are adversely impacting Guam National Wildlife Refuge. And the refuge has a response.

To protect and restore critical habitat, the refuge is installing a multi-species barrier fence around 125 acres of native forest. The goal is to create habitat as free as possible of invasive snakes, pigs, deer and cats for the benefit of Guam's native bird species.

Guam Refuge includes a pristine beach, native limestone forest and a rich cultural heritage. It provides habitat for the island's last remaining populations of the endangered Mariana fruit bat and *Serianthes nelsonii* tree as well as extirpated endangered bird species, including the Mariana crow and Guam rail.

"Guam's ecosystem has been so devastated by invasive species that, for restoration of native habitat to occur, a pest-free area needs to be established," says refuge manager Joseph Schwagerl. The weather-resistant fence is scheduled to be completed this fall. Once it is finished, Schwagerl says, invasive pest species will be removed from (or controlled within) the enclosed area to

enable forest regeneration and native bird repatriation.

"Our long-term goal is to release the flightless Guam rail—which has been extinct in the wild for more than three decades—within the enclosed area," Schwagerl says.

Invasive species first arrived on Guam with the Spanish, who colonized the island in the 1600s. They brought animals that have had severe impact on native forest. "Pigs and deer eat and trample young trees and plants before they reach maturity, thereby slowing propagation and dramatically decreasing the understory as well as the amount of mature trees and vegetation," Schwagerl says.

Most damaging, though, has been the accidental introduction of the brown tree snake, which is thought to have stowed away in military cargo after World War II. With no natural predators and abundant prey, the snake population exploded and native forest bird populations plummeted.

The snakes "have had the most devastating effect because they consume both the bird and eggs, which has led to the extinction or extirpation of nine of 11 forest bird species on Guam," says Schwagerl. "The only native mammals found on Guam were three species of

bats, of which only the Mariana fruit bat remains in small numbers [less than 50] on the island and is an occasional visitor to the refuge."

After the barrier is complete, the plan is to remove adult brown tree snakes from the enclosed area using known trapping, baiting and hand-removal methods. Removing juvenile snakes is more difficult because there is no known method of baiting and trapping them. But the refuge is working on that with the U.S. Geological Survey Guam Brown Tree Snake Project.

"We are still developing methods to remove small snakes that have yet to make the transition to warm-bodied prey," says U.S. Geological Survey project research manager M.J. Mazurek. Nonetheless, trapping adult snakes will allow for the safe release of several native bird species within the enclosure, including the endangered Guam rail—eventually.

The rail, or *ko'ko* in the native Chamorro language, was extirpated from Guam in the 1980s. It is now bred in captivity. If all goes well, the refuge anticipates a soft release of Guam rails into the enclosure by 2015. 🦋

Jennifer Cruce is a wildlife refuge specialist at Guam National Wildlife Refuge.

Northern Leopard Frogs Go to School in Nevada

By Darrell Freeman

How many teenagers do you know who get up at 6 a.m. on Saturday and go to school by choice?

Jason Wurtz is one. The senior-to-be at Pahrnagat Valley High School in Alamo, NV, volunteers his free time taking care of some rare amphibians, and he often gets up early to do it.

Several springs at Pahrnagat National Wildlife Refuge near Alamo serve as a southern stronghold for northern leopard frogs. The population of the small, native frogs in the western United States is declining across much of their historical range. However, the frogs at the refuge are doing well. With Wurtz's help over the past three years and with the support of science teacher Wesley Wilson, they are expanding their population and the number of sites they occupy.

How is Wurtz contributing to the amphibians' well-being? He keeps them in school.

Each February, as the frogs' breeding season approaches, Wurtz prepares aquariums housed in the high school's agriculture classroom. The aquariums and associated supplies are furnished by the U.S. Fish and Wildlife Service through Pahrnagat Refuge.

When the male leopard frogs begin serenading the females at the refuge, Wurtz knows it won't be long before egg masses can be found in the springs. When at least three leopard frog egg masses are located, usually in early March, a refuge biologist or Wurtz collects a portion of one of the masses. The freshly laid eggs are delivered to the school, where Wurtz places them in an aquarium and dotes over them like a father-to-be.

Within days the eggs hatch into tadpoles, which require daily care and feeding. Wurtz watches over the newborns. He regularly checks the water quality, monitors water temperature and provides the tadpoles with a daily diet of special flaked food that helps them grow and remain healthy.



Counterclockwise from top right: High school student Jason Wurtz next to an aquarium in which he rears northern leopard froglets; releasing froglets into a spring at Pahrnagat National Wildlife Refuge; and holding a froglet on his thumb before releasing it. (Annjanette Greenwood/USFWS)

By late June or early July, the tadpoles become inch-long froglets, and Wurtz must bid them farewell. The froglets are returned to Pahrnagat Refuge and released into the wild at one of the springs, hopefully growing to maturity and starting additional populations. Adults—which are smooth-skinned, green, brown or sometimes yellow-green and covered with large, oval dark spots—range from 2 to 4.5 inches in length and live five or more years.

Protection From Predators

Captive rearing provides protection from the many predators in nature that typically consume most of each year's tadpoles. Last summer, the froglets were released into a small, isolated spring that did not have leopard frogs and was not plagued with predatory fish or non-native bullfrogs that would eat the froglets.

Introductions of captive-reared northern leopard frogs at the refuge over the past two years resulted in the establishment of a fourth population at a separate spring site. That particular population is now self-sustaining. Wurtz's contributions to this effort have been critical.

Wurtz, who is a Nevada Conservation Corps intern this summer at Pahrnagat Refuge, says he will continue rearing the froglets next year. He hopes to pass along the project to another student when he graduates in spring 2014. For their part, staff members at Pahrnagat Refuge gladly take the eggs to school to ensure that northern leopard frogs continue to prosper in the Pahrnagat Valley. 🦵

Darrell Freeman is a wildlife biologist—until recently at Pahrnagat National Wildlife Refuge, NV, and now at Ruby Lake National Wildlife Refuge, NV.



A blue dasher dragonfly, left, at New Mexico's Bitter Lake National Wildlife Refuge and a flame skimmer at Nevada's Ash Meadows National Wildlife Refuge. (Bill Flynt, Cyndi Souza/USFWS)

“Dragonflying” Takes Off

By Susan Morse

They're not dragons, and they're not flies. But however inaptly they're named, the stunt pilots of the insect world are attention-getters. They wear flashy colors; dart at speeds of up to 30 mph; boast ancestors that predate dinosaurs; mate in mid-air. Aggressive predators and carnivores, they're out for blood—but not yours. What's not to love?

Not much, a swelling fan base has decided, on national wildlife refuges and beyond. A crop of new field guides, mounting attendance at dragonfly festivals, and the spread of online dragonfly photos and other information all point one way: “People are fascinated with finding dragonflies and damselflies”—their biological cousins, says David True, refuge ranger at Aransas National Wildlife Refuge in Texas. “It is a growing thing.”

Bruce Lund, with the Friends of the Desert National Wildlife Refuge Complex in Nevada, agrees. He credits rising interest, in part, to two popular new field guides by zoologist Dennis Paulson and new state guides that help dragonfly enthusiasts identify their finds. Then there are the viewer-friendly habits of the insects themselves.

“People are attracted to these insects because they are big [compared to other insects], colorful, and active in daytime,” says Lund, who leads periodic refuge dragonfly tours. “They perch for long periods and keep returning to the same perches,” making them easier to

photograph than butterflies, which stop less often and less predictably. Adults and children also like dragonflies' fanciful names: vivid dancer, sparkling jewelwing, furtive forktail, stygian shadowdragon, harlequin darner, dragonhunter; ebony boghaunter are some highlighted on a fact sheet at Aransas Refuge.

For their parts, refuges are happy to host dragonflies not just because they're native wildlife but because they're natural mosquito controls and indicators of clean water. Dragonflies are generally most abundant in mid to late summer. Dragonflies and damselflies are members of the biological order *odonata*, meaning “toothed ones.” (“They don't have teeth; don't ask me why they're called that,” says True.)

Refuges known for dragonflies include:

Bitter Lake Refuge, NM. The refuge plans to host its 12th annual dragonfly festival on September 7-8. Last year's festival, which also celebrated the refuge's 75th anniversary, drew more than 2,000 people, up from the usual 1,000 or so. More than 100 dragonfly or damselfly species have been spotted on

the refuge, including the rare bleached skimmer. Peak dragonfly viewing is in July and August.

Patoka River Refuge, IN. Refuge wetlands host 30 species of dragonflies and 13 species of damselflies, including some rare kinds, a 2009 survey found. Three miles of refuge trails lead visitors through habitats where dragonflies can be seen. The Halloween pennant dragonfly, named for its orange and black wings, can be found at almost any refuge oxbow or wetland from mid-June through early October.

Aransas Refuge, TX. Dragonfly species there include red saddlebags and wandering gliders.

Desert Refuge Complex, NV. The complex, which includes Ash Meadows, Desert, Moapa Valley and Pahrnagat Refuges, recently completed surveys of its dragonflies and damselflies. Biologists and volunteers documented 35 dragonfly species, including two found in Nevada for the first time. 

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

Did You Know?

- Dragonflies have two sets of wings, which they flap at about 30 beats per second.
- Dragonflies have huge compound eyes, which give them almost 360-degree vision.
- Dragonflies develop a taste for meat early. As nymphs, they snack on water insects, worms, mosquito larvae and small fish.
- Dragonflies don't have stingers and can't harm you. Myths abound about dragonflies.

At 97, He's Still Leading Birders at Hagerman Refuge

By Susan Morse

Since Karl Haller began volunteering at Hagerman National Wildlife Refuge in Texas, seven refuge managers have come and gone. Cedar and locust have invaded refuge fields, and Dallas has crept toward the refuge boundary, changing bucolic to metropolitan. Only Haller hasn't changed—as sure a presence as the snow geese that fill the refuge every winter and the songbirds that return each spring.

At 97, Haller is still conducting refuge bird surveys, as he's been doing every week for 50 years. On Thursdays, he drives a group of ladies along the same 23-mile bird-watching route.

“If you're interested in birds or wildlife, you just have to keep up with it,” he says. “You can have a good time out here.”

In the process, you can also build a scientific database that's invaluable for understanding bird trends in a time of drought and climate change, says refuge manager Kathy Whaley.

Thanks to Haller, the refuge knows spring migration of neotropical songbirds, shorebirds and waders begins weeks earlier than it used to. Will insects that the birds eat keep pace? No one knows. Haller also has helped document species never before seen at the refuge. “Last spring, we had a green-tailed towhee here—the first time one's ever been recorded in the county,” says Whaley. “We think the drought farther west pushed the bird here looking for food.”

Whaley praises Haller's passion for nature and his social engagement. “Most people I know at age 97 are not out at a national wildlife refuge birding,” she says. “They're doing the best they can to just make it day to day. Karl is active, engaged, conversational, pleasant to be around. I admire him very much.”

Born in 1916 in Wheeling, WV, Haller developed an early interest in birds. “When I was eight years old, I heard somebody say something about a bird feeder. I found an old box, put it on a post in my backyard, filled it with a little

bit of scratch—you know, chicken feed—and started getting lots of birds.” He experimented with other feed. “I heard some guy talk about a nuthatch. I didn't have the slightest idea what it was. Then I learned. I would take little bits of English walnut. The birds would pick them up, carry them to the ground, and break them up.”

He credits the Brooks Bird Club in Wheeling, where he became a charter member in 1932, with giving him his real start in birding. In the late '30s/early '40s, he received a bachelor's degree in biology and a master's in zoology, discovered the Sutton's warbler in West Virginia, and collected natural history museum specimens on an expedition to Canada's James Bay region. He served in the Air Force during World War II before joining the biology department at Austin College in Sherman, TX, where he taught field ornithology and bird taxidermy, and served as a lab coordinator.

Haller began leading birding trips at Hagerman Refuge in 1963, compiling Christmas Bird Counts and mentoring dozens of budding ornithologists. In 1995 he was the National Wildlife Refuge Association's Volunteer of the Year.

This spring the refuge honored Haller for his service. “I was never more surprised in my life,” he says of the small ceremony at which he received a plaque and friends praised his knowledge and graciousness.

Ruth Sonnenburg, who birded with Haller for 20 years, starting in the 1960s, recalls his patience with beginners. “If we saw something, Karl never said, ‘Oh no. You couldn't have seen that.’ He never put us down ... He was a great teacher and a great person ... and still is.” 

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



Karl Haller has been a volunteer at Hagerman National Wildlife Refuge in Texas since 1963. (Rick Cantu/USFWS)

A New Tool to Combat Cheatgrass

By Susan Morse

A strain of naturally occurring soil bacteria tested on national wildlife refuges and other western lands may soon offer a safe new way to manage cheatgrass, an aggressive plant pest.

Cheatgrass is a Eurasian invasive plant now found in the United States, Canada and Mexico. It covers hundreds of thousands of square miles, including the fragile sagebrush steppe habitat that is the home of the increasingly rare greater sage-grouse. In the Great Basin of the west, cheatgrass is spreading at the rate of thousands of acres per day, endangering many animal species and habitats. Wherever cheatgrass grows, unwanted wildfires burn hotter and more frequently and disrupt fragile ecosystems.

The native bacterium doesn't have a catchy name; researchers refer to it as ACK55. But many hopes are riding on this strain of *Pseudomonas fluorescens*.

"I'm convinced it will work as long as the bacteria are applied in the fall to the soil so they can colonize emerging cheatgrass roots in the spring," says Michael Gregg, a Land Management Research and Demonstration biologist at the Mid-Columbia River National Wildlife Refuges Complex in Washington. Like a sports agent, the U.S. Fish and Wildlife Service scientist is working to convince others that ACK55 belongs in the big leagues of land management. The message is getting through.

In addition to the Service, agencies expressing interest in the natural cheatgrass inhibitor include the National Park Service, Bureau of Indian Affairs, Bureau of Land Management and the U.S. Forest Service.

"A biopesticide is much more cost-effective than an herbicide and less damaging to the environment and human health," says Hilda Diaz-Soltero, senior invasive species coordinator for the Department of Agriculture. She hopes the inter-agency interest will speed



Invasive cheatgrass is spreading in the Great Basin and elsewhere, fueling wildfires and disrupting fragile ecosystems. Service biologist Michael Gregg believes that a strain of naturally occurring soil bacteria can be effective in managing cheatgrass. (Kari Greer/National Interagency Fire Center)

further research designed to lead to the product's approval as a commercial biopesticide.

Early test results have been impressive. In long-term field trials at Hanford Reach National Monument/Saddle Mountain Refuge in Washington, single applications of ACK55 dramatically reduced cheatgrass in three to five years while not hurting other plants or animals. Another field trial is in progress at Deer Flat Refuge in Idaho. In December 2012, the Service committed \$200,000 to scale up ACK55 tests to meet Environmental Protection Agency biopesticide registration requirements.

ACK55 is not the only new cheatgrass management tool being studied. "There is a fungus, colorfully named Black Fingers of Death, that is being tested by other researchers," says Fred Wetzel, Service national wildland fire and emergency response advisor and ACK55 project leader. In contrast to other controls, Wetzel likens ACK55 to using laser surgery to target and suppress the plant's developing root cells: "This cheats the plant out of everything it needs to grow and reproduce."

Many land managers recognize that control of this invasive grass will require more than one management method.

Ann C. Kennedy, a soil microbiologist with the USDA's Agricultural Research Service, discovered ACK55 and devised a method to apply it. Kennedy stresses ACK55's safety. She says the native soil bacteria inhibit just three grass species: cheatgrass, medusa head and jointed goatgrass. All are invasive species in sage steppe habitat. Wheat, native bunch grasses and broadleaf plants are unaffected. Another advantage of ACK55 is that applied bacteria don't survive in the soil indefinitely; after three to five years, soil bacteria numbers return to pre-treatment levels.

By applying ACK55 in the fall, scientists aim to give the cold-loving native bacteria time to colonize the soil before the spring growing season. "One of the issues with cheatgrass is it greens up early in spring, so it gets a head start on other plants and outcompetes them," says Gregg. "What we're trying to do is remove that competitive edge so native plants can survive."

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Rivers Create Opportunities for Refuges

By Bill O'Brian

“Rivers flow not past, but through us; tingling, vibrating, exciting every cell and fiber in our bodies, making them sing and glide.”

Naturalist John Muir was referring to rivers' effect on people. But rivers have a similar effect on national wildlife refuges. Rivers make fish, wildlife and refuges sing and glide, too.

“Rivers continue to transform and shape the physical, biological, natural and cultural landscapes using time, water and gravity as the fundamental tools,” says Andrew French, manager at Silvio O. Conte National Fish and Wildlife Refuge whose acquisition boundary is the watershed of the first national blueway, the Connecticut River.

This Focus section touches on a handful of mighty rivers that are intrinsically tied to refuges: the Mississippi, the Niobrara, the Yukon, the Kuskokwim, the Illinois, the Rio Grande and the nation's second blueway, the White.

Many rivers vital to the National Wildlife Refuge System are not featured here.

The basin of the 1,200-mile-long Columbia River, for instance, spans seven states and one Canadian province and sustains more than 25 refuges, including 10 in or along the river itself. The Columbia ecosystem is vital to threatened and endangered species, such as the Columbia white-tailed deer, spotted owl, grizzly bear and wolf.

The Tennessee River basin—home to Wheeler and Tennessee Refuges and others—is considered by The Nature Conservancy to be the nation's most biologically diverse river system for aquatic organisms. It also harbors the highest number of imperiled species of any large basin in North America with 57 fish species and 47 mussel species considered to be at-risk.



The Missouri River basin sustains at least two dozen refuges from the 2,341-mile-long river's source in the Rocky Mountains of Montana to its mouth at the Mississippi River in its namesake state. Here, the Missouri flows through Montana's Charles M. Russell National Wildlife Refuge. (Dan Harrell/USFWS)

The Missouri River basin nourishes at least two dozen refuges from the 2,341-mile-long river's source in the Rocky Mountains of Montana to its mouth at the Mississippi River in its namesake state.

The Colorado, the Ohio, the Bear, the Klamath, the Sacramento, the San Joaquin, the Minnesota, the James, the list goes on.

While rivers are the lifeblood of refuges ecologically, they are also important to refuges in other ways. And they are central to President Obama's three-year-old America's Great Outdoors (AGO) initiative.

Tamara McCandless, the U.S. Fish and Wildlife Service AGO coordinator, says that rivers are important to AGO because they:

- connect Americans to the outdoors. (Think of water trails on rivers as dissimilar as the Bronx and the Kansas.)
- provide recreational opportunities, often close to home, for the nation's 40 million anglers and 24 million paddlers.
- provide vital habitat and migration corridors for fish and wildlife.

Extinction rates for freshwater species are five times higher than for terrestrial species; 69 percent of U.S. freshwater mussel species are at risk of extinction.

- provide chances for people to improve their community by participating in river cleanups, riparian plantings and river access improvements or volunteering with a river stewardship organization.

“Rivers create opportunities for refuges to connect with the larger watershed and a diversity of other partners—making refuges and our mission more relevant,” says French. “Using a National Blueways System approach to our efforts within the watershed, refuge personnel can facilitate communication, coordination, collaboration and leveraging of resources within the federal family and other watershed stakeholders from the conservation, education, recreation and economic sectors.”

For the final word on the importance of rivers to refuges and conservation, though, let us turn to Japanese naturalist Tanako Shozo: “The care of rivers is not a question of rivers, but of the human heart.” 



"In a Deep Canyon With Wilderness on Both Sides"

By Bill O'Brian

All people need a place to revisit to be "inspired anew with the wonder and pure majestic beauty of Mother Nature," blogger Bruce Tomes once wrote. "The Niobrara River in Nebraska is that place for me, and has been since the first time I paddled a canoe down the classic stretch between the Cornell low-head dam by Valentine and the Norden bridge over 30 years ago."

Tomes is not alone. The stretch of river he cherishes runs through Fort Niobrara National Wildlife Refuge. About 10,000 visitors a year float it in a canoe, kayak or tube.

"The Niobrara River is a jewel in the beautiful landscape that is north-central Nebraska," says refuge project leader Steve Hicks. "This is an area that is still mostly native prairie. The river flows freely through the heart of that prairie."

Part of the river lies in refuge designated wilderness.

"The wilderness character is maintained," Hicks says. "It can be your 'secret place' even though you may have to share it."

Balancing the refuge mission with river recreation can be tricky.

An unusual variety of habitats converge at Fort Niobrara Refuge. Six different plant communities and a blend of topography, soil and rock formations with differing sun, wind and moisture exposure attract a rare diversity of wildlife. "It just all comes together to be a beautiful, unique place," says Hicks.

The 19,131-acre refuge is managed for birds, bison and elk. Habitats ranging from grass-covered sandhills to deep wooded river gorges draw more than 230 bird species. Wild and captive elk roam wooded and prairie areas. Bison can be found seasonally on the



Fort Niobrara National Wildlife Refuge gives about 10,000 visitors a year the rare opportunity to canoe, kayak or tube through wilderness. But balancing the refuge mission with river recreation can be tricky. (Nebraska Tourism)

open prairie or in the gorges of the 4,635-acre wilderness area.

To minimize wildlife and habitat disturbance, the refuge enforces a river recreation management plan devised in 2005.

At a refuge canoe launch just outside the wilderness, private individuals and commercial outfitters with special-use permits can put into the river for a five-plus-mile refuge jaunt that takes about two hours in a canoe or four hours on

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7 Years Later, CCP Is Refuge's "Backbone"

By Cindy Samples

Upper Mississippi River National Wildlife and Fish Refuge represents a small, but ecologically important, section of the Mississippi River watershed. As such, the refuge faces numerous management challenges and jurisdictional conflicts on its 241,000 acres that stretch south from the Chippewa River in Wisconsin to northwestern Illinois.

The refuge crosses four states; two U.S. Army Corps of Engineers districts; 11 locks and dams for navigation; and seven Congressional districts. It is represented by eight U.S. senators; is adjacent to 70 cities/towns; and shares boundaries with railroads, scenic byways, power plants and other public and private lands. Plus, 3.9 million visitors annually have their own perspectives.

Add it together, and it's a challenging place to manage.

Refuge manager Kevin Foerster is fond of the saying, "Everybody's in charge, and nobody's in charge; it's all about the partnerships." This complexity came to the forefront last decade during development of the refuge's comprehensive conservation plan (CCP).

By 2006, after years of debate, thousands of public comments and at least 46 meetings, the CCP was finalized. Almost immediately, the refuge implemented key components, including a furbearer management plan that took a more conservative approach to the taking of otters than the states and designated special management areas for youth trapping. Perhaps the most important change came to regulations regarding areas closed to waterfowl hunting. By 2009, there were 23 such areas or sanctuaries totaling 43,652 acres, compared to the previous 15 areas totaling 44,544 acres. Strategically locating closed areas along the 261-mile refuge is critical to birds along the



Duck hunters at Upper Mississippi River National Wildlife and Fish Refuge near La Crosse, WI. The refuge's comprehensive conservation plan was finalized in 2006. It modified regulations to benefit birds and keep hunting compatible with the refuge's conservation mission. (Cindy Samples/USFWS)

Mississippi Flyway and keeps hunting compatible with the refuge mission. In many ways, those efforts were as intense as the CCP development.

Former refuge manager Don Hultman, who led the CCP effort, says the ultimate goal was (and always should be) doing right by the resource.

"The [hunting] system in place in 2006 had been virtually unchanged since the late 1950s, despite dramatic changes in refuge habitat and thus bird distribution," says Hultman. "The changes were sorely needed, but doing so met with loud and sustained opposition. In the end, the birds won."

The CCP also brought increased awareness of this national treasure—with the public and among states and agencies with jurisdiction along the Upper Mississippi.

"For me, the CCP is the backbone for refuge decision-making," deputy manager Tim Yager says of the refuge, which includes four administrative districts. "Whether it be reviewing proposals to enhance recreational beaches on refuge lands or evaluating the merits of habitat restoration actions,

the CCP forms the basis for nearly all decisions that need to be made by district managers. If a manager needs guidance before making a decision, they can usually find that guidance in the CCP. I use it almost every day."

"We're at the halfway point in the life of this CCP," Foerster says of the document, which is in force until 2021. "Looking back seven years, we've seen the maturation of several Friends groups and a better refuge for wildlife and the American people."

The next seven years will focus on meeting commitments in the CCP, in particular the refuge's habitat management, forest management and visitor services plans.

Staff members are working hard to engage the public and partners in the process. The goal is to help people *connect* with the river refuge, so they care about it, and are willing to take action in support of the refuge and the river. 🦋

Cindy Samples is visitor services manager at Upper Mississippi River National Wildlife and Fish Refuge, MN, WI, IA and IL.



White River Blueway Designation Is Rescinded

[Editor's Note: On July 3, after Refuge Update went to press, the Department of the Interior rescinded the White River watershed's national blueway designation. This article, whose original headline was "2nd Blueway Connects 3 Refuges to 1 Watershed," has been updated to reflect the rescindment.]

By Bill O'Brian

In the 1800s, John Wesley Powell defined a watershed as "that area of land, a bounded hydrologic system, within which all living things are inextricably linked by their common water course and where, as humans settled, simple logic demanded that they become part of a community."

Early this year, the Department of the Interior moved to solidify that sense of community in Arkansas and Missouri by designating the White River watershed as the United States' second national blueway.

However, on July 3, the Department rescinded the White River blueway designation after opponents contended that the designation could result in new regulations or private land seizures. Supporters said those objections could make landowners hesitant to participate voluntarily in conservation efforts. DOI spokeswoman Jessica Kershaw said the designation was withdrawn "in light of requests received from local and state stakeholders."

The White River flows more than 700 miles from the Boston Mountains of northwestern Arkansas to the Mississippi River in southeastern Arkansas, passing through the Ozark Mountains of Missouri en route. It drains a 17.8-million-acre watershed that spans 60 counties. The watershed is home to 1.2 million people. The river is vital to the wildlife-related economies of Arkansas and Missouri, which statewide accounted for \$1.8 billion and \$2.8 billion in 2011, respectively, according to the Interior Department.



In January, the Department of the Interior designated the White River of Arkansas and Missouri as the United States' second national blueway. On July 3, DOI rescinded the blueway designation after local and state opposition. (Arkansas Department of Parks and Tourism)

The watershed contains three national wildlife refuges – Bald Knob, Cache River and White River.

"The watershed is large and geographically diverse – we like to say 'From the mountains to the Mississippi' – so it is important that these refuges can be connected to a much larger conservation system," Central Arkansas National Wildlife Refuge Complex project leader Keith Weaver said before the rescindment was announced.

The blueway designation would have established a framework for diverse stakeholders at the federal, state, non-governmental organization and community level throughout the watershed to collaborate on common goals regarding conservation, recreation, education and sustainable economics.

Before the blueway designation was rescinded, the Department of Agriculture had committed \$22 million to soil and water conservation in the watershed via its Environmental Quality Incentives Program. The Forest Service was undertaking dozens of habitat-improvement projects. The Army Corps of Engineers was increasing fish and wildlife habitat, too.

The Nature Conservancy, National Wildlife Refuge Association, Ducks Unlimited, The Conservation Fund, Audubon, the Missouri Department of Conservation, the Arkansas Game and Fish Commission, Arkansas Natural Heritage Commission and others also supported the blueway.

White River Refuge is the largest, oldest and southernmost of the watershed's three refuges. Established in 1935, it is part of Arkansas' "Big Woods" and one of the nation's largest remaining seasonally flooded bottomland hardwood forests. With 300-plus lakes, the 161,000-acre refuge is a magnet for outdoor recreation.

Cache River Refuge has the most diverse habitat of the three because of variations in elevation and site conditions. The fragmented 70,000-acre refuge plays a major role in acquiring marginal agricultural lands and restoring them to bottomland hardwood forest. It is where a sighting of an ivory-billed woodpecker – thought to be extinct – was reported in 2004.

Bald Knob Refuge is the smallest (15,000 acres) and newest (1993) of the three. It is important stopover habitat for northern pintails in the Mississippi Flyway and has become one of Arkansas' top shorebird photographing areas. 🦋

Grand Challenges Along the Rio Grande

By Ben Ikenson

Established last year, 570-acre Valle de Oro National Wildlife Refuge is five miles from downtown Albuquerque. It joins numerous refuges along a beleaguered river.

Formed in the Rockies, the Rio Grande wriggles through southern Colorado, bisects New Mexico and draws the Texas-Mexico borderline before reaching the Gulf of Mexico. Along its 1,896 miles, refuges are working valiantly to conserve ecological health in a drought-stricken region where even Rio Grande cottonwoods, the hardy arboreal icon of the Southwest, are dying of thirst.

“The drought is affecting all components of the floodplain and the wildlife that depend on those habitats, including river, forests, wetlands, savannas and croplands,” says John Vradenburg, a biologist at New Mexico’s Bosque del Apache Refuge, which straddles the river.

With a drastically reduced water table, invasive species like salt cedar—whose roots go deeper than native vegetation and which put salt into soil so little else can grow—are spreading. It’s becoming increasingly difficult to maintain the wetlands and croplands that attract tens of thousands of birds—ducks, geese and sandhill cranes—each autumn.

Many of those birds nest closer to the Rio Grande headwaters, where refuges are similarly challenged.

“We have to carefully prioritize nesting areas, and it’s hard to manage wetlands when the soil profile is parched,” says Mike Blenden, project leader at Colorado’s San Luis Valley Refuge Complex. “We use water as early as February,

when Rocky Mountain sandhill cranes pass through on their migration. But we then have to be careful with nesting species like cinnamon teal and Wilson’s phalaropes, which arrive right after the cranes, not to create wetland habitat that cannot be sustained, wasting the birds’ energy if it dries up and their nests fail a few weeks after they come.”

“What will we do if this is the new normal?”

The complex includes Monte Vista and Alamosa Refuges, which often sustain just 25 percent of the wetland habitat they once did.

“Since 2002, we’ve seen groundwater levels drop from a chronic lack of recharge and precipitation,” Blenden says. “To some degree, these cycles may be normal, but, with the specter of climate change, we have to ask ourselves, ‘What will we do if this is the new normal?’”

In south Texas, the Lower Rio Grande Valley Refuge faces similar issues. With

more than 500 documented bird species, the refuge’s 100-plus tracts form an important wildlife corridor along the river’s final 275 miles. “We see the refuge as a string of pearls in an area that has been primarily converted for agriculture, industry and development,” says refuge manager Bryan Winton.

Many of the pearls were blemished after a 2010 tropical storm necessitated reservoir releases that flooded many refuge units just as salt cedar—relatively new to south Texas—was germinating. Now, the invasive plant can exploit drought conditions that leave natives high and dry. Refuge staff has been working to eradicate infestations, but it is hardly a matter of a little weeding. “We have so many units,” Winton says, “and some of these trees are now 15 feet tall.”

Additionally, local residents don’t seem to appreciate the ecological and economic importance of the native plant community—even though the habitat it creates is a global draw for birders.

“Birding is the number one visitor use here, and birders contribute a lot to the local economy when they come,” says

Winton. “Yet, local nurseries don’t even sell some of the important native plants because they have spines and thorns, which I suspect makes them less desirable for landscape purposes.”

If educating the public is crucial to addressing Rio Grande issues, new Valle de Oro Refuge is poised to help. It is within easy distance of 60 percent of New Mexico’s population. 

Ben Ikenson is a New Mexico-based freelance writer.



Ongoing drought is making it extraordinarily difficult for refuges to conserve ecological health along the 1,896-mile Rio Grande. Here, in non-drought conditions, the river passes through Bosque del Apache National Wildlife Refuge in central New Mexico. (Bill O'Brian/USFWS)



The Yukon-Kuskokwim delta within Yukon Delta National Wildlife Refuge is an unusually diverse expanse of wetlands. (Tom Collopy and Mary Frische)

Two Alaska Rivers Nourish One Enormous Delta Refuge

By Brian McCaffery

The combined delta of the Yukon and Kuskokwim Rivers fans out in a sprawling realm of marsh and slough within the protective borders of immense Yukon Delta National Wildlife Refuge.

On the refuge interior the two rivers feint to within 25 miles of each other. Then they diverge to meet separate destinies nearly 250 miles apart at the Bering Sea. The color of well-creamed coffee, these massive rivers are fed by alpine streams so clear that one can see the scutellations on the legs of wading tattlers.

Across the delta's diverse wetlands, the flashing black-and-white of Sabine's gulls ripple in the shimmering heat reflected from a frozen spring landscape; the wild, wistful cries of loon and crane pierce the lavender stillness of summer twilight; and brightly clad Alaska Native women stoop over the tundra to harvest the bounty of late-summer berries.

At nearly 2,000 miles, the Yukon is America's third-longest river; while at 724 miles, the Kuskokwim is the nation's longest free-flowing river. The abundance of lakes and ponds on the delta still defies enumeration by the most advanced technologies, and the intertidal

mudflats alone cover more than 1,200 square miles.

The biomass of large breeding water birds may surpass that of any comparable area in North America, and the largest expanse of wetlands on the continent's west coast supports the highest density and diversity of breeding shorebirds in the New World. At more than 19 million acres, the refuge is home to Emperor geese, spectacled eiders, gyrfalcons and bristle-thighed curlews.

The Size of Maine

The Yukon and Kuskokwim are the lifeblood of southwestern Alaska for wildlife and for humans. Once the winter ice goes out, five species of salmon surge upstream, tracking obscure olfactory currents to their natal streams, while skiffs laden with fishing gear patrol the same routes, returning each summer to traditional sites for netting the annual harvest. Most of the 25,000 people who live in this roadless area the size of Maine are Yup'ik Eskimos. The delta is the heartland of their culture.

As a boy, Gene Peltola Jr. became intimately familiar with this vast, watery landscape. He grew up along the Kuskokwim, where visits with his Yup'ik relatives, trips to harvest spring geese, summer berries or autumn moose, and long hard days working the family's

salmon nets were all dependent upon the moods and meanders of the Kuskokwim. Today, his life is still intimately tied to the river. He lives in the town of Bethel on the Kuskokwim where he serves as Yukon Delta Refuge manager.

In a landscape so immense, in an ecosystem so dominated by the persistent power of moving water, habitats themselves cannot be managed to maximize wildlife resources. Instead, human behavior must be. Every day, Peltola juggles salmon politics, liberal moose-hunting regulations, flyway-wide waterfowl controversies, mining proposals and regional energy planning—all in an effort to fulfill the refuge's mandate to conserve wildlife, fulfill treaty obligations, safeguard the delta's water and provide subsistence opportunities for rural residents.

Through the challenges, recollections of the past and a vision of the rivers' future sustain him.

"I've always loved to hunt and fish," he says. "Bringing food home to my family is so important to me, and to our culture. One of my most cherished memories, however, is of a trip with my late uncle when we *didn't* catch a moose. We awoke on a still, frosty September

continued on pg 14



At nearly 2,000 miles, the Yukon is America's third-longest river. It and the Kuskokwim River flow through Yukon Delta National Wildlife Refuge. They are the lifeblood of southwestern Alaska for wildlife and for humans. A Cornell Lab of Ornithology video about the refuge's importance to birds worldwide is on YouTube at <http://bit.ly/11YTI2e>. (Tom Collopy and Mary Frische)

Yukon Delta — from page 13

morning. Scanning across the river, we saw two grizzly cubs perched patiently atop a beaver lodge, while their mother splashed wildly through the shallows in pursuit of a fleeing beaver. I was just 14, and, although I've spent most of my life along the rivers, the special moment my uncle and I shared that fall morning remains vivid to this day."

Thirty years later, Peltola mentors his own children about the ways of the great rivers, rivers he hopes families will cherish and protect for generations to come. 🐾

Brian McCaffery is a ranger at Yukon Delta National Wildlife Refuge.

A New Tool to Combat Cheatgrass — from page 7

Working with the EPA, the Service and an interagency team of resource scientists are moving toward federal registration of ACK55 as a biopesticide. Only then can a patented treatment be licensed for commercial sale and distribution. Diaz-Soltero sees licensing as five or more years off. "The registration process is long, and it's science," she says. "We have to do the work systematically and thoroughly,

dealing with challenges and questions as they arise."

Biologists and land managers are anxious to keep this process moving.

"We don't have time to waste," says Wetzels. 🐾

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

Niobrara River — from page 9

a tube. "You're in a deep canyon with wilderness on both sides," says Hicks.

On the river, visitors must follow the 2005 plan's regulations, which prohibit alcohol; firearms; fireworks; high-volume radios ("boomboxes," Hicks clarifies); devices capable of shooting or directing a projectile or liquid at another person or wildlife ("squirt guns"); camping; open pit fires; and hunting. The regulations also mandate daylight-only floating; five float tubes maximum tied together; fishing limitations; no ice climbing, rock climbing or rappelling; and no collecting plants, animals, rocks or historical artifacts.

Hick, a 29-year U.S. Fish and Wildlife Service employee who has been Fort Niobrara Refuge manager since 2008, is grateful for his predecessors' work. "They did a really good job in writing the plan," he says. "The biggest challenge is enforcing those rules. When they are complied with, then wildlife, people and habitat are coexisting without one being a detriment to any other."

Another challenge is that, because the river runs through wilderness, the rules must be enforced using non-motorized vehicles. So, Hicks points out, Fort Niobrara Refuge staff members must be highly skilled in kayaks—and they are.

The Niobrara, which originates in Wyoming, is fed by the Ogallala Aquifer and flows into the Missouri River 135 miles downstream from the refuge. Much of it is a national wild and scenic river. Even so, the nonprofit American Rivers has named it among "America's most endangered rivers," largely because of dam-related sediment built up at the confluence with the Missouri.

Such degradation worries blogger Tomes, a man who clearly paddles locally and thinks globally: "It's not just about the Niobrara River or any other particular place. It's about all of our places collectively." 🐾



“We’re Not Alone on This River”

By Bill O'Brian

Bob Barry has managed the Illinois River National Wildlife Refuge Complex for less than a year:

“One of the things I have discovered is that we’re not alone on this river,” he says. “There are a whole bunch of state and private areas managed for ducks and waterfowl. There are eight state areas and two Nature Conservancy sites from Peoria down to Meredosia”—a distance of just 95 miles.

Like Barry, the Ramsar Convention recognizes that two of the complex’s three refuges—Chautauqua and Emiquon—belong to something bigger. Last year, it included them in a new Wetland of International Importance. The third refuge, Meredosia, is just south of the Ramsar site but also within the Illinois River floodplain.

“The Ramsar designation has helped to raise awareness that the refuges play a significant role in providing resources critical to migratory birds,” says Barry. “It gives us a great sense of pride that all the management efforts over the years, on the part of the [U.S. Fish and Wildlife] Service and our various partners, have resulted in something of international significance for the resource.”

Challenges and Opportunities

Being backwater habitat in the Illinois’ floodplain presents the three refuges with conservation challenges, cultural resource opportunities and iffy outdoor recreation options.

The refuges’ primary mission is to provide foraging/resting areas for migratory birds. The refuges also provide habitat for breeding neotropical migrant songbirds and resident wildlife. All three refuges include seasonally flooded backwaters, forested bottomlands and patches of prairie. Because they are essentially backwater lakes/wetlands, the refuges don’t manage for riverine aquatic species such as mussels or sturgeon.



Emiquon National Wildlife Refuge in Illinois was designated part of a Wetland of International Importance by the Ramsar Convention last year. (USFWS)

But when flooded the refuges provide spawning habitat for native fish.

“The river is the lifeblood of the refuges, and all are dependent on it to recharge wetlands, provide nutrients and create disturbance necessary to maintain the ecology of these flood-pulse systems,” Barry says. However, drainage systems and levees make the river susceptible to rapid rises and flows that can complicate matters.

For instance, high water in backwater lakes, such as this spring’s severe flooding, can delay early-summer draw-downs. Those annual draw-downs enable moist-soil plants and invertebrates (duck/shorebird food) to develop in time for migration. River floods also deposit silt that is slowly filling in some refuge lakes.

Invasive Asian carp, which overwhelm the backwaters during floods, are another challenge. “The carp eat virtually everything and keep the silt in the water churned up, which impacts aquatic vegetation and everything dependent on it, including invertebrates important as food for ducks, shorebirds and native fish,” says Barry. During draw-downs, the refuge lets commercial fishermen harvest carp to reduce the number of dead, decaying fish left after the water comes off.

Up and down the river, especially near Emiquon Refuge, there is archaeological evidence of 12,000 years of human habitation, including ancient burial mounds. The river valley also could be considered “the birthplace of modern-day waterfowl hunting,” Barry says. “Some of the earliest decoys and duck calls started around here.”

While state and private waterfowl hunting areas line the Illinois River, hunting is limited on Chautauqua and Emiquon Refuges and prohibited on Meredosia. And the three refuges welcome just 18,000 visitors annually because frequent flooding imperils public-use infrastructure.

“There are not a lot of big rivers that are being allowed into their floodplain to the extent this one is,” says Barry. The water levels of the Mississippi and Ohio, for example, are tightly managed with locks and dams for transportation and flood control. The Illinois has minimal locks, dams and barge traffic and no major navigation channel, so the river “is more connected to its floodplain,” Barry says.

All of which enhances habitat, even if it can complicate refuge management. 

Around the Refuge System

Alaska

The U.S. Fish and Wildlife Service honored the World War II heroism of Pvt. Joseph P. Martinez by installing a plaque in June on Attu, a remote Aleutian Island in Alaska Maritime National Wildlife Refuge. Seventy years ago, in May 1943, Martinez died charging into enemy fire to clear a mountain pass and help pinned-down U.S. forces rout the Japanese during the Battle of Attu. Service and refuge scientists installed the plaque in his honor during a stop at Attu as part of a wildlife monitoring trip aboard the research ship *Tiglax*.

Maine

As deaths of little brown bats rise, biologists from the Service and state agencies have investigated the potential for using decommissioned military bunkers on national wildlife refuges as artificial hibernacula for imperiled bats affected by white-nose syndrome. The disease is responsible for 75 to 90 percent declines in the species population since 2007. In December 2012, 30 hibernating little brown bats were collected from two hibernacula in New York and Vermont and placed in a bunker for hibernation at Aroostook National Wildlife Refuge in northern Maine. In March, biologists found that, although there was mortality among the bats, abandoned military

bunkers can create suitable habitat and may provide a useful strategy to conserve bats affected by white-nose syndrome.

Virginia

Sen. Tim Kaine and Service Northeast Region deputy regional director Deborah Rocque were among 400 people who gathered for the grand opening of the James River Ecology School at Presquile National Wildlife Refuge. The school, a joint effort between the Service and the James River Association, is a state-of-the-art green facility. It includes the Menenak Discovery Center and a bunkhouse that sleeps 34 students on the 1,329-acre island refuge accessible only by boat. The daylong grand opening featured public nature hikes, paddling and birding activities at the refuge 20 miles southeast of Richmond. Kaine, Rocque and other speakers emphasized that the new school is designed to connect kids to nature. It already seems to be working. One kindergartener from nearby Henrico County, Christian Lewis, took her first-ever canoe trip with her mother, Craijetta, and brother, Craijaun. "My butt got wet, but it was awesome!" Christian said of the canoe experience. "I'm going to write about it in my journal."

Wisconsin-Illinois

Ducks Unlimited has purchased 86 acres to be conserved in the Wisconsin portion of Hackmatack National Wildlife Refuge, which straddles the Illinois border. Working with the Service Partners for Fish and Wildlife Program, Ducks Unlimited plans to convert the parcel from agricultural use to restored wetland, prairie and savanna habitat. Hackmatack Refuge was established last fall via a 12-acre conservation easement donation in Illinois. This parcel is the first acquired in the Wisconsin part of the refuge.

Nevada

The most recent survey of endangered Devils Hole pupfish at Ash Meadows National Wildlife Refuge shows a population decline. An April 6-7 count estimated just 35 observable fish, compared to 63 last spring. The short-lived species (lifespan of about one year) experiences a natural high and low cycle, with the population in the fall being greater than in the spring. Last fall's estimate was 75 fish. Reasons for the spring-to-spring decline are unclear, and biologists are reluctant to speculate, but they believe three earthquakes and one rain runoff event in the 14 months preceding the survey may have had some effect. Devils Hole pupfish is one of the world's rarest fishes, spending most of its life in the top 80 feet of the 93-degree waters of a cavern in the Mojave Desert, which is managed on the refuge as part of Death Valley National Park with the Service and Nevada Department of Wildlife. A hybridized form of the pupfish has been moved to a state-of-the-art facility constructed at Ash Meadows Refuge to mimic the harsh conditions of Devils Hole. Those fish, which are thriving, were moved to aquaria where biologists can conduct research without disrupting fish in their natural environment.

California

Don Edwards San Francisco Bay National Wildlife Refuge has opened a new pedestrian bridge to 3,000-acre Bair Island, which had been closed for habitat restoration since 2007. About



Five-year-old Christian Lewis basks in her first canoe trip ever at the grand opening of the James River Ecology School at Presquile National Wildlife Refuge in Virginia. (Bill O'Brian/USFWS)

half the island recovered naturally from its recent human use as grazing lands and salt evaporation ponds. The refuge is now restoring the other half to tidal wetlands. The restoration, which has been decades in the making, will renew natural vegetation, protect critical wildlife habitat and endangered species, reduce mosquito breeding and offer revitalized public access and renewed opportunities for environmental education. Part of the ongoing restoration includes raising the level of the island so that, when tidal action is re-introduced, the area will quickly become vegetated marsh. The bridge opening coincided with the opening of a two-mile trail on the island. A seven-mile path, which will include viewing platforms and information displays, is scheduled to open next year.

Hawaii

The lighthouse at Kilauea Point National Wildlife Refuge on Kauai has been renamed in honor of the late Sen. Daniel Inouye. Inouye, who died last December at 88, was a longtime advocate for conservation and a key supporter of the refuge's establishment in 1985 after its transfer from the U.S. Coast Guard. One of the few Hawaiian refuges open to the public, 203-acre Kilauea



The lighthouse at Kilauea Point National Wildlife Refuge in Hawaii has been renamed in honor of the late Sen. Daniel Inouye. (Megan Nagel/USFWS)

Point Refuge offers breathtaking views of the Pacific Ocean and attracts more than 500,000 visitors annually. Kilauea Point is the northernmost land in the inhabited Hawaiian Islands. "Senator Inouye served as a beacon of hope for conservation issues," said Service Director Dan Ashe. "His efforts

included creation and reauthorization of the Coral Reef Conservation Act to protect the beautiful ecosystems of Hawaii. Renaming the lighthouse is befitting of his lifelong work and contribution to the people of Hawaii and the conservation community."

Awards

- **Bob Danley**, outdoor recreation planner at Lee Metcalf National Wildlife Refuge, MT, has been chosen as 2013 U.S. Fish and Wildlife Service 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. Danley was honored for reaching visitors through tweets, blogs, Facebook and the Metcalf Refuge Web site as well as via weekly radio and monthly TV appearances that highlight wildlife topics.

- **Brian J. McCaffery**, ranger at Yukon Delta Refuge, was one of 16 individuals or teams to be honored by the Service

as a Recovery Champion. Honorees are Service staff and partners whose work advances the recovery of endangered and threatened species. For more than 20 years, McCaffery has played a pivotal role in Steller's and spectacled eider recovery, including serving as the Eider Recovery Team leader. He is primary author of the Spectacled Eider Recovery Plan. He has helped evaluate the feasibility of reintroducing Steller's eiders to the Yukon-Kuskokwim Delta and is developing decision-making methods and other modeling techniques for critical management decisions. By writing and performing music about birds and habitat conservation, McCaffery also communicates with audiences that the Service might not otherwise reach.

- The Federal Executive Board honored Midwest Region Refuge System geographic information system (GIS) coordinator **Mary Balogh** as a 2013 Civil Servant of the Year. The statewide award honors federal employees in Minnesota "whose performance has been exceptional and commitment to public service unwavering." Balogh is known as a professional who goes above and beyond to serve others. She responds to hundreds of requests for GIS assistance from field station staff each year and has trained hundreds of employees in the use of GIS-related computer programs. She also has sought out and advised promising university students with GIS skills, often leading to permanent jobs with the Service. 

Two Years After Madison, *Conserving the Future Takes Shape* — continued from page 1

The pilots will be formally recognized in September at the Urban Academy, training at which about 150 Service staff and partners will share tools, discuss overcoming barriers to engagement and develop strategies to implement standards of excellence for urban refuges.

The pilots are designed to foster a land ethic in cities. Here are two examples: The Rhode Island Refuge Complex and the Southern New England-New York Bight Coastal Program will collaborate with the city of Providence, watershed associations, the zoo, Audubon and others to use the city parks system as a portal to reach urbanites. The San Diego Refuge Complex will create a River Rover, whose goal is to bring “people to the river” and “the river to the people” in Los Angeles. The project will involve a mobile exhibit space to include an interactive model of the Los Angeles River watershed.

Via *Conserving the Future*, the Refuge System also has committed to landscape-scale conservation planning to integrate the best available science to adapt to demographic and climate change. The Inventory and Monitoring Seven-Year Plan: 2013-2020 includes tools that help refuge managers document/justify monitoring priorities, streamline refuge management plan



An Urban Wildlife Refuge Partnership pilot project will be designed to increase awareness and appreciation of the Los Angeles River watershed. (William Preston Bowling)

development and catalog individual refuge monitoring history.

Looking forward to the next two years, the Service will increase quality hunting and fishing opportunities on refuges; improve working relationships with state partners; and, where appropriate, invest in accessible facilities. New technology will be used to increase virtual and in-person visitation. An ambassador program will train employees, volunteers, refuge Friends and close partners to communicate and interpret key messages to the public.

“Like any other voyage, you have to get out the compass and get your bearings straight,” Refuge System Chief Jim Kurth said recently. “We are making progress. You are going to have headwind, like this budget climate right now, but this country will be strong again, and, in the end, people in this country like what we do and care about wildlife and wild places and want us to conserve these national resources. It’s an incredibly powerful recipe.” 🦋

Anna Harris is the Conserving the Future coordinator. To follow the implementation teams’ work, go to AmericasWildlife.org.

Chief’s Corner — continued from page 2

Much remains to be done. Yet, the fiscal challenges we face are daunting. We are going to have fewer people and fewer dollars over the next couple of years. We spent two years crafting a vision for the future of the National Wildlife Refuge System that aspires to do more, not less. But we also spent those years defining what is important.

We laid out a vision of how refuges fit into the U.S. Fish and Wildlife Service’s science-based, landscape-scale conservation framework. We reflected on how we must remain relevant in a changing America and build a connected conservation constituency. We described the leadership it would take. Our vision for conserving the future is focused. We

can go as fast or as slow as circumstances allow. But we are moving forward, there is no looking back. So stay focused and positive—because our work is incredibly important. Let’s have some fun and keep on going. 🦋

From the Director — continued from page 2

Importantly, Secretary Jewell recognizes the work of public servants and understands the vital role of public service in our nation's life. I was happy and proud that in her first town hall with Interior folks she talked about the importance of diversity and noted the strides the Service has made.

To echo Secretary Jewell, we must ensure that public lands and their stories are relevant “to all Americans, not just a subset of Americans, and it begins right here and doing the job here at Interior and setting the right example.”

The Secretary began her career as a petroleum engineer. She later worked in exploration and production and moved on to the world of commercial banking, serving as an energy and natural resources expert. She then shifted her focus again, leading outdoor retailer REI.

She understands the importance of the connection between Americans and our natural resources—and the need to balance energy development with strong wildlife and habitat protection. I'm looking forward to her ideas for managing energy development on refuges and public lands while reconnecting Americans with their natural heritage.



Secretary of the Interior Sally Jewell at Arthur R. Marshall Loxahatchee National Wildlife Refuge in Florida this spring. (Ryan Murphy)

And Secretary Jewell is an avid sportswoman with a love for the outdoors. I was at Nationals Park watching a baseball game recently and the beer man actually echoed one of Secretary Jewell's most important ideas. He told me: “If you can't have fun at work, go home!” Too often, we become wrapped up in process and lose sight of the joy of conservation and the outdoors. The Secretary has challenged us to have fun at work. She

knows that we work on important issues but understands the need to avoid taking ourselves too seriously.

I am excited to work with Secretary Jewell and know she will bring a great, fresh and fun perspective to the Interior Department and conservation in America. 🦋

Study Finds Steep Decline In Amphibians — from page 1

Scientists with the USGS Amphibian Research and Monitoring Initiative analyzed nine years of data from 34 sites—including 10 national wildlife refuges—and covering 48 species.

The refuges were: Buenos Aires, AZ; Coldwater River, MS; Great Bay, WI; Neal Smith, IA; Rachel Carson, ME; Upper Mississippi River, MN, WI, IL, IA; William L. Finley, OR; Eastern Massachusetts; Canaan Valley, WV; and Klamath Marsh, OR.

“Amphibians have been a constant presence in our planet's ponds, streams, lakes and rivers for 350 million years or so, surviving countless changes that caused many other groups of animals to go extinct,” said USGS Director

Suzette Kimball. “This is why the findings of this study are so noteworthy; they demonstrate that the pressures amphibians now face exceed the ability of many of these survivors to cope.”

The study found declines even in species presumed to be relatively stable and widespread. Declines were documented nationwide, from the swamps in Louisiana and Florida to the high mountains of the Sierras and the Rockies.

“Even though these declines seem small on the surface, they are not,” said USGS ecologist Michael Adams, the lead author of the study. “Small numbers build up to dramatic declines with time.

We knew there was a big problem with amphibians, but these numbers are both surprising and of significant concern.”

The study did not evaluate causes of decline, but researchers speculated disease and climate warming were among contributing factors. The decline in amphibian numbers affects humans because amphibians control pests, provide medicines, feed other animals and help make ecosystems work.

The study—reportedly the first to measure the rate at which amphibians are disappearing—was published in the journal PLOS ONE: <http://bit.ly/13LZcRu>. 🦋



RefugeUpdate

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A Look Back ... Cecil Kennedy

“He loved those sheep,” recalls retired maintenance worker Tom Emmanuel about his years working with manager Cecil Kennedy at San Andres National Wildlife Refuge in New Mexico. A tribute in the Las Cruces *Sun-News* wrote that he was legendary in his own time because of the “excellent care and love Kennedy poured over the sheep.”

No desert bighorn sheep had been sighted for years when the refuge was established in 1941, and Kennedy’s predecessor, Arthur Halloran, began orchestrating their comeback. The sheep population continued to grow steadily under Kennedy’s management. It now numbers 120-130 animals in the San Andres Mountains.

Kennedy started working at San Andres Refuge in maintenance and was named manager in 1945—at a salary of \$3,350. He held the position until his retirement



Cecil Kennedy, who was San Andres National Wildlife Refuge manager from 1945 to 1968, was known for surveying the New Mexico refuge on foot and horseback to make sure every desert bighorn lamb was counted. (USFWS)

in 1968. Former U.S. Fish and Wildlife Service Director Lynn Greenwalt called Kennedy a real-life cowboy and innovative manager.

San Andres Refuge is 57, 215 acres of rugged Chihuahuan desert mountains

and canyons, and it is now completely surrounded by the White Sands Missile Range. Kennedy was among the last managers at the refuge to count sheep only from the ground. In 1968, the refuge began combining ground and helicopter counts. Before that, at least four men on horseback or foot would cover both slopes of a survey unit, riding along the mountain contour for the length of the slope.

“He looked like John Wayne,” said Emmanuel. “He was daring on horseback. He would do things others would consider risky to cover the area. He was very good at what he did.”

Kennedy received the Woodmen of the World Award in 1967 and the Department of the Interior’s Commendable Service Award in 1969 for his contributions to conservation. 🦋

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