



Refuge Update

National Wildlife Refuge System



Canadian botanist George Argus measures willow on Attu Island at Alaska Maritime National Wildlife Refuge. (USFWS)

Measuring What We Need to Know

What are the critical information needs of the U.S. Fish and Wildlife Service and the Refuge System in the face of climate change? How can resource monitoring respond to those needs? An eight-member team of refuge biologists and data managers – known as the core Refuge System Inventory and Monitoring (I&M) Team – is working to answer those questions and identify specific goals.

With the demands of accelerating climate change and the Service’s implementation of Strategic Habitat Conservation, the importance of a consistent, sophisticated and efficient system of inventory and monitoring has risen exponentially. The I&M team will develop priorities for gathering baseline information, make recommendations on how to administer a national data program and identify what technology is needed to make it all happen. “Much of the groundwork identifying the information refuges need has been done by the teams that worked on implementing *Fulfilling the Promise*. We now need to consider the implications of climate change and other environmental stressors, and broaden our thinking to include how monitoring on refuges can inform landscape level conservation,” explains Andy Loranger, chief of the Division of Natural Resources and Conservation Planning.

“Data management is key. The information we collect must be easily available to refuge managers, decision-makers and the public,” Loranger continues. “We must also ensure the long term integrity of that data.”

How will this change what happens on an individual refuge? “A lot of work on refuges won’t change,” says Loranger. “How we manage data and its transparency – that

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Google Earth Includes Refuge Boundaries

By Bret Wolfe

Google Earth allows users to display high-resolution aerial and satellite imagery of virtually any place on earth – now including the boundaries of the National Wildlife Refuge System. Version 5.0, released in February, offers views of the ocean floor, the night sky, the moon and even Mars.

The basic free version of Google Earth includes dozens of data layers with an assortment of mapping information such as roads, geographic pictures, famous places, businesses, 3D buildings and picture galleries. When a layer is turned on, icons appear with links to additional information.

To view the Refuge System, first download the most recent version of Google Earth from <http://earth.google.com/index.html> and click “download

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From The Director Honored and Fired Up



Sam Hamilton

As I take on my new role as Director of the U.S. Fish and Wildlife Service, I have to admit that I am equal parts honored and all fired up.

The Service is the finest conservation organization in the world. Its workforce is unsurpassed in its dedication. I began my career at 15 as a Youth Conservation Corps employee at Noxubee National Wildlife Refuge in Mississippi. Since then, I've had the privilege of working at every level of the Service. I know from firsthand experience that, as I take the reins of leadership, I stand on the shoulders of people for whom conserving America's resources has always been more than a job. It's a calling.

We are at a crossroads in America's conservation history. We have outstanding leadership to provide vision and

momentum. We also have the backing of a Secretary of the Interior who appreciates what we do for the country. This is our moment, and we are ready.

During my confirmation, I told the Senate Environment and Public Works Committee, "As wildlife goes, so goes the nation." To remain strong, America needs sustainable populations of fish and wildlife resources and healthy, thriving ecosystems.

The Service has an unparalleled opportunity to make a difference, but we cannot underestimate the challenges. Our natural resources are being pushed to the breaking point from habitat fragmentation, genetic isolation, invasive species, unnatural wildfires, increasing demands on limited water supplies, and the illegal trade in wildlife.

Added to this is the overarching threat posed by climate change. It is a game-changer, not only because of its direct

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Chief's Corner Refuges as Ambassadors



Greg Siekaniec

We focus in this issue on the role of national wildlife refuges as national ambassadors for natural resource protection. "Wildlife first"

has long been an unofficial, yet

important, mantra within the Refuge System, but wildlife only becomes a priority when people understand that the health of our natural resources is the very foundation of America's well-being. That's why national wildlife refuges' most critical role may well be ambassadorship.

And we're doing an awfully good job.

It was hard to pick just six or so focus stories to illustrate the extent of our success. National wildlife refuges hold hundreds of events for youngsters and

families, for sports enthusiasts and for folks who just want to walk with nature.

One glance at our online special events calendar gives you an idea of the scope of our offerings – from birding festivals, to citizen science events like BioBlitz and tagging of monarch butterflies, to arts extravaganzas that incorporate writing, drawing and photography into an understanding of nature.

It all comes none too soon.

Facebook, Twitter, video games, more than 300 cable television stations, iPods, iPhones, podcasts, instant messaging – the whole world of technology: it's all changed how we relate to one another and to the world around us. What hasn't changed is man's need to seek the natural, to have moments of beauty and silence, to see a world beyond skyscrapers and suburbia. That's what

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RefugeUpdate

Ken Salazar
Secretary
Department of the
Interior

Sam Hamilton
Director, U.S. Fish
and Wildlife Service

Greg Siekaniec
Assistant Director –
National Wildlife
Refuge System

Martha Nudel
Editor in Chief

Karen Leggett
Managing Editor

Address editorial
inquiries to:
Refuge Update
USFWS-NWRS
4401 North Fairfax Dr.,
Room 634C
Arlington, VA
22203-1610

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

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Around the Refuge System

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Inspired Dedication...from Ira Gabrielson to Changbaishan



A National Wildlife Refuge System delegation visits Changbaishan National Nature Reserve in northeast China. (Roy W. Lowe/USFWS)

the Advanced Leadership Development Program (ALDP) and Stepping Up to Leadership. He also believes it's increasingly important for Refuge System leaders to think globally. "What we do for conservation within the boundaries of the Refuge System is not significant if it's not projected onto the greater landscape....Refuges are anchors not islands of habitat."

Kurth's journey to China in July with nine other Service employees reflects this

belief. "When you travel to a country with such a different culture, you have the opportunity to see conservation challenges through a lens you simply can't get here," adds Kurth. He first went to China in 2005 to see the panda reserves in Sichuan province and returned in 2007 to work on a conversation agreement that included tracks on fish, protected areas, wetlands and cities. This year the group visited nature reserves in far northeast China, including Changbaishan on the border with North Korea.

Kurth was impressed by the quality of visitor facilities at some of the Chinese nature reserves – entire floors with models of the landscape under glass and outstanding cinematography. "And they can cut red tape: one of the most outstanding exhibit rooms was designed and built entirely by refuge staff in only three months," added Kurth incredulously. The visitor experience is quite different in China in other ways – lots of developed trails with scenic overlooks to accommodate the high interest in photography, no hunting, no backcountry camping and no sport fishing ("The Chinese have a much more utilitarian approach to fish – fish ponds are a source of food for staff who live on the reserve.")

On other issues, there were significant similarities – climate change is a concern. "If you are managing a wetland in the United States or China it goes without saying that you need to worry about water supply and weather patterns," says Kurth. Exchanges with China will continue to address climate change and other shared concerns as groups focused on wetlands, refuges and fish travel both directions in 2010. He credits Steven Kohl of the Division of International Conservation for his vision in developing an innovative and effective program that not only "helps our Chinese colleagues but also provides Service employees with a rare opportunity to take a world view on conserving natural resources and consider what it will take to ensure a sustainable future for our planet."



Deputy Chief of the Refuge System Jim Kurth learns of his Ira Gabrielson Award while traveling on a train through China. (Roy W. Lowe/USFWS)

But what impressed Kurth the most was that the conservation ethic of our Chinese colleagues "is so similar to our own professionals....the Chinese are doing cutting edge conservation work in many areas that is equal to anything in the world and they do it with the same inspired dedication of our own professionals. It's a great thing to see." 🦋

Ira Gabrielson was an accomplished naturalist, scientist, author and administrator who directed the U.S. Fish and Wildlife Service from 1935 to 1946 and then moved on to a second career as President of the Wildlife Management Institute. "A remarkable mix of skills with a litany of accomplishments," says Deputy Chief of the Refuge System Jim Kurth, who recently received the Ira Gabrielson Conservation Leadership Award.

Humbled and appreciative, Kurth says the award "reflects what I've been part of with a lot of other people. You don't do much in conservation by yourself." Gabrielson was able to lead the Service much longer than today's directors, working with other legends like J. N. "Ding" Darling and J. Clark Salyer to add millions of acres to the Refuge System in response to the Dust Bowl – "the worst ecological crisis we've ever been through in this country," says Kurth, "when we lost hundreds of millions of acres of topsoil and had an unprecedented waterfowl crisis."

Refuges as Anchors not Islands

Kurth believes the Service has made a strong commitment to developing leaders who can emulate Gabrielson with programs like the Refuge Academy (Kurth has attended 25 Academies),

What Happened to the Whoopers



Lack of blue crabs is believed to have caused a record die-off of whooping cranes at Aransas National Wildlife Refuge in Texas. (Lance and Erin Willett)

A record number of whooping cranes died at Aransas National Wildlife Refuge in Texas during the winter of 2008-09, due to a lack of the blue crabs and wolfberries that are the staples of the bird's diet. Twenty-three cranes died – 8.5 percent of the flock – compared to an average winter mortality rate of 1.8 percent. Exceptional drought in South Texas cut the population of blue crabs, which can make up nearly 90 percent of the crane's diet.

Adult cranes stand five feet tall with a wingspan of more than seven feet. "Usually, when you see a whooping crane," says whooping crane coordinator Tom Stehn, "it's magnificent. This year, they looked disheveled. The importance of blue crabs to the whooping crane is just smacking us right in the face."

An additional 34 whooping cranes had died between spring and fall of 2008. These birds left the refuge in April and did not return. No carcasses were

found so the cause of death is not known. Whoopers fly 2,500 miles from Wood Buffalo National Park in Canada to their wintering grounds at Aransas Refuge. They travel as a single pair, family group, or in small flocks, sometimes accompanying sandhill cranes. The loss of more than 20 percent of the spring 2008 whooper flock of 266 was a significant loss for a very endangered species.

The refuge responded to the losses by providing supplemental feed corn for the first time since the 1950s. State waters on Matagorda Island were closed to commercial crabbing. More than 400 abandoned crab traps were collected. A prescribed burn program was implemented to provide additional feeding opportunities for the cranes. Refuge staff also increased the number of census flights to look for crane mortality.

Ongoing Threats to Cranes

Ongoing issues threaten the whooping crane, including reduced river inflows,

sea level rise, wind energy and housing development, and the addition of power lines in the migration corridor. Collisions with power lines are the single largest known cause of death for fledged whooping cranes. These threats are being addressed on all fronts by numerous partners.

The wind industry is writing one Habitat Conservation Plan to address loss of habitat and power line construction. The Texas Nature Conservancy, working closely with the U.S. Fish and Wildlife Service, has protected two pieces of land with an easement. The crane die-off has added urgency to discussions about water quantity as the growing populations of San Antonio and Austin put increased pressure on the Guadalupe River, which runs from the Texas Hill Country to San Antonio Bay.

Coastal estuaries need enough water, in the right combination of salt and fresh, to provide nutrients for crabs, cranes and other species. Springs in Texas Hill Country flow from the aquifer that lies under San Antonio and the surrounding area. During droughts, there is little surface runoff, so the majority of river water originates from these springs. A federally funded Edwards Aquifer Recovery Implementation Program is producing a second Habitat Conservation Plan to protect everything from cave invertebrates to whooping cranes. The plan is being developed by a consortium of stakeholders, including water developers, water user interest groups and conservationists.

Multiple endangered species live in the springs, so the plan seeks to maximize the sustainable withdrawal of water from the aquifer while protecting wildlife species. Stehn believes the Service must consider the needs of whooping cranes when analyzing the impact of management proposals for the aquifer. 

The Mystery of the Dying Cormorants

They began washing up on the beaches of Marin County, California, in the middle of April: Brandt's cormorants, among the most abundant breeding seabirds in California, were dying by the hundreds. The problem seemed to be restricted to an area of the central California coast between Point Reyes and Monterey. The cormorants were not showing up at breeding colonies either, even though the nesting season should have started.

Biologists at PRBO Conservation Science in Petaluma say that 2009 will be remembered as the worst year in memory for all Bay Area cormorants.

The world's largest colony of Brandt's cormorants occurs at the Southeast Farallon Islands within Farallon National Wildlife Refuge, where as many as 12,000 pairs have nested in recent years. These cormorants and their fellow seabirds are among the most counted and studied birds in California. Several colonies are monitored by the U.S. Fish and Wildlife Service and PRBO; hundreds of volunteers participate in two standardized survey programs coordinated by the National Oceanic and Atmospheric Administration (NOAA) and the



Brandt's cormorants died by the hundreds on the central California coast this spring, possibly the victims of starvation. (USFWS)

California Department of Fish and Game (CDFG). The Monterey Bay National Marine Sanctuary's Beachcombers counted more than 500 dead cormorants in a short period of time.

Disease Ruled Out

Initial tests conducted by the CDFG and the USGS National Wildlife Health Center ruled out West Nile and avian flu viruses and domoic acid, a biotoxin that has been seen in brown pelicans and sea lions. "The initial assessment," said Gerry McChesney, a wildlife biologist at the San Francisco Bay National Wildlife Refuge Complex, "was that the birds had no fat, no food in their stomachs – and no disease. Our conclusion was that this was a starvation event."

Why? McChesney says everyone is baffled.

Scientists are piecing together all the elements of a brain teaser:

- The Brandt's cormorants did extremely well in 2006-2007, when many other breeding seabirds in California fared poorly.
- Brandt's cormorants typically do well during La Niña years like 2008 and 2009, but instead did poorly at most Gulf of the Farallones and Monterey Bay colonies. The number of nesting pairs was the lowest in many years and most birds raised few if any young.
- The common murre, another abundant seabird that feeds on schooling fish like the cormorants, also nested late and had low reproductive success on the Farallones and

other nearby colonies – another indication of low prey availability.

McChesney and other biologists are looking at oceanographic data and comparing bird and fish surveys from Oregon and Washington, but they already have suspicions. There were unusually strong northwest winds in April that may have altered the upwelling patterns that typically bring nutrients to the surface. The cormorants' favored foods, like anchovies and sardines, may have been pushed further out to sea. Local fishermen have indeed confirmed a severe shortage of anchovies and other small schooling fish.

Climate Change in Action?

Is accelerating climate change to blame? "We don't know for sure," says McChesney. "We need at least five more years of data collection to know for sure but there is a good chance this is climate change in action."

In the meantime, there is little Farallon Refuge can do but document and study what's happening.

As much as possible, the Service and other agencies work to reduce human disturbance and anything else that might limit breeding success. The islands of Farallon Refuge are closed to the public, and even researchers use carefully constructed boardwalks and blinds so they won't disturb the very wildlife they are studying. The public is encouraged to experience the seabird spectacle either on summer boat trips around the islands or on a new Web cam perched on Southeast Farrallon Island, a cooperative effort with the California Academy of Science and PRBO Conservation Science. 

The Farallon Web cam and extensive background information are available at www.calacademy.org/webcams/farallones.

After the Flood in North Dakota

By Kim Hanson

A \$10 million water reclamation project survived the North Dakota floods this year, which exceeded the 1997 record by more than eight feet, and so did the dikes built by the Civilian Conservation Corps in the 1930s. But the high water inundated seven of 10

buildings at Arrowwood National Wildlife Refuge headquarters.

The permanent solution is to relocate the headquarters facilities on the bluffs overlooking the river – well above the high water mark. Plans call for a new administrative building with adequate office space for staff and a visitor contact area to provide interpretation.

All new structures will include the latest green construction technology and will incorporate solar, wind and ground source heating and cooling features as well. The cost to relocate and construct the new headquarters is estimated at \$10-\$12 million.

The refuge's most recent

water control improvements were part of a project completed last year by the Bureau of Reclamation to mitigate the adverse impacts of Jamestown Reservoir. Excess water often backed onto the refuge, creating lakes instead of the shallow, productive wetlands necessary for waterfowl and other migratory water birds.

The mitigation project included a bypass channel and five additional subimpoundments, improved water control structures, and lowering the Jamestown Reservoir operating level by almost two feet. The project allowed managers to fill and draw down impoundments independently to mimic a more natural water régime.

When this year's flood waters receded in mid-June, the CCC dikes and the mitigation project features that were designed to withstand periodic flooding were remarkably intact. Refuge employees are currently repairing roads, parking areas, gates and fences. 

Kim Hanson is project leader at Arrowwood National Wildlife Refuge Complex in North Dakota.



Plans call for a new administrative building on higher ground to replace facilities inundated during record spring flooding at Arrowwood National Wildlife Refuge, ND. (USFWS)

Rudolph Dieffenbach Award

The 2009 winner of the Rudolph Dieffenbach Award is Gary Sullivan, supervisory realty specialist in the Northwest Montana Wetlands Office. The award is given annually to a Division of Realty employee for significant contributions to the Service's land acquisition systems, operation or mission. Sullivan was credited for outstanding skill in developing community-based partnerships and land conservation strategies in Montana.

In helping to establish the Rocky Mountain Front Conservation Area, Sullivan brought together a variety of stakeholders, including landowners, multiple nongovernmental organizations and the local community to achieve common land conservation goals.

The Rocky Mountain Front Conservation Area is a model for landscape-level conservation projects.

Rudolph Dieffenbach oversaw the appraisal and acquisition of land for a record 272 national wildlife refuges beginning in 1929. He was the first Secretary of the Migratory Bird Commission, a position he held for 18 years. 

Gary Sullivan, Northwest Montana Wetlands Office, is the 2009 winner of the Rudolph Dieffenbach Award. (Noreen Walsh/USFWS)



Tearing Down a Levee in Louisiana

By K.C. Summers

As hurricane season is in full strength and communities throughout the Lower Mississippi Valley fortify levees in low-lying coastal areas, Upper Ouachita National Wildlife Refuge in northeastern Louisiana is planning to tear one down.

Counterintuitive? Not in this case. The 16-mile-long levee separates a portion of the Ouachita River from its floodplain in the eastern part of the refuge, and breaching it has long been a dream of conservationists in the region.

The goal: to reconnect the river to its floodplain, providing 25 square miles of new habitat for hundreds of animal species and native plants.

The ambitious \$4.5 million project, developed by the refuge in partnership with The Nature Conservancy (TNC), is thought to be the largest wetlands restoration project in the country. The first phase began in 1997, when the Upper Ouachita Refuge acquired the 16,000-acre tract of land ringed by the levee. The land had been cleared for agricultural use in the 1960s, so the refuge first worked to restore the original bottomland hardwood forest, planting three million trees over the next few years.

Then, using Cost Share Challenge grants and funds from TNC and others, the refuge prepared to launch Phase 2 in 2008: breaching the levee in five strategic places.

Along came an unexpected bonus: \$2.1 million from the American Recovery and Reinvestment Act (ARRA). The funds mean that Phase 3 can soon begin: removing huge chunks of the levee, with a goal of eventually taking down the entire structure.

Rains before Demolition

“We were projecting that it would take eight to 10 years to get the rest of the levee down, doing some of it ourselves every year,” said George Chandler, project leader for the North Louisiana National Wildlife Refuge Complex. “Now



Unexpected flooding breached a levee along the Ouachita River in Louisiana in two places – not places that fit into a master plan for removing the levee. (Meryl Kennedy)

we can contract it out.” He said the ARRA funds will allow the refuge to take down at least a mile-wide portion of the embankment.

Demolition work was set to begin in the summer of 2008, but Hurricane Gustav brought the river to record levels. The project was postponed to summer of 2009, but massive rainstorms caused additional flooding, scoured out large portions of the landscape and breached the levee in two places – unfortunately, not places that fit into the engineers’ master plan. “We knew the levee would fail at some time,” said former refuge manager Brett Hortman, “but we wanted to do it on our own terms. The floods caused us even more problems.”

After several more postponements, work is now set to start this fall. Then, if all goes well, the project will be completed in about a year. “It’ll be a functioning wetland on the river,” Chandler said. “We’ll have enough of the levee down so that the water will rise and fall with the river.”

That’s how it was always meant to be. In the Lower Mississippi Valley, there once were 24 million acres of bottomland hardwood forests providing

habitat and nutrients for indigenous species and migratory waterfowl. Over the years, about three-quarters of the forests were cleared for agriculture use or development, and levees became commonplace. “We’ve disconnected our rivers from their floodplains,” said Keith Ouchley, director of TNC in Louisiana. “It’s one of the biggest stresses on the ecosystem down here.”

Now that things are turning around, Brett Hortman dreams of nutrient-rich soil, new fish spawning grounds and a corridor habitat for the endangered Louisiana black bear. Ouchley is excited about effects on trees, herbaceous plants, waterfowl, fish and other species. “We always talk about the benefits [of reforestation] to these different life groups,” he said, “but now we’re going to have it documented.”

Bringing the project to completion has been frustrating at times, all agree. But that’s just part of working with nature. “You can’t fight it,” said Chandler. “You’ve got to bend and go with it.”

K.C. Summers is a former editor at The Washington Post who is now a freelance writer.

Focus...Refuges as Ambassadors

Small Projects – Big Dividends

Many national wildlife refuges have discovered that relatively small initiatives to connect with the local community have a positive ongoing impact on a refuge. Here are just a few of those stories.

Ambassadors on Home Plate

Red Rocks Lake National Wildlife Refuge in Montana is remote even by Montana standards. Lima is the nearest town and it's at least an hour's drive, mostly on gravel road. But when Lima scheduled a softball tournament in 2005 and 2006, the refuge fielded a full team, even winning the first year.

"Lots of folks were pleased to see the refuge participate," recalls Jeff Warren, refuge biologist. The refuge staff also fielded a basketball team, which took third place. Warren recalls playing seven games in a single day for one tournament and not playing at all last winter because everyone living on the refuge was snowed in.

"It was a good opportunity for us to get out of (the U.S. Fish and Wildlife Service) uniform and just be with the local community," says Warren. "It opened lines of communication we wouldn't have had otherwise. When you're in shorts and a t-shirt, you're more human than when people are on a refuge and are afraid they might be breaking a rule. Now when we go into town, we can stop and talk to people by name."

Neighborhood Advice

Refuge manager Stuart Marcus at Trinity River National Wildlife Refuge in Texas was approached by a nearby residential subdivision when a one-acre pond was being smothered by invasive giant salvinia. Herbicides weren't eradicating or even controlling the weed, but Marcus knew the Salvinia weevil might work.

With a stock of weevils from the state of Texas and permission from the local homeowners association, the refuge began growing weevils in the community pond.

"The weevils are beginning to work their magic," says Marcus. "The salvinia is beginning to break down and sink." Now the state has delivered more weevils to the refuge to tackle salvinia in larger areas.

In the meantime, the refuge involvement in the project has led to multiple opportunities for the refuge Friends

organization to present programs on salvinia and other invasives in the community. The presentations have prompted interest in the refuge as local residents seek to address problems not only with salvinia but feral hogs and Chinese tallow in local hayfields.

Community Quilt

With a lot of graph paper scribbles, a handy calculator and input from local quilters, the design for a quilt to commemorate the 100th anniversary of Malheur National Wildlife Refuge in Oregon took shape. The annual John Scharff Migratory Bird Festival children's art contest provided art for the quilt squares.

From more than 200 entries, 49 pieces of children's art work representing wildlife in the local area were chosen. The centerpiece for the commemorative quilt was created by Malheur Wildlife Associates member Patty Bowers and featured three sandhill cranes, one strolling through the marsh grass, and two engaged in the age-old "crane dance" breeding behavior.

The children's art was scanned and printed on fabric by visitor services manager Carey Goss. Seven local quilters created the commemorative quilt arrangement on a design wall at a local quilt store that provided the space for the volunteers to work. More than 120 hours of volunteer time went into the commemorative quilt. The quilt was ready to help the refuge celebrate its 100th anniversary in 2008, almost one year after it all began. The quilt is now displayed in the refuge museum and Goss says, "I still get children running up to me or waving because of the connection with the refuge and the schools."

History All Around Us

It all started with a few history buffs who were also members of the Friends of the 500th supporting Canaan Valley National Wildlife Refuge in West Virginia. Organizing themselves as



A quilt to celebrate the centennial of Malheur National Wildlife Refuge, OR, includes designs by local children. (Barbara Wheeler)

the Tucker County Highlands History and Education Project, they began conducting oral history interviews with long-time members of the community. Articles based on these interviews were featured as “Chronicles” in the Friends newsletter, Timberdoodle.

In 2008, the West Virginia Humanities Council approved a grant to turn the articles into a book, *Behold! The Land of Canaan*, published on June 1. Within a month, more than 750 copies had been distributed to public and college libraries, elected officials, historical societies, civic organizations, schools or “sold” for a donation in the refuge visitor center. “They were a hot commodity,” says project director and Friends board member Julie Dzaack.

Now the group has a Preserve America grant to develop a plan to share the region’s cultural history as it relates to the natural landscape. The first permanent settlers came to the valley after the Civil War and the area was logged until the 1920s. Fires followed the logging and then farmers tried to eke out an existence on the denuded landscape. “The diverse habitats on the refuge are the direct result of the fact that this land was clear cut 100 years ago,” explains Dzaack. “The grasslands being protected today wouldn’t be here if the land hadn’t been logged and farmed.”

Dzaack expects to have interpretive panels and brochures at the refuge as well as field trips and teaching trunks to lend to local schools. In the broader community, says Dzaack, “We want to reach people who value the land but may not have a ‘wildlife first’ mindset. People who had never stepped foot in the visitor center came to pick up one of these books. We brought a new audience to the refuge.”



Workers at a West Virginia logging camp are remembered in a new history of Canaan Valley by members of Friends of the 500th, supporters of the Canaan Valley National Wildlife Refuge. (Frances Zadell Tekavec/TCHHEP)

“When settlement finally began in earnest in the 1860s, the stories are an awesome testimony to the strength, endurance and downright determination of people to live here and prosper.”

Behold! Land of Canaan

Focus...Refuges as Ambassadors

Refuge Converts Trash to Cash

By Diane Pence

Four years ago, when Sachuest Point National Wildlife Refuge in Rhode Island was honored with a Department of the Interior Environmental Achievement Award, revenue from birdwatchers was an unlikely impetus for action. But with birdwatching increasing in the United States, according to the *Addendum of the 2006 National Survey of Fishing, Hunting, and Wildlife-associated Recreation*, remediation of a 21-acre municipal landfill within the 242-acre refuge attracted attention from birds and birdwatchers alike.

The municipal landfill was used from the 1950s to 1970s, and was acquired by the Audubon Society before being transferred to the U.S. Fish and Wildlife Service. Before its remediation, the landfill had the potential to leach contaminants into the groundwater system. However, through the restoration process, hazardous waste was identified, removed and disposed of properly.

The remediation project at Sachuest Point Refuge transformed the landfill into a coastal grassland and restored more than 15 acres of salt marsh. The upland landfill cap was seeded with a custom mix of native Rhode Island species that included 14 wildflowers and six warm-season grasses. In addition, a native shrub mix of bayberry, dwarf sumac, pasture rose and beach plum was planted along a 1,500-foot stretch of road adjacent to the landfill cap.

Making Good Birdwatching Better

The resulting site reclaimed six acres of salt marsh that had been destroyed by the landfill, restored another nine acres of salt marsh buried under a mat of phragmites, and created 15 additional acres of coastal grassland habitat.

This new grassland and salt marsh system complements habitats on adjacent refuge lands, providing additional foraging and roosting areas for a variety of bird species, including short-eared owl, northern harrier and semi-palmated plover. “The addition of

salt marsh habitat makes an already good birdwatching experience even better,” said Sharon Ware, wildlife refuge specialist. “We’ve found 55 species of waterbirds, including 23 species of shorebirds, six species of terns, five species of wading birds and five waterfowl species using the new mudflat, channels and pools. Because of this diversity and the peak use during fall migration, the Sachuest Point marsh is considered one of the top three migratory stopover sites in the state.”

More than 165,000 visits are made to Sachuest Point Refuge each year. For each federal taxpayer dollar spent on the refuge, \$6.25 is generated in the local community in total economic demand. Every winter, birders from throughout New England visit this hotspot to view the coast’s largest wintering population of harlequin ducks. The refuge has more than two-and-a-half miles of nature trails. ↗

Diane Pence is chief of migratory birds for the Northeast Region.



A remediation project at Sachuest Point National Wildlife Refuge, RI, transformed a landfill into coastal grassland (lower right) and restored more than 15 acres of salt marsh (surrounding the beach parking lot). (Bruce Greenhalgh)

NWRA Award Nominations Due Nov. 15

The National Wildlife Refuge Association is accepting nominations for the 2010 National Wildlife Refuge System Awards: Refuge Manager, Employee, Volunteer and Friends Group of the Year. The awards, sponsored by NWRA and the National Fish and Wildlife Foundation, honor outstanding accomplishments by groups and individuals and raise awareness about the challenges faced by the Refuge System and innovative efforts to meet those challenges. Nominations may be submitted by Service employees, Friends groups, other federal and local government agencies, private individuals and conservation organizations. Nomination forms are available at www.refugeassociation.org/new-events/callfornom2010.html.

Reaching out to Homeschoolers

Each year in Alaska more people are injured by moose than bears so Kenai National Wildlife Refuge offers a discovery program designed to increase awareness about the biology and behaviors of moose. The Magnificent Moose program and several others are designed specifically to reach children in the community who are homeschooled.

More than 25 families came to this year's Magnificent Moose program at Kenai Refuge. Children learned the difference between an antler and a horn, what moose should and shouldn't eat and how to be safe around moose. Children dressed up as a moose, played antler ring toss and guessed how many moose droppings were in a jar. "It's a fantastic opportunity to get people to the refuge," says environmental education specialist Michelle Ostrowski. Families who come to educational programs return for community events and summer camps as well.

Because families come with several children of multiple ages, they don't want a formal field trip geared toward one specific age group. Instead, Ostrowski organizes a multi-grade Discovery Room in the refuge's Environmental Education Center with activities appropriate for children in grades K-2, 3-4 and 5-6. Parents assist their children at different stations that offer science experiments, crafts or themed snacks. Children typically receive a small prize if they complete a workbook or worksheet.

Ostrowski offers programs on mammals, birds, owl pellet dissection, bear safety, showshoeing and Red Cross First Aid. Since 2006, 122 families have participated. Ostrowski has a small brochure of "Environmental Education Resources for Homeschool Families" outlining the Discovery Room programs as well as six educational kits or suitcases that families may check out for three weeks at a time. The Animal Signatures Kit includes track and scat replicas and guides. The Federal Junior



The Magnificent Moose program at Kenai National Wildlife Refuge, AK, teaches children like Kateland Farrell about the behaviors and habits of moose. (Michelle Ostrowski)

Duck Stamp Program is a dynamic arts curriculum about wetland and waterfowl conservation. Another kit is filled with museum-quality skulls of selected Alaskan animals and another includes rubber molds to make plaster casts of Alaskan animal tracks.

Homeschool Networking in Florida

Environmental education specialist Toni Westland at J.N. "Ding" Darling National Wildlife Refuge in Florida also finds homeschool days a great way to connect with new families – and enable them to network with each other as well. "Once they have a good experience," says Westland, "they are such a good network that they spread the word about the refuge."

Homeschool days revolve around a theme – Junior Duck Stamp, Estuary Day, International Migratory Bird Day, Nature Photography Workshop. Each program lasts half a day and families bring their own lunch. Westland requires at least five families to do a tour but she has often had groups that include 50 children plus adults.

Both Westland and Ostrowski appreciate the less structured atmosphere around homeschooled families, but they have to be prepared for differences from the typical school field trip. "Sometimes homeschooled kids don't know how to line up quickly in a single file line," notes Westland. However, homeschooled children are more accustomed to hands-on activities and they can be a more mellow group since they have not just arrived at the refuge after a bus ride with all their friends.

Like Ostrowski, Westland has seen benefits from reaching out to the homeschooling community when these families show up on special event days "and run to give you a hug." She believes many of these families are also just waiting to find someone with formal education in science. "Sometimes parents and even teachers are scared to teach science," says Westland, adding, "We are the experts on our own refuge." 



Explaining the relationship between a red mangrove tree and a mangrove tree crab, environmental education specialist Toni Westland at J. "Ding" Darling National Wildlife Refuge, FL, says "I like to explain that little things in nature are just as important as the big ones." (USFWS)

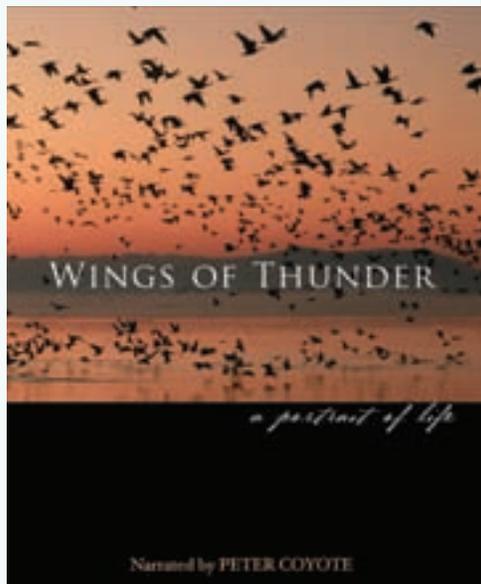
Focus...Refuges as Ambassadors

Wings of Thunder at Bear River

By Betsy Beneke and Al Trout

How do you communicate the value of wildlife conservation to a generation of young people who have left the outdoors to pursue an indoor relationship with electronic gadgets? Friends of the Bear River Refuge, in northern Utah, decided to try the medium of film.

Wings of Thunder is a half-hour documentary about Bear River and the



University, surrounding landowners and private donors. Jeff Hogan of Hogan Films in Jackson, Wyoming, served as cinematographer and co-producer, along with Friends board member and retired refuge manager Al Trout. Hogan used a remote control Canada goose decoy with a miniature HDV camera inside to allow the camera to “mingle” with waterfowl and shorebirds, capturing images from water level. Specially scored music and sound effects, as well as narration by film star Peter Coyote, brought the quality of the project to a new level.

The film premiered to delighted audiences in June of 2009, is available daily for viewing by all visitors to the refuge’s Education Center, and continues to get rave reviews. Copies of the DVD are sold in the Friends’ Avocet Corner Bookstore for \$10.00, with \$7.00 of the purchase price going toward an endowment fund for environmental education. Copies will also be made available to local school districts free of charge.

Classy Center Draws Visitors

In March of 2006, after years of planning

and fund-raising, doors to the multi-million dollar James V. Hansen Wildlife Education Center at Bear River Refuge opened to the public. The vision of refuge staff, Friends and the local community was to develop a state-of-the-art facility that went beyond the boilerplate refuge visitor center. The Center features a large exhibit hall, teaching and research labs, meeting rooms, theater, bookstore and adjacent accessible interpretive trail. The Center is frequented by area students, teachers and community, but also visitors – especially those who travel the nearby Interstate and see the new recreation signs posted by the Utah Department of Transportation or the large billboards produced by Friends and Brigham City. 🦋

Betsy Beneke is outdoor recreation planner at Bear River Migratory Bird Refuge, UT. Al Trout is a former manager of Bear River Refuge.

national wildlife refuge, which share the same name. Stunning scenes of birds, behaviors and refuge habitats at the edge of the Great Salt Lake, with the backdrop of the scenic Wasatch Mountain Range, bring the wonder of Bear River Migratory Bird Refuge to the silver screen and into the lives of viewers of all ages. Three years in the making, the project became a labor of love for all involved.

Brigham City already takes pride in the refuge – a huge sign across the middle of Main Street reads: “Welcome to Brigham City, Gateway to the World’s Greatest Wild Bird Refuge.” To create the movie, a broad-based partnership developed among refuge staff, the Friends group, the Utah Office of Tourism, Box Elder County, Brigham City, Weber State



The James V. Hansen Wildlife Education Center at Bear River Migratory Bird Refuge, UT, is promoted by Brigham City billboards and Utah Department of Transportation highway signs. (Steve Greenwood)

Motivated Teens Meet the YCC

By Jennifer Anderson

Take two skilled instructors and eight motivated teenagers, and in one week 40 wooden steps are built along a steep mountain trail in the Alaska outback. Take the same crew, and a week later a fallen tree is converted via hand tools into a 25-foot-long bridge across a creek in the same wilderness.

What may also have been built is a new understanding of the importance of conservation among a small group of teenagers.

“We were moving a lot of equipment and materials up steep, slippery, rocky trails,” said Ryan Beltz, lead instructor for Kenai National Wildlife Refuge’s Youth Conservation Corps (YCC), a nationwide program that provided about 500 teenagers with summer employment in fiscal year 2009. Often, YCC is a teen’s first hands-on learning about conservation.

Kenai Refuge launched its YCC in 1974, when funding was plentiful through the Department of Labor and the refuge could take on as many as 30 students. Funding evaporated by the 1980s, prompting Kenai Refuge to maintain the program by using its operating funds, budgeting about \$50,000 a year, explained Scott Slavik, backcountry ranger and Beltz’s supervisor.

As many as 60 teens, ages 15-18, apply each summer for eight slots. Occasionally participants who are particularly enthusiastic are rehired the following summer. For 2009, five of the eight were re-hires, the largest number to date.

Skills and Self-Confidence

Slavik described the YCC as a win-win. The students benefit not only financially (they’re paid \$8.90 per hour) but also gain the skills and self-confidence that come of camping in remote settings and working together to create well-constructed projects that enhance the natural world. The refuge also benefits

directly from the skillful improvements to its 250-mile trail system, but also indirectly by instilling in youngsters a love of the wilderness and yearning to pursue related careers.

Consider Christa Kennedy, Beltz’s assistant for 2009. Kennedy started as a YCC participant for two summers; now in college, she is studying forestry and resource management.

Then there are the letters Slavik receives from alumni. This spring one arrived from Kristen Hansell, an early-1980s graduate, who describes her YCC time as “the very best summer of my entire life.” She adds: “I never, ever throw stuff away in the woods...and as a mom to two boys, I taught them [that lesson as well].”

Projects in recent years have included historic cabin restoration, wildlife management and invasive species eradication. Each year there’s also an educational theme such as “Leave No Trace” and backcountry skill development, including map and compass use and knot tying.

Slavik credits Beltz, a skilled carpenter with a wilderness background, with “raising the bar” on the magnitude of the projects for the past two summers. For the wooden staircase, students milled 25- to 40-pound boards by hand out of downed trees, strapping them to metal frames worn on their backs and



Students on a YCC crew use log tongs while building a new timber bridge at Kenai National Wildlife Refuge, AK. (USFWS)

hauling them first to the trail site and then up the mountainside to create the staircase along what Beltz estimated was a 35-degree grade.

A week later they used similar tools to convert a downed spruce into timbers, which they then converted into a bridge. Using a system of ropes, pulleys and anchors, they then lowered the bridge into place across a creek along a trail system.

“They were impressed they could accomplish something of that quality,” Beltz said – noting how quickly euphoria gave way to exhaustion. “We’d get in the truck, and they would be asleep within three minutes of the doors’ closing.”

Jennifer Anderson is a freelance writer who frequently contributes to Refuge Update.

Focus...Refuges as Ambassadors

Postcards from Papahānaumokuākea

By Tracy Ammerman

Imagine more than 1.5 million albatross, squawking, dancing or begging their parents for food. Imagine Hawaiian monk seals and green sea turtles basking on blinding white sand beaches. Imagine snorkeling in water that is an indescribable blue.

Papahānaumokuākea 'Ahahu'i Alaka'i in Hawaiian, from June 10-19. The experiential leadership program brought together 12 participants – painstakingly selected from a pool of more than 80 nominations – including teachers, environmental educators and community leaders. They were all interested in learning about and being

Hawaiian Islands. The remaining days were based on Midway Atoll National Wildlife Refuge, where participants engaged in stewardship activities.

Participants included a children's book author, school teachers and an educational director from the Seattle, WA, Aquarium. It is the participants' *kuleana* to serve as educational ambassadors, to bring inspiration and change back to their communities through focused projects.

Some of the innovative projects in the works include: publication of children's coloring books based on the nature and culture of the Northwestern Hawaiian Islands; creation of a Hawaiian charter school whose curriculum is based on environmental and cultural stewardship; an active campaign to eliminate plastic bottle caps from a high school campus; and development of conservation-focused outreach brochures for coastal communities, using elementary student artwork. Some of the projects are already underway, others – like the charter school – are quite visionary.

Children's author Ron Hirschi began sending "Postcards from Papahānaumokuākea" through his blog and Website (www.ronhirschi.com). He answers questions sent by children and was inspired by one youngster to create SOAR – Save Our Albatross Research, which encourages school children to collect bottle caps and other plastic pollution and send him the results. 🐦

Nomination packets for the 2010 workshop will be available Nov. 1 on the Monument's Web site, <http://papahanaumokuakea.gov/>. Learn more about the 2009 workshop at <http://paaprogram.blogspot.com/>.

Tracy Ammerman is the visitor services manager for Papahānaumokuākea Marine National Monument.



In June of 2009, the Papahānaumokuākea Marine National Monument hosted its first workshop for environmental ambassadors from around the country. Notice monk seal pup on the beach. (USFWS)

Now imagine that you are a professional educator or community leader – and it is your responsibility (*kuleana*, in the Hawaiian language) to share the wonders of a distant place within your own community. It is your *kuleana* to spread the word not only about the beauty of the place, but also – and more importantly – about the advancing science to protect the place and about a living culture intimately connected to its seascape.

What's your plan?

For the staff of Papahānaumokuākea Marine National Monument, the answer was a PAA Workshop, or

inspired by science as well as traditional Hawaiian management practices, which combine culture with generations of close environmental observation.

The name of the workshop speaks much about its goals and visions: 'Ahahu'i refers to society, club or association; Alaka'i means ambassador or leader; the acronym in Hawaiian, PAA, means steadfast, learned, strong, to hold, retain.

Experience on Midway

The first days of the workshop took place on O'ahu, where participants gained a better understanding of the natural and cultural history of the Northwestern

Offering Visitors a Sense of Safety

By Joan Jewett

Law enforcement was a key impetus for the creation of the National Wildlife Refuge System as an effort to end the exploitation of wild birds to support the latest fashion craze.

Wildlife continue to need not only direct protection from the refuge officer, but also the protection of an engaged and caring public – people who nurture a special sense of place for *their* national wildlife refuge. “To nurture that sense of place,” says Mark Chase, chief of law enforcement for the Refuge System, “people must connect; and to connect, they must experience. To experience, they must feel safe to do so.” Refuge officers provide that sense of safety both as a matter of routine and also under extraordinary circumstances.

The route between Malheur National Wildlife Refuge in southeast Oregon and Denio Junction near Sheldon National Wildlife Refuge is a lonely stretch of road. It reaches 60-plus miles through

sage brush, juniper and dust, and cattle outnumber cars. Not much happens in these parts – usually.

But April through August 2009 was anything but usual for two refuge law enforcement officers and a summer worker who, among them, were involved in an Amber Alert, a motorcycle accident and a big marijuana bust.

Kids, Bikes and Grass

On April 22, law enforcement officer Chris Johnson was patrolling the remote Sheldon Refuge when an Amber Alert came over the radio. Knowing the welfare of a child could be at stake, Johnson took note of the suspect car and its direction. The black Camry was spotted near Malheur Refuge, headed toward Denio. Soon, Johnson pulled over the car:

Johnson ordered the driver out at gunpoint and had him spread on the ground. In the car were a mother and her 5-year-old son, whom she’d taken from his foster home. The mother had a suspected history of drug use; the

driver was a convicted felon. Within 10 minutes, local sheriff’s deputies showed up and took the three away. The child was returned to his foster home. Johnson doesn’t know what happened to the adults.

Two months later, Rob Cahalan was headed to his Student Training Employment Program job at Malheur Refuge, a position made possible with American Reinvestment and Recovery Act funds. He and the two Youth Conservation Corps workers with him came upon a motorcycle accident that had just happened. Cahalan jumped into action, using the first-responder training he’d received as a U.S. Marine during two tours in Iraq. The couple, Richard and Julia, were injured but conscious. Then Richard passed out. For the next hour, Cahalan and others who had arrived on the scene worked to keep Richard awake until the ambulance arrived.

“It was just instinct to help out,” said Cahalan, who is now back in school at the University of Wisconsin-River Falls. “I knew what to do.”

Then on August 18 the area’s calm was broken again, this time with the discovery of more than 5,000 marijuana plants on Steens Mountain, just south of the Malheur Refuge. Refuge law enforcement officer John Megan was among the county, state and federal agents flown into the rugged area by helicopter to count the plants. Nearly 5,300 plants – “chest-high with big buds,” Megan said – were confiscated. Two days later, 11 men were arrested.

“This is usually a pretty quiet duty station,” said Megan, who focuses mostly on preventing artifact thefts, hunting violations and patrolling fence lines to keep cattle in their place. “We go months without anything happening and then something pops up.”

Joan Jewett is chief of public affairs for the Pacific Region.



The quiet expanse of Malheur National Wildlife Refuge, OR, was marred by an Amber Alert, a motorcycle accident and a marijuana discovery – but refuge officers were ready for it all. (Terrie Miller)

Salt of the Earth Not Healthy for Wildlife

Hailstone National Wildlife Refuge in Montana will be using \$550,000 in American Reinvestment and Recovery Act funds to begin tackling a growing problem with salt. Salinity levels in the reservoir at Hailstone Refuge are often so high that ducks become encrusted with salt, are unable to fly and no longer have access to fresh water. Ingestion of salty water quickly overwhelms their salt glands and the ducks die of sodium toxicosis.

Hailstone Refuge is located in Lake Basin, an internally drained basin in northern Stillwater County. The area is susceptible to saline seeps that develop in the shallow soil and leach salt and other elements, such as selenium, into the groundwater and surface water runoff.

The surrounding land is crop-fallow farmed, which allows significant amounts of water to move downward past the root zone, activating groundwater flow. Surface water run-off and snowmelt can dissolve the salts from the saline seeps and deposit them in the reservoir.

Birds using Hailstone Refuge can be affected by both selenium and salt. Brine shrimp, the primary food source in the reservoir, contain high levels of selenium, which can cause reproductive failure in birds. The U.S. Fish and Wildlife Service monitors both groundwater and surface water in the basin. If salinity in the reservoir reaches a level of concern, the refuge

can use pyrotechniques and falcons to discourage waterfowl from using the reservoir.

Plants that Need Salt

The refuge and the Service's Environmental Contaminants Program are working to reduce or eliminate the salinity problem, but it is a slow and often tedious process. The first phase involves an experiment with halophytic plants that sequester salt in tissue and volatilize selenium. In a partnership with the U.S. Geological Survey and Montana State University, halophytic plants are being grown in a greenhouse, using water and sediment from the Hailstone Refuge reservoir. If the plants thrive, they will be planted on the refuge next spring.

During the project's second phase water will be removed from the reservoir and the dam built in 1938 will be breached. The Service and the Montana Department of Environmental Quality have concluded that removing the dam and impoundments will reduce risks to both waterfowl and shorebirds.

Restoring Native Grasses

Simply pumping out the water could cause it to flow over privately-owned farmland downstream. Instead, an irrigation system is being designed that will flood-irrigate the salt flats and allow the water to evaporate over two years. Once the reservoir is drained, the dam will be breached and the water will again be a naturally flowing stream. The basin will be seeded with about 15 native grasses to attract birds such as western meadowlarks, Baird's sparrows, longspurs and long-billed curlews.

"It would be better for Hailstone Refuge if it returned to grasslands for grassland-nesting birds," says project leader Barron Crawford, who would really like to see much of the surrounding farmland returned to prairie as well. Growing wheat on shallow soils dissolves the sodium, which then leaches out at the bottom of the basin. Most of the saline seeps begin on private land.

Eventually, Crawford and state officials with Montana Salinity Control hope to persuade adjoining landowners to change cropping practices to reduce saline seeps. "Our goal is to dewater the reservoir so it's not a hazard, restore the natural water channel, address the saline seeps on the refuge and work with the state to create incentives that would make it beneficial for landowners to address problems on their land," says Crawford. 



This salt-encrusted teal is the victim of excessive salinity in a reservoir at Hailstone National Wildlife Refuge, MT. (USFWS)

Curlews Receive Attention in Two-Year Study

Considered “highly imperiled” in the U.S. Shorebird Conservation Plan, the long-billed curlew was the subject of a two-year study that ultimately could enhance the bird’s reproductive success. The U.S. Fish and Wildlife Service and the U.S. Geological Survey just concluded the study on the Mid-Columbia River National Wildlife Refuge Complex in Washington.

The study sought to determine how many curlews are on national wildlife refuges within the Columbia Basin, the number and density of breeding pairs, and the bird’s favored vegetation for nesting and breeding. Data are still being analyzed and as is often the case, the results may pose as many questions as they answer.

The curlew is one of 139 focal species to receive heightened attention from the Service, including an action plan designed to bring these birds to healthy and sustainable levels. The bird spends just a few months in the Columbia Basin, nesting and hatching clutches of four eggs, before returning to the Pacific shore. Birds arrive in Washington in March and leave three months later, wintering along the California coast and into the Baja Peninsula. The curlew – North America’s largest shorebird – is threatened by the loss of grassland habitat to agriculture and development as well as the degradation of wetlands in its winter home.

The highest number of nests was counted at Umatilla National Wildlife Refuge but only 41 to 48 percent of the nests were successful in 2007 and 2008. Heidi Newsome, biologist at the Mid-Columbia River Refuge Complex, says a much higher nest success rate was recorded in the 1970s. One of the next projects will be to look at nest success over time – and the reasons behind it. “We also don’t have information on what level of nest success leads to fledgling success and whether that will maintain a stable population. Is it enough, in other words, just to recruit adults in the population?” North American Breeding Bird Survey data suggest that curlews have been slowly



The curlew is threatened by the loss of grassland habitat in its breeding areas in Mid-Columbia River National Wildlife Refuge complex in Washington. (USFWS)

declining in the Columbia Plateau for more than twenty years.

Getting the Grass Right

The study did hint that curlews nest more successfully in native bunchgrass rather than cheatgrass. Newsome says this validates the need for further study directed specifically at this issue of vegetation.

Cheatgrass is an invasive species that arrived with wheat from the Middle East at the turn of the last century. This short grass creates fuel for wildfires and encourages their spread. Because it forms solid mats of grass and dries out early in the season, it tends to show the travel path of everything that has walked through it. This makes it easy for predators to see the curlew’s trail and find its nests. On the other hand, native grass doesn’t show travel paths nearly as plainly and it also supports a greater diversity of invertebrates for the curlew to eat.

“We are trying to restore native grasslands in place of monoculture cheatgrass,” says Newsome. “This study is a good basis for seeking funding to do that.”

As recommended in its Comprehensive Conservation Plan, Hanford Reach National Monument is using shorter grasses and not including shrubs or other tall vegetation in areas designated as short-grass habitat. This study confirms that the curlew turns away from grass that is above a certain height.

Results of the study will help the Refuge Complex make more informed management decisions about restoring and protecting the best curlew breeding and nesting habitat. Newsome hopes to expand the curlew study across a larger landscape, including more public and private lands. 🦋

Around the Refuge System

Alaska

Five dragonfly hunters flew north of the Arctic Circle this summer and spotted an ocellated emerald dragonfly, the first record of the species in Alaska. John Hudson and Bob Armstrong, co-authors of the field guide, *Dragonflies of Alaska*, also found several other species of emerald dragonflies that had never been documented at Kanuti Refuge. This is the second time in recent years that a new state record has been found within the refuge. In 2004, a prairie bluet damselfly was captured at Kanuti Lake. Little is known about insect distribution in Alaska, including dragonflies, particularly in these remote northern areas.



An ocellated emerald dragonfly was seen for the first time in Alaska at Kanuti National Wildlife Refuge. (Bob Armstrong)

Alaska

A 20-year effort to document traditional Native place names in the Koyukuk River area has culminated in the publication of a 54-page full color atlas – *Middle Koyukuk River of Alaska – An Atlas of Fishing Places and Traditional Place Names*. In the mid-1980s, refuge information technician Johnson Moses interviewed Native elders and compiled hundreds of traditional place names. The information remained unpublished until the Yukon River Drainage Fisheries Association used grant funds to finish the project. “We had a keen interest in resurrecting the project,” says refuge manager Mike Spindler. “We’re really working now with the last generation of people able to speak the Koyukuk language and who know the stories behind the names,” says Spindler.

According to the atlas, the refuge’s Kanuti River takes its name from the Koyukon Athabascan name “Kk’oonootne,” meaning “well-traveled river by both man and animals,” or possibly “fish roe river.”

Wyoming

Can a variation on a kids’ game keep rapacious elk from devouring bird and fish habitat? Conservationists have embarked on a three-year experiment at National Elk Refuge to find out. In June, 150 willow stems were planted along a quarter-mile stretch of Flat Creek. The crew placed logs haphazardly among the willows to create unstable footing and deter elk and other ungulates. The technique, called “jackstraw,” takes its name from the children’s game in which straws are dropped in a heap, with each player trying to remove one without disturbing the rest. The logs were also laid overhanging Flat Creek to provide cover for trout.

The trial includes three small sample areas, one featuring the jackstraw technique, one without jackstraw, and jackstraw used in an existing browsing area to see how well the willow regenerates. Biologists from the Wyoming Game & Fish Department and National Elk Refuge will take periodic measurements to test the success of the technique.



National Elk Refuge, WY is mixing logs and willow stems in an effort to discourage elk from destroying habitat for bird and fish. (USFWS)

California

The first Web cam is now providing live images of bird and ocean activity from remote Farallon National Wildlife Refuge, 27 miles off the coast of San Francisco.

Farallon Refuge is closed to the public, in part because it hosts the largest seabird colony in the continental United States. Approximately 350,000 seabirds of 13 species breed, along with thousands of seals and sea lions. Gray, blue and humpback whales migrate and feed off the islands along with great white sharks.

The Web cam is the result of a partnership among the U.S. Fish and Wildlife Service, California Academy of Sciences and PRBO Conservation Science. The solar-powered camera is perched atop a lighthouse on Southeast Farallon Island, one of four island groups in the refuge.

The Web cam is hosted on the California Academy of Science site at www.calacademy.org/webcams/farallones.

Maine

For the first time in more than 125 years, a common guillemot or murre hatched an egg on Matinicus Rock, one of 50 islands in the Maine Coastal Islands National Wildlife Refuge. The egg was found

next to a group of decoy mures. Sadly, the egg was broken and eaten, probably by a gull. But the fact that it showed up at all is significant. “It’s definitely a big deal,” says Brian Benedict, deputy manager of the refuge. “Everything that we’re doing along the coast is trying to maintain the diversity of seabird nesting colonies.”

In the 1800s, these colonial nesting birds were hunted for meat and eggs; the murrelets were extirpated from the state of Maine by the 1870s. The National Audubon Society's Seabird Restoration Program and the refuge have been working for 17 years to bring the murrelets back to the islands by using social attraction systems such as decoys and sound systems. For the past several years, murrelets have been visiting Matinicus Rock.

Although it is too late for any more eggs this season, Steven Kress, director of the National Audubon Society program, says, "This egg gives us great encouragement to step up the attraction program to get this pair and others to nest next summer."



A common murre egg was found next to decoys at Maine Coastal Islands National Wildlife Refuge – the first egg in more than a century. (Maria Cunha)

Texas

Caddo Lake National Wildlife Refuge opened to the public on September 26. Established in 2000 on the site of the former Longhorn Army Ammunition Plant, the refuge will transform the last original building from the ammunition plant – a guard house – into its Ramsar Wetlands Visitor Center. The refuge has been recognized as a Ramsar wetland of international significance because of its extensive bottomland hardwood forest. In the past, trappers and fishermen camped

along Caddo Lake's shoreline while timber operators and cotton plantations took advantage of the abundant forests and rich, river loam soil.

The site of the refuge historically had been part of Caddo Indian territory. Texas got its name from the Caddo Indian word *tay-shas*, meaning *friend* or *ally*. Caddo Indians performed at opening festivities for the refuge. The Friends of Caddo Lake National Wildlife Refuge will be helping to convert two FEMA trailers into classrooms and a visitor reception area.

Hawaii

Rare bird fossils have been found during restoration of tidal pools on Pearl Harbor National Wildlife Refuge on the island of O'ahu. Scientists have uncovered fossilized bones of an extinct hawk, long-legged owl, Hawaiian sea eagle, petrel, two species of crow, Hawaiian finches and honeyeaters and a native moa nalo. Earlier findings at similar sites suggest that the bones could be 1,000 to 8,000 years old. "These fossils give us a glimpse of an earlier time, when the lowlands teemed with native birds, insects and plants," says Helen James, research zoologist at the Smithsonian Institution, which is providing assistance to identify and catalog the fossils.

In 2008, the U.S. Fish and Wildlife Service began restoring 12 anchialine pools in a section of Pearl Harbor Refuge that was once part of the former Barbers Point Naval Station. Over time, the pools had been filled with rubble, rocks and debris. When the natural tidal fluctuations were restored in the pools, native shrimp quickly recolonized this unique habitat. The restored pools may also attract a species of rare Hawaiian damselfly.

Montana

Professional and citizen scientists counted 413 species during a recent BioBlitz at Lee Metcalf National Wildlife Refuge – including land snails, dragonflies and other small animals that had never been surveyed. About 400 people joined the count – more people than at any other event in the last five years at Lee Metcalf Refuge, says refuge manager Erin Holmes. Volunteers signed up to survey bees, search for bats and count everything from grasshoppers and fungi to mammals, mosses and moths.

"The aquatic invertebrates were a very new thing for us," said Holmes. "Another surprise was the number of land snail species. We have very good bird data and invasive species data, but dragonflies, bees, moths . . . we have information for the first time on these species." Holmes says she was also surprised to learn that the refuge does not have many herptiles (lizards).

Scientists from area universities, agencies and nonprofit organizations led teams of volunteer counters, including at least one family from Nevada who stayed for the entire 24-hour BioBlitz. "One 12-year old girl was up early for the small mammal hunt," recalled Holmes, "and at the end she announced she wanted to be a biologist."

Kansas

Native oak and hickory trees were planted on 776 acres at Marais des Cygnes National Wildlife Refuge, thanks to The Conservation Fund's Go Zero program that allows individuals and corporations to offset their carbon emissions. As the forest matures, it is expected to trap an estimated 260,500 metric tons of carbon dioxide, equal to taking approximately 47,000 cars off the road. The project has earned Gold validation from the Climate, Community and Biodiversity Alliance.

Deputy Directors Named



Dan Ashe
(Tami Heilemann)

Rowan Gould
(Tami Heilemann)

U.S. Fish and Wildlife Service Director Sam Hamilton has selected Dan Ashe and Rowan Gould to serve as deputy directors for the agency. Hamilton says, “The combination of their extensive experiences and range of expertise is a rare, and much needed, resource.”

Gould, who has served as acting director since January 2009, will be deputy

director for operations. He will be responsible for day-to-day Service operations, including overseeing regional directors and ensuring agency performance, accountability and consistent application of all management policies.

Gould is a native of Oregon, graduating from Oregon State University with a doctorate in fish health and biology. He has held numerous research positions, including section chief at the National Fisheries Research Center in Seattle, Washington, and director of the National Fisheries Research and Development Laboratory in Pennsylvania. Gould also served as regional director of the Alaska Region, deputy assistant director for fisheries in Washington, DC, and deputy regional director for the Service’s Pacific Region.

Ashe, who has served as science advisor to the director since 2003, will be deputy

director for policy. He will oversee assistant directors in the Washington, DC, office, providing strategic program direction and developing policy and guidance to promote program development.

Ashe was raised in Atlanta, Georgia, where his father William Ashe began a 37-year career with the Service. With degrees in marine affairs and biological sciences, he worked for 13 years on the staff of the former Committee on Merchant Marine and Fisheries in the U.S. House of Representatives. Ashe has held numerous leadership positions in the Service. As science advisor, he has led the organization in recognizing and responding to changes in the global climate system, helped define an agency Code of Scientific and Professional Conduct, built an electronic literature access for employees and reinstated internal scientific publication outlets. 

Hooked on Falcons

If you want to get Harold (“Bus”) Engsborg’s attention, now’s a good time. Come March you might lose out to the species at the other end of his scope – the one to which he’s devoted much of the last 16 of his 91 years as a volunteer at Cape Meares National Wildlife Refuge in Oregon. That would be the peregrine falcon, the once-endangered bird of prey that Engsborg watches hour after hour from the cliff-top viewing platform at the refuge. You’ll find him there most days, along with his wife Delena, giving public outreach a personal face.

“Basically, he’s a protector of those birds and he educates people about them,” says Roy Lowe, manager of the Oregon Coast National Wildlife Refuge Complex, which includes Cape Meares Refuge. “He does it because it’s his love, not because we asked him to.”

Engsborg offers visitors a look through his lens and an earful on what makes the falcon such a swift and fearsome predator. “A lot of birds can maneuver

and attain great speeds, but nothing equals the peregrine,” he says, noting the bird’s ability to shift from a cruising speed of 50 miles per hour to a 200-mile-per-hour dive. “They put on some dandy aerial shows. They fly so fast that a lot of people who are not used to observing things like that, they miss a great deal. They can’t seem to follow them.”

In 2001 the Oregon State Parks honored the Engsborgs for their volunteer work, after they were nominated by the Friends of Cape Meares Lighthouse and Wildlife Refuge to which they belong.

Why the fascination with falcons, in particular? The birds’ grace and intelligence appeal to him, he says. “I didn’t start watching birds until I was 75,” says Engsborg. “I’d like to be at it 100 more years. I never get tired of watching them fly.” 



A fast and agile predator that catches its prey in mid-air, a peregrine falcon demonstrates its wingpower. (Mike Baird, flickr.bairdphotos.com)

Measuring What We Need to Know — continued from page 1

will change.” An I&M program that generates key layers of baseline data, coordinates monitoring efforts System-wide and ensures that information is easily available and informs management decisions at all levels – that is the goal.

“The more information we can tie together about what’s happening to the resources, the more compelling a case we can make for what we need to conserve those resources. This presents an unprecedented opportunity to build our capacity for science-based decision-making. It is a critically important challenge for the Refuge System, and I am confident we can do it,” concludes Loranger.

Alaska in the Forefront

Alaska has taken the lead in reevaluating how data are analyzed and reported. In April, the Alaska Division of Realty and Natural Resources joined USGS Alaska in sponsoring a three-day forum attended by government land managers, biologists and other scientists, and leaders of key nonprofit organizations. The discussions focused on ecoregional monitoring. “Until now,” says Danielle Jerry, chief of the Alaska Division of Realty and Natural Resources, “inventory and monitoring had been done on a refuge-by-refuge basis. Several years ago, refuge biologists recognized the need for a region-wide plan, culminating in this spring’s forum.”

Forum participants agreed to divide Alaska into four ecoregions – polar, maritime, boreal and coastal boreal. Each is a large area of land and water

containing geographically distinct species and environmental conditions. “We have eight refuges in the boreal northern forest,” explains Jerry. “They have little in common with Alaska Maritime National Wildlife Refuge, but a lot in common with Denali or Yukon-Charley National Parks.”

As climate change accelerates, “we know we will have more shrubs and trees on the North Slope. What does that mean for animals?” asks Jerry. “If we look only at one refuge, we can’t understand the regional, much less global, context.”

Prior to the forum, refuge biologists created conceptual models of the energy flow on a refuge: for example, salmon swim upstream, salmon die and the carcasses provide nutrients for bears, plants, eagles and more. The USGS collaborators then generated ecoregional models to help biologists conceptualize the links that matter to fish and wildlife as permafrost melts, wetlands dry and land erodes.

“The conceptual models allow biologists to clarify our thinking and even conduct mind experiments,” Jerry explains, “We



The Alaska experience and other federal monitoring systems will help the Refuge System develop an inventory and monitoring program that will take climate change into account. (USFWS)

can also overlay existing monitoring efforts on the models and identify data gaps or possibilities for partnerships. Our goal is to expand a refuge-based monitoring framework into an integrated regional effort.”

The Alaska experience and other federal monitoring systems will help inform the development of an I&M program within the Refuge System. “It has to be relevant at the refuge level and within an ecoregion, or landscape conservation region,” insists Loranger. “At the same time, we need to look at inventory and monitoring in the context of climate change and identify the most important information that could help reduce uncertainty. This requires a lot of thought.”

From the Director — continued from page 2

effects on species and habitats but because of its influence on all other stressors. Rising sea levels along our coastal refuges, altered hydrology in rivers and wetlands, melting sea ice and glaciers in our fragile Arctic ecosystems, changing precipitation patterns, increasing surface and water temperatures, and an acceleration in the spread of invasive species are among the climate-driven changes we’ve seen.

The Service will respond boldly. Our actions and decisions will be grounded

in science and demonstrate scientific integrity and transparency. We will apply cutting-edge technology. And we will collaborate with partners in the public and private sectors to carry out a conservation mission that none can accomplish alone.

Interior Secretary Ken Salazar has challenged the Service and others to show vision and leadership in addressing our most pressing problems. We will look for opportunities to leverage our conservation mission, to contribute to

the development of alternative energy sources, and to create jobs that help restore our national economy.

My confidence rests less in my own leadership abilities than in the drive, determination and creativity of Service employees. I know that the passion for conserving wild places and wild things is alive and well in the Service.

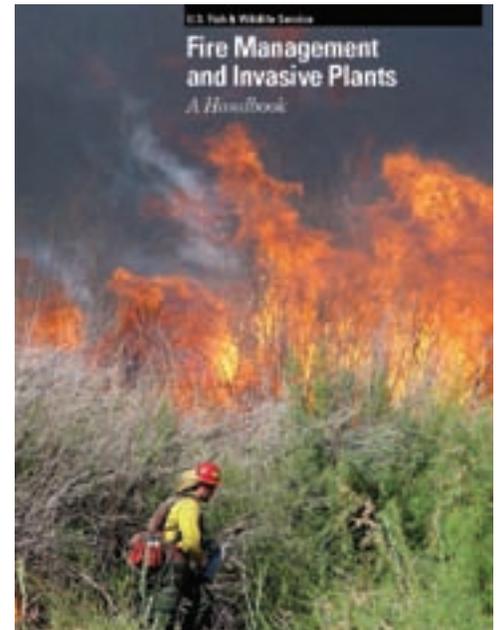
Using Fire to Fight Invasive Plants

A new handbook gives refuge staff practical guidelines to ensure that fire management does not result in the spread of invasive plants. While fire management helps maintain natural habitats, it can also create ideal opportunities for invasive plants to spread.

Fire Management and Invasive Plants: A Handbook, by Matthew Brooks at U.S.G.S. and Michael Lusk, former invasive species coordinator for the Refuge System, suggests these action steps to prevent nonnative seeds from blowing onto a newly burned area:

- Fire camps and staging areas should be located in areas that are relatively free of weeds or other invasive plants.
- Prescribed fires must burn only enough vegetation to accomplish a particular goal.
- Equipment should be washed before and after leaving a prescribed burn site.
- Any revegetation must use seeds or mulch that is certified weed-free.

The handbook is available online at www.fws.gov/invasives. 



Chief's Corner — continued from page 2

national wildlife refuges and wetland management areas offer.

In fact, many are using today's technology to engage our constituents in nature and draw them to the special places we all know. Some Refuge Friends groups use Twitter and Facebook to engage a new generation in conservation. National wildlife refuges are offering Web cams so people can watch eaglets on a nest and other wildlife in places where we have to limit public access to protect wildlife. Other refuges have engaged in a

form of geocaching that neither disturbs wildlife or habitat nor requires something to be buried on a refuge.

The Refuge System had a hugely successful public service campaign on television – using the medium to encourage people to get outside. In coming months, we will be launching a series of radio announcements – called the *Refuge Minute* – in which we tell the story of national wildlife refuges on radio stations willing to donate to our conservation cause with broadcast time.

Among the topics we will explore are manatees and pileated woodpeckers.

It's all to the good. We can be ambassadors online and on the air as well as face-to-face.

So whether you use the new technology, join the local basketball league with your refuge staff as team members, or continue to address wildlife issues with local and national leaders, you are ambassadors for wildlife. And wildlife will be the better for it. 

Google Earth — continued from page 1

Google Earth 5.0." To activate the Refuge System boundaries, in the "layers" panel on the bottom left of the screen, scroll down to "places of interest" and click the plus sign (+) to expand the list. Scroll down again to the "parks and recreation areas" and expand this list. Click in the empty box to the left of U.S. Fish and Wildlife Service. The Refuge System boundaries are now turned on.

By pressing Ctrl+Alt+C, users can copy a screen image for use in documents or

presentations. Users have free access to all images as long as they are not used for commercial purposes. More advanced options available in the free version of Google Earth include adding customized information, recording a personalized flyby tour, advanced viewing options such as 3D terrain and ocean bathymetry, and adding map plug-ins to Web sites. GPS tracks, including from many Garmin, Magellan, and NMEA-compatible devices, can be uploaded to

Google Earth, allowing a user to visualize running, hiking and biking trails. With millions of users worldwide and an abundance of free information, Google Earth is an amazing public outreach tool. 

Bret Wolfe is assistant marine program coordinator for the Refuge System.

Urban Treaty on Behalf of Birds

By Diane Pence

Philadelphia, the city of ornithological greats – from John James Audubon to Alexander Wilson – received a \$70,000 grant from the U.S. Fish and Wildlife Service’s Urban Bird Conservation Treaty Program to restore, conserve and protect valuable bird habitat and help citizens understand the importance of bird conservation.

At the nearby John Heinz National Wildlife Refuge at Tinicum, refuge staff has worked with Treaty partners such as the National Audubon Society, the Philadelphia Zoo and the city’s Fairmont Park on numerous educational projects. “Birding has been a wonderful way to connect children and families to nature,” said John Heinz Refuge manager Gary M. Stolz. “From kids’ bird clubs and summer camps to volunteer-led weekend walks and our annual Cradle of Birding Wildlife and Conservation Festival, thousands of city visitors have fledged into amateur naturalists who now better

understand the mission of the Fish and Wildlife Service and the Refuge System.”

Often, a long-standing partnership between a city and a national wildlife refuge generates a city’s interest in becoming an Urban Treaty City. In Portland, OR, another Urban Treaty city, Tualatin National Wildlife Refuge coordinated its International Migratory Bird Day Festival with the city. In New York City, added last year as a new treaty city, Long Island National Wildlife Refuge will be the visitor site for some of the educational projects being sponsored by treaty partners.

A city must apply to the regional Migratory Bird program for a grant, which must be matched equally by other support. Urban Treaty agreements usually start with at least a \$50,000



Urban Bird Treaties help the public understand the importance of conserving habitat for wildlife, including this palm warbler at John Heinz National Wildlife Refuge at Tinicum, PA. (Todd Fellenbaum)

one-time grant to fuel a partnership that is expected to continue to generate funds. 🐦

Diane Pence is chief of Migratory Birds in the Northeast Region.

Scenic Byways along Refuges

Nearly a third of the 39 newly designated National Scenic Byways pass through or along a National Wildlife Refuge. Eleven refuges – Dahomey, Yazoo, Holt Collier, Chickasaw, Reelfoot Lake, Lower Hatchie, Lake Isom, Delta, Tensas, Bayou Cocodrie and Cat Island - are along the Great River Road National Scenic Byway, which now extends the entire length of the Mississippi River. The other refuge connections include:

- Wichita Mountains Refuge along the Wichita Mountains National Scenic Byway in Oklahoma,
- Key Deer Refuge along the new Florida Keys Scenic Byway All American Road in Florida,
- Blackwater Refuge along the new Harriet Tubman Underground

Railroad All American Road in Maryland,

- Pea Island and Cedar Keys Refuges along the Outer Banks National Scenic Byway in North Carolina,
- Bon Secour along Alabama’s Coastal Connection National Scenic Byway,
- St. Marks and St. Vincent Refuges along the Big Bend National Scenic Byway in Florida,
- Big Oaks and Muscatatuck Refuges along Indiana’s Historic Pathway, and
- Havasu Refuge on the Colorado River in Arizona along Historic Route 66, now an All American Road.

National Wildlife Refuges are now identified on the American Scenic Byways



Wichita Mountains National Wildlife Refuge – which provides habitat for this lotus flower – is one of 22 refuges along newly designated National Scenic Byways. (Elise Smith)

Web site (<http://www.byways.org/fws/>), which also includes links to the Refuge System hunting and fishing guides. 🐦



RefugeUpdate

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A Look Back... C.S. Johnson

“On the whole, it is our impression that a lot of people here have a whopping good time in the out of doors...”

You could count on C.S. Johnson to season his required refuge reports with a sprinkling of humor and plain language:

“It has been difficult at times to find compromise between relative efficiency and full compliance with government organization.”

Johnson was born and raised in Michigan. His studies in animal husbandry at the University of Wisconsin were interrupted by service in World War I. He joined the new Civilian Conservation Corps in 1933 as a construction foreman and accepted the opportunity to manage the new Seney National Wildlife Refuge when it was established in 1935.

Managing Seney Refuge for 14 years, Johnson built a refuge from scratch on 153 square miles of burned and denuded pine forest on the Upper Peninsula of Michigan. Although conservation practices have changed since Johnson’s day, successors like Seney Refuge forester Greg Corace still credit him for promoting prescribed fire before others did and reducing poaching of uncommon species.

Johnson managed CCC workers during the Great Depression and conscientious objectors during World War II, writing in 1944 that “we were up to our necks in trouble with no hope in sight...It can truthfully be said that the main activity of the camp was refusal to work.”

By the beginning of the 21st century, Seney Refuge would host 100,000 visitors a year. Johnson’s dedicated staff included biologist Elizabeth Losey, an accomplished biologist in her own right, who wrote a history of the refuge and compiled Johnson’s writings into an edited booklet, *In the Words of C.S. Johnson...*, available from the National Conservation Training Center or Mark_Madison@fws.gov.

Johnson left Seney Refuge for a new posting at Lower Souris National Wildlife Refuge in North Dakota, but only two months later, he and his pilot Roy Ferguson were killed in an airplane



C.S. Johnson (USFWS)

accident during a routine crop survey. Former Seney Refuge manager Tracy Casselman says, “Everyone who visits Seney Refuge owes a debt of gratitude to Johnson for creating such a wildlife viewing oasis from the ruin of man’s greed. As a manager I am in awe of what he was able to accomplish considering the conditions at the time.”

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.