



RefugeUpdate

March/April 2008 Vol 5, No 2

Inside

Crystal River's Manatee Rescue Squad, page 3

Manatees—gentle, lumbering marine mammals—often run afoul of Florida boaters and need help in a hurry.

Focus on . . . Birds and Birding, pages 8-15

The Refuge System's Birding Initiative is out to foster a better appreciation of refuges as America's premier birding locations.

Assessing Damage in an Arizona Wilderness, page 16

Illegal immigrants and the Border Patrol officers who hunt them leave their marks on a fragile desert landscape.

Have Hammers, Will Travel page 18

Highly skilled Maintenance Action Teams.

A Look Back



One of the world's oldest conservation agencies, the U.S. Fish and Wildlife Service traces its history back to 1871. Beginning

with this issue, *Refuge Update* will look back at some of the giants of the Refuge System, some famous and many unheralded. On the back page, meet the man whose fear of flying helped him add more than 27 million acres to the National Wildlife Refuge System.

Historic Agreement with Cornell Laboratory of Ornithology



U.S. Fish and Wildlife Service Director H. Dale Hall (left) and Dr. John Fitzpatrick, director of Cornell Laboratory of Ornithology, signed a Memorandum of Understanding that outlines joint efforts to promote birding and citizen science. (LaVonda Walton/USFWS)

The U.S. Fish and Wildlife Service signed a Memorandum of Understanding on February 20 with the Cornell Laboratory of Ornithology, outlining efforts to work together to promote birding, habitat conservation and citizen science to a broad audience across the country.

The nonprofit Cornell Laboratory of Ornithology leads the nation in involving the public in bird watching, science, and conservation. A membership institution, its mission is to interpret and conserve the earth's biological diversity through research, education and citizen science focused on birds. The partnership with the Cornell Lab is yet another step forward in the Service's National Wildlife Refuge System Birding

Initiative. (See related story on the Initiative on page 8.)

“Joining forces with the world-renowned Cornell Laboratory of Ornithology in support of birding, bird conservation and citizen science is a natural fit for both organizations,” said Service Director H. Dale Hall.

Discussions are underway with Cornell Lab regarding nest watch programs, urban bird celebrations, opportunities for refuge visitors to participate in citizen science projects, and the broader availability of eBird Tracker – an online, interactive network of computer kiosks where birders can record sightings, consult video field guides and check seasonal lists of birds.



H. Dale Hall

From the Director Another Challenge in Our Resource History

The National Wildlife Refuge System is quickly moving away from a world in which land and wildlife habitat can be managed solely within the confines of refuge boundaries. Instead, change is driving us to do business on the landscape scale.

Climate change and invasive species are two major issues that are creating significant challenges to how we conserve fish and wildlife habitat. Interrelated, they will directly impact how we set priorities within limited budgets. We must develop new ways to implement our vision for the future.

And we're beginning to do just that. The Service has formed a climate change workgroup to address this issue, and Regions are planning a series of forums to help collect information on the potential effects of climate change in coastal

areas, mountains, prairies and other landscapes. With partner participation, the forums will help us identify ways we might better prepare for managing our valuable natural resources in the coming decades. The Refuge System is now considering climate change in future Comprehensive Conservation Plans, which provide a framework for guiding refuge management decisions.

In addition, engaging volunteers in the fight against invasive species is an integral part of the Refuge System's landscape-level management approach, and our invasive species partnership with the National Wildlife Refuge Association has shown real on-the-ground results. Using grant money allocated from Congress in 2005 and 2006, more than 1,800 volunteers have contributed more than 40,000 hours to manage invasive plants on more than 144,000 acres of refuge land. In addition, more than 200 volunteers have

been trained to use state-of-the-art GPS technology to map 24,000 acres of invasive plant infestations on 30 refuges.

We know the distribution, functions and values of fish and wildlife habitat are changing and will continue to change as a result of climate change and invasive species. Our challenge is how best to adapt our efforts to conserve, protect and enhance fish, wildlife and plants in light of the anticipated habitat changes taking place across the landscape.

The one thing that probably won't change much in the next decade is the fact that budgets are not likely to expand to meet all the new challenges we will face. So, we are looking at ways to focus efforts where they will do the most good through Strategic Habitat Conservation—which incorporates measurable population goals across landscapes—and for opportunities to leverage our money with that of our conservation partners to make each dollar go further.

Working with landowners, volunteers and other partners is no longer a luxury. It's a necessity. Through a shared commitment to conserving natural resources, the Service and our partners can help change the future. ♦



Geoff Haskett

Chief's Corner Maintenance and Resource Management, Inextricable

I've visited hundreds of national wildlife refuges over my career with the Fish and Wildlife Service. While each refuge is different, every one is the same in at least one respect: Maintenance and natural resource management go hand-in-hand.

When we talk about building impoundments for waterfowl or using prescribed fire as a management tool, we might think about refuge managers, wildlife biologists or fire professionals

making the decisions that make a national wildlife refuge run. We sometimes forget to credit as well the people who run the swamp buggies and tractors to get the job done.

Today, the Refuge System maintains more than \$20 billion in facilities and a fleet of about 13,800 vehicles and other heavy equipment that need to be in top running condition. For that, too, we depend on our maintenance crews.

In 1988, the Refuge System became the first agency within the Department of the Interior to institute a heavy

— continued on pg 23

RefugeUpdate

Dirk Kempthorne
Secretary
Department of the
Interior

H. Dale Hall
Director — U.S. Fish and
Wildlife Service

Geoffrey L. Haskett
Assistant Director
— National Wildlife
Refuge System

Martha Nudel
Editor in Chief

Michael Wright
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

This newsletter is
published on recycled
paper using soy-based
ink.



Just a Phone Call Away

For the Health of Florida Manatee

A manatee rescue team is on call at Florida's Crystal River National Wildlife Refuge to ride to the rescue of the gentle, lumbering marine mammals that have a way of running afoul of boaters and needing medical attention.

Crystal River Refuge was created specifically for the protection of the endangered West Indian Manatee. It includes the last unspoiled and undeveloped habitat in Kings Bay and preserves warm water spring havens, which provide critical habitat for the manatee. About 350 or so migrate here each winter; approximately 50 are year-rounders.

When temperatures outside their protected habitats warm up, manatees frequently venture into more open waters, often crowded with recreational boaters. That's make manatees – frequently submerged just below the surface – vulnerable to the propellers of passing boats.

“More than 50 percent of our manatees have been hit by propellers,” according to Ivan Vicente, public use specialist at the refuge and a member of the rescue team. “Some have been hit as many as 20 times. We can track manatees by scar patterns left by propellers. The damage usually depends on the size of the boat.”

In many instance, a manatee wound stems from boaters ignoring posted speed limits. And manatees have a way of wandering into harm's way. “They all have distinctive personalities. Some react more quickly to danger than others,” says Vicente.

Many False Alarms

The 16-member rescue team includes refuge staff and volunteers, two of whom are veterinarians, says Vicente. “Most people around here know us. They're pretty quick to call when they think a manatee may be in trouble.”



Manatees are gentle marine mammals that all too often lumber into harm's way. Whenever they do, the Crystal River National Wildlife Refuge's 12-member manatee rescue team often gets a call. (USFWS)

Many of the calls are false alarms. In December 2007, the team set out to rescue a manatee that reportedly had been floating in the same spot for nearly two days. “The manatee had a bad case of gas. It floated like a cork for a time, and then it just swam away.”

Late in 2007, another alert came in after a manatee wandered into a small pond and appeared stranded once the tide went out. The team took a look, and the manatee was doing just fine; it was waiting for high tide. Six hours later, it swam out.

Other calls don't have such happy endings. “Last October, we found a manatee that had been severely injured by a propeller,” Vincinte recalled. “It had a deep cut on its lower back and part of its tail was missing. We got the manatee out of the water and into a rescue trailer.

It was dead by the time we got it to a local zoo. The wounds were too severe. When we have to take a manatee out of the water, only one in three survives.”

Altogether, five manatees in the area died of boat-related incidents last year; in 2006, the area total was from 10-12. Vicente speculates that last year's decline stems from a reported decline in the number of pleasure boaters in nearby waters, prompted in part by the high cost of fuel. ♦

When the President Comes Calling

by Brad Knudsen

It all started October 5, 2007, with a voice-mail message from Janet Kennedy, refuge supervisor in the Northeast Region: “Congratulations, Brad. The President is coming to Patuxent Research Refuge on October 20.”

My first thought was, “Cool. The President of REGION 5????” Then it dawned on me that she meant the President of the United States. When I got to my desk, I had another voice message, this one from Greg Schildwachter, associate director of Agriculture, Lands and Wildlife on the White House Council on Environmental Quality. He provided a few more specifics: President Bush, accompanied by the First Lady and the Secretary of the Interior, was coming to Patuxent Research Refuge to make an important announcement about migratory bird habitat.

During the next few days, there was a cascade of more phone calls and exchanges of information involving several White House staff members,

the President’s personal assistant, the Secret Service and the Department of the Interior’s security office. On October 15, I met at the refuge with White House staff aides and Dr. Schildwachter. We settled on, among other matters, the points in the refuge where the President would stop.

Nothing is Left to Chance

Many refuge staff members, as well as our colleagues at the U.S. Geological Survey’s Patuxent Wildlife Research Center (PWRC), subsequently were enlisted to help. I probably did 10-12 “dry runs” of the visit route, getting to know that part of the refuge extremely well! For all involved, the attention to detail was remarkable.

Decisions were made on such matters as how many vehicles would be in the motorcade and where the exact “stepping out” points would be for the President and First Lady (no ankle-turning uneven spots allowed) to having the right background for any photographs. For security reasons, everybody had to undergo a background check. (We all passed.)

October 20 was intense and exciting, starting three hours before the President’s arrival with final security briefings. The President arrived at 7:50AM. During his 90-minute visit, he stopped by the PWRC’s whooping crane breeding facility and visited with Dr. Judd Howell, the center’s director; held a captive screech owl used in toxicology studies; and walked a quarter-mile with me on a refuge trail (with Secret Service agents rustling through the forest understory, of course). During our walk, I mentioned some of the Refuge System’s priorities, which he seemed to appreciate. We also talked a lot about his bass pond and the wildlife at his Texas ranch.

At the presentation site, with a small pool of White House reporters and photographers looking on, the President formally unveiled a federal initiative to protect several hundred thousand acres of migratory bird habitat, citing the important role in the effort played by national wildlife refuges such as Patuxent.

As the motorcade pulled away, we all breathed a huge sigh of relief, and shared a sense of great satisfaction that things had gone so well. Though the Refuge, which is located only 16 miles from the nation’s capital, frequently hosts high-level government officials – Secretaries of the Interior, members of Congress and federal agency directors as well as foreign dignitaries, with each visit being special – this had been a truly remarkable occasion. One of the President’s event planners told me that the visit had lasted about 20 minutes longer than scheduled, and he said, “That means he was enjoying himself.”

All in all, the opportunity to play host to the President – and even the hectic days that preceded his visit – reinforced for me what I have believed for a long time – being a refuge manager really IS the best job in the world. ♦

Brad Knudsen is manager of Patuxent Research Refuge in Maryland.



Patuxent Research Refuge Manager Brad Knudsen is pictured behind President George Bush just before the president announced a major land acquisition initiative for migratory birds. With the president were Interior Secretary Dirk Kempthorne (left) as well as the First Lady. (Ed Grimes/USFWS)

Caught in Regional Water War



With no end in sight for the Southeast's record-setting drought, Eufaula National Wildlife Refuge and its wildlife are adjusting to a water shortage that leaves impoundments partially full and other valuable habitat parched. (Quincey Banks)

Eufaula National Wildlife Refuge straddles the upper reaches of an 85-mile-long reservoir on the Chattahoochee River, which, for much of its length, separates Georgia from Alabama. Because of its location in a region that has been enduring a record-setting drought, the 11,184-acre refuge – highly popular with migratory waterfowl, sportsmen and bird watchers – is caught in the middle of a high-stakes water war that has been underway for nearly 20 years.

As the level of Walter F. George Reservoir, popularly known as Lake Eufaula, dropped last fall to record lows, the battling among large and small municipalities as well as state and federal agencies intensified apace. “Fortunately for the Service, no one has questioned the refuge about our share of river water,” says refuge manager Troy Littrell. “Unfortunately for our birds and other wildlife, our supply of water is just barely adequate enough to meet our needs.”

The varied habitats of the refuge – which is situated on the eastern edge of the Mississippi flyway and on the western edge of the Atlantic flyway – provide shelter for numerous species of migratory waterfowl and neotropical migratory birds. The refuge was established in

1964, not long after the Army Corps of Engineers completed work on the downstream dam that created Walter F. George reservoir (Lake Eufaula).

Maintaining adequate water levels in the refuge’s seven seasonally adjusted impoundments and maintaining other habitats has become especially challenging. The refuge’s Georgia unit includes lake shoreline as well as an impoundment that encompasses wetlands, agricultural fields and timberlands.

In addition to shoreline, the Alabama portion is a mosaic of wetlands, croplands, woodlands and grasslands. A 4,000-acre portion of the lake is also within the refuge’s boundaries.

Wood Duck Boxes High and Dry

In fall 2007, when time came to flood the impoundments, it was a tough going. The impoundments eventually were flooded, but pumping was slow going in a few until a little rain finally came in late December. “Our pumping stations are set at 185 feet above mean sea level. The lake level needs to be higher than 185 feet for the refuge to be able to pump,” Littrell says. “In late November, it was at or below the 185 range, about five feet lower than usual for that time of year.”

On the lake itself, wood duck boxes have to be strategically placed to ensure

nesting success. In 2007, nearly 70 percent of the refuge nest boxes were sitting above dry ground. “Woodie ducklings need to be near water so they can obtain food after hatching. The greater the distance from the nest to water the less likely they are to survive,” Littrell notes. “Our wood duck production levels have been down for the past two years, in part due to the severe drought conditions.”

Elsewhere on the refuge, areas where corn is grown for waterfowl and sunflowers for dove and other birds are parched. A number of trees have been lost due to the lack of rain. The low water level has caused some invasives, hydrilla among them, to begin extending their range.

Another dry scorcher of a year, and a continuation of the water wars, will raise new challenges for Eufaula Refuge and the town of Eufaula, AL, the refuge’s nearest neighbor. Most years, nearly 400,000 people a year visit Eufaula Refuge. “That’s a lot for a refuge of this size,” Littrell says. Many drive from neighboring states to look at birds or fish or hunt deer and waterfowl; they spend time and money in Eufaula.

Littrell, a 13-year veteran of the U.S. Fish and Wildlife Service, is no stranger to disputes involving competing demands for river water. During a tour as manager of Aransas Refuge in Texas, he helped establish a successful partnership with the Guadalupe Blanco River Authority that provides a constant flow of water for the refuge.

“I’ve been a little surprised at the extent of the problems here,” he says. “But dealing with water demands is a part of life all over the country. That’s a part of the future for many of our national wildlife refuges. We must be proactive in the struggle to balance the needs of wildlife and people.” ♦

Eager Young Adults Study on Hands and Knees

by Jack Sparks

How can a refuge in California's San Joaquin Valley manage its wetlands to provide the best food source for the greatest number of waterbirds? In 2007, San Luis National Wildlife Refuge Complex embarked on a wetland vegetation study in collaboration with the University of the Pacific in Stockton to answer just such a question. While the study's results are expected to steer wetland management decisions for years to come, the college intern program that grew from it may become just as important.

The intern project – a first for the San Luis Refuge Complex – grew from an existing relationship with a professor studying water quality issues on the complex and surrounding area. Complex staff proposed that the study sample wetland vegetation as well. While the student interns were employed through the university, this portion of the project was designed and overseen by complex staff. The three student interns who came to the complex in the summer of 2007 were majoring in natural resources or biology. They were paid but did not receive college credit.

The study was conducted on 107 seasonal wetland units of the San Luis and Merced National Wildlife Refuges. These wetlands are managed as moist soil units primarily for wintering waterfowl and other migratory waterbirds. Moist soil plants produce large and abundant seed heads that feed a variety of wildlife, especially waterfowl. With this study, we wanted to determine if a wetland that is flooded in a certain month, drained in a different month and then burned results in better plant growth and more waterfowl use than a wetland with a different regime of flooding/draining/burning/mowing.

The dominant target vegetation included swamp timothy, watergrass, smartweeds and bulrush. Specifically, the objectives

were to describe the wetland plant composition, structure, biomass and seed-production; establish monitoring methodologies to provide long-term data for use in adaptive management of wetland units; and provide quantifiable descriptions of wetlands to be used with another water quality investigation taking place.

The data collection protocol involved a range of activities. Two perpendicular 100-meter transects were randomly established in each wetland area. The students then used a point intercept method to determine the percent cover and height of each wetland species. Every 20 meters along each transect, a quadrant was established to collect biomass samples where all vegetation was clipped at ground level and bagged. After drying, the samples were weighed to provide a biomass estimate for each wetland. The interns also assessed the seed production of the moist soil plants in each wetland unit.

Passion for Ecology, Field Work

The crew of three interns worked professionally and efficiently for 10 weeks, often under difficult field conditions. The temperature in the San Joaquin Valley regularly exceeds 100 degrees during July and August. But the heat did not deter intern Alyssa Carrell, for whom the project confirmed her "passion for ecology and field work. It helped me realize I could enjoy a job predominantly outdoors."



In collaboration with the University of the Pacific, San Luis National Wildlife Refuge Complex has conducted a wetland vegetation study to determine how the refuge should manage its wetlands to provide the best food source for the greatest number of waterbirds. College interns did the field work. (USFWS)

The quality of the collected data was evident when preliminary analyses were conducted. We are now beginning to monitor and compare waterbird use on the different wetlands that the college interns surveyed and evaluated.

The student intern project developed scientific work skills and also instilled participants with an interest for wildlife and nature and the Refuge System. Carrell said she appreciated the opportunity to see scientists working in the field in conservation and biology.

As a testament that the program works, the three interns said they are willing and want to return this year, although plans for future projects have not been finalized. Not only do young adults benefit from these programs, but also their enthusiasm spreads throughout the refuge staff and local communities. It was promising to see refuge summer programs attract eager young adults willing to get their hands dirty working outdoors with wildlife. ♦

Jack Sparks is outdoor recreation planner at San Luis National Wildlife Refuge Complex in California.

Notice What's Under Your Feet

Mosses may be small, but their contribution to the natural history of the Aleutian Islands is not. So conclude two researchers – including a wildlife refuge botanist – who are authoring a major work on the mosses of the Aleutian Islands and the neighboring Alaska Peninsula.

In the Aleutians, some 250 moss species cover the ground like a green, lush carpet. They can be a barrier between falling seeds and the soil, preventing germination, or a cool, damp nest that encourages it. In thick layers, they also keep soil temperatures low, slowing the rate at which some things grow and others rot away.

Yet, despite their influence in an ecosystem, relatively little has been known about them. Consequently, the impacts of human disturbance upon one of the Aleutian ecosystem's dominant life forms are poorly understood.

Alaska Region refuge botanist Stephen Talbot and Wilf Schofield, professor emeritus with the University of British Columbia, are changing that. For the past two decades, they have been collecting and cataloging the mosses of the Aleutian Islands and the neighboring Alaska Peninsula in Alaska Maritime and Izembek National Wildlife Refuges. The comprehensive book on their research is a pioneering effort that will be beautifully illustrated, says Talbot, with palpable enthusiasm.

The book will address the biological significance of the mosses and provide detailed information on the life cycle, ecology, distribution and keys to identifying the mosses. Distribution maps will provide the current knowledge of all species and illustrate the role of the Aleutian chain in extending the range of the mosses.

The Aleutian Islands and Alaska Peninsula of southwestern Alaska are a remote, mountainous portion of North

America that lead like stepping stones to Asia. The area lies along what was once the southern edge of Beringia – a land bridge that joined present-day Alaska and eastern Siberia – and serves as a corridor for plant dispersal.

An Eye for the Unusual

Schofield – who was 80 during last summer's trip to the Aleutians – says mosses intrigue him not only because they illustrate this dispersal of species but also because they are generally neglected, even among botanists. "I have always been interested in plants. But mosses attracted my interest because I appear to have an eye for finding unusual species," he says, with a twinkle in that eye. "This, of course, gave me considerable satisfaction."

Both Talbot and Schofield have an eye for gathering evidence about the spread of mosses and their importance to different species. Talbot explains, for example, that moss capsules provide readily available, high quality food for young ptarmigan chicks before they can hunt mobile, invertebrate prey.

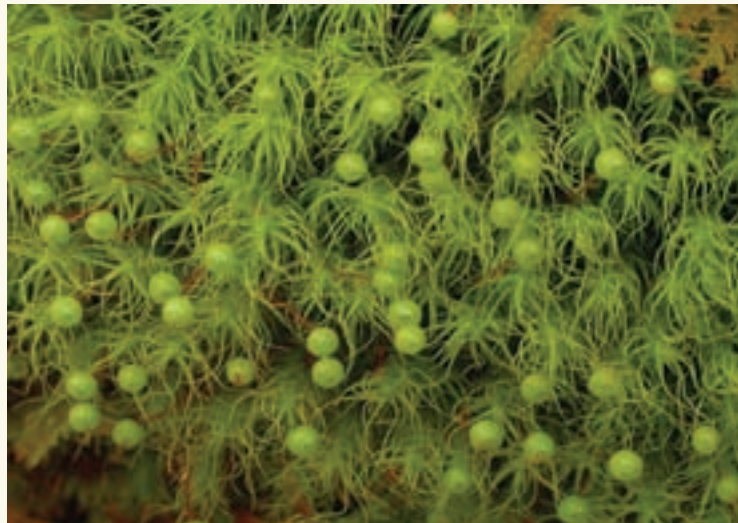
Clues to Biodiversity and Environmental Health

On a broader scale, explains Talbot, mosses have great potential for ecological monitoring. They cannot regulate gain

and loss of water, so daily drying and wetting cycles concentrate in the moss tissues the chemicals and pollutants otherwise dissolved in rain, fog, or dust. These tissues have been sampled for decades as indicators of air pollution.

In addition, because they are very primitive land plants, mosses can lead to a better understanding of the origins of biodiversity. "All organisms are interdependent," says Schofield, "so we need to learn as much as possible about their interactions in order to protect the diversity of species as well as the integrity of associations. Humans are merely a small part of these associations, but are extremely significant in disrupting them."

Both Talbot and Schofield say their work would not be possible without the support of refuge staff as well as the highly skilled crew of the research vessel M/V Tiglax. "The boat landings can be pretty tricky in surf conditions along the rocky coast, so it takes some real skill to get us and our equipment in and out without getting soaked," says Talbot. "Having a dry, warm vessel to return to after being out in the rain all day is great. The staff is enthusiastic about the studies and their interest pushes you to go the extra mile." ♦



In the Aleutian Islands, some 250 moss species cover the ground like a green, lush carpet. (USFWS)

FOCUS ... *Birding on Wildlife*

Building Connections with America's Birders

by Maggie O'Connell

The National Wildlife Refuge was born for the birds on Pelican Island in Florida and today offers America's birders some of the finest winged paradises found anywhere in the world. Waterfowl, wading birds, shorebirds, raptors, neotropical migrants – almost anything else that flies stops at a national wildlife refuge. Nearly 170 refuges have been designated Important Bird Areas by the American Bird Conservancy and the National Audubon Society.

Many refuges, some next door to or within urban centers, go out of their way to make birders feel right at home, with viewing platforms and great walking and driving trails. Many refuges work with local educators, Friends groups and private sponsors to introduce youngsters to nature. Others celebrate their bird populations with community festivals.



The National Wildlife Refuge System Birding Initiative is identifying ways refuges can be more birder friendly and birders can better appreciate the role of wildlife refuges. (USFWS)

Kansas Toots a Horn for Quivira Refuge

Kansas is already an established destination for domestic and foreign bird watchers. In a drive to attract even more birders, the state's tourism-promotion agency is spotlighting a sprawl of carefully protected prairie wetlands that includes Quivira National Wildlife Refuge.

Rightfully so, the agency billboards the refuge and the nearby Cheyenne Bottoms Wildlife Area – with 40,000 combined acres, one the largest wetland ecosystems in the world – as “a birding paradise.” Cheyenne Bottoms is administered by the Kansas Department of Wildlife & Parks and The Nature Conservancy.

National and international birding groups regularly list the Cheyenne Bottoms/Quivira Refuge area as prime bird watching territory. The area now attracts more than 100,000 visitors a year to central Kansas, many of them bird watchers.

In recognition of the area's standing in the birding world—and of the economic benefits the state derives from all those visitors – the Cheyenne Bottoms/Quivira Refuge wetlands have been elected one of the “Eight Wonders of Kansas”. Kansas Gov. Kathleen Sebelius announced the designation at a January 29 ceremony. More than 24,000 people

Many participated in last year's Big Sit, the nation-wide bird watching event sponsored by Bird Watcher's Digest; still more stations are expected to join in this year's observation on October 12.

Recognizing how important refuges are to birding, the U.S. Fish and Wildlife Service in 2006 launched its National Wildlife Refuge System Birding Initiative. The Initiative will both help birders appreciate the value of refuges and help national wildlife refuges recognize the value of birders as advocates, volunteers and economic supporters of local communities.

A 14-member Birders Team, representing different sectors of the birding world, is spearheading the drive. The Team includes authors, editors, educators, conservationists and business leaders. Jon Andrew, Refuge chief for the Southeast region, serves as chair.

Two additional panels provide support and feedback. One is composed of independent biologists, educators,

authors and other birding specialists. The other panel is composed of Service staff biologists, refuge managers and visitor services specialists from Refuges and Migratory Birds.

What We Can Do For Birders

One often-heard request is that refuges post bird sighting lists outside visitor centers or offices for birders who visit in the early morning or late afternoon. Many birders would like to have input when refuges plan trails, observation decks, blinds or boardwalks.

On the other hand, the Birding Team has heard several ways that birders could help refuges. Birders value tips on where and when to look for their favorite species. So, local bird club members might make good front desk volunteers. Bird groups also could be asked to help establish, monitor and interpret nest boxes and platforms for species of concern.

Initiative planners are applying finishing touches to several projects. A custom-made Web site devoted to creating and

nurturing connections between refuges and birders is in its final development stage. In a significant advance for the Birding Initiative, the Service has signed a Memorandum of Understanding with the Cornell Laboratory of Ornithology, outlining a shared agenda. The new partnership will spread information about citizen science programs and promote urban birding, among other advances.

"Through the Birding Initiative, we believe we can help foster a better appreciation of refuges as premier birding locations and, along the way, help reconnect people to nature," says Andrew. "In the long run, we not only kindle a passion for birds, but a real a passion for conserving and managing wildlife habitats for all time." ♦

Maggie O'Connell is a National Wildlife Refuge System visitor service specialist based in Arlington, VA.

from all 50 states participated in the "Wonders" balloting.

Because of its location at a "bottleneck" on the Central Flyway, the Cheyenne Bottoms/Quivira Refuge area attracts millions of migrating waterfowl. Shorebirds pause for rest and refueling on carefully maintained open mudflat habitat. Even endangered whooping cranes sometimes drop by during their closely watched migration.

Quivira's Assistant Manager Jim Sellers says the refuge staff focuses on providing migratory birds with food, water and shelter. He adds quickly that the refuge does not short change its visitors, who mostly drive through the gates during the spring and fall migratory peaks. There are plenty of views – of the birds and of their surroundings – along a four-mile,

all-season road and from the vantage points of hiking trails and photo trails.

"The refuge is already a destination for birders, but we work closely with the various visitor promotion groups," Sellers says. "We want to make sure that we are promoted appropriately. We have to consider the fact that many birds here just want a little peace and quiet."

In its promotional material, the state tourism agency also refers birders to the 7,500-acre Marais Des Cygnes National Wildlife Refuge in eastern Kansas. Every year, more than 30 species of warblers home in on the area's hardwood forests. ♦

Please note photo is currently at 120%



In a drive to attract birders, the Kansas tourism bureau is spotlighting 40,000 acres of prairie wetlands that include Quivira National Wildlife Refuge, just named one of the "8 Wonders of Kansas." (USFWS)

FOCUS *...Birding on Wildlife*

Reaching Beyond the Boundaries: Birding Partnerships

People who want to add the brown jay to their life bird lists without traveling outside the country should stop at the Roma Bluffs World Birding Center in Texas. There, staff and volunteers from Lower Rio Grande Valley National Wildlife Refuge direct them to a short stretch along the Rio Grande River, where the bird makes its only U.S. home.

The birding center – city-owned and refuge-operated – is just one of the many Refuge System partnerships that benefit birders.

More than 500 bird species can be found in the Rio Grande Valley, where nine birding sites, including Roma Bluffs Center, make up the World Birding Center (WBC). The most recent WBC sites opened to the public just last year, but this new mecca for birders is already expected to generate more than \$100 million each year in tourism revenue.

Roma Bluffs has an interpretive overlook with a magnificent view of the Rio Grande. From here, visitors are guided to birding sites, often on refuge tracts. Canoe tours down the historic river are

also offered. While welcoming birders, the Roma Bluffs Center is also raising the refuge's profile.

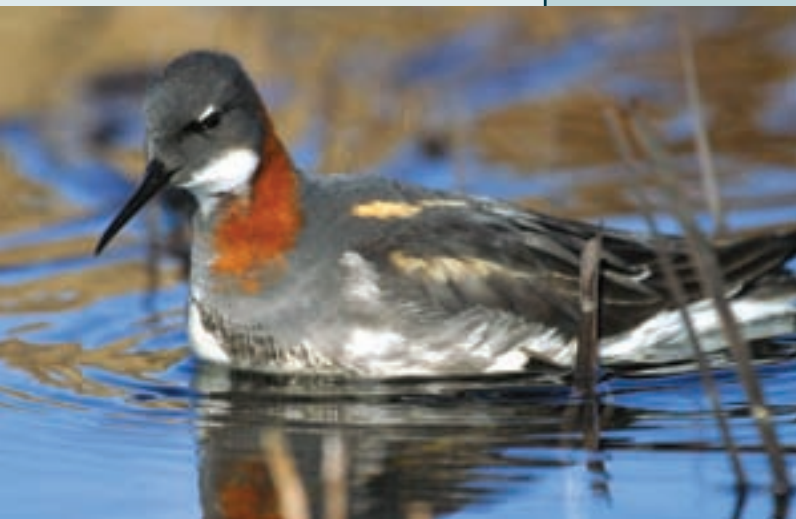
"We have an office and a new visitor center to welcome visitors coming from Laredo to the west and McAllen and Brownsville to the east on a well-traveled highway," says Ken Merritt, who was project leader of the South Texas Refuge Complex when the WBC opened. "It gives us the potential to make tens of thousands of contacts in any given year."

Spring Wings Bird Festival

Until recently, few thought to go birding in Nevada, better known for slot machines rather than stilts. But that is changing, in part because of a birding festival in the town of Fallon.

The Spring Wings Bird Festival is held each International Migratory Bird Day in May. Eleven years ago, Stillwater National Wildlife Refuge, the Nevada Division of Wildlife and the Great Basin Birding Observatory were looking for something to replace a cancelled wetlands event. As a result of their meetings, refuge visitor services manager Janet Schmidt was handed

"Bombay Hook National Wildlife Refuge has always been a destination for birders. Now, a new birding trail puts Delaware on birders' maps."



Nearly 48 million Americans enjoy watching birds, according to the 2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation. (USFWS)

Historic Agreement with Cornell Laboratory of Ornithology — continued from pg 1

"National wildlife refuges represent America's premier network of habitats where birds and other wildlife are being protected and nurtured," said John Fitzpatrick, director of the Cornell Lab of Ornithology. "These are also remarkable spots for enjoying the global spectacles provided by our nation's bird populations. The Cornell

\$5,000 to put on the first Spring Wings Bird Festival.

About 500 people participate in the festival, which is booked to capacity every year. Ten vans take festival goers to birding sites throughout Lahontan Valley. Schmidt says there is no special bird that attracts birders; rather, it is the quantity of birds that seek relief from the surrounding desert at the valley's precious wetlands.

The festival promotes Nevada birding at other times of the year. Noting that birders now visit Stillwater Refuge year round, Schmidt says, "It has made a difference."

Delaware Birding Trail

A new birding trail and brochure make it easy for birders to know where and when to find red knots or yellow-rumped warblers in Delaware. The trail is comprised of 27 geographically diverse birding sites, including Bombay Hook and Prime Hook National Wildlife Refuges.

For 18 months, experts from the Delaware Division of Fish and Wildlife, Delaware Audubon and the Delmarva Ornithological Society contemplated Delaware birding and organized their thoughts into a beautiful, glossy

Lab of Ornithology is thrilled to be partnering with the Fish and Wildlife Service to enhance opportunities for citizens of all ages to interact with birds at these magnificent places and to participate actively in their appreciation, study, and protection."

Nearly 48 million Americans enjoy watching birds, according to the *2006 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation*. "Bird watching has never been more popular. With so many people across the country enjoying the wonders of birds, we are committed to providing them



A birding trail brochure describes Bombay Hook as Delaware's "single best-known birding site" and calls its fame justified. (USFWS)

brochure, unveiled in December 2007. The project was paid for with a state grant that included funding from the U.S. Fish and Wildlife Service's Division of Federal Assistance.

"Bombay Hook has always been a destination for birders, but the trail shows that Delaware is a birding destination," says Coastal Delaware National Wildlife Refuge Complex Refuge Manager Terry Villanueva. She says birders now come to Delaware and

spend several days visiting sites along the trail, including the refuges.

The birding trail brochure describes Bombay Hook Refuge as Delaware's "single best-known birding site" and adds its fame is justified. "We have the destinations and (they) have the marketing expertise," says Villanueva, explaining why the partnership is such a good one. The brochure can be obtained through the Delaware Birding Trail Web site (www.delawarebirdingtrail.org). ♦

with great wildlife viewing opportunities at national wildlife refuges across the country," Hall said, noting that wildlife observation is one of the six priority public uses of the Refuge System.

More than half of all federal lands designated by the American Bird Conservancy as globally significant Important Bird Areas are on national wildlife refuges. Birding is big business, too. Birders spent roughly \$31 billion in 2006 on all their wildlife watching experiences, including money for binoculars, field guides, bird food, bird houses, camping gear and such

big-ticket items as boats, according to interpretation of figures in the *2006 National Survey*. ♦

The Next Generation of Birders?



A vermilion flycatcher provided a teachable moment when youngsters visited Aransas National Wildlife Refuge in Texas. (USFWS)

A class of first graders had just learned to use binoculars. They stood outside Aransas National Wildlife Refuge in Texas ready to try their new skills when a vermilion flycatcher – apparently sensing the perfect teachable moment – caught an insect and landed in a nearby bush.

Tonya Stinson, Aransas Refuge environmental education specialist, is still a bit giddy as she tells how “one little boy took my hand and said, ‘we don’t need our binoculars. We can see him with our eyes.’” They all stood mesmerized as the little boy exclaimed, “This is the best field trip ever. I want to come back.”

It is the dream of every refuge to generate excitement and compassion for wildlife, especially among children. Aransas Refuge did so when this year they became the first refuge partner of a Council on Environmental Education (CEE) program called Flying WILD (<http://www.flyingwild.org/>).

The program introduces young people to bird conservation in large part because, “from urban landscapes to wilderness preserves, birds are often the most spectacular and readily observable wildlife.” Besides, notes the introduction

to *Flying WILD: An Educator’s Guide to Celebrating Bird*, birds provide a natural inroad for students to start learning about wildlife. CEE executive director Josetta Hawthorne also believes refuges are a perfect fit for Flying WILD and is eager to partner with refuges, especially those near urban areas.

Traditionally, CEE has teamed with cities to provide environmental education to underserved children. Since 2004, partners in 20 cities have agreed to train at least 200 educators to use Flying WILD. This year, Aransas Refuge will distribute the guide and train about 100 educators. Refuges in Texas and surrounding states attended the first training in February. A summer class at NCTC (Connecting People to Nature through Birding) will offer training in Flying WILD and other bird curricula.

Flying WILD is not the only way that national wildlife refuges introduce a new generation to bird watching. The Friends of **San Luis Valley National Wildlife Refuge** in Colorado organize a different migration game as part of their annual Kids Crane Festival. Wintering and summer breeding grounds are at opposite ends of a field, with the refuge as a mandatory migratory stopover in the

“As of January 1, 2008, the Checklist of Alaska Birds stood at a remarkable 484 bird species.”

Alaska Checklist: Growing by Leaps and Bounds

by Toby Burke

In 1959, Ira Gabrielson and Frederick Lincoln published the monumental ornithological work, *Birds of Alaska*, which included an annotated list of 311 naturally occurring bird species observed in Alaska through June 1958. In 1978, Brina Kessel and Daniel Gibson updated the list through November 1977, which by then totaled 381 bird species.

In 1991, Gibson and Kessel again updated the list, documenting 436 species. Gibson, Steven Heintz and Theodore Tobish compiled 468 species through 2002. And as of January 1, 2007, the *Checklist of Alaska Birds* stood at a remarkable 478 species. Just a year later, it increased by six, not to mention 26 additional unsubstantiated species.

middle. Youngsters flap their wings as they migrate across the field, coping with hazards like power lines (ropes at knee height), habitat degradation (rubber tires rolling onto the field) and predators (soft balls thrown at them). Some “birds” are tagged out or eliminated from the migration along the way.

Coordinator Jenny Nehring says younger children enjoy a slower paced, less complicated game, while older kids have a chance to learn more of the biology of migration hazards and habitat issues. “The older kids also handle getting tagged out better!”

Youngsters at **Neal Smith National Wildlife Refuge** in Iowa are participating in actual bird nesting surveys. Visitor services manager Cheryl Groom says students in the fifth grade and above will contribute to the Iowa Breeding Bird Atlas. This spring, 70 three-mile circles will be marked off on the refuge. Students will count as many nesting birds as they can find.

Groom appreciates the opportunity to get kids involved in actual research and population surveys. Younger children come to Neal Smith Refuge to participate in “Birds Schmirds,” learning common

bird sounds and where to find birds on the refuge.

Supervisory park ranger Dawn Grafe at **Oregon Coast National Wildlife Refuge Complex** has built her own shorebird program based on the Service’s Shorebird Sister Schools curriculum. (<http://ssspfws.org/index.cfm>) Grafe and her team of Americorps volunteers visit 23 fourth and fifth grade classrooms six times during the school year, teaching students to identify shorebirds, their adaptations and behavior, threats and conservation. Each visit lasts 90 minutes.

“It’s not a one shot deal,” says Grafe enthusiastically, “We build a relationship with the kids.” Students visit at least one estuary close to their school, usually on a refuge.

Pre- and post-tests show the youngsters learn a lot. “Eighty percent of the kids



Aransas National Wildlife Refuge became the first refuge partner of a Council on Environmental Education program called Flying WILD. (Tonya Stinson/USFWS)

start out thinking shorebirds eat trash,” says Grafe. By the end of the school year, more of their answers are correct, and there has been an attitude shift. A written survey of students shows a half to a full point improvement in attitudes, represented by opinions about statements like, “This year I will...do something at home that is good for the environment... learn more about birds for fun...”

Is that attitude shift long lasting? Grafe isn’t sure. “Birders are still usually older than 50, but young families are coming to birding festivals and birding on the coast has taken off.” ♦



A generation ago, not many people came to the Kenai Peninsula of Alaska – or to Kenai National Wildlife Refuge – expressly for birding. These days, a record-setting number of bird species has made the state a birding hot spot. (USFWS)

The *Checklist of Alaska Birds* is primarily founded on the collection of voucher specimens but, in the absence of an actual physical specimen, audio, photographic and video recordings are used to substantiate the state’s naturally occurring species.

Today, while conducting routine bird surveys, staff members at Kenai National Wildlife Refuge document range extensions for several common Alaska bird species. The refuge initiated its Birding Hotline in January 2004 as one way to solicit interesting or rare bird sightings. A tool not only

for documenting rare species – both introduced and naturally occurring – it also has been a means to document the arrival and departure dates for common migrant species.

Most of the hotline information has come from visiting birders interested in birding both on the refuge and the greater Kenai Peninsula. A generation ago, few people came to the Kenai Peninsula to bird. They came to fish. Today, although fishing is still king, the refuge has several guides that offer birding trips in addition to their normal array of fish guiding trips. Kenai Refuge

continued on pg 23

FOCUS ... *Birding on Wildlife*

At an Urban Refuge, Wood Ducks on Parade

Oregon's **Tualatin River National Wildlife Refuge**, about 15 miles from downtown Portland, was established in 1992 at the urging of residents and local governmental agencies who sought protection for one of the few expanses of green space remaining in a rapidly developing part of the metropolitan area.

Now more than 1,400 restored acres support a wide variety wildlife species especially birds. Because of these efforts, the refuge has become a significant staging area for wintering waterfowl. As many as 50,000 waterfowl have been documented using restored floodplains.

Before the restoration, fewer than 20 species of birds that would have historically relied on native seasonal wetland habitat were seen in these areas. Now, more than 70 species of water birds

home in on the restored wetlands, with nearly 200 species documented throughout the refuge. Each year, more species are added to the bird list as restored habitats mature; some of the newcomers had been rarely seen in the area.

As the seasons change on the refuge, so do the bird watching opportunities. Located on the Pacific Flyway, the refuge is an important spring stopover for migrating shorebirds and neotropical landbirds, some of which remain through the summer to breed. Fall brings the rain, just in time for the arrival of wintering waterfowl and birds of prey such as bald eagles and peregrine falcons.

The Audubon Society has listed the refuge as one of the state's Important Bird Areas. Local birders use websites, such as Oregon Birder's Online, to

Florida's Merritt Island Refuge: A Birder's Dream

Birders flock to the estuaries, marshes, coastal dunes and pine forests of Merritt Island National Wildlife Refuge, whose prime location attracts a rich mix of shorebirds, waterfowl and songbirds. (USFWS)



by Dorn Whitmore

Just five miles off I-95 and 45 miles east of Disney's Magic Kingdom theme park in Florida, Merritt Island National Wildlife Refuge has been a major destination for visitors for nearly 45 years. Roughly half of our 750,000 annual visitors are birders.

They have a lot to take in. The refuge's diverse habitats together with its location on the Atlantic flyway attract more than 300 species of birds, a rich mix of shorebirds, waterfowl and songbirds. The Florida scrub jay is one that many birders want to add to their life list, and the refuge supports the best habitat in the state for the species.



Birders flock to Oregon's Tualatin River National Wildlife Refuge, 15 miles from downtown Portland. Some 400 acres of the refuge opened to the public in June 2006. (Jim Williams)

routinely share their observations and species checklists from refuge visits. Even local and regional newspapers and television stations have highlighted Tualatin River Refuge as a wildlife watching opportunity for expert birders

and novices alike. Since the opening of the refuge in June 2006, nearly 50,000 people a year have been taking advantage of this new resource.

Visitor Enhancements

Trails take visitors through a variety of habitats. Along the way, wildlife overlooks provide sweeping views of the Tualatin

River; its riparian forest and floodplain wetlands. Interpretive stops help visitors appreciate the connections between the refuge's wildlife and the habitats they rely on. A photo blind on the edge of the

wetlands is a popular reservations-only attraction, especially during the wood ducks' nesting season.

Whatever the location, volunteer trail rovers greet and welcome visitors, pointing out wildlife viewing opportunities. For the benefit of birders, the Friends-operated bookstore stocks binoculars, bird identification guides and sturdy field packs to hold the gear. Wildlife observation is a central element of the refuge's environmental education program. The refuge has developed its own education curriculum. It also uses nationally known educational guides such as *Flying WILD: An Educator's Guide to Celebrating Birds*, which focuses broadly on migratory birds and their needs. As a part of an active education program, the refuge loans binoculars and field guides to visiting school groups. ♦

Our visitor center book store has a broad offering of local and state-wide bird guides as well as binoculars. The refuge provides interpretive skills training and develops programs – including tours designed to orient visitors – for members of our Friends group and other volunteers to implement. By far the most popular guided tour program is the Beginning Bird Watch Tour, held three times a week from November-March.

Bird-Rich Habitats

Seven wildlife viewing trails allow wildlife viewing in each refuge habitat. The most popular trail is the six-mile Black Point Wildlife Drive, an auto loop that meanders through marshes, impoundments and uplands. Many birds have become so habituated to people that visitors can often get close-up views of roseate spoonbills, reddish egrets, wood storks, white and glossy ibis, white and brown pelicans, mottled

ducks as well as many other marsh and shorebirds.

Other visitors amble up one or more of Merritt Island's hiking trails, which range from a half-mile to five miles. Over the years, blinds and towers have been constructed at carefully selected points to enhance wildlife viewing and photography. The Cruickshank Tower rises about 16 feet above a surrounding marsh and provides panoramic views of the Indian River Lagoon.

Merritt Island Refuge has an important economic impact on its neighbors. Eleven years ago, the nearby community of Titusville – a short drive away across the lagoon – began hosting the Space Coast Birding & Wildlife Festival. The four-day festival has grown into one of the nation's largest ecotourism event. It attracts about 4,000 birders, generating more than \$1 million for the local economy annually. Most of the field trips involve the refuge.

The state also recognized the value of Merritt Island Refuge in 2000 as it was establishing the east Florida section of the Great Florida Birding Trail. Merritt Island is the designated "visitor center" for the northeastern and east central sections of the trail. Specific improvements for birders have been completed since that designation. Last year, our Friends group sponsored a capital improvement project, spending \$80,000 on restrooms, a handicapped accessible tower, spotting scopes and two wildlife viewing blinds. ♦

Dorn Whitmore is the supervisory ranger at Merritt Island National Wildlife Refuge in Florida.

Desert Hike to Track Man-Made Damage

by Michael Lusk

Curt McCasland, deputy project leader at Cabeza Prieta National Wildlife Refuge in Arizona, and Michael Lusk, national invasive species coordinator working as a volunteer, hiked 72 miles across the refuge to assess damage inflicted on the refuge's wilderness by drug smugglers and illegal immigrants. Lusk once had McCasland's job at Cabeza Prieta.

Not long after arriving at Cabeza Prieta seven years ago, Curt McCasland – then the refuge biologist – saw the need to monitor the impact of illegal immigration and Border Patrol actions on the refuge's delicate desert ecosystem. So, McCasland designated transects across the refuge, which he regularly monitors by walking and taking GPS readings to pinpoint the location of fresh tire tracks, foot paths, trash, vehicles and more.

When I served at the refuge, I was never able to accompany him on a hike. This year, things fell into place, so I took annual leave and headed for Arizona.

We started from the refuge's northwestern corner at approximately 3 p.m. on January 21; we completed the hike on the east side at about 5 p.m. on January 25. From start to finish, we carried packs that weighed as much as 60 pounds, depending on how much water we were carrying. We were loaded with enough food – most of it dehydrated – for six days, in case we were delayed.

On the first day, we hiked about five miles; on the second, about 17.5 miles. We averaged about 16.5 miles for the remaining three days. It was grueling. Before long, your feet, knees and ankles remind you that you were not designed to be pack animal.

At night, we slept on a tarp, with a Thermarest mattress on top of it and then our sleeping bags. We were not rained on, but we would often wake with

puddles of dew or frost on our sleeping bags. The skies were so dark and clear that I was reminded of how much I miss seeing the stars now that I live on the edge of one of the world's busiest cities.

During the trip, we encountered no other people, not even one of the many Border Patrol officers that now patrol the refuge. But the desert was full of signs of life. We did not see any of the refuge's critically endangered Sonoran pronghorn or bighorn sheep, but there was plenty of evidence they had recently crossed our paths. Jackrabbits bounded across the landscape as we neared them. To my eye, they looked like small kangaroos.

Illegal Road through Heart of a Wilderness

The tranquil surroundings made the damage inflicted by people and their machinery all the more striking. A crude road as wide as a four-lane highway stretches from a point near the refuge's 52-mile long border with Mexico north through the heart of the refuge. Man-made ruts are so well traveled that in some places they are at least two feet deep.

Because of the low rainfall and spotty vegetation growth, desert land recovers

much, much more slowly than other kinds of terrain. For example, you can still see tracks that Model T Fords left in the 1940s. If the illegal traffic stopped today, it would take decades, perhaps even centuries, for the evidence of the "highway" to be obliterated.

Deserted, sometimes burned-out hulks of cars or trucks are another constant. And the closer you get to "civilization," the trash piles – bottles, food containers, clothing and other personal items that have been lugged across the desert – get higher and higher.

Still, the most enduring memories of the trek will be the sights and sounds that you encounter only in a large expanse of desert wilderness. The sound of the wind as it races through the spine-covered body and arms of a 200 year old saguaro cactus. The clean smell of the creosote bush. The full moon rising slowly over distant mountains. All that and a foot full of blisters. ♦

(All of Lusk's photos can be viewed at <http://www.flickr.com/photos/22548183@N06/>)



The deputy project leader at Cabeza Prieta National Wildlife Refuge, joined by a headquarters staff member from Arlington, VA hiked 72 miles across the sprawling Arizona refuge to monitor the impact of illegal immigration and Border Patrol actions on delicate desert ecosystems. (Michael Lusk)

Open Invitation to Year-Long Celebration

by Michele Nuss

Powdery snow builds around clusters of cattails. A shroud of dense fog obscures surrounding hillsides. Morning breaks on Lower Klamath National Wildlife Refuge along the California-Oregon border and the crisp February air fills with a blend of calls from thousands of snow, white-fronted and Canada geese.

Nearly 800 bird enthusiasts each President's Day weekend come for the Winter Wings Festival, when they have the chance to see 500-plus eagles and participate in professionally-led eagle viewing and raptor identification tours that spotlight Lower Klamath Refuge. But this year is special as the refuge celebrates its centennial.

Lower Klamath Refuge, the first wildlife refuge established specifically for protection of waterfowl, is inviting the public to discover the refuge's diversity during its centennial.

President Theodore Roosevelt established the refuge on August 8, 1908, an era when the plume trade was at its height, and lakes and marshes were often drained for conversion into farmland. In winter 1903, hunters shipped 120 tons of ducks from the Klamath Lake region alone to feed the meat markets of San Francisco. During one summer, feather hunters shipped 30,000 grebe skins to the San Francisco millinery trade.

Public outcry was led by Audubon Society's Western field representative William Finley who, with others, rallied national support for the Lacey Act and other laws against non-game bird hunts and illegal transporting. The establishment of Lower Klamath Refuge recognized the vital importance of wetlands and marshes for thousands of migratory waterfowl along the Pacific Flyway.

However, establishment of the refuge didn't guarantee habitat conservation.

Due to a series of pro-development watershed decisions by the Bureau of Reclamation and federal and state agencies, Lower Klamath Refuge had been drained from 81,619 acres down to a 300-acre pool by 1920. The U.S. Fish and Wildlife Service facilitated negotiations with the Bureau of Reclamation for construction of a tunnel in 1942 to transport water from Tule Lake Refuge to re-water Lower Klamath Refuge and return it to over 23,000 acres of wetlands.

Today, Klamath Basin wetlands are at 25 percent of their historic acreage and still support one million to three million birds at peak spring and fall migrations. Lower Klamath Refuge consists of 51,000 acres of shallow freshwater marshes, open water, grassy uplands and croplands. A 10-mile auto tour route allows visitors year-round access to view wildlife during daylight hours. Several photo blinds, strategically placed for early morning photography, are available by reservation and require the purchase of an annual pass.

Centennial Activities

Among the centennial year activities are:

On March 15, Refuge biologist Dave Mauser led a tour highlighting the Walking Wetlands program, which rotates cropland with emergent wetlands to enhance wildlife habitat for migrating waterfowl.

On April 19, visitor tours centered on historical events on the refuge



Birders have a chance to see some of the thousands of tundra swans—and numerous species of raptors — on Lower Klamath National Wildlife Refuge during the Winter Wings Festival held on President's Day weekend each year. This year, they also have the chance to celebrate the refuge's centennial. (USFWS)

lands. On May 17, Tule Lake Refuge will hold its annual migratory Bird Festival. Finally, May 30–June 1, visitors can take a weekend trip to Malheur National Wildlife Refuge, which also celebrates its centennial this year. Refuge staff will lead a full day of birding on Malheur Refuge.

Lower Klamath Refuge extends an open invitation to former employees, Refuge Friends, supporters and the general public to attend an old-fashioned picnic and ice cream social in August. Those attending will receive a stamped envelope commemorating the centennial. Former employees and volunteers can contact outdoor recreation planner Dave Menke at 530-667-2231 or by e-mail at dave_menke@fws.gov to receive an invitation and additional information. For a full list of Lower Klamath Refuge Centennial events and current updates, check the Web at www.fws.gov/klamathbasinrefuge. ♦

Michele Nuss is an interpretive park ranger at Lower Klamath National Wildlife Refuge.

Construction Team Takes On its Biggest Project

by Chuck Traxler

Continuing their craft's tradition of creative problem solving, maintenance workers organized into a Maintenance Action Team (MAT) in the Midwest Region are about to complete their first building construction project: The renovation and expansion of the 35-year-old headquarters building at Clarence Cannon National Wildlife Refuge in Missouri. The building also serves as the headquarters for Great River National Wildlife Refuge.

Using the MAT, Clarence Cannon Refuge saved \$500,000 in renovation costs as compared to estimated contractors' bids. The Clarence Cannon Refuge project is expected to be completed this spring. MAT squads typically converge on a refuge to complete tasks where manpower and money are in short supply.

Once preliminary work on the Cannon Refuge structure was completed, the MAT went into action during the warmest stretch of an unusually hot summer last year. They concentrated on, among other elements, foundation and concrete work, carpentry and installation of windows, doors and exterior siding.

As work progressed, even in 100-degree weather, 10 maintenance specialists from seven refuges and wetlands districts took part, in shifts that ranged between a few days to five solid weeks. According to Refuge Manager David Ellis, "The skill, pride and camaraderie of the team members were evident to anybody who watched them work." The renovated building is designed for much greater energy efficiency and will include an improved visitor's area and staff offices.

"This has been a great opportunity for maintenance staff from around the region

to work closely together and to learn new skills that they can take back their home stations," said Dale Pittman, Midwest Region heavy equipment coordinator and Maintenance Action Team leader.

History of Innovation

The Clarence Cannon Refuge project is just one of what has become a string of ambitious projects as the region's maintenance workers face the all-too-typical challenges of too little money, too few staff and too much to do. So in fall 2005, the concept of Maintenance Action Teams was born.

The first MAT project restored a half-mile-long dike and installed a concrete spillway and water control structure at Muscatatuck National Wildlife Refuge in Indiana. The project was completed for \$120,000 less than engineering estimates. A subsequent project at Wisconsin's Horicon National Wildlife Refuge saved more than \$283,000.

At Ohio's Ottawa Refuge, a MAT's assistance saved nearly \$500,000 and allowed the refuge to open a new visitor center. "During construction, we had more than 15 inches of rain in a month," said Ottawa Manager Doug Brewer. "The team worked around the weather, putting in long hours under difficult conditions, to get the job done."

"Our maintenance staffs have always been the force that keeps refuges running," said Nita Fuller, Midwest Region Wildlife Refuge System Chief. "Instead of looking at our limited resources and letting the Refuge System fall into greater disrepair, these dedicated professionals stood up and found a way to get the job done." ♦

Chuck Traxler is a member of the Midwest Region's external affairs staff.



A Midwest Region Maintenance Action Team completed its most ambitious assignment to date – renovating and expanding the 35-year-old headquarters building at Clarence Cannon Refuge in Missouri. Holding the Blue Goose high are refuge employees (left to right) refuge manager Dave Ellis, maintenance mechanic Alan Lagemann, maintenance worker Kurtis Pursley, administrative technician Carolyn Gregory, and wildlife specialist Candy Chambers. (USFWS)

Never Ending Nutria



Invasive nutria were eradicated from Blackwater National Wildlife Refuge in Maryland in 2004, but control efforts continue along the Chesapeake and Delaware Bays. (USFWS)

Blackwater National Wildlife Refuge in Maryland became a beacon of success in 2004, when it announced the eradication of the noxious nutria. But the battle against this invasive rodent is never ending. “The success of Blackwater’s nutria-free status is dependent on what’s done *around* the refuge,” says Steve Kendrot, the Department of Agriculture biologist in charge of nutria control in the mid-Atlantic area, including Blackwater Refuge.

Brought to the United States from South America for the 19th century fur trade, thousands of nutria were released into the wild in the 1940s. Then the fur trade collapsed but the nutria population kept right on growing. Nutria are incredibly prolific. They breed year round and within 48 hours of giving birth. If that isn’t bad enough, they also produce large litters and displace native muskrats which are smaller and less aggressive.

Before nutria eradication, as many as 8,000 acres of marshland at Blackwater Refuge had become open water. “Nutria dig until the food is gone,” explains Kendrot. “It looks like someone has been through an area with a rototiller.

They dig canals that allow the tide to flush water in and speed up erosion. The marsh begins to sink and eventually becomes open water.”

For many years, it was not understood just how critical the nutria were to the gradual disappearance of the marshland. It was also assumed that eradicating nutria was simply not possible.

In the late 1990s, tests with enclosed pens confirmed that when nutria are kept out of a damaged area, the marsh vegetation will grow back. With that information, federal legislation was passed in 2003, calling for the eradication of nutria from the Chesapeake and Delaware Bay watersheds.

One year later, Blackwater Refuge claimed victory, but 17 full-time USDA staff are still on project. “It’s a cutting edge project,” says Kendrot. “We are one of a handful of invasive programs of this magnitude. It has to be a year-round effort to place tremendous pressure on the nutria population.”

An intensive trapping and detection program is maintained on 130,000

coastal acres surrounding and including Blackwater Refuge. High priority areas are re-inspected every three to six months so that “we can continually shut down source populations.” Kendrot and his USDA team systematically remove nutria from one small plot after another. “If it is broken down into a systematic process, eradication can be achieved,” believes Kendrot.

Cooperation of Private Landowners

Kendrot is also working to enlist private landowners adjacent to the refuge. Many are cooperative but others resent any federal intrusion on their land. Very recently, one reluctant landowner finally agreed to allow nutria trappers on his property. Within a month, Kendrot’s team trapped 60 nutria.

What convinced the landowner to join the battle? Neighbors who were already cooperating with Kendrot were successfully hunting muskrat on their land. Muskrats are marketable; nutria are not. As the number of nutria drops, the number of muskrats increases.

In recent years, damage caused by nutria has increasingly been found on refuges in the Columbia River Gorge in Oregon and Washington. Joe Engler, assistant refuge biologist in the Pacific Region, says the nutria have burrowed into dikes at Ridgefield National Wildlife Refuge in Washington. In Portland, Oregon, near Tualatin National Wildlife Refuge, biologist Pete Schmidt is confronting a huge public education issue because “people in town are feeding nutria in the park.”

Kendrot is eager to share with those on the West Coast his successful, methodical system for eradicating nutria. “We have to expand the boundaries of eradication more quickly than nutria can expand. We’re supposed to be working ourselves out of a job.” ♦

Around the Refuge System

Texas

The tallest bird in North America has something special to “whoop” about. For the first time in 100 years, the population of whooping cranes exceeds 500 birds, according to Tom Stehn, whooping crane coordinator at Aransas Refuge Complex. The whooping crane, declared an endangered species in 1971, is still one of the rarest birds on the continent.

An estimated 266 cranes – members of the only remaining national wild flock – spent the cold-weather months along a 35-mile-long stretch of Texas Gulf Coast that includes the 115,000-acre Aransas Complex. His fall 2007 beak-count, reflected and increase of 29.

The higher numbers reflect an especially productive nesting season last summer 2,400 miles away at Canada’s Wood Buffalo National Park. There, a record 65 nesting pairs fledged 40 chicks; 39 of the chicks made it safely to Texas. One whooping crane pair touched down in Texas with two chicks; the cranes normally hatch two chicks every



For the first time in 100 years, the population of whooping cranes exceeds 500 birds. An estimated 266 – members of the only remaining national wild flock – spent the cold-weather months along a 35-mile-long stretch of Texas Gulf Coast that includes Aransas National Wildlife Refuge Complex. That’s 39 more cranes than were counted in the previous survey. (USFWS)

year, but only one youngster usually survives. “The pair with two chicks has a territory on the southern tip of Aransas,” Stehn says. “They are the first cranes the tour boats usually see once they reach the refuge.”

Florida

Approximately 120 Honduran flies have been released at Arthur R. Marshall Loxahatchee Refuge to do battle against a species of Mexican weevil that threatens the refuge’s bromeliads. Bromeliads play a vital role in the South Florida ecosystem. The plants’ water-filled centers support frogs, birds and insects.

The weevil, related to the boll weevil, lays its eggs in the leaves of the bromeliad plant. When larvae emerge, they tunnel in and feed on plant tissue, eventually killing the bromeliad. Released by the University of Florida and the South Florida Water Management District – with an excited crowd of fourth graders looking on – the Honduran flies are expected to produce maggots that will eat the weevil larvae. The refuge release is one of a series of fly releases across Florida.

Washington

Nisqually Refuge is taking a leading role in efforts to restore the Nisqually River estuary as a nursery and feeding ground for endangered Chinook salmon and other fish. The refuge, near Olympia in Western Washington, is located where the river’s fresh water meets the saltwater of

south Puget Sound, creating the Nisqually estuary, designated a National Natural Landmark. It is a biologically rich and diverse area that supports a variety of habitats including the estuary, freshwater wetlands and riparian woodlands.

This coming summer, refuge crews will begin to restore 700 acres of diked wetlands back to the estuary. Reflecting the significance of the restoration project, all five South Puget Sound watershed groups are setting aside \$2.4 million in grants for the refuge project. The groups have never before pooled their resources for a single project. “They recognized this greater good,” said Jean Takekawa, manager of Nisqually refuge. “This is an example of how we can all reach across our boundaries to restore Puget Sound.”

Mississippi

Gulf Coast Refuges Complex and a regional wildlife conservation group have joined to restore and maintain habitats for the endangered Mississippi sandhill crane. Under a recently signed cooperative agreement, three units of the Complex – Mississippi Sand Hill Crane, Grand Bay and Bon Secour Wildlife Refuges – are partnering with Southeast Wildlife Conservation Group (SWCG), a non-profit that focuses on “protecting, conserving and reclaiming the South’s natural environments.” Among other steps, the SWCG is supporting efforts by the refuges to control invasive species and to clean up hurricane debris. The conservation group will also help raise money for a bookstore at Mississippi Sandhill Crane Refuge.

Midway Atoll

An attempt to establish a breeding colony of Laysan ducks, America's rarest native waterfowl, has turned into a rousing success. In 2004 and 2005, 42 wild juveniles were transplanted to Midway Atoll Refuge. According to the latest head count, the "experimental" colony has grown to include nearly 200 adult and fledgling ducks. The success of the Midway experiment – a joint undertaking of the U.S. Fish and Wildlife Service and the U.S. Geological Survey – may pave the way for the translocations of other at-risk species.

The transplanted ducks were shipped 750 miles westward to Midway from their sole remaining breeding ground – Laysan Island, four square miles that is part of Hawaiian Islands Refuge. The establishment of the Midway colony was prompted by fears that the Laysan Island population, never more than 500 birds, and once fewer than 12, could be wiped out by storms, drought or disease.

Midway Atoll lies within the presumed prehistoric range of the species and is free of rats and other predators. Before the ducks arrived, Service staff and volunteers devoted 18 months to, among other actions, removing non-native plants and cultivating native grasses and sedges the ducks would use for nesting. As a measure of how well the Laysan ducks have adjusted, birds in the Midway population are breeding at an earlier age and laying more eggs than those on Laysan Island. Creating a third colony on another rodent-free island is being considered.

Oklahoma

A local man and his wife, who cultivate more than 1,000 acres on the Sequoyah Refuge through the cooperative farming program, have been named Oklahoma Farm Bureau Farm Family of the year. Jody and Paula Sloan were honored in part because of innovative steps they took to improve the property and its yield. Among other

constructive measures, the Sloans have fought erosion by using a "no-till" approach that largely leaves the soil intact and helps to promote a cleaner and healthier environment.

Under the Sequoyah Refuge's cooperative farming program, the Sloans and five other farm families leave standing a percentage of their crops. The unharvested crops provide forage for resident and migratory wildlife, especially migratory waterfowl. "The refuge manager told us that we were essential to the successful operation of the refuge," Jody Sloan said. "Without the farmers, all this land would be covered with weeds."

Louisiana

The City of New Orleans collected about 10,000 castoff Christmas trees this year to help Bayou Sauvage Refuge restore shoreline habitats destroyed by Hurricane Katrina. The refuge comprises 23,000 acres of fresh and brackish marshes, all within the New Orleans city limits. The trees were bundled and then airlifted to the refuge by Louisiana National

Guard helicopters. With the help of volunteers, the bundles will be set in place at several locations to reduce wave action and capture sediment to offset subsidence that has been expanding the amount of open water in the refuge, according to wildlife operations specialist Shelley Stiaes.

Oregon

A film crew from the Federal Law Enforcement Training Center in Georgia shot scenes at Malheur Refuge, among other locations, for a new film that spotlights the looting of archaeological sites. The film will be used to acquaint new law enforcement officers with the wide variety of archaeological and historic sites that are looted for profit. The film focuses on violations of the federal Archaeological Resource Protection Act of 1979 that prohibits the destruction of historic and prehistoric sites. Parts of new version were shot at a number of Malheur Refuge's prehistoric sites, including archaeological excavations underway at the Sod House Ranch. The film is expected to be completed in the spring.



For a new film that spotlights the looting of valuable archaeological sites, a crew from the Federal Law Enforcement Training Center in Georgia shot several scenes at a number of prehistoric locations at Oregon's Malheur National Wildlife Refuge. (Carla Burnside/USFWS)

“If We’re Down to One Person, They’ll Be Spraying Weeds”

by Mark Pfost

Imagine 24,000 acres of upland and wetland habitat scattered over 61 Waterfowl Production Areas, which themselves are strewn over 11 counties in the Rainwater Basin Wetland Management District in Nebraska. Now imagine that almost every day from mid-May to mid-July, four two-person crews mount their machines and begin another day of trying to kill every noxious non-native thistle and leafy spurge plant. Left unchecked, they and such other troublesome species as crown vetch will degrade grasslands.

Each team establishes its own search methods. They traverse Waterfowl Product Areas (WPAs) while covering the grassland using a grid pattern, working both ends toward the middle, or winding through tree shelterbelts planted long ago – eyes constantly scanning for the easily seen bolted thistle or the much less obvious rosette that is hunkered down among the tallgrass. On some days, a crew can thoroughly cover two or three WPAs; on others, multiple crews may need to work together to cover a large WPA heavily infested with thistle.

When a bad patch of musk thistle is found, the task of spraying each plant seems daunting. Experience and the previous season’s weed maps remind crews that a particular hillside is “nasty” with crown vetch, or that they need to keep a sharp eye out for pre-flowering leafy spurge along a roadside ditch.

After hours spent squinting into the bright Nebraska sun, crews load ATVs back onto trailers for the return home – sometimes a two-hour journey. Once back, ATVs are washed to prevent the spread of undesired seed and refueled. Water tanks are filled and repairs are done so the process can start again the next morning – at 6 a.m.



All-terrain vehicles enable crews to comb Waterfowl Production Areas for even small patches of Canada thistle. (USFWS)

Weeds Don’t Stop in July

While May to July might be thought of as the traditional weed season, weeds in the Rainwater Basins are fought for much of the year. Tractors outfitted with spray rigs figure much more prominently in late summer and autumn, the prime time to spray Canada thistle rosettes, from the air if necessary. Late summer and fall are also the seasons to go after leafy spurge, reed canary grass and phragmites.

Trees are considered weeds on Rainwater WPAs. Red cedars, although native, can be highly invasive. Deciduous shelterbelts, planted long ago around homesteads and field edges, expand into grasslands, degrading bird habitat. Tree removal is a priority to enhance habitat for the millions of waterfowl, shorebirds and passerines that use WPA uplands and wetlands.

Every weed may not be eliminated from all WPAs, but we’ll probably be able to eradicate them from some and reduce them to manageable quantities on others. Project leader Gene Mack once told the staff, only half jokingly, that if the Rainwater Basin WMD staff was ever reduced to just one person, that person would be spraying weeds! ♦

Mark Pfost heads the weed eradication program at Rainwater Basin Wetland Management District in Nebraska.

Chief's Corner, Maintenance and Resource Management, Inextricable — continued from pg 2

equipment safety training program. We are proud of our remarkable safety record.

Equally important, our maintenance crews have a great record of achievement. They build levees, install water control structures and construct everything from boardwalks to barns. For one example, turn to page 18 in this issue and read how a Maintenance Action Team renovated

and expanded a 35-year-old headquarters building at a fraction of what a private contractor planned to charge.

Maintenance work is inherently dangerous, no less so on national wildlife refuges, where habitat has to be protected and every piece of land has its own unique hazards. We want our maintenance folks to go home safely to their families each night. We

want national wildlife refuges to be places that wildlife call home and where visitors experience quality wildlife-dependent recreation. The people on our maintenance crews work with diligence and intelligence so both goals are met. So here's to the accomplishments of scores of maintenance crews who physically make our national wildlife refuges such natural treasurers. ♦

Alaska Checklist: Growing by Leaps and Bounds — continued from pg 13

provides spring bird walks on selected trails and sells refuge bird finding guides in the visitor center.

Incredible Year

In fact, 2007 was an incredible year for new bird species in Alaska. Strays from Eurasia included brown hawk-owl observed on St. Paul Island and sedge warbler and yellow-browed bunting seen on St. Lawrence Island. Bullock's oriole and vesper sparrow are North American breeders also newly documented in Alaska. Additionally, the checklist gained a new species as the result of a taxonomic division of the Eurasian vagrant bean goose into taiga bean-goose and tundra bean-goose. Gray heron and Eurasian collared-dove, both Old World species,

were also observed in Alaska in 2007, but observers did not submit supporting documentation in time to be considered for the latest update.

The checklist does not include species whose occurrence in Alaska is considered unnatural, the result of human assistance, known or presumed. Accordingly, you will not see Humboldt penguin on the checklist even though one was captured alive in a southeast Alaska fisherman's net in 2002. It is strongly suspected that the penguin was transported to Alaska waters aboard a South American ship. Nor will you see brown booby on the checklist, even though one accompanied a yacht sailing 2,200 miles from Hawaii to the port of Kodiak in August 1999.

these species are not known to persist independent of humans. After numerous introductions, they appear to be breeding in the greater Homer area to the point that they may some day persist independent of humans.

Although not native to Alaska, European starling is already on the state checklist, not merely because it is believed to have made it to Alaska on its own, where it typically lives in urban and agricultural environments, but because it also persists, though not commonly, in the larger wilder landscape. European starling along with the newly arrived Eurasian collared dove and the rarely encountered house sparrow and house finch have the dubious distinction of being our only invasive bird species encountered in Alaska.



Kenai Refuge initiated its Birding Hotline in 2004 as one way to solicit interesting or rare bird sightings. (USFWS)

Other notable birds you will not see on the checklists are becoming increasingly common on the landscape, such as rock pigeon (domestic pigeon), wild turkey, northern bobwhite and ring-necked pheasant. Considered commensals,

Like most comprehensive bird checklists, the *Checklist of Alaska Birds* reflects not only the contributions of many highly skilled and passionate professional ornithologists and wildlife managers but also the contributions of many highly skilled and passionate citizen scientists. Their eyes, ears and minds are open to the diversity of our Alaska avifauna. ♦

Toby Burke is a refuge biological technician who is intrigued by the status and distribution of Alaska and Kenai Peninsula birds and enjoys birding with his wife and family.

A Look Back ... J. Clark Salyer II

As a teenager in Missouri not long after the turn of the 20th century, J. Clark Salyer was frequently given permission to leave school early to run his trapline through the marshes for muskrat and in the uplands for foxes, raccoons, skunks and opossums. That earned him as much as \$750 a year toward college, according to George Laycock in *The Sign of the Flying Goose*. Salyer never lost his love of the outdoors.

He taught science in the public schools of Parsons, KA, and biology at Bethel College in Newton, KA, before deciding to pursue a Ph.D. in biology at the University of Michigan. Jay N. "Ding" Darling, then Chief of the Bureau of Biological Survey, convinced him to take a year off to develop a nationwide waterfowl management program. Waterfowl management based on the habitat needs of migratory birds had never been tried on a national scale.

Salyer took a full time position in 1934 as Chief of the Wildlife Refuge Program. He feared flying, so within six weeks, he had driven 18,000 miles and drawn up plans for 600,000 acres of new refuge lands. Under his direction, the Refuge System grew from 1.5 million acres in

the mid-1930s to 29 million acres in 1964, when Salyer retired as the first Chief of the Refuge System.

Laycock writes that Salyer's pace wore out government cars at a furious pace. One refuge manager riding behind Salyer is reported to have said, "Look at those arms waving. Every time his hand goes out that window, it means spending another thousand dollars we don't have."

But Salyer had a reputation for getting the money, too. "You had to howl like a gut-shot panther," he once said. "Everybody always had his hand out for a piece of the refuges. You had to know how to say 'no.'"

By 1958, Salyer had lost his eyesight, but he could remember details of virtually every refuge he had visited. In 1962, Interior Secretary Stewart L. Udall honored him with the department's Distinguished Service Award. Ding Darling considered him the "salvation of



J. Clark Salyer II

the duck restoration program of 1934-36. He did most of the work for which I was awarded medals."

Not long after Salyer's death in 1966, Lower Souris National Wildlife Refuge in North Dakota was renamed the J. Clark Salyer National Wildlife Refuge to honor his legacy. ♦

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.



RefugeUpdate

USFWS-NWRS
4401 North Fairfax Dr.
Room 634C
Arlington, VA 22203-1610

STANDARD PRESORT
POSTAGE AND FEES
PAID
U.S. DEPARTMENT OF THE
INTERIOR
PERMIT G-77