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Visitors Hugely Satisfied with National Wildlife Refuge System



Visitors give refuge employees and volunteers outstanding marks for the valuable information and service they provide, according to a recent Visitor Satisfaction Survey. (John and Karen Hollingsworth/USFWS)



A new survey gives national wildlife refuges a 4.48 rating on a 5.0 scale. Only two percent of respondents who answered survey questions at 47 representative refuges reported they were dissatisfied with their overall experience. (Ryan Hagerty/USFWS)

National wildlife refuges scored a solid “A” for visitor satisfaction, according to a recent Fish and Wildlife survey.

“This is heaven on Earth,” wrote one respondent. “Thumbs up!”

A whopping 95 percent of visitors at 47 refuges covered in the survey said they “agreed” or “strongly agreed” that they were satisfied with their experience. Respondents’ overall satisfaction rating was a 4.48 on a 5.0 scale. Only two percent of respondents reported they were dissatisfied with their overall experience.

“We are extraordinarily proud of these results,” said Refuge System Chief Bill

Hartwig. “The Refuge System is providing quality wildlife-dependent recreation and opportunities for family education that will benefit the health of our wildlife resources for generations to come.”

Survey highlights included:

- Visitors were highly satisfied with the service they received from employees and volunteers, with their overall rating 4.7 out of a possible 5.0. They specifically noted that employees and volunteers were courteous and knowledgeable about refuge wildlife and recreation programs.

- The majority of respondents indicated their main reason for visiting was to



From the Acting Director

Building On Progress

Under the leadership of former Director Steve Williams, the Service

reestablished our connection with those at the heart of wildlife conservation, worked to improve our science capabilities, and stressed the importance of establishing partnerships to fulfill our wildlife conservation mission. We have made great progress, however we cannot rest on our laurels. As we move forward, the National Wildlife Refuge System will be key to our success.

National wildlife refuges are the places where Americans see how the Fish and Wildlife Service uses their tax dollars to protect and conserve the resources that are the anchor of wildlife conservation and our outdoor heritage. Whether it is science, quality wildlife-dependent recreation, habitat management and

restoration, or environmental education, wildlife refuges are on the frontlines. What we do on the ground affects people in every state, but we can't accomplish long-term conservation without the talents and dedication of varied partners and all those who are proud to wear the "U.S. Fish and Wildlife Service employee" shield. National wildlife refuges have already made huge strides, often through the 240-plus nonprofit Friends groups, whose concepts and organizational structure other federal agencies seek to emulate

One of our most essential partnerships is with the Cooperative Alliance for Refuge Enhancement, the CARE group. The 21 conservation organizations in CARE don't always agree with one another on all issues. But they are united in helping decision-makers understand why we need a strong and effective Refuge System. Their work has been nothing short of

stunning, and the Service is fully committed to continuing our work with CARE.

As we move forward, we must also plan for the challenges of the future. That's why we will continue to expand our science capabilities through the Science Excellence Initiative and work to enhance compatible wildlife-dependent recreation on national wildlife refuges. Those attending the "Conservation in Action Summit" last May clearly told us that Americans crave more quality recreation opportunities and environmental education, so if possible, we should strive to fulfill this need.

With optimism, innovation, and the continued dedication of Service employees, I am confident the fish and wildlife resources we protect and conserve will continue to prosper, while we expand opportunities for wildlife-dependent recreation our national wildlife refuges.

— Matt Hogan



Chief's Corner

An Informed Public Should Be An Active One

"Please continue to be friendly, helpful and educational," one visitor wrote in the Visitor Satisfaction Survey. "We love coming here, and we tell many other people to come here, too."

The Refuge System has come a long way since citizen wardens guarded wildlife refuges against poachers and plume hunters, and visitors were nearly as rare as some of our endangered species. Today, we welcome and orient about 40 million visitors. Americans recognize wildlife refuges as true national treasures. That is both to the benefit of resource conservation and the fulfillment of the National Wildlife

Refuge System Improvement Act.

The authors of the Refuge System Improvement Act understood that citizens – armed with the power of a vote and a voice – determine the ultimate importance of wildlife conservation. No matter how diligently we work, we cannot conserve America's wildlife unless the public is involved. Little wonder, then, that the Refuge System Improvement Act's authors stated, "wildlife dependent recreation . . . is directly related to the mission of the National Wildlife Refuge System."

Indeed, those who attended the "Conservation in Action Summit" in May 2005 put

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Dr. Laura Brandt, Refuge Employee of the Year, was honored for her involvement with restoration of the Greater Everglades ecosystem. (Jim Smoot/USGS)

Recognizing Refuge Employees with Prestigious Honors

The prestigious **Refuge Manager** of the Year and **Refuge Employee of the Year** Awards were presented by the National Wildlife Refuge Association and the National Fish and Wildlife Foundation at a special ceremony March 17 in Arlington, VA.

The Paul Kroegel Refuge Manager of the Year Award was given to Roy Lowe, manager of the Oregon Coast NWRC, and the Refuge Employee of the Year Award was presented to Dr. Laura Brandt, a wildlife biologist at Loxahatchee NWR, FL.

The awards recognize exceptional contributions made by employees toward protecting the National Wildlife Refuge System. Recipients, who often make use of scarce funds and limited resources to “get the job done,” have demonstrated a dedicated career and commitment to the cause of wildlife conservation, as well as the ability to effectively deal with external organizations and the public to further the goals and objectives of the Refuge System.

Lowe was recognized for working effectively to build mutually productive relationships with land conservancy groups, private landowners, and American Indian tribes to add crucial acres of rare and essential habitat to the refuge complex. His commitment to public

outreach, research and education has proven invaluable to projects such as the acquisition of Crook Point and the preservation of the archeological and cultural significance of the Ni-les’tun Unit of Brandon Marsh NWR.

“This is really a humbling honor when you think about who this award is named after and all the hard-working and deserving folks in the Refuge System today,” said Lowe. “The only way to make things happen in a coastal setting like this, with six different refuges spread along the entire coast, is through extensive outreach, education and partnerships,” he said. The Oregon Coastal Refuges protect more than 1,800 rocks, reefs and islands supporting more than 50 percent of the nesting seabird population on the West Coast.

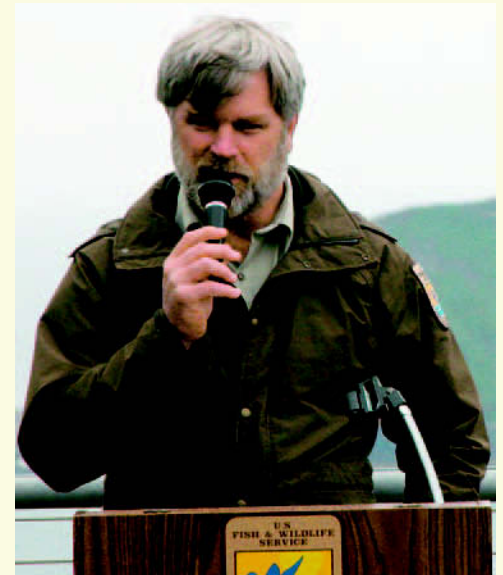
Dr. Brandt was honored for her involvement in multiple forums working to restore the Greater Everglades ecosystem. She is widely respected as a scientist who facilitates communication and understanding between various partners. Her enthusiasm and dedication have led to valuable collaboration with partners and academic institutions.

“This recognition wouldn’t be possible without support from all the people at Loxahatchee, especially Refuge Manager

Mark Musaus and others in the Regional Office,” said Dr. Brandt. “Their continued support allowed me to facilitate communications among refuge employees and others working to improve a scientific approach in Everglades restoration.”

The awards were presented in conjunction with the 70th North American Wildlife and Natural Resources Conference March 16-19.

The National Wildlife Refuge Association and the National Fish and Wildlife Foundation also presented Refuge Volunteer of the Year and Friends Group of the Year Awards in February during the “Friends In Action Conference” in Washington, DC. As reported in the January/February issue, Ervin Davis of the National Bison Range, MT, earned the Volunteer of the Year Award, while the Friends of Black Bayou (LA) received Friends Group of the Year honors. ♦



Roy Lowe, Refuge Manager of the Year, was recognized for building mutually productive relationships with land conservancy groups, private landowners and American Indian tribes as manager of the Oregon Coast NWRC. (Dawn Grafe/USFWS)

Planting a Rare Collection of Seeds

By Kim Bousquet

The high gray walls and barbed wire fencing of the Appleton, MN, prison hide a project that few would imagine: For the past three years, serious offenders housed in this medium to high-security facility have grown native prairie plants whose

seeds are restoring land at Big Stone NWR, MN.

Last year alone, the prison produced 41 pounds of pure wildflower seeds that will be planted within native prairie restoration sites this fall. In 2004, the prison's produce was worth about \$4,000.

The refuge staff worked closely with officials of the Corrections Corporation of America, which runs the prison, to launch the project in the prison's greenhouse and outdoor garden area.

For the refuge, the program has created an inexpensive means of securing expensive wildflower seeds. For the inmates, the program allows them to work outdoors for as long as five hours daily. It has sparked an interest within a population whose lifestyle rarely included a love of natural resources.

Big Stone Refuge lies in the heart of the Northern Tallgrass Prairie, which



Native prairie plants grown by inmates at an Appleton, MN, prison have yielded wildflower seeds that have restored native prairies at Big Stone NWR, in the heart of the Northern Tallgrass Prairie. Since it was established in 1975, the refuge has restored about 4,300 acres to native prairie plant communities. (Kim Bousquet /USFWS)

Supporting Priority Visitor Centers in Tight Financial Times

Although most new land acquisition should be delayed for the next few years in the face of federal budgets that are expected to be tight, the Refuge System should request money for operations and move forward on construction of the 20 visitor centers listed as top priorities, said Loretta Beaumont, staff assistant for the House Appropriations Subcommittee for Interior and Related Agencies. Ms. Beaumont addressed the "Friends in Action Conference" Feb. 5.

"We could use some help from the Office of Management and Budget to get some of these top visitor centers built," she said, looking with a sly smile at Robert Lamb, deputy assistant secretary for Budget and Finance in the Office of the Secretary of the Interior and another member of the three-person panel who addressed the conference on "Congressional View: The Long-Term Needs of the Refuge System." Mike Hickey, with the Office of

Management and Budget, was the third person on the panel.

Several of the top priority visitor centers have already been built or are under construction.

Ms. Beaumont stressed that, as a staff person on the subcommittee dealing with the Fish and Wildlife Service, she advocated creating modest "pots of money" for small visitor enhancement projects, including better marked trails with interpretive signs, visitor contact stations, observation towers and bathrooms.

"The public's growing appreciation of our resources should be the goal," said Ms. Beaumont. "That's more important than fantastic visitor centers. Ten years after construction, they are outmoded and need large infusion of capital to replace them."

Instead, Ms. Beaumont stressed that national wildlife refuges should keep

visitor centers simple, "settling for something that provides the visiting public with information and interpretation rather than holding out for the Taj Mahal." She advocated "modest" visitor centers that can be built for \$3 million or less while helping visitors make "special connections" with wildlife resources.

The Refuge System should work toward creating a standardized design that can be applied in all regions, thus reducing engineering, overhead, planning and design costs, she noted.

On other issues, Ms. Beaumont suggested that tight financial times require the Refuge System "to get back to habitat," including habitat restoration and projects that combat invasive species. She also noted that many refuges do not have enough staff.

While more money should go into operations, Ms. Beaumont warned, "We

originally occupied millions of acres. Today, it is one of the most endangered ecosystems in the United States. Less than 1 percent of the original prairie remains intact.

Since the refuge was established in 1975, it has restored about 4,300 acres to native prairie plant communities consisting primarily of four to eight different grass species. While restoration has benefited a myriad of wildlife resources, refuge staff long recognized that it could not get sufficient plant diversity without looking for innovative partnerships. Remnant native prairies normally consist of at least 30 plant species and sometimes more than 100 species. Native wildflower seeds average about \$200 per pound.

That's when discussion began with the Corrections Corporation of America about a project that would produce not only seeds for the refuge, but also a new level of interest among inmates.

In fact, a horticulture course started after the wildflower program attracts a large

class. The inmates have shown great interest in learning about the plants and ways to produce them. They take pride in their gardening work.

The prison's garden plot contains approximately 17 species of native prairie plants. Last year, the prison expanded the plot and plans to increase species diversity. The refuge hopes to increase the number of plants to 30 species.

The program caught the interest of a Minneapolis television station, whose story was also aired at a Corrections Corporation of America board meeting. Now, officials are planning to replicate the program in at least seven other prison facilities.

The Corrections Corporation of America, which has 61 prison facilities throughout the United States, is interested in developing similar programs and partnerships to promote natural resource conservation. Refuges that are working on different types of restoration programs – whether native prairie, woodland

restoration, endangered species, or even restoring damaged wetlands – and have nearby prison facilities could benefit greatly from such partnerships.

For Big Stone Refuge, the project will enhance wildlife observation opportunities for the public and provide them with the chance to experience the natural beauty of the prairies. Once native prairies are restored on the refuge, the prairies will be harvestable. The harvestable seed then will be made available to other refuges and wetland management districts to enhance native prairie restorations in the Northern Tallgrass Prairie. ♦

Kim Bousquet is the wildlife biologist at Big Stone NWR, MN.

don't want to forget about maintenance.” She did not provide specifics, but suggested that some “realignments” might be needed.

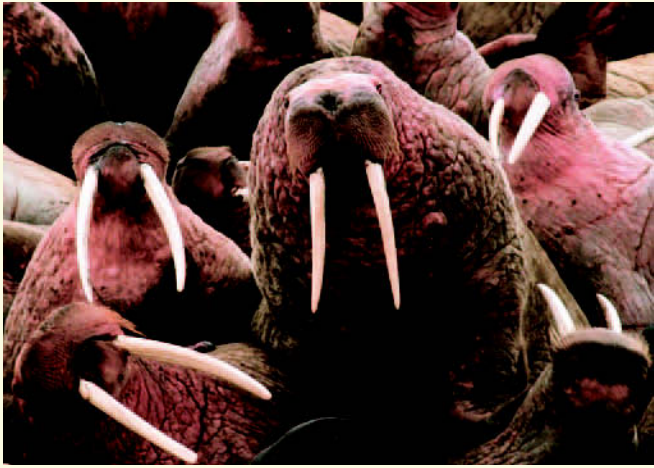
“Partnerships are very important,” she acknowledged as she recognized the hundreds of nonprofit Friends organizations that “are critical to the health of the Refuge System.”

“Across government, we will not see increases for domestic programs,” she emphasized. “From 1997 to 2004, the Refuge System was riding a wave of recognition and getting sizeable increases every year. I suspect that is ending.” ♦



Loretta Beaumont, staff assistant for the House Appropriations Subcommittee for Interior and Related Agencies, is pictured at the “Friends in Action” Conference with other speakers at the panel discussion, Deputy Assistant Secretary for Budget and Finance Robert Lamb, seated, at left, and Michael Hickey of the Office of Management and Budget. National Wildlife Refuge Association President Evan Hirsche is pictured at the podium. (USFWS)

Around the Refuge System



🌿 **Minnesota, Wisconsin, Iowa:** This winter, birders across the country flocked to the forests and bogs of Minnesota, Wisconsin and Iowa, including several refuges, to witness the rare spectacle of northern owls that came south from Canada in unprecedented numbers. The Minnesota Ornithologists' Union said the owl invasion – including great gray, northern hawk and boreal owls – was unprecedented in intensity and scale.

At Rice Lake NWR, MN, the influx meant a big increase in the number of visitors. Refuge Manager Mary Stefanski said winter visitation is normally about 3-4 visitors per day, usually for cross-country skiing. "Since the owls have shown up, it's not uncommon to have 30 or more visitors a day," she said.

At Agassiz NWR, MN, great gray owl sightings began last May. "Since October we've had one or two great gray sightings along the main travel route every month," said Refuge Biologist Gary Huschle. MOU President Mark Alt explained, "During the last owl invasion in 2000, it was considered big news if birders saw a handful of great gray owls in a day. Now, we know of someone who saw 214 in a day."

🌿 **Texas:** Several south Texas refuges, including Santa Ana and the Lower Rio Valley NWRs – renowned hotspots for birding during winter – saw visitation skyrocket as birders traveled to see several species that normally winter in Mexico. Since the beginning of the year,

visitation rose by 20 percent at Santa Ana as birding enthusiasts raced to see blue buntings, rose-throated becards, roadside hawks and white-throated robins – all of which have rarely been seen on the refuges or in the area. Santa Ana Refuge Manager Jodi Stroklund compared the bustle to the floor of the New York Stock Exchange. "I've met birders from all over the country in the past

few weeks, and they all seem to be looking for the blue bunting."

🌿 **Alaska:** Staff from Togiak NWR was pleasantly surprised by the number of walrus counted in January during an aerial survey at the Cape Peirce and Cape Newenham haulout sites in southwestern Alaska. The peak number of walrus at the same sites during the summer field season was only 31 animals, yet in January more than 1,400 walrus were counted. Staff are also counting endangered Stellar sea lions in the area, with a high of 140 recorded so far.

🌿 **Oregon:** Volunteers from Spirit Mountain Casino took part in habitat restoration at Baskett Slough NWR in January, transplanting nursery-grown Nelson's checker-mallow seedlings to refuge habitat. The threatened plant is found only in wetland prairie habitats in the Willamette Valley and northern Coast Range of Oregon and a few locations in Washington. In all, staff and volunteers transplanted 640 seedlings along Moffitt Marsh. Funding for this project, part of a larger effort to restore native prairie habitat for the recovery of listed species, was provided through the Cooperative Conservation Initiative.

🌿 **Maryland:** One hundred three eagles were found in 14 locations in January as more than two-dozen staffers and volunteers on Blackwater NWR conducted the Mid-Winter Eagle Survey. They identified 86 bald eagles, two golden

eagles, and 15 unknown species. Although fewer eagles were counted than the last two years, the count was consistent with surveys over the last decade. Biologist Roger Stone noted that even slight variances in weather affects eagles' willingness to fly, and because it was very cold and overcast on the day of the survey, some eagles may have been more difficult to spot.

🌿 **Georgia:** Red-cockaded woodpecker habitat at Okefenokee NWR is the centerpiece of a new agreement between the Service and International Paper, the nation's largest paper company, to create and manage 6,700 acres of feeding habitat on the refuge for the endangered bird. The new agreement is an extension of a longstanding partnership between the Service and International Paper to help stabilize the red-cockaded woodpecker population and improve habitat in forested areas of the Southeast.



🌿 **Washington:** A new scenic overlook and rustic kiosk, with expansive views of the beautiful Walla Walla River Valley and its wildlife-rich wetlands, have been constructed at McNary NWR, thanks to transportation enhancement funds provided by the Washington State Department of Transportation. Adjacent to State Highway 12, the new overlook not only offers scenic delights, but also a glimpse of history through interpretive panels highlighting Lewis and Clark's encounter and exchange of gifts with Walla Walla Chief Yellept. Future interpretive panels also will showcase special fish and wildlife management and recreation at the refuge.

🌿 **Alaska:** Yukon Delta NWR staff is using ingenuity and technology to spread the conservation message to schools throughout an area as large as the whole state of South Carolina. Using the Lower Kuskokwim School District's video conferencing system, refuge staff recently offered an educational program on subsistence hunting and fishing to 60 teachers scattered across the refuge's 20 million acres. "The people in the villages where these teachers work depend on

subsistence hunting and fishing," explained Refuge Manager Mike Rearden. "It's important for them to know what activities they can participate in legally."

🌿 **Louisiana:** Twenty students from Bethel Christian School in Jennings helped remove invasive Chinese tallow trees at Lacassine NWR. The enthusiastic youngsters pulled tallow trees, loaded them onto a trailer, and transported the plucked pests to an upland location for a future prescribed fire. Students came away with a new awareness of the severity and effects of invasive plants on native habitats in their home state.

🌿 **Alaska:** Sandra Siekaniec has become refuge manager at Izembek NWR, replacing Rick Poetter, who transferred to Columbia NWR, WA. Siekaniec holds a wildlife degree from Purdue University and has devoted her 18-year career to refuges, beginning as a SCA volunteer. She has worked on seven refuges in four regions, serving as project leader at Tewaukin NWR, ND, and deputy manager at Innoko NWR, AK. Siekaniec assumed her post on March 20.

🌿 **In Memoriam:** Former Fish and Wildlife Service employee Jack Edward Waddell, 72, died of heart failure on December 1, 2004, in Vancouver, WA. A veteran of the Korean War, Waddell graduated from Humboldt State University in 1964 with a master's degree in wildlife management. He served as assistant manager at Columbia NWR, and was later appointed the first manager of Ridgefield NWR, both in Washington. He worked as district refuge supervisor for Idaho and Nevada before transferring to Federal Aid in the late 1980s. He retired in 1991. Memorial contributions may be made to the American Heart Association.

Our hearts were saddened with news of the passing of Sandy Jeffers, who died March 6 from complications related to surgery. Ms. Jeffers worked in the Headquarters Office of the Refuge System for about 17 years as an administrative officer in the Office of Budget and the Office of Information Technology Management.

Visitors Satisfied —from pg 1

watch or photograph wildlife, noting that information about the refuge, including maps and signs, was easy to locate and understand. The National Wildlife Refuge System Improvement Act of 1997 identifies six wildlife-dependent priority uses for national wildlife refuges: hunting, fishing, photography, wildlife observation, interpretation and environmental education.

🌿 For visitors who paid a fee, whether for entry to the refuge or for a specific service, 83 percent agreed that the fee was appropriate. Indeed, 9 percent of the respondents thought the fee was too low, and another 8 percent voiced concerns about the low level of funding for refuges.

🌿 Those who reported dissatisfaction pointed to the condition and quality of roads as well as the number of parking spaces. These, along with providing visitor services, have been focal points for Refuge System improvements.

"Welcoming and orienting visitors to wildlife refuges is a priority for us and we are working very hard to bring people closer to the outdoors," said Mr. Hartwig.

Survey results are based on responses from 2,456 visitors in fall 2004, during the peak migration of waterfowl and songbirds. Survey sites represented a cross-section of refuges, based on number of visitors and staff, physical size, and geographic location.

Part of a Department-wide performance measurement program, the survey covered more than 30 questions on topics ranging from customer service and facility conditions to the quality of specific recreation programs. ♦





The Mid-Coast Chapter of the Texas Master Naturalists provided trail cleanup at Aransas NWR after Hurricane Claudette. (Mid-Coast Chapter of Texas Master Naturalists)

National Master Naturalist Initiative Joins the Refuge System

Dr. Anna Toness, coordinator of the National Master Naturalist Initiative, is working with the National Wildlife Refuge System for the next 18 months as the first step in a joint venture with Texas and 15 other states. The Master Naturalist program provides in-depth, science-based

training to help volunteers promote awareness of natural resources and citizen stewardship.

Unlike many others, the master naturalist program certifies volunteers only after they complete 40 hours of basic training, eight hours of advanced training and 40 hours of volunteer service. The national master naturalist's training is in a class all its own. Experts from nearby universities, state agencies and other local partners present unbiased, science-based ecological management concepts and applications. A strong, hands-on field component is included.

People so value the training that they are willing to pay a nominal fee and donate volunteer service when they finish. Master naturalists can only maintain certification by completing 40 hours of service each year and at least eight hours of advanced classes in their area of interest.

Established in 1998, the Texas Master Naturalist Program has trained and certified 3,100 volunteers, who have given 315,000 hours of community service, valued at more than \$5 million. They have reached 475,000 people, enhanced 30,000 acres of native habitat, developed and enhanced 380 miles of interpretive trails and formed 260 local partnerships. Several Texas chapters have worked on refuges:

- At Aransas NWR, the master naturalists lead weekend van tours from January through March; guide group tours; and offer demonstrations during such special occasions as Refuge Day. Two volunteers patrol 25 miles of beach in May and June to locate Kemp's Riddley sea turtle nests. Recently, the naturalists helped build an observation platform, the only public access to the Tatton unit, a prairie environment.
- On San Bernard NWR, the master naturalists staffed the children's environmental education booths during the Migration Celebration, and participated in the Christmas Bird Count. They also conduct Big Tree tours, bird banding, butterfly counts and plant surveys. At the Hudson Woods Unit, they help combat non-native tallow, among other projects.
- Together with the Friends of Brazoria NWR, the Cradle of Texas Master Naturalists received a \$50,000 grant to stock an educational center. Over the years, master naturalists have helped the Friends group with the Christmas bird counts, and Family Day and youth education activities, which touch about 2,500 youngsters annually.
- On Balcones Canyonlands NWR, master naturalists help with education and outreach during National Wildlife Refuge Week in October and the Songbird Festival in the spring. They also assist with trail maintenance, monarch butterfly tagging and the Bridges to Birding program for schoolchildren.
- On Santa Ana and Laguna Atascosa Refuges, the master naturalists plant trees as part of the "Rio Reforestation" project (see related story on page 10). They also volunteer on one of the area's largest wetland restoration projects, creating a channel through Bahia Grande on Laguna Atascosa Refuge.

Master Naturalist Program certifies volunteers only after training and service.



Master naturalists lead nature walks at the Doeskin Ranch Public Use Area of Balcones Canyonlands NWR, TX. The Refuge System is working in a joint venture with the National Master Naturalist Initiative to provide in-depth, science-based training to help volunteers promote awareness of natural resources and citizen stewardship. (USFWS)

In the Beginning

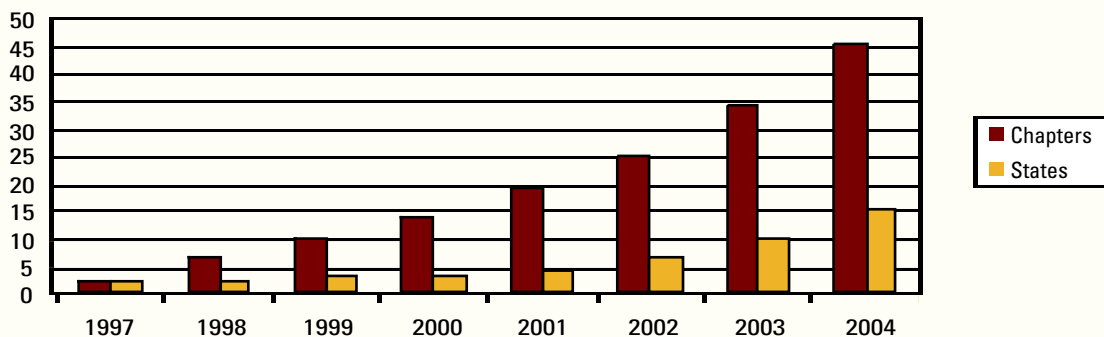
The first master naturalist programs were developed independently by state fish and wildlife agencies, state extension agencies and municipalities to meet the needs of an increasingly urban, diverse constituency and to help connect people to the land. In Texas, Florida and Ft. Collins, CO, the program was created more than five years ago. Others states followed and the National Master Naturalist Initiative was launched in October 2003 with funding from the International Association of Fish and Wildlife Agencies.

Thirty states have received training on how to create and improve volunteer education programs. A steering committee representing 18 states and the Fish and Wildlife Service was formed in 2004, seeking to help support creation of master naturalist-type programs in all 50 states. Ultimately, the National Master Naturalist Initiative will significantly increase the number of well-educated volunteers supporting the Refuge System.

For more information, contact Dr. Anna Toness at Anna_Toness@fws.gov or 703-358-1889. ♦

People so value the training that they are willing to pay a nominal fee.

Master Naturalist Programs Over Time





The Refuge System's land managers have "unplowed" prairies, "undrained" wetlands and "uncut" woodlands as they work toward restoration and habitat management. (Robert Owens/USFWS)

Refuges and Land Management: Victory Behind, Challenges Ahead

By Bob Adamcik

"Must spin gold from straw!" I'm surprised we don't require that when recruiting refuge managers, biologists and field technicians to the Refuge System. Across the breadth of the U.S. and its territories, the National Wildlife Refuge System's inventive and dedicated staff have spun golden, productive habitats from the chaff of abused and overworked lands. It's a role they have reprised often and widely: amid Dust Bowl farmlands of the Midwest; among remnant wetlands in California's Central Valley; in the fragmented Tamaulipan brush country of the Rio Grande.

Thanks to the breadth of problems resolved over the last century, refuge land managers today are among the most respected in the world. In many cases they have worked straight from Aldo Leopold's casebook, turning the ax and the plow – often the very tools of the land's degradation – into implements of restoration. In others, they were pioneers, working with states, universities, private organizations and U.S. Geological Survey's Cooperative Wildlife Research Units to develop new techniques or modernize old ones.

In the process, they have restored prairie flowers to Midwestern farmlands, returned green riparian woodlands to the arid Southwest, and coaxed reticent beach nesters to newly formed sandbars on the Gulf Coast. They have shaded Northwestern salmon streams with new vegetation and reopened to the sea long-

Revegetation Program Brings Natives Back

Tamaulipan Scrubland Restoration Erases Farming's Imprint Effectiveness

By Chris Best

Imagine a place where chachalacas, green jays and red-crowned parrots invade suburban landscapes, where ocelots, jaguarundis and javelinas still thrive in remnant patches of subtropical forest and shrubland.

There, ancient trees with gnarled trunks, such as Texas ebony, *brasil* and *anacua*, emerge from impenetrable thickets of spiny shrubs with names like *ojo de vibora*, *guayacán*, *guajillo* and *colima*. A great river dividing two nations flows through a broad delta, where 3 million people live and work. The largest part of the river's flow is siphoned into a vast sys-

tem of irrigated farmland, but its last drops still seep into an expanse of coastal estuaries and the Gulf of Mexico.

This is the ecosystem of the Rio Grande Delta of southernmost Texas and northeast Tamaulipas, Mexico, where the subtropical climate and a range of habitats – from the humid coast to the semi-arid interior – support one of North America's most biologically diverse regions. Despite the destruction of most of the native vegetation, 500 species of birds, 302 butterfly species and 1,200 plant species still live in this 4,296-square-mile area in Texas' Cameron, Willacy, Hidalgo and Starr counties.

closed salt marshes in the Northeast. By expanding the concept of habitat management, they have freed islands in the Aleutians from the scourge of foxes, turned taro farms into bird habitat in Hawaii, and limited recreational use of sea turtle nesting beaches in the Caribbean.

So, it is with justifiable pride that this issue of *Refuge Update* presents the land managers' stories, tales of how they have "unplowed" prairies, "undrained" wetlands and "uncut" woodlands.

Tomorrow's Issues

Still, we cannot rest on our laurels. Tomorrow's issues are surfacing in the form of rapidly disappearing aquifers, a juggernaut of invasive species, global climate change and encroaching economic development. Competition for the land base is intensifying, critical keystone species such as pollinators are declining, and the legal environment in which we work is ever more complex.

The challenges are daunting. We must learn to compromise, yet recognize its limits. We must reconcile management ideals

with statutory responsibilities towards planning, the integrity of ecological systems, marine resources, and special designation areas like wilderness. As model land managers, we must not only adapt to these constraints, but embrace them by seeking responsible answers to new and difficult questions: How do we rehabilitate wilderness habitats with the least possible impact on their character? What constitutes the most "natural" restoration target? Can we restore a coral reef?

Fortunately, new tools are emerging. The Refuge System's *Policy on Biological Integrity, Diversity, and Environmental Health* (601 FW 3) helps guide managers faced with difficult management choices. Comprehensive conservation planning provides a structured environment in which to explore broad management directions. A new habitat management policy facilitates final decision-making. Innovative online training is accelerating that policy's implementation and promoting the completion of habitat management plans.

A new planning guide, *Writing Refuge Management Goals and Objectives: A*

Handbook, is available. Several regions are implementing systematic wildlife and habitat management reviews on field stations. Expanding geospatial and electronic capabilities are facilitating new data handling tools such as the Refuge System Lands Geodatabase and the Refuge Management Actions Database. And finally, Land Management Research and Demonstration Areas now exist as vanguards of new technology and practices.

We must embrace new challenges by melding the energy and enthusiasm of a new generation of managers with the knowledge and background of those now on staff. Coming into the Refuge System today are some of the most educated and best prepared land managers ever known. They will find difficult challenges, but also the breathtaking experience and dedication of those who have gone before them. Victory lies in joining the two.

Bob Adamcik is a wildlife biologist in the Branch of Wildlife Resources in the Refuge System Headquarters.

Lower Rio Grande Valley NWR, founded in 1979 to protect remaining habitat in the Rio Grande Delta and surrounding region, sought to restore native vegetation on retired cropland in order to create wildlife corridors and alleviate habitat fragmentation. The lower Rio Grande corridor would then link Santa Ana and Laguna Atascosa NWRs with some 6,000 acres of Las Palomas Wildlife Management Area, managed by Texas Parks and Wildlife Department, as well as protected reserves managed by the National Audubon Society, The Nature Conservancy and numerous private landowners. Lower Rio Grande Valley Refuge now consists of 89,900 acres on 113 tracts. Eventually, it will cover 132,500 acres.



Patty Alexander, a public outreach specialist at Lower Rio Grand Valley NWR (left), and Karen Fedor, formerly with American Forests, look at a Vasey's Adelia, planted as part of the refuge's program to return retired cropland to native vegetation to create wildlife corridors and alleviate habitat fragmentation. (Chris Best/USFWS)

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Fourteen refuges are taking a landscape level approach to developing habitat management plans (USFWS)

Sharing Resources, Expertise to Develop Habitat Management Plans

By Janith Taylor

Identifying habitat management priorities for a refuge is no easy task. Properly addressing the dizzying array of conservation plans, guidance and policies that apply can be overwhelming, even for the most seasoned refuge manager.

The Northeast Region is addressing this challenge by sharing the task across a group of 14 refuges. Together, these refuges are taking a landscape-level approach to address the Fish and Wildlife Service's priorities and habitat objectives on an eco-regional scale. That means integrating continental, national, regional and local conservation objectives into jointly developed habitat management plans (HMPs). Combining the effort allows the 14 refuges to share expertise and make more efficient use of input from other Service programs, ultimately allowing all 14 refuges to develop HMPs in less than two years.

Riparian Restoration Assures Place for Rare Species

By Kim Forrest

The San Joaquin River NWR – working with River Partners, California's premier riparian restoration organization – has nearly completed restoration of 800 acres of floodplain riparian woodland. Begun in 2002, the restoration will provide critical habitat for such federally- and state-listed species as the highly endangered riparian brush rabbit, threatened valley elderberry longhorn beetle, threatened San Joaquin woodrat, yellow-billed cuckoo, Swainson's

hawk, chinook salmon, steelhead and Sacramento splittail.

Minor native grass/forbs understory restoration and maintenance will be completed this spring, when work is expected to begin on restoration of an additional 500 acres.

Located along the San Joaquin River, the refuge lies in an area of intensive agricultural development that left only 5 percent of the historic riparian habitat intact. The

The process for stepping down objectives from multiple conservation plans into meaningful HMPs for individual refuges is outlined in the Promises WH1-3 Team's final report – *A Process for Integrating Wildlife Population, Biodiversity, and Habitat Goals and Objectives on the National Wildlife Refuge System: Coordinating with Partners at all Landscape Scales*. However, as we undertook the process, we relied heavily on the Joint Venture Program (JVP) for information and examples.

The JVPs, although originally established as implementation units of the North American Waterfowl Management Plan, are now heavily involved in all bird conservation efforts. As such, they have substantial experience in organizing numerous overlapping conservation plans and stepping them down into meaningful habitat and population objectives for a particular piece of ground. The Northeast Region worked with individuals from the Atlantic Coast JVP as it embodied all 14 refuges in this project.

We started with a series of meetings and workshops that brought together refuge biologists, managers, project leaders and staff from other Service programs to develop the overarching parts of the HMPs. Thereafter, staff from individual

refuge was established in 1987, primarily to benefit endangered species and migratory birds.

More than 200,000 native riparian woody plants – about 250 plants per acre – were planted on former agricultural fields during the restoration. A variety of woody plants were used, including valley oak, elderberry, Fremont cottonwood, blackberry, box elder, buttonbush, rose, coyote brush, mule fat, Oregon ash, and three species of willows. The planting design will enhance habitats for targeted wildlife species, including neotropical migrant songbirds, the endangered riparian brush

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HMP Project Wildlife Refuges

The 14 national wildlife refuges involved in the jointly developed habitat management plans are:

- 🌿 Aroostook Refuge
- 🌿 Eastern Massachusetts NWR Complex: Massasoit, Mashpee, Nomans Island, Monomoy, Great Meadows and Oxbow
- 🌿 Great Bay Refuge
- 🌿 Lake Umbagog Refuge
- 🌿 Moosehorn Refuge
- 🌿 Nulhegan Refuge, unit of Conte NFWR
- 🌿 Parker River Refuge
- 🌿 Petit Manan Refuge
- 🌿 Pondicherry Refuge, unit of Silvio P. Conte NFWR
- 🌿 Rachel Carson Refuge
- 🌿 Sunkhaze Meadows Refuge

refuges took the lead in refining the content of their individual draft HMPs. They developed step-down management strategies and provided other refuge-specific information to a writer-editor contracted for the overall project.

Working as a team, the Northeast Region reduced individual station workload; shared expertise and ideas across refuges; lowered the costs of producing vegetation maps and compiling GIS data; and overall improved the quality, consistency and speed at which HMPs are developed. This

process also provided an important opportunity to clarify the Service's habitat management priorities and objectives prior to discussing them with partners in order to assure that we are all on the same page.

The Northeast Region will certainly do more multi-refuge HMPs in the future. ♦

Janith Taylor is the Northeast Region's refuge biologist

More than 200,000 native riparian woody plants were planted on former agricultural fields as San Joaquin River NWR. (USFWS)



FOCUS...*On Habitat Management*

Reducing Fire Risk To Benefit Wildlife

By Jenny Niemeyer

Each year, Fish and Wildlife Service fire personnel put a torch to about 300,000 acres of Service-owned land, sometimes bringing invasive weeds under control, or sometimes thinning thick brush or timber and burning away the undergrowth left from years of suppressing fire on public lands. While the main purpose of prescribed burns in recent years has been to reduce fire risk, the work also helps wildlife habitat flourish.

If fire managers had their way, twice as much would burn in 2005 to get and keep lands in Fire Condition Class 1, the best condition and at low risk of losing key ecosystem components. Right now, only about 70 percent of Service lands are in that condition.

Although additional burning would cost about \$20 million more each year, the investment would reduce the risk of catastrophic wildfire and subsequently cut the cost of fire suppression and emergency rehabilitation and restoration.

The fire program has worked since the 1930s to restore ecosystems while

An Eastern Massasauga rattlesnake suns itself after emerging from hibernation on Squaw Creek NWR, MO, where a prescribed fire was held during late winter 2004. (USFWS)



Riparian Restoration—*from pg 13*

rabbit and the threatened valley elderberry longhorn beetle.

Nearly 28,000 elderberry shrubs have been planted, offering habitat for the valley elderberry longhorn beetle, which depends on this shrub for every phase of its life cycle. In addition, River Partners is planting 10 native herbaceous understory species to prevent invasion by aggressive, non-native weedy species. The Fish and Wildlife Service is also restoring adjoining seasonal and permanent wetlands, expanding the habitat benefits to waterfowl and shorebirds.

Finally, the site is the only one of 600 non-

structural flood protection demonstration projects in California still being considered by the U.S. Army Corps of Engineers. After the devastating 1997 floods, the Corps proposed such nonstructural projects to remove levees in order to reconnect the San Joaquin River to its historic floodplain and reduce flood damages.

At the same time, the Endangered Species Recovery Program, part of California State University/Stanislaus, is captive-rearing and reintroducing riparian brush rabbits on the refuge and monitoring their success. So far, 300 animals have been reintroduced, the largest of the three known populations of the world. After the 1997 floods, some consideration was

protecting both people and wildlife. In its staffing and budget, the program is the smallest among federal land management agencies, yet it manages the most land units and has traditionally led the Department of the Interior in the number of acres treated annually by using prescribed fire. Generally, the Service can conduct fuels treatments at the lowest cost of any agency.

Most beneficial fires are set by fire experts, while others start as lightning strikes and are monitored and controlled to achieve habitat objectives that needed to be reached anyway. Either way, fire combined with elbow grease, collaboration and time bring dramatic changes to the land. Fire is remarkable in its ability to restore habitat and wildlife.

Benefits Are Visible

The staff at Cibola NWR, AZ, recognized that a wildfire in 2002 was an opportunity to control invasive salt cedar trees. After the 400-acre burn subsided, the refuge worked with Ducks Unlimited to restore native cottonwood and willow. After only a few growing seasons, the native species – much less fire prone – will provide better habitat for migrating waterfowl, a boon to hunters and outdoor enthusiasts. Moreover, the town of Cibola, threatened

by wildfires in years past, has welcomed the replanting project, which is still ongoing.

Other examples can be found across the country:

- In 2003, fire managers at Nevada's Pahranaagat NWR in 2003, burned cattails and bullrush that were choking this rare desert marsh. The fire removed the invasive weeds and opened the land for a variety of migratory waterfowl. The refuge hosts more than 200 species of birds.
- Fire managers did something similar in the mixed prairie-grass setting of Kirwin NWR, KS. There, fire experts timed their controlled burns to promote warm season grasses and remove non-native trees and weeds. They now are reseeding with native grasses and wildflowers, and have opened up habitat for such declining bird such as bell's vireos and grasshopper sparrows.

While it may seem counterintuitive that fire and endangered species could co-exist, a 455-acre prescribed fire to reduce fire risk in 2003 at Willamette Valley NWRC, OR, also restored native prairie to its his-

toric condition and enhanced habitat for federally listed species, including the Fender's blue butterfly, Kincaid's lupine, Bradshaw's desert parsley, Willamette daisy, and Nelson's checkermallow. After the fire, the Fender's blue butterfly reached its highest population level in 10 years. Biologists credited both good weather and habitat restoration for the boom.

Similarly, at San Andres NWR, NM, a landscape-scale prescribed burn took five days to complete in May 2003, with help from a half-dozen wildlife refuges and several federal agencies. The project reduced flammable vegetation on about 16,000 acres, creating the open lands preferred by endangered desert bighorn sheep.

There is no way to duplicate fire's ecological benefits. Moreover, as people live closer than ever to wild areas, the Service has an obligation to professionally monitor fire as a natural phenomenon and to help the public understand that it is an essential tool to protect communities and sustain wildlife habitat. ♦

Jenny Niemeyer is a public affairs specialist for External Affairs in the Pacific Regions, working on detail to the Fire Management Branch.

given to declaring the species extinct.

Beside the USFWS and River Partners, the nonprofit Point Reyes Bird Observatory/Conservation Science is helping the restoration project by monitoring birds on the refuge. The monitoring will help measure the restoration's success and guide future plantings.

Educational Opportunities

The riparian restoration is also bringing educational opportunities to the community. For example, the refuge is now applying for an Environmental Protection Agency grant to create an environmental education program for the local high school with the Center for Land-Based

Learning's "Student and Landowner Education and Watershed Stewardship Program." Under the program, students come to the refuge on field days to learn various aspects of ecology that complement and enhance classroom lessons. Topics will range from site mapping; wildlife and vegetation monitoring; botany; plant, animal and bird identification; to terrestrial and aquatic ecology and invasive species ecology.

Using the Comprehensive Conservation Plan, the refuge is evaluating public use opportunities after restoration is complete. Although the refuge hopes to offer all the wildlife-dependent recreation opportunities identified in the National

Wildlife Refuge System Improvement Act, the largest use within the riparian areas most likely will be walking trails for wildlife viewing, interpretation, environmental education and photography. ♦

Kim Forrest is refuge manager of the San Luis NWR Complex, CA.

FOCUS...*On Habitat Management*

Habitat Management Plan Is Culmination of Data, Best Strategic Thinking

By Bridget Olson

Bear River Migratory Bird Refuge staff in April 2004 completed the “Bear River Migratory Bird Refuge Habitat Management Plan.” The Bear River Habitat Management Plan (HMP) is the first such approved document written in accordance with new refuge policy that provides guidelines on how to derive habitat goals, objectives and management strategies that reflect a refuge’s role in the larger landscape while achieving an individual refuge’s specific purposes.

Habitat management planning is a step-by-step process. Ecological data at the broad ecosystem level are “stepped down” to the local level of the refuge. Refuge habitats are described in the context of the surrounding landscape as well as the associated biotic and abiotic forces that drive ecosystem processes. These factors can include geographic setting, topography, climate, watershed, hydrology, soils and broad vegetative characteristics. Understanding how these factors influence refuge habitats is the foundation for sound habitat management decisions.

Habitat management planning is also a focused process to evaluate the most appropriate management direction or best use of refuge lands. For Bear River Refuge, that meant considering the refuge’s role in addressing conservation issues in the Intermountain West, Great Basin and Great Salt Lake ecosystems.

Quality management of natural resources means knowing the species and habitats most in need of conservation efforts. Therefore, one of the most important steps is identification of refuge resources of concern – those species, groups or communities upon which to focus management.

History Plays a Role

Established in 1928 in response to loss of Bear River Delta wetland habitat and waterfowl population declines due to over-harvesting by market hunters and avian botulism, Bear River Refuge is critical habitat for migrating and breeding waterfowl and shorebirds. In 1964, a record 79,000 ducklings were produced at Bear River Refuge. In 1982, the refuge, as part of the Great Salt Lake, hosted the world’s largest breeding colony of white-faced ibis.

But in 1983, after a couple years of record precipitation, the Great Salt Lake began to rise, eventually overtaking refuge dikes, contaminating fresh water habitats and rendering the refuge inoperable. By 1990, the Great Salt Lake receded.

Refuge employees, aided by volunteers, undertook the Herculean work of restoring the refuge.

Today, Bear River Refuge, through its habitat management plan, is seeking to manipulate habitats to maximize use by such resources of concern as American avocet, cinnamon teal, white-faced ibis and marbled godwit while also recovering from the affects of the flooding in the

Established in 1928 in response to loss of Bear River Delta wetland habitat and waterfowl population declines, Bear River Migratory Bird Refuge, UT, is critical habitat for migrating and breeding waterfowl and shorebirds. Its Habitat Management Plan takes into account the refuge’s role in addressing conservation issues in the Intermountain West, Great Basin, and Great Salt Lake ecosystems.



1980s and the drought conditions that began in 1997.

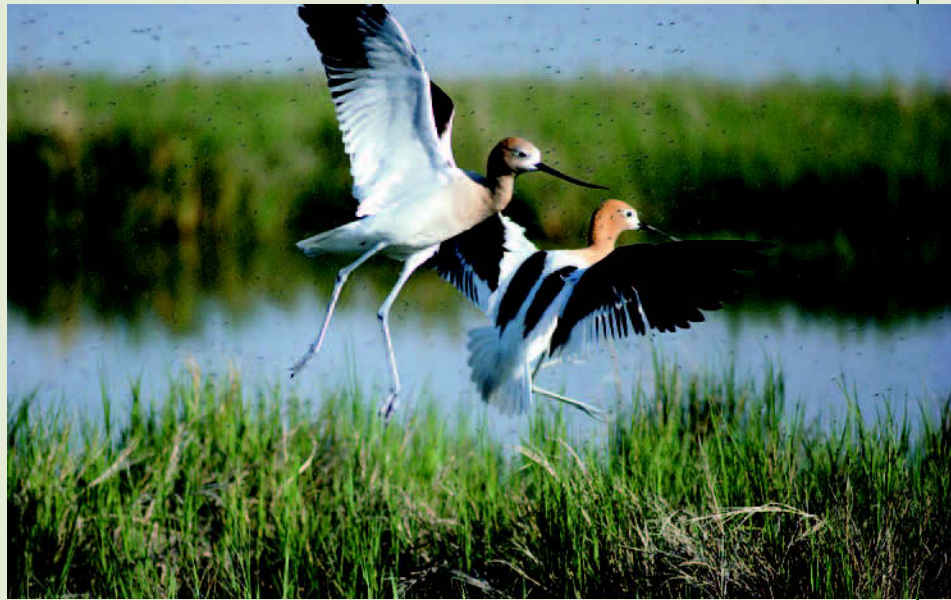
To identify resources of concern, Bear River Refuge staff assembled landscape-scale bird conservation plans, such as the U.S. Shorebird and Waterbird Conservation Plans, the Partners in Flight Plan, and the N.A. Waterfowl Management Plan, stepped down to Intermountain West regional plans, then to the Great Salt Lake basin and finally to the refuge. In this final step, we considered the historic, current, and potential ability of the refuge to contribute toward the conservation of species and/or species habitat. Species were flagged as refuge priority when the refuge played an obvious role in population and habitat objectives as outlined in one or more bird conservation plans.

The planning process began more than a decade ago when refuge staff drafted the Long Range Water Management Plan. The revitalized HMP has taken about 18 months, including peer review by all Service regional biologists that is not mandated for every HMP.

Managing by the Plan

The HMP provides consistency in long-term management, while the Annual HMP sets a course of action at the beginning of each season. Refuge staff derived habitat objectives by linking the ecological and physical aspects of refuge lands with priority species habitat requirements. The objectives concisely state the habitat conditions needed for the resources of concern.

Finally, refuge staff used ecological data, scientific literature, expert opinion, key historical refuge data, and staff expertise to generate a list of potential management strategies for each habitat type. The most appropriate management strategy is selected each spring during the annual habitat management planning process. The selection is based on the effects of management actions on the habitat and species of concern from the previous year as well as predicted water supply from the Bear River.



Bear River Migratory Bird Refuge is using its habitat management plan to maximize use by resources of concern. (USFWS)

The process becomes evident on the ground. To manage wetlands, for example, the refuge will work to maintain salinity levels and water clarity to influence the aquatic vegetation community composition. The work is complex as refuge staff implements three primary water management strategies to manage soil salinity.

The planning process has helped refuge staff understand the refuge's vital role in the conservation of several bird species not only within the region, but also nationally. As a result, each spring, the staff evaluates water forecasts from the National Oceanic and Atmospheric Administration to keep the limited water at target levels only in units that support the highest ranked species.

The Bear River Migratory Bird Refuge Habitat Management Plan has brought home the importance of managing the refuge as a functioning wetland system in light of the paucity of freshwater wetlands in the Great Basin and the Great Salt Lake ecosystem. The HMP describes a wetland network of braided river chan-

nels, deep pockets of open marsh, and shallow waters hosting an assortment of vegetation. In the final analysis, the HMP articulates how to manipulate wetland habitats to mimic, as closely as possible, the historic and natural hydrologic processes of the Bear River delta where a plethora of bird species may flourish. ♦

Bridget Olson is the Bear River Migratory Bird Refuge wildlife biologist.

FOCUS...*On Habitat Management*

Roosevelt's Restored Mississippi Forests



In the early 20th century, the Mississippi River was a defining force on the landscape. Historic and ongoing floods had caused the river to cut new channels, creating today's oxbow lakes. The river's movements sculpted diverse microhabitats of ridge-and-swale complexes and deposited thick layers of rich soil. Flooding limited settlement, and the forests grew freely.

A century later, the river no longer meanders freely, and agriculture forms the backbone of the Delta region's economy. Yet, although the forests of Roosevelt's era are gone, the restoration started in 1968 has already sprouted results.

For the past 36 years, Mississippi's Roosevelt Refuge Complex has spearheaded intensive reforestation work on refuge lands that grew corn, rice and soybeans 20 years ago. Trees flourish today. Nearly 20,000 acres of the complex's 90,000 acres have been replanted. Plans to reforest an additional 3,000 acres within the next five years are underway. The work will continue as additional lands are acquired. The complex manages these growing forests to accelerate the development of forest structure, enhancing shrubs, vines and herbs to benefit such wildlife as the threatened Louisiana black bear, endangered pondberry and forest-dependent breeding birds.

By Raye Nilius

When Theodore Roosevelt hunted black bear in Mississippi in 1902, he noticed the unique and majestic quality of the forests. He later wrote, *"Beyond the end of cultivation towers the great forest. Wherever the water stands in pools, and by the edges of the lakes and bayous, the giant cypress loom aloft, rivaled in size by some of the red gums and white oaks. In stature, in towering majesty, they are unsurpassed by any trees of our eastern forests."*

Fulfilling the Promise on Habitat Management

By Larry Williams

One of the most complex challenges individual refuges face is selecting habitat management objectives. Rather than operating from the historic mantra to "do what's best for the birds" when "birds"

always meant "waterfowl," refuge managers today must consider habitat needs of a broader suite of birds and other wildlife.

The fact that selecting habitat objectives can be so challenging is no doubt why it figured so prominently in *Fulfilling the Promise*, a guiding document of the

Reforestation has been an evolving science. In the early years, the refuge often planted just one or two species of trees. Later, a mixture of oaks, sweet pecan, persimmon, green ash and cypress were planted across the landscape. Wind, floods and proximity to other species can also diversify the composition. For a time, three refuge staff worked 10 hours daily for seven to eight months planting acorns or seedlings. To maintain a diversity of tree ages and forest structure, reforestation has slowed, and only small acreages are being planted each year.

Regrettably, replacing agricultural crops with trees can't exactly duplicate the mixed species forest of the early 20th century. Refuge staff recognized that reforested areas require management over time to produce the preferred habitat. A second-generation forest will more closely resemble the forests of Roosevelt's time.

The Panther Swamp Refuge contains one of the largest blocks of interior forest in the refuge complex. Similar in structure and species composition to the forests that once supported millions of songbirds, it is a rare forest ecosystem in the agriculturally rich Delta. Here, silvicultural techniques are used to produce the needed habitat, allowing many of the older trees to remain throughout the upper limits of the forest canopy for the Cerulean warbler. Group selection, or patchcuts, promote a dense understory for the Swainson's warbler.

The refuge's proximity to Delta National Forest yields a precious opportunity to link the refuge's forest with the national forest to benefit interior forest-dependent birds and provide a future home for threatened Louisiana black bear. As reforestation efforts continue in the lower Mississippi alluvial valley, large tracts of forest can be joined together, providing the necessary landbase for all species of Delta wildlife.

Trial and Error

How do we manage these plantations to produce the best habitat for the greatest number of species? What must we do to provide specialized habitat for targeted species? So far, trial and error and basic forest management have produced better structure and more vegetation in the forest's understory, a forest that more closely resembles the one Roosevelt admired in 1902. Because the refuge contains some of the oldest reforested sites in the Delta, they provide an optimal location for scientists to study bottomland hardwood forests as they grow from seedling to closed canopy.

Current research on older plantations focuses on the amount of carbon that is sequestered, both above- and below-ground, and on reforestation techniques. One study involves a cottonwood nurse crop planted on 12-foot by 12-foot spacings that are then interplanted with Nuttall oaks three years following initial planting. After two 10-year rotations of cottonwood are removed, a 17-year-old oak stand

remains with additional natural invader tree species. Future studies will look at various harvesting practices and monitor how changes affect wildlife species.

Although the reforestation work since 1968 has allowed refuge staff to expand their knowledge, additional research is needed to help answer critical habitat management questions and refine refuge management plans. Research conducted on tree plantations on refuge lands will contribute to the body of knowledge needed to manage restored forests for wildlife. The results will also be useful to other Service programs for their habitat restoration decisions, and to USDA's Natural Resources Conservation Service for their work with reforestation under the Wetland Reserve Program. For now, Roosevelt Refuge's forester collaborates regularly with researchers on a number of studies, and the refuge staff continues to fine-tune forest management plans, manipulate habitat and observe the growing number of species enjoying Roosevelt Refuge's restored forests. ♦

Raye Nilius is deputy project leader of the Theodore Roosevelt National Wildlife Refuge Complex, MS.

Refuge System. Indeed, the first three recommendations are about habitat objectives.

The Promises WH 1-3 Team, commonly known as the "Habitat Goals Team," has developed a process for individual refuges to sort through all the different mandates, conservation plans and resource limitations, and emerge with realistic

habitat management objectives that best serve the needs of wildlife. This year, each region will select one eco-region to pilot the "Habitat Goals Process."

As the process is refined, it will be expanded to other parts of the region. The team hopes that every national wildlife refuge eventually will contribute

its best to national, regional, and local conservation efforts, and that the staff of each refuge will be able to articulate exactly why the refuge selected its habitat objectives. ♦

Larry Williams is the national Promises coordinator for the National Wildlife Refuge System.

FOCUS...*On Habitat Management*

And Then the Rains Came

Restoring Variable Water Levels Key to System Recovery

By Stephen D. Earsom

Most refuge managers would be thrilled to see a 50 percent to 100 percent increase in one year in the number of waterfowl wintering at their wetland. Well, how about an order-of-magnitude increase?

“In January 2004, we saw a 14-fold jump in the number of waterfowl from the previous winter,” said Caribbean Islands NWR Complex Project Leader Susan

Silander, referring to the 400-acre Laguna Cartagena wetland in southwestern Puerto Rico. “With some good management and luck, we think we could see another order-of-magnitude increase in waterfowl and even greater gains in shorebird use.”

Early in the 20th century, this subtropical, depressional wetland was considered one

of Puerto Rico’s most important freshwater habitats for native and migratory birds. More than 100,000 shorebirds were seen during fall migration, and nearly 20,000 ducks dabbled in the shallow waters. A mosaic of rushes, sedges and grasses ringing the central open area provided habitat for green heron, yellow-breasted crane and many other secretive marshbirds. But the forested lands fringing the wetland were useful for more than just wildlife.

In the 1950s, sugarcane was king in Puerto Rico, and nearly the entire 7,500-acre watershed that drains into Laguna Cartagena had been converted to agriculture. An irrigation canal system was constructed to provide water to drier areas, and drainage canals carried away excess water and fertilizer. The central drainage canal was plumbed into the wetland, resulting in higher and more stable water levels. In less than 20 years, the combination of extra water, a high nutrient load and a long growing season allowed cattail to cover more than 95 percent of the wetland. Bird use plummeted, as did the system’s ecological function.



A two-year drought, coupled with an improved water removal system and a late summer fire, removed much of the standing cattail from the 400-acre Laguna Cartagena wetland in southwestern Puerto Rico. As a result, for the first time in more than 30 years, waterfowl, shorebirds and marshbirds had some semblance of a habitat mosaic. (Stephen Earsom/USFWS)

Since 1994, 9,550 volunteers have planted nearly 132,000 tree seedlings on 552 acres on Lower Rio Grande Valley NWR, TX, cropland as part of the refuge’s revegetation program, which gives native plants a solid head start in the ecological race. (Chris Best/USFWS)



Revegetation Program—*from pg 11*

Initially, scientists envisioned that the native forest would spontaneously regrow on abandoned cropland. Instead, introduced grasses invaded the old fields and suppressed the natural regeneration of native plants. These monocultures of non-native grass were prone to wildfires that killed trees and shrubs and endangered local communities.

Therefore, the refuge established a revegetation program in 1982 to give native trees and shrubs a head start in a great ecological race to colonize the disturbed soil of old fields. A Cooperative Farming program was also established to keep the

The Fish and Wildlife Service acquired the degraded wetland in 1989. A local stakeholder group was formed to consider how to reduce flooding in an adjacent community. Water quality studies showed that nutrient levels had decreased as the sugarcane industry moved off the island. However, a significant amount of the nutrient load had been assimilated into a floating mat of cattail – a meter thick in some places. Unfortunately, a single treatment of herbicide followed by a prescribed fire would only unlock the nutrients and stimulate new growth.

To Restore Natural Variability

Because restoration of variable water levels was a major part of the solution, a water control structure was installed in 1994. But debate continued regarding the “when, how much, and why” of water level management. Therefore, refuge staff analyzed 50 years of precipitation data and developed a water balance for the wetland.

Although Puerto Rico generally has a rainy season from August through December, with another few wet weeks in April or May, variability is substantial. Preliminary results of the water balance showed that, had there been no anthropogenic changes to the watershed, Laguna

Cartagena could have been overflowing or completely dry in any month of the year. Further, the wetland might have dried out as many as a dozen times in the 50 years analyzed. Thus, the key to a healthy Laguna Cartagena was in the variability.

With these data in hand, refuge staff worked with stakeholders to develop a range of alternatives to achieve three goals. First, the ability to control water levels had to be improved to facilitate habitat management. Second, flooding to the neighboring community could not be increased and, hopefully, could be lessened. Finally, the plan had to have a reasonable chance of being fully funded within five years. After many meetings and much spirited debate, five alternatives were posed and weighed in an Environmental Assessment. The public comment period ended March 4.

In the meantime, several events conspired to achieve a dramatic change in the wetland. A two-year drought, coupled with an improved water removal system and a late summer fire, removed much of the standing cattail. Heavy rains soon followed. For the first time in more than 30 years, waterfowl, shorebirds and marshbirds had some semblance of a habitat mosaic. The number of migratory water-

fowl skyrocketed from a handful the previous winter to more than 1,400 for several weeks in 2004. Ironically, nature had shown that the Service’s partially implemented restoration plan could work.

Laguna Cartagena Refuge Manager Joseph Schwagerl recognizes he is fighting a long-term battle. “Water levels must be managed throughout the year to improve nutrient cycling and encourage aerobic decomposition of the anthropogenic peat layer. Spring drawdown also helps dry the standing crop and rhizomes to facilitate late summer prescribed burns.”

Schwagerl notes this approach will eventually return the cattail to a useful component of the habitat mosaic needed by the many species of endemic, native and migratory birds and other wildlife, while keeping management costs low and minimizing flooding to the refuge’s neighbors. “Our stakeholders have been an integral component of our progress, and keeping them involved will be critical to achieving all our long-term objectives,” concluded Schwagerl. ♦

Stephen D. Earsom is the Southeast Region’s refuge ecologist.

refuge’s farmland free of weeds until it could be replanted.

Today, more than 70 species of native trees, shrubs and cacti have been restored on more than 10,000 acres of cropland. The species selection for each planting site is modeled on the existing native vegetation of similar, undisturbed sites. Future land acquisition for the refuge is expected to add about 30,000 farmland acres, which will be revegetated over the next half-century.

With 22 years of experience, the revegetation program has evolved. A Cooperative Agreement established in 1998 with the nonprofit Valley Nature Center has provided the refuge with 570,000 seedlings of native trees and shrubs. Since 1997, an

additional 310,000 seedlings have been donated through grants from the American Forests Global ReLeaf Program. The refuge also grows up to 85,000 seedlings each year in its native plant nursery. Over the last five years, an average of 196,000 seedlings have been planted on 753 acres annually.

Every fall since 1994, the refuge has held a tree-planting day called “Rio Reforestation,” attended by volunteers from schools, scouting organizations and the general public. The Valley Proud Environmental Council; Sabal Palm Audubon Center and Sanctuary; the Friends of the Wildlife Corridor; the City of Brownsville; the municipality of Miguel Alemán, Tamaulipas (México); Valley

Nature Center and numerous school districts have been partners. By 2004, 9,550 volunteers had planted 131,942 tree seedlings on 552 acres of refuge cropland at “Rio Reforestation” events.

As the native plants of revegetated farmland gradually mature, wildlife corridors are forming to connect isolated habitat fragments. White-tailed deer, javelinas, bobcats, white-winged doves, migrating flocks of warblers, butterflies, beetles and other wildlife have returned to many places, tangible evidence of successful habitat restoration. ♦

Chris Best is the plant ecologist at Lower Rio Grande NWR, TX.

Making Connections

Vieques NWR Works to be a Good Neighbor



By Gisella Burgos

When Vieques NWR was established in 2001 on about 18,000 acres of the Puerto Rican island, the Refuge System stepped into a future of complex issues, including a legacy of munitions contamination and discontented residents who feared for the future of their island.

Four years later, the Refuge System is beginning to become part of a culture

distinctly different from that on the mainland, and residents are starting to take in the refuge's natural beauty. The story of how refuge staff reached out to the community is an instructive one.

From World War II until May 2003, when the U.S. Navy fully left the island and transferred 14,573 acres of land to the Fish and Wildlife Service, two-

thirds of the 21-mile by six-mile Vieques Island had been a munitions depot and bombing range. The island had also been the site of many acts of civil disobedience as residents fought to end Naval operations. The Navy had transferred roughly 3,100 acres from the island's western end to the Service in 2001 when the refuge was established.

Since the refuge's establishment, the Refuge System has sought to manage fragile lands and become an integrated part of the community. Knowing that the transition of Navy lands into a wildlife refuge would be difficult, the Refuge System has worked to transform challenges into opportunities. Some steps eased the way.

First, a cooperative agreement with Puerto Rico Department of Natural and Environmental Resources and Puerto Rico Conservation Trust was signed to protect the western end of Vieques. The plan was a first step in a collaborative and cooperative working partnership, getting the organizations to manage coral reefs, seagrass beds, mangroves, coastal wetlands and watershed resources.

Secondly, a large portion of the refuge was opened to the public – not to mention sea turtles, pelicans, lizards and about 130 types of birds. Once closed to the public, three beaches - Playa Caracas (Red Beach), Playa La Chiva (Blue Beach) and

The Bull Island Archery Hunt: A 50-Year Quest

Georgetown, SC, resident John Dawson expected the November 2004, hunt on Bull Island on Cape Romain NWR to be among the best in recent years. After all, the year's healthy acorn crop, plenty of rain and lots of yaupon meant the deer were plentiful.

Dawson became interested in archery at age 26, hunting with bow and arrow for the very first time on Bull Island 50 years ago. Now 77, he hunts exclusively with bow and arrow, and always at Bull Island. Anticipating this November's hunt, he reminisced about island hunts long ago.

Years ago, refuge staff used a big landing barge to transport hunters to the island. Everyone put his gear into a service truck on the barge. The hunters then were taken to the campground, where they set

up tents for the week. Every morning before daylight, staff transported hunters to their stands, returning at mid-day and at dark to pick up them and their harvested deer. "Sometimes, I walked three miles to hunt on the south end and stayed all day," Dawson recalled.

Hoyt Mills, former island caretaker, gave him an old hatchet and nails to build a stand. Dawson used driftwood and saplings to build stands in the trees. As people became more environmentally conscious, they used portable tree stands.

Today, Dawson uses a portable stand he calls the "Hilton," a piece of plywood set atop two 2x4 planks between two trees. After scouting the area for trails and food sources, he erects the stand between the deer's bedding and feeding areas. He can

lie down in the middle of the day, awaiting deer later in the evening.

Fifty years ago, 60 to 70 people participated in the archery hunt. Dawson recalls when a fellow from a hunting magazine wrote a long article about Bull Island. The next year, 360 people showed up and about 60 deer were harvested. "That's why we don't spread the word too much anymore," he laughed.

Dawson points to a deer mount on his wall, harvested in 1992. His greatest hunting success, the seven-year-old deer was scored 117 by Pope and Young, which measured the circumference around each point. For 13 consecutive years, Dawson got at least one deer each year. Then he came off Bull Island for two straight years empty handed.

Punta Arenas (Green Beach) - are now playgrounds for birders, divers, researchers or anyone trying to get away from the island's hustle and bustle. About 9,000 or so acres of the refuge remain off limits while the Navy cleans the land of contaminants and unexploded ordnance.

With refuge lands open for public access, the staff was prepared to meet and greet the community. They needed to understand community traditions and culture. From law enforcement to maintenance workers, the staff in Vieques Refuge is fully bilingual, able to communicate with locals and tourists. Many are native to the island.

Little by little, island residents have begun to understand that the Service's mission of protection and conservation is vastly different than that of the Navy. A local school teacher is a good example. For years, 20 de Septiembre Biology Teacher Julián García Martínez had been concerned about sea turtle conservation. So, he gathered a group of students and

created Huellas sobre la Arena (Tracks on the Sand). Once refuge staff and the teacher discovered their mutual passion, forces were united for sea turtle conservation.

Just before daybreak, Garcia Martinez, students from Huellas sobre la Arena and refuge staff are on the beaches seeking evidence of these amazing creatures. Two years have passed and the ties have grown stronger. Not only is Huellas sobre la Arena lending a hand in collecting sea turtle data, but the students are also keeping refuge beaches free of litter and participating in several outreach activities. In recognition of his dedication and work, Garcia Martinez won the Service's 2003 Regional Director Volunteer Award.

For the first time, the Youth Conservation Corps in 2002 employed five young men and women at Vieques Refuge. The program was a knockout success. In 2003, the program expanded to 10 youth. As a result of their experience, many of these young adults have gone to college and

enrolled in natural resource conservation programs.

While it sure hasn't been "peaches n' cream" working with a community that still has a bittersweet aftertaste of the Navy's departure, the conservation benefits are worth it.

In overbuilt, overpopulated Puerto Rico, Vieques Refuge is the treasure that will keep the island special. What was spoiled will be cleaned and what was not spoiled will be conserved and protected for the visual, spiritual and physical enjoyment of future generations. ♦

Gisella Burgos is the outreach specialist at Vieques NWR, PR.

Why does he choose the bow over the gun? "It's the challenge," he said. Unlike using the gun, "you've got to get it all together," making the hunting experience much more involving. But it's something more that brings Dawson back year after year to Bull Island.

"It's the camaraderie that makes the island hunt so special," he admits. "Through the years I've developed some real good friendships."

Dawson didn't take home a deer from this year's Bull Island hunt, although his friend, Jurgen Hauschild, got a 100-pound doe. By week's end, 65 hunters had harvested 15 deer. Dawson is looking forward to the next bow hunt on Bull Island December 6-11. ♦



Now 77, John Dawson has hunted with bow and arrow for 50 years, and always at Bull Island on Cape Romain NWR, SC. (Tricia Lynch/USFWS)

What Can a Little Stamp Do for You?

By Ryan Booth

The Federal Duck Stamp has been an overlooked gem for most Americans, but a tremendous boon for the Refuge System.

From 1993 to 2003, the Fish and Wildlife Service purchased 1,256,254 acres for the National Wildlife Refuge System by using more than \$241 million from sales of Duck Stamps. The land protects wildlife resources and provides wildlife-dependent recreation across the country.

Every American benefits from the sales of Federal Duck Stamps. By purchasing a stamp at \$15, every individual can feel that they have a stake in the National Wildlife Refuge System.

In 2004, the monies from the sale of Federal Duck Stamps purchased almost 16,000 acres in 10 wildlife refuges. New habitat includes:

- 10,948 acres added to the Tensas River NWR and 1,082 acres for Red River NWR, both in Louisiana.
- 1,681 acres added to the San Bernard NWR and 225 acres to the Trinity River NWR, both in Texas.
- 1,073 acres added to Lake Umbagog NWR, which lies across the Maine/New Hampshire border.
- 622 acres added to Silvio O. Conte National Fish and Wildlife Refuge in New Hampshire, Vermont and Massachusetts
- 486 acres added to the Canaan Valley NWR in West Virginia.

The Duck Stamp is a required permit for any one older than 16 who is hunting migratory waterfowl in the U.S. Hunters have been the earliest and most ardent supporters of the Duck Stamp Program since its inception in 1934. However, hunters are not the only ones with an

Collectors purchase many duck stamps because they are miniature works of art.

One by One, Leatherback Turtles Are Helped to a Future

They lumber onto the Caribbean beach in the shrouded seclusion of night during the spring and summer. Female leatherback turtles, giant creatures that weigh 700-1,000 pounds, are ready to lay their eggs just as their ancestors have done for more than 65 million years.

They dig their nests in the sand about three feet deep in a painstaking process that can take an hour. Using their hind flippers, which measure about a foot-and-a-half long, they lift the sand out to ensure they are building just the right kind of nest cavity. They are slow. They are deliberate. Descendants of creatures who witnessed the extinction of the dinosaur, female leatherback turtles reproduce every two to three years, creating four to five nests during the season.

The average female lays about 82 eggs. At Sandy Point NWR, VI, they have been

getting extraordinary help for more than 20 years. If the turtle has built its nest on an unstable part of the beach, staff and Earth Watch volunteers are ready to catch each cue ball-sized egg as the turtles go into a sort of trance. Twenty to 30 percent of eggs must be relocated from erosion-prone parts of the beach.

Some females are fast, dropping their eggs in less than 90 minutes. Others take all night. No matter: the staff and volunteers are on hand to count each nest and egg, and ensure that each turtle is tagged and identified. Seventy to 80 people volunteer each season.

The success has been extraordinary.

Begun in 1982, the Leatherback Sea Turtle project has assured the productivity of more than 8,250 nests and the health of tens of thousands of hatchlings. When

the program of patrolled beaches began, just 2,100 hatchlings entered the Caribbean waters. In 2001, the 20th anniversary year, an estimated 44,325 hatchlings successfully left their nests on Sandy Point Refuge.

This year, Sandy Point Refuge Manager Michael Evans is expecting a record number, perhaps more than 1,200 nests. The first females could well be nesting by late February.

The leatherback turtle was declared an endangered species in 1970. Today, the National Oceanic and Atmospheric Administration believes that nesting trends in the United States are stable. But the 20,000-30,000 adult female leatherbacks, less than 20 percent of the female adults that swam the oceans in 1980, still face significant threats from commercial fisheries and marine pollution

interest in this unique stamp. Duck Stamps can be purchased at some local refuges, often at bookstores runs by a Friends group, at post offices or online at www.usps.com.

Collectors purchase many duck stamps because they are miniature works of art. The federal government hosts its only art contest each fall to choose which image will appear on next year's Duck Stamp. This unique contest pits some of America's best wildlife artists against each other to produce the most impressive stamp image. A panel of five judges, approved by the Secretary of the Interior, decides which artwork will be made into a Duck Stamp. Mark Anderson of Sioux Falls, South Dakota bested over 200 other artists and his art will be featured on the 2005-2006 Federal Duck Stamp. ♦

Ryan W. Booth is the special events and outreach coordinator for the Federal Duck Stamp Office in Arlington, VA.



From 1993 to 2003, the Federal Duck Stamp Program contributed more than \$241 million for purchase of 1,256,254 acres for the National Wildlife Refuge System. (USFWS)

– some of the same problems that caused the number to plummet from 1980-1995. On the other hand, the loss of nesting habitats and destruction of nests by poachers has lessened.

Looking into the Future

“The henhouse is getting full,” Sandy Point Refuge Manager Michael Evans noted. “We’re looking into the future and beginning to wonder what will happen when we are overflowing with turtles.” Already, Evans sees leatherbacks nesting on four or five other St. Croix beaches that do not offer the same protections and help.

“The local department of planning and natural resources faces a desperate economy on the island. That makes enforcement against poachers, for example, difficult,” said Evans, who proudly points to an October 2004 conviction, when two poachers pleaded guilty to taking 91 eggs.

“A great deal of what is known about leatherbacks came from this project,”

stressed Evans as he described how blood is drawn for DNA testing. “The information we’ve gotten is incredible.”

For now, Sandy Point Refuge still has room for the nesting turtles that have

found important protection. Starting April 1, the volunteers and staff will again patrol the beaches, hoping to break the record of 186 female turtles that nested during the project’s busiest season in 2001. ♦

The Leatherback Sea Turtle Project has assured the productivity of more than 8,250 nests and the health of tens of thousands of hatchlings. Twenty years after its inception, an estimated 44,325 hatchlings successfully left their nests on Sandy Point NWR, up from 2,100 hatchlings when the patrol program began. (NOAA)



Malheur Archeologist Honored for Breaking Crime Ring

By Steve Farrell

Carla Burnside, an archeologist at Malheur NWR, Ore., received a Conservation Service Award from Interior Secretary Gale Norton for her role in exposing a crime ring responsible for damaging archeological sites on national wildlife refuges and other federal lands. The award is one of the highest honors presented by the Department of the Interior.

Ms. Burnside was among seven federal employees, including Fish and Wildlife Service special agents Edward Dominguez and Eric Jumper, honored for their contributions to Operation Indian Rock, a criminal investigation that broke up a ring of archeological looters who had been operating for nearly a decade. Throughout the two-year investigation, Ms. Burnside cataloged and established monetary values for thousands of artifacts from sites in Nevada, California, Arizona and Utah.

“This case brought a lot of attention to archeological crimes. Our investigation

led us to dozens of archeological sites, including many that were previously unrecorded,” said Ms. Burnside.

The interagency task force documented more than \$500,000 worth of damage to 50 archeological sites on federal lands, including Desert and Pahrnagat national wildlife refuges. Investigators recovered more than 11,000 historic and prehistoric Native American artifacts, including grinding tools, ancient corncobs, projectile points, fiber sandals, pottery fragments, figurines, baskets and pendants.

Five people pled guilty to felony violations of the Archeological Resources Protection Act (ARPA). One defendant was sentenced to 18 months in prison while another was sentenced to 37 months – the longest sentence ever for an ARPA violation by a first-time offender.

Ms. Burnside is now involved in two other cases. ♦

Steve Farrell is in the Refuge System Branch of Communications.



Carla Burnside, an archeologist at Malheur NWR, OR, compared confiscated artifacts with those that remained in the collection as she investigated the crime ring. (USEWS)

Prairie Restoration Brings Back Rare Songbirds

By Karen Viste-Sparkman

When refuge staff at Baskett Slough NWR, OR, intensified efforts to improve prairie and oak savanna habitat for threatened and endangered butterflies and plants, they also reaped important benefits for songbirds.

Restoration efforts over the last few years brought both expected boosts — such as an increase in the endangered Fender’s blue butterfly population — and some pleasant surprises, especially for rare western bluebirds and western meadowlarks, Oregon’s state bird.

Western bluebirds, which use the Willamette Valley’s oak savannas, experi-

enced drastic declines in mid-20th century, probably due to intensified agricultural practices. Although bluebirds are sometimes present on the refuge during winter, they had not been known to nest there in recent memory.

In 2001, refuge staff placed several nest boxes in oak savanna habitat on the west slope of Baskett Butte, hoping to attract western bluebirds. Tree and violet-green swallows, black-capped chickadees and house wrens immediately took up residence in the boxes. For the past two years, a pair of white-breasted nuthatches, another declining species, used one of the boxes. Interestingly, both years, a pair of tree swallows stayed near the box for

weeks, apparently waiting for “their turn.” When the nuthatches fledged in late May, the swallows immediately moved into the box to start their own nest.

The successful return of bluebirds eventually came as a result of restoration efforts for the Fender’s blue butterfly. Over the last few years, refuge staff cleared brush, mowed invasive grasses, and carried out a prescribed burn to create prairie habitat with fewer shrubs, lower-growing grasses and less thatch.

Not only did these efforts boost the Fender’s blue butterfly population, they also had a positive side effect for western bluebirds. In the spring of 2004,

National Fishing and Boating Week is June 4-12

Refuge System Fishing Guide Will be Unveiled

Hundreds of events on national wildlife refuges across the country will celebrate the fifth annual National Fishing and Boating Week June 4-12, sponsored by the Recreational Boating and Fishing Foundation. The week highlights the opportunity that fishing gives families to share fun together while learning about two of the nation's favorite activities – recreational boating and fishing.

The Refuge System will unveil its “Guide To Fishing on National Wildlife Refuges” during the week. This will be the first update in more than a decade of its comprehensive guide. It gives specific information about fishing opportunities on refuges, including what species can be fished, operating hours and dates for the fishing season, and available facilities.

The Recreational Boating and Fishing Foundation is offering its Event Planning Kit to refuges and other organizations to help make hosting a fishing event easier. To receive an Event Planning Kit or for more information, contact Anne Minor at aminor@rbff.org or 703-519-0013, ext 108.

western bluebirds nested in one of the boxes and fledged young, likely because of the improved foraging habitat in the oak savanna.

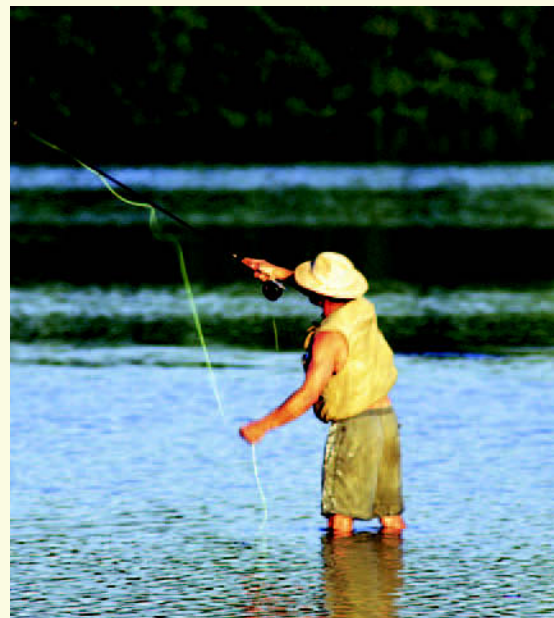
Restoration in another area of the refuge attracted western meadowlarks, a significant success considering the Oregon State Bird has declined at a higher rate than any other bird in the Willamette Valley over the past 35 years.

Near a wildlife observation platform at the top of Baskett Butte, refuge staff cleared brush, removed small trees and mowed invasive grasses. They also began restoring a nearby agricultural field to native prairie. Last spring, they sprayed the field with herbicides to control weeds and non-native grasses. This helped create a large area of grassland with diverse

The kit includes such materials as:

- 🍃 planning strategies, event ideas and tips for identifying and mobilizing local partners and sponsors.
- 🍃 a CD-ROM with customizable posters, flyers, and print ads to advertise local events.
- 🍃 a guide to working with the media, including sample press releases and tips for securing media coverage.
- 🍃 information on “Passport to Fishing and Boating,” a hands-on interactive program that includes scripts, posters, activity cards, a boat map layout and much more to help you or your volunteers easily teach families the basic skills to begin fishing and boating.

To download the free Passport materials or to order a Passport Materials Kit, go to www.NationalFishingandBoatingWeek.org/Passport. National wildlife refuges can register their National Fishing and Boating Week events at www.TakeMeFishing.org to get some publicity from the national media campaign. ◆



National wildlife refuges across the country will celebrate National Fishing and Boating Week in early June. (GeorgeGentry/USFWS)

grass structure that meadowlarks need for foraging and nesting.

Birders hiking the trail to the platform during last year's nesting season were almost certain to see and hear a pair of western meadowlarks that came to occupy an area around the platform — the first pair known to nest on the refuge in many years.

Efforts to restore and protect upland prairie and oak savanna habitat at Baskett Slough NWR will continue, hopefully with even more comebacks for a variety of wildlife. ◆

Karen Viste-Sparkman is a SCEP student at Willamette Valley NWRC, OR.



After a long absence, western bluebirds returned to nest on Baskett Slough NWR, OR, in 2004, thanks to intensive prairie habitat restoration efforts. (USFWS)

Chief's Corner – from pg 2

among their top priorities the need to improve opportunities for wildlife-dependent recreation. Our visitors agree. They put “adequate activities and opportunities” among their top suggestions on the Visitor Satisfaction Survey. Visitors also told us that we need more visitor centers. We have a list of top priority visitor center construction, but construction money is hard to come by.

Yet, as important as visitor centers are, they supplement – rather than supplant – the experience of wildlife refuges. The Refuge System’s foremost concern is the quality and management of habitat for wildlife, and so we’ve focused this issue of *Refuge Update* on that very subject.

The Visitor Satisfaction Survey brings to mind one important aspect of any survey: spreading the news. In our participatory form of government, it is vital that people’s viewpoints be heard in the halls of America’s decision-makers. Those who volunteer and visit wildlife refuges have every reason to convey their opinions to the people who represent them on Capitol Hill. Giving people enjoyable, compatible recreation moves them to value what we work for, a concept they take into their communities and voting booths – where values really make a difference.

Habitat Management Training Available on the Web

A Habitat Management Course that provides an overview of the habitat management planning process is available online from the National Conservation Training Center. It offers guidance for preparing an HMP in three short modules.

The modules are all synchronous Web-based sessions taken from participants’ field station computers. They include sessions on background information, ecological integrity, resources of concern, habitat goals and objectives, habitat management strategies, monitoring, and annual habitat work plans.

Approximately 187 Fish and Wildlife Service employees from 105 national wildlife refuges have taken the course. For more information and course dates, contact Karen Lindsey or Jaime Brown at 304- 876-7442. ♦



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.



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