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RefugeUpdate

January/February 2004
Vol 1, No 1



(USFWS photo by Paul Tritaik)

Smithsonian Museum Highlights Refuges

The first-ever Smithsonian Institution exhibit about the National Wildlife Refuge System will introduce tens of thousands of people to the nation's most extensive network of federally protected lands and the scenic byways that surround them.

"America's Wildest Places," which opened at the National Museum of Natural History in Washington, D.C., on Nov. 7, 2003, is one of the most extensive examinations of the conservation of wildlife and natural diversity by any museum. The multi-media exhibit, which runs through April, presents the Refuge System's pioneering work to preserve the nation's natural treasures even as suburban growth replaces important habitat.

It features a storehouse of historic items, including the gun, badge and appointments papers issued to Paul Kroegel, an immigrant boat builder who was the first manager of Pelican Island NWR, Fla. The exhibit also has a number of hands-on displays, including a U.S. map that will take you directly to information about all refuges in a specific state.

"We're proud to bring to our nation's capital virtual tours of seven of our best wildlife refuges, each located along one of America's byways," said FWS Director Steve Williams.

continued pg 2



(USFWS photo by Paul Tritaik)



Chief's Corner

Welcome to the new *Refuge Update*. Until now, we have distributed *Refuge Update* strictly by e-mail, bringing news of the Refuge System right to your computer.

With this issue, we launch a full-color, bi-monthly printed newsletter whose focus is you and your work. We will offer stories from across the country and an inside look at the people and programs that make the Refuge System a vibrant and effective network of public lands for wildlife conservation and recreation.

We are not retiring *Refuge Update* as you have known it. During months when we do not publish this printed version, we will continue to bring you the news from Washington electronically.

So why have we elected to produce a printed newsletter when the world seems to be on an all-digital path?

First, we recognize that not everyone within the Refuge System works from his or her computer all the time. Our people are in the field, working with school groups, volunteers, visitors, wildlife – and sometimes on emergencies. A printed *Refuge Update* can be read anywhere, and it will not

focus so narrowly on what's happening in Washington.

Second, a printed newsletter gives us the chance to show off our refuges in pictures as well as words. The newsletter will prove once again that pictures speak far more eloquently than words.

Finally, a printed newsletter means you can easily share the news. We hope you take it home to your family, to community meetings, to legislative offices, to your local business community.

The Refuge System has been called "America's best kept secret." I'm not so sure that's true today, especially because Centennial celebrations have garnered an unprecedented amount of publicity and brought tens of thousands of new visitors to refuges. Now, *Refuge Update* will be an added tool in our arsenal of public outreach tools.

By the way, many of the stories and ideas in this newsletter come directly from the Accomplishment Reporting System (ARS), which will play a more important role as *Refuge Update* grows.

We hope you enjoy it. We want to hear your comments. We want to report your stories. You can give Editor Martha Nudel your ideas by contacting her at 703-358-1858 or Martha_Nudel@fws.gov.

Bill Hartwig

Refuges – from pg 1

"We look forward to hosting visitors at these and other refuges after they learn about the Refuge System from this fabulous exhibition."

The exhibit also examines how technology has dramatically improved wildlife and habitat management and preservation, and how the Refuge System's growth reflects changing conservation values over the past 100 years. The exhibit encourages visitors to reach wildlife refuges by using the national scenic byways, a collection of distinct roads designated by the secretary of transportation.

The exhibit is sponsored by the USFWS, Smithsonian Institution, and the Federal Highway Administration. The National Museum of Natural History is the world's most visited natural history museum, welcoming more than 6 million people last year.



RefugeUpdate

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Refuge Summit Will Continue *Promises* Vision

"Huge Opportunity"

The Refuge System's Conservation in Action Summit, scheduled for May 24-27 at the National Conservation Training Center, Shepherdstown, W.Va., is a "huge opportunity" to develop a comprehensive view of where the Refuge System is headed in light of the Refuge Improvement Act and the "tremendous influx of funding that has taken place over the last few years," said Bob Byrne, of the Wildlife Management Institute, one of three people on the conference executive committee. National Wildlife Refuge Association President Evan Hirsche and Deputy Refuge System Chief Jim Kurth are the other two members.

Two hundred fifty participants will be invited to the summit, including USFWS field staff, scores of partners, state representatives, and representatives of refuge Friends groups, among others. Invitations will be disseminated in February.

Five teams are already working to identify the most pressing challenges as the Refuge System launches its second century of wildlife conservation. The teams are concentrating on science, wildlife and habitat, wildlife-dependent recreation, strategic growth, and leadership.

"The summit will identify specific priorities – and obstacles – to getting the core missions accomplished," observed Byrne. "It will allow the Refuge System to refocus its efforts for the next 10 to 15 years. It will also give CARE (Cooperative Alliance for Refuge Enhancement), an opportunity to identify the Refuge System's needs and explain those needs to Congress." Byrne sees yet broader opportunities. "The summit is a chance for the Service and non-governmental organizations to improve their partnership," he noted.



Wildlife Management Institute Wildlife Program Coordinator Bob Byrne, a member of the Conservation in Action Summit executive committee. (Photo courtesy of Wildlife Management Institute)

The Wildlife Management Institute (WMI), established in 1911, has been a staunch supporter of the Refuge System and the organizing force behind CARE. WMI President Rollin Sparrowe conceived of CARE in 1996, bringing together organizations that had sometimes disagreed over Refuge System management issues. The organizations found common ground in their support of increased funding for operations and maintenance of the Refuge System, and their success has been remarkable. Since CARE's creation, the budget for operations and maintenance has grown from \$161 million annually to about \$388 million this fiscal year.

"We'll All Get What We Want"

"Throughout the 1980s and 1990s, when environmental groups and some sportsmen's organizations were beating

on Congress to do something about refuges, a group of organizations realized that, if we checked our differences at door and made the Refuge System healthier, then we'd all get what we wanted," Byrne recalled.

For now, Byrne's focus – like that of so many in the Refuge System – is the Conservation in Action Summit and the path it will demarcate for the near future of the Refuge System.

The Promises Implementation Team has worked successfully for six years in carrying out the mandates of *Fulfilling the Promise*. Now the Conservation in Action Summit will enunciate specific measurable goals that are essential as the Office of Management and Budget and federal officials make budgetary decisions.

"*Fulfilling the Promise* gave the Refuge System a sound vision," said Byrne. "Now we have to examine how best to finance that vision over the next 15 years. The summit will allow us all to work together to meld the vision of *Promises* with the challenges of the Improvement Act."

Information about the summit will be reported on a continuing basis in *Refuge Update* and on a Web site, <http://refuges.fws.gov/ConservationSummit/>, dedicated to the conference.



MAY 24-27, 2004 | SHEPHERDSTOWN, WV

Conservation in Action Summit

A new century of conservation challenges



Partnership, Refuges Reach Out to Handicapped

"Self-Esteem is Back"

Al Dager (center), a champion waterfowl caller, volunteered his time for the hunt. Three temporary waterfowl blinds designed to allow those inside to shoot from a sitting position were placed along fields the previous day. (USFWS photo by Steve Farrell)



We made a difference in people's lives," said Bombay Hook NWR, Del., manager Terry Villanueva as she discussed the five disabled hunters who enjoyed a too-rare opportunity to hunt waterfowl when the refuge held a special hunt Dec. 11, 2003.

The event was the second in a series of four planned for the Refuge System's Centennial year as part of a groundbreaking partnership between the USFWS and the National Wild Turkey Federation's Wheelin' Sportsmen program for disabled sports enthusiasts.

Hunters began the day with a 4 a.m. breakfast and an official welcome. Three temporary waterfowl blinds designed to allow those inside to shoot from a sitting position were placed along fields the previous day. The existing wheelchair accessible blind was also used. Each blind was equipped with a radio or cell phone in case of emergency. Because torrential rains swept the area the night before, plywood was laid down to keep wheelchairs from sinking into the mud.

Al Dager, a champion waterfowl caller, was one the volunteers who came with their own decoys to work with the

Refuge Outreach Touches New Audiences

By Jeanne Clark

During a pre-feature show at a Sacramento, Calif., movie theatre, a slide flashed on the screen promoting the Refuge System. It was just one of the many good ideas transformed into reality by Barbara Simon, information and education specialist at San Diego Refuge Complex.

Indeed, like many projects, the promotional slides took tenacity. After a year of rejections, Simon found a theatre chain willing to run the slides at no charge. "It really wasn't that hard," said Simon. "It just took some persistence."

Before joining the Refuge System in 1996, Simon worked for 15 years as a film and

television producer. She is now using her knowledge about the film industry on behalf of wildlife conservation.

Recently, private and government partners in the United States and Mexico have joined forces to address issues facing the Tjuana River watershed. "We received grants of almost \$250,000 to develop a CD in English and Spanish," Simon noted. A major focus is conservation of the river and its wildlife at Tijuana Slough NWR, Calif., which is a major stop on the Pacific Flyway for migratory birds.

Much of Simon's work has focused on migratory birds. She introduced the San Diego Zoo's Educational Department to the region's Songbird Blues and Shorebird

boxes, leading to their adaptation as props in skits that helped families learn about International Migratory Bird Day and endangered species. The innovative Sweetwater Safari teacher backpacks and Tijuana Estuary Explorer curriculum have strengthened community partnerships while providing information about refuges and wildlife.

"Working with people outside of the Service enriches us tremendously, expands our ideas, stretching our creativity, and allows us to go places we wouldn't go otherwise," noted Simon.

Jeanne Clark is editor of Out & About, the quarterly newsletter for Region 1 USFWS employees.



All of the sports enthusiasts at the December 2003 hunt at Bombay Hook NWR, Del., bagged ducks. (USFWS photo by Steve Farrell)

hunters until about noon. The visitors saw as many as 100,000 snow geese, Canada geese and ducks that feed and rest on the refuge during the winter months.

“It was an unforgettable experience,” echoed Wayne Carter, executive director of the Paralyzed Veterans of America, Delaware-Maryland chapter and a veteran hunter. “Events like this renew people’s self-esteem. The world comes alive when you get out into the woods, sit in a marsh to see the sun rise and have the camaraderie of others who are in wheelchairs.”

Dave Timberman, a quadriplegic and treasurer of the Paralyzed Veterans of America, Delaware-Maryland chapter, was armed with a shotgun that had been modified to allow the trigger to be pulled with his knuckles. For Ron Hoskins, it was his first waterfowl hunt. He bagged a deer two weeks earlier at Prime Hook NWR, Del.

“This program offers a fabulous opportunity for people with disabilities to enjoy the outdoors,” said Kirk Thomas, national coordinator for the Wheelin’ Sportsmen program. “When you can do

that in a setting like the Bombay Hook Refuge, you create memories that last a lifetime.” The first hunt under the partnership was held at Shiawassee NWR, Mich., in November 2003.

Refuges interested in hosting a Wheelin’ Sportsmen event, whether hunting, fishing, bird watching or photography for disabled individuals, should contact Steve Farrell, Division of Visitor Services & Communications, 703-358-2247.

This bit of salt-marsh habitat, just 315 acres, is all that’s left of the huge salt marshes surrounding San Diego Bay. The refuge was developed as a result of a court-ordered settlement over a development plan that would have included a hotel, a flood-control channel, and a highway-widening project. The refuge, a satellite of Tijuana Slough Refuge, is home to the endangered least tern, Belding’s savannah sparrow, and light-footed clapper rail. (USFWS photo by John and Karen Hollingsworth)



The Refuge Road to Freedom

Great Dismal Swamp Gets First Designation

In 1861, Frederick Law Olmsted wrote, "Children were born, bred, lived and died here." Such "maroon" communities continue to be the subject of historical research.

The Great Dismal Swamp Refuge, 111,000 acres that lay across the Virginia and North Carolina border, has become the first refuge named by the National Park Service to its Underground Railroad Network to Freedom Program. Established by federal legislation in 1998, the program was created to extol the historical significance of the Underground Railroad in the eradication of slavery and the evolution of the national civil rights movement.

Official celebration of the designation will be held Feb. 11. More than 500 people have been invited, including Assistant Secretary Craig Manson, USFWS Director Steve Williams and National Park Service Director Fran Mainella.

The refuge, established in 1974, protects a remnant of what is thought to have been a million-acre swamp. It is one of the

largest unbroken expanses of forested swamp along the East Coast, and is still impenetrable in places. Long recognized as a mysterious place in which people become easily lost, the Great Dismal Swamp was described as "dreadful" by William Byrd II, who surveyed the boundary between Virginia and North Carolina. In 1728 he noted, "It is certain many slaves shelter themselves in this Obscure Part of the World, nor will any of their righteous Neighbors discover them."

Since the 17th century, the swamp has served as a refuge and route to freedom. For some, the swamp offered a means to purchase their freedom through work in cedar and cypress timber production or on the Dismal Swamp Canal, which runs along the refuge's eastern edge.

Others found refuge in the swamp, hiding in its dense underbrush. These "outlyers" established maroon communities. In 1861, Frederick Law Olmsted wrote, "Children were born, bred, lived and died here." Such "maroon" communities continue to be the subject of historical research.

For still others, the swamp was a stopping point on their way to Norfolk or Portsmouth, Va., or to Albemarle Sound and Elizabeth City, N.C., where they could secure passage on a ship going north. During the Civil War, Union regiments of the United States Colored Troops marched down the canal bank from Deep Creek, Va., to northeastern North Carolina to liberate and recruit enslaved African Americans.

"We may never know how many people found refuge in the swamp," notes Julie Rowand, Visitor Services specialist. "Now, the refuge's cultural history has become a great vehicle to share information about the Dismal Swamp's natural history with a new audience." ♦



Osman, a maroon slave, was illustrated for the 1856 issue of Harper's New Monthly. Art courtesy of Cornell University Library, Making of America Digital Collection Crayon, Porte (David Strother), The Dismal Swamp. Harper's New Monthly Magazine, vol. 13, issue 76. (September 1856).

Around the Refuge System



Chad Pregracke, right, president of Living Lands and Water, helps a Hickman High School, Mo., student plant a tree on the Overton Bottoms unit of the Big Muddy National Fish and Wildlife Refuge. (USFWS photo)

- **Launched in August 2003**, the campaign by the Wetland Management Districts and Private Lands Office in Minnesota to restore 541 prairie wetlands to commemorate the Refuge System's Centennial has exceeded its goal by 400. As of Dec. 5, 2003, 941 wetland basins have been restored, creating more than 3,000 acres of new wetland habitat. Although small, these basins are critically important to a wide array of waterfowl, small mammals, reptiles, amphibians, and a host of plant and animal species. They also benefit flood control and improve water quality.
- **Big Muddy National Fish and Wildlife Refuge, Mo.**, received 100 six to eight-foot pin oak saplings from Living Lands and Waters, a national organization dedicated to protecting waterways, specifically the Mississippi and Missouri rivers. Hickman High School's applied science class planted the trees Nov. 12, 2003, at the Overton Bottoms unit of the refuge. "If you see something you don't like, start now to begin changing it," Living Lands and Waters President Chad Pregracke told the students. The area will become part of an ongoing Department of Agriculture study about the reintroduction of oaks, pecans, and other hardwoods that once thrived in the floodplain.
- **Las Vegas NWR, N.M.**, saw a dramatic increase in the number of visitors who enjoyed the fall flight wildlife drive, a 4.5-mile self-guided auto route that meanders past native prairie grasslands, lakes, ponds, marshes and croplands, important habitat for migratory birds. More than 500 people in November 2003 took advantage of the refuge's Sunday openings, up from just 134 visitors in November 2002. Part of the increase is due to a huge article in the *Santa Fe New Mexican*. People came with the newspaper in hand, the refuge reported.

Tundra Swan Saved After Oil Mishap

"TR" a rehabilitated juvenile tundra swan nicknamed for the founder of the Refuge System, was released Dec. 3, 2003, at Eastern Neck NWR, Md., to join the migratory flock after its recovery from a tumble into an oil impoundment at Prudhoe Bay, Alaska.

The Sept. 13, 2003, accident could have spelled sure death after about half the cygnet's body was covered with oil. Instead, it was rushed to the International Bird Rescue Research Center in Anchorage for treatment. By the time the cygnet recovered, its family group had left on their annual migration to the Atlantic Coast.

So, on Sept. 29, 2003, the cygnet was transferred to Tri-State Bird Rescue & Research Inc. in Newark, Del., one of the country's largest wildlife rehabilitation centers. "TR" stayed there until December, when large flocks of tundra swans arrive at Eastern Neck Refuge.

"TR" was outfitted with a satellite transmitter so the USFWS can track his overwintering and migratory behavior. Satellite signals will pinpoint "TR" 's location for the next 18 months, giving vital clues about the migratory success of a hatching-year swan that didn't learn the route by traveling with parents.



(USFWS photo)

Eastern Neck Refuge has been home to tundra swans and other migratory birds in the Chesapeake Bay area since the refuge's establishment in 1962. The refuge's annual Tundra Swan Watch attracts thousands of visitors. ◆

FOCUS ...On Refuge Friends

You Have to Have Friends

The nation's 250 voluntary, community-based refuge Friends groups add a dimension of expertise and assistance that enhances the Refuge System and the individuals refuges they help. Up from just 74 groups in 1996, the Friends groups are driven by a passion for wildlife and fueled by the knowledge that the nation's largest network of public lands is the best hope for the health of the nation's biodiversity.

"With an ever tighter federal budget, we just couldn't meet the growing demands on the Refuge System without our Friends groups," states Bill Hartwig, assistant director – National Wildlife Refuge System. "On many refuges, they run book stores. On others, they raise money for special projects. Sometimes, they speak on Capitol Hill about the importance of refuges for their communities. Often, they are our public

face. Very often, they are our behind-the-scenes hands."

Today, more than 30,000 people are members of refuge Friends groups. The nonprofit, independent groups – some dating back to the 1970s – are as diverse as the communities they serve. So is their work:

- The Friends of Willapa NWR, Wash., founded in 2000, couldn't ignore the devastation wrecked by *Spartina alterniflora* – commonly called smooth cordgrass – which was destroying the salt marshes and mud flats, killing migratory bird, fish and shellfish habitat. So they raised more than \$60,000 to enable the refuge to conduct essential tests to determine the concentration of herbicides that will be used extensively over the next few years to rid the refuge of a killer.



Patuxent Research Refuge, Md., volunteers planted trees at the Bald Eagle Refuge exhibit at the National Zoo, Washington, D.C. (USFWS photo by Dick Cole)

Setting Friends, Staff at Ease



Friends of Big Muddy NWR, Mo., Peter Ironwood and Troy Gordon help Park Ranger Tim Haller clean up the refuge. (USFWS photo)

"When we are trying to invigorate a group or help one get started, the primary

message is collaboration between refuge staff and Friends board," says Molly Krival, former president of the "Ding" Darling Wildlife Society and one of 17 mentors who traveled across the country in 2003-2004, assisting refuge Friends groups to become more effective.

This year's National Refuge Mentoring Program was the largest ever, with 18 refuges receiving help. Krival traveled to the Don Edwards San Francisco Bay NWR, Calif., with Refuge Manager Mike Blenden, and to Tualatin River NWR, Ore., and Ridgefield NWR, Wash., with Manager Mark Musaus.

Each mentor team is composed of a Friends volunteer and a refuge manager trained for the program. It not only provides assistance to established groups,

Friends of Big Muddy (Mo.) member Troy Gordon helps a young angler at a Free Fishing Day event. (USFWS photo)



- Friends of the Wildlife Corridor linked isolated forest habitats by reforesting with native vegetation tracts of land acquired for the Lower Rio Grande Valley and Santa Ana refuges in Texas.
- Friends of the Upper Mississippi River National Wildlife and Fish Refuge in Minnesota turned to the public libraries to expand environmental education, providing children's books and helping to create library outreach programs.
- Friends of Squaw Creek Refuge in Missouri used a grant from the National Fish and Wildlife Foundation to build the Mike Callow Memorial Trail – a handicapped-accessible trail that honors a USFWS employee who died in the line of duty.

- In Oklahoma, the Association of Friends of the Wichitas created a two-hour interpretive program that teaches visitors to the Wichita Mountains Refuge about the importance of bats and other nocturnal animals, using night viewing equipment to observe their movement.

Because the work of refuge Friends is so valuable, the USFWS provides and supports a range of national programs to support the groups, most notably the National Wildlife Refuge Support Group Grant Program and the National Refuge Mentor Program.

For the first time in 2003-2004, a series of six conferences are being staged in four regions to bring ideas, skill building and networking opportunities to Friends groups. In years past, a single

national conference brought together hundreds of Friends, volunteers, refuge staff and supporters from across the country. Regional conferences will be more intimate and connect people in communities that are in close proximity. The USFWS is partnering with the National Wildlife Refuge Association and refuge Friends groups to co-sponsor and promote the regional conferences.

“Our outstanding partners and Friends are pivotal to our success,” notes Trevor Needham, the Refuge System's Friends coordinator. “The legacy of our 250 Friends groups can be seen on the land, as more and more volunteers devote their passion and time to our refuges.” ◆

but also helps new ones get off the ground. Refuges must apply for the competitive program by March 15 to participate in the 2004-2005 program.

“As refuge staff changes and Friends groups develop, problems crop up,” Krival notes. “They will apply to the program for help to get back on course.”

Each refuge Friends group is an independent, nonprofit tax-exempt organization with its own board of directors. Over the years, some have elected projects that do not coincide with a refuge's priorities or ones that require a permit. “The problems become more complicated as groups consider capital projects, and collaboration is more critical,” stresses Krival.

Mentors often work in middleman roles, helping refuge staff and Friends groups understand how to reconcile differing priorities. “If a Friends group wants to build an education room, the committee should include a refuge staff member so that refuge professional advice is always available,” notes Krival. “The more activities a Friends board undertakes, the more staff members need to be involved.”

Blackwater NWR, Md., Manager Glenn Carowan, who mentored at Kofa NWR, Ariz., and Noxubee NWR, Miss., in 2003, stresses that the program puts refuge staff and Friends group at ease.

“In many cases, refuge staff is concerned the Friends group will take over,” stresses Carowan. He often

explains to Friends groups that a refuge is like a corporation in which the refuge manager has 51 percent of the stock. The Friends group has an influential 49 percent share.

“In every case, there is a single message: While this is a relationship, the refuge manager has the ultimate decision-making authority,” Carowan emphasizes. “But the Friends group is not an enemy group.

“The Mentor Program has helped put refuge staff at ease, giving them a better experience in working with Friends groups,” he concludes. “In the end, we reduce the level of fear among Refuge staff, within the Friends group, and we accomplish wonderful things.” ◆

FOCUS ...On Refuge Friends

Ambassadors for the Resource



through November 2004 due in part to the enthusiasm Sutter lit within the 625 members of the Friends of the Minnesota Valley, whose subcommittee researched routes, located 15-passenger vans and developed the tours.

Designed to ignite a passion for the refuge in people who can't walk the four to six miles of trails, the Tuesday, Friday and Saturday 90-minute tours will showcase Louisville Swamp, Rapids Lake and Long Meadow Lake units. The rented vans, with a Friends guide to explain the sights, will drive on service roads, taking people into parts of the refuge they otherwise would not see. Sutter and Chuck Amundson now serve as guides. The subcommittee is recruiting and training others.

"We've talked about a program like this for years, but we didn't have the staff

Pick-up stops for the refuge tour can be in unexpected places, like a spot across from the Hilton Hotel and just down the road from the Minneapolis/St. Paul International Airport. The Friends of the Minnesota Valley are encouraging tourists to see the refuge right along with other tourist spots. (Photo by Steven Sutter)

Volunteer Steven Sutter couldn't believe that more people weren't on the refuge trails he hiked each week. Next year, there will be.

The first full season of 23 free, guided van tours of Minnesota Valley Refuge trails is scheduled from the Spring

Friends Grants Reach \$1 Million

Muscatatuck Wildlife Society volunteers restored and maintain a historic log cabin on the Muscatatuck NWR, Ind. (USFWS photo)



more than 150 Friends groups working to support more than 165 refuges, wetland management districts and national game preserves.

This one-of-a-kind program, funded by USFWS and administered by the National Fish and Wildlife Foundation, has fueled the tremendous growth in the number of Friends groups – from just 74 in 1996 to 250 today.

Focused exclusively on increasing the number and effectiveness of refuge Friends groups, the program aims to help them gain experience in developing projects, expand their capacity and skills, meet the needs of local refuges, and gain community recognition and support.

The program offers three types of grants. Start-up grants fund such things

Twenty-one Friends groups received nearly \$100,000 in National Wildlife Refuge Support Group Grants in November 2003, bringing to \$1 million the amount of direct support provided by the program since its inception in 1998. During its life, the program has awarded 270 grants to

to do it," says Tom Kerr, Minnesota Valley Refuge operations specialist. "The people who take the tour will become ambassadors for the refuge." The Friends group received a \$4,800 grant from the National Fish and Wildlife Foundation's "Pathway to Nature" program for the tour season. A \$400 donation from the Friends group funded three test tours in October 2003.

"This is a niche that refuge support groups like ours can fill," says Sutter, who is president of the Friends group. "As we drive down the bluff, we will change our perspective back 10,000 years to the time when glaciers formed this valley. As we move through the refuge, we will wind our way into the present and start thinking about the refuge's future."

Because the Friends group will conduct the tours, certain issues may be discussed that refuge staff might eschew. For example, Sutter intends to point out a bridge, built in 1927 and closed by the City of Bloomington awaiting replacement. Without the bridge, hikers cannot cross Long Meadow Lake to a wonderful bird watching spot. Eight groups are working as citizen advocates to get funding for the bridge's replacement.

The Friends subcommittee is marketing the tours in nearby hotels, as well as other locations. "We can get a diverse audience connected with the resource, without them having to commit a lot of time and energy," Sutter observes. ◆



One of the stops along the six-mile tour is a hollow cottonwood tree, more than 27 feet in circumference, where the Chris Kasic family paused for a photo opportunity. (Photo by Steven Sutter)

as membership drives, training, creation of such outreach tools as brochures, newsletters and tabletop exhibits, and mission and strategic planning. Capacity building grants can include community outreach, strategic planning, board or leadership development, and training. Project specific grants fund development of conservation education programs for local schools, outreach programs aimed at private landowners, habitat restoration, interpretive signs on the refuge and watchable wildlife programs, among others.

Among the projects funded in late 2003 are as follows:

- Surveying the biodiversity of Eastern Neck NWR, Md., by scientists, educators, students, community partners and the public.
- An environmental education series focused on the natural history of the Buenos Aires NWR, Ariz., and surrounding areas.

- Organizational support for the DeSoto, Iowa, and Laguna Atacosa, Texas, refuges bookstores, run and managed by volunteers to support the refuges' conservation and outreach programs.
- Start-up money for the Noxubee, Miss., and San Pablo Bay, Calif., refuges' Friends programs.

- Providing a portable visitor contact station at Wertheim NWR, N.Y., to enhance education and recreational outreach.

For information about applying for such grants, contact Suzy Oversvee, National Fish and Wildlife Foundation, 202-857-0166, or Trevor Needham, USFWS, 703-857-2392. ◆

David Nycklemoe, a member of the Friends of the Prairie Wetlands Learning Center, helps the prairie science class gather data during a duck-banding program at the Prairie Wetlands Learning Center, Fergus Falls, Minn. (USFWS photo)





The Bateman Center's displays take visitors on a journey through Chincoteague Refuge's habitats, teaching them not only about wildlife resources, but also about management programs. (USFWS photo by William Buchanan)



Sustainable Design Can Be Duplicated

By Alison Penn and Kelly Chase

“But an education center is never meant to replace the real experience. So, the exhibits are designed to be appetizers for what lies outside.”

After 40 years of planning, Chincoteague NWR, Va., on Oct. 25, 2003, opened the \$10 million Herbert H. Bateman Educational and Administrative Center, a building whose “green architecture” and use of sustainable, recycled or environmentally friendly materials will make it a leader in sustainable design for the USFWS.

The center has already won two awards for sustainability: The Gold Award for Excellence in Architecture by the New Jersey Chapter of the American Institute of Architects, and the 2003 Federal Energy Saver Showcase award from the Department of Energy, Office of Energy Efficiency and Renewable Energy.

With a 125-seat auditorium, a classroom/wet lab, and 5,000 square feet of interactive exhibits, the education center brings state-of-the-art interpretive programming to Chincoteague Refuge, which sees 1.5 million visits each year.

The sustainable design is evident throughout the building. Cedar was used for exterior siding. Beams made from pine lumber harvested from forests certified as sustainable were laced throughout the interior. The floors were made of bamboo, which grows quickly and is produced easily in the United States. The ceiling was made from fibrous material found in quick-growing Aspen trees. In addition, engineered wood was utilized for all of the rafters and support

The Price of Conservation

The right to chew gum during school comes with a price tag. Just ask the Ortonville Elementary School, Minn., fourth graders, who amassed \$4,386 by selling such privileges for two years to help the USFWS restore a large wetland in the heart of prairie pothole country.

The 596-acre Centennial Waterfowl Production Area (WPA), in the Morris Wetland Management District, Minn., which cost about \$600,000 to purchase and another \$260,000 for habitat restoration, was dedicated May 2003. It contains several hundred acres of restored grassland as well as a large restored prairie pothole wetland. It is one of the

larger wetland restoration projects undertaken by the Refuge System in Minnesota.

The Department of Agriculture, using its Wetland Reserve Program, provided 75 percent of the funding. Among the USFWS' other partners were Ducks Unlimited, Big Stone County, Minn., and the Upper Minnesota River Watershed District. Some funding came from a North American Wetland Conservation Act grant, administered by the USFWS.

“This is an excellent example of how wetland management districts do their work, involving a large number of



Darrell Haugen, wildlife biologist at the Morris WMD, demonstrated banding of a blue-winged teal to Ortonville Elementary School students at the dedication of the Centennial WPA. (USFWS photo by Lori Wolff)

beams. These beams are manufactured from younger and fast-growing trees and wood strands. They make use of leftover wood pieces. In all, use of such fibrous material minimizes depletion of forests.

Environmental efficiency was incorporated into floor coverings as well. For example, recycled rubber flooring is in the education classroom and in some exhibit areas. Cork, which grows quickly, was used for flooring in parts of the exhibit and information desk areas. Recycled carpet adorns the auditorium, hallways and administrative building.

Zinc roofing, appropriate for the climate, was chosen for its benefits for plants and animals. This heavy metal, essential in a healthy life cycle, helps the re-created wetland around the building receive necessary nutrients.

The wetland, which allows water to be cleaned and recycled on the premise, reduces water intake. Grey water is pumped from the sinks, toilets, and waterless urinals into the wetland, created by using native vegetation. Once the water is cleaned, it is then pumped back into the toilets, helping to save approximately 40,000 gallons of water a year.

A geothermal heating and cooling system, which consists of a series of wells connected to the building's heating system by underground piping, improves the heating system's efficiency. The ground

keeps the water in the underground piping at a steady 55 degrees F. In the winter, the building's heating system picks up heat from the water. In the summer, the reverse occurs.

The building's design and placement take advantage of sunlight to illuminate exhibits, the auditorium, classroom, teacher resource room, and other open areas, increasing attentiveness and decreasing the use of electricity.

"Visitors to the 5,000 square feet of exhibits are taken on a journey through the refuge's habitats. Not only do they learn about wildlife resources, but they also learn about our management programs," says Refuge Manager John D. Schroer. "But an education center is never meant to replace the real experience. So, the exhibits are designed to be appetizers for what lies outside." ♦

Alison Penn has been environmental education specialist at the Refuge since 2000. Kelly Chase has served as outdoor recreation planner since 2002.



Visitors to Chincoteague Refuge examine an exhibit on bird migration on Oct. 25, 2003, opening day of the Herbert H. Bateman Educational and Administrative Center. (USFWS photo by William Buchanan)

partners in habitat restoration and working with many counties," notes Steve Delehanty, Morris WMD manager.

The restored 350-acre wetland, drained for farming decades ago, will provide habitat for waterfowl and other wildlife, improve water quality downstream and reduce flooding in the watershed. It is already providing a terrific ecology lesson to the Ortonville Elementary School students.

Each year, Ortonville Fourth Grade Teacher Kyle Kirkeby incorporates wetland education into his conservation

curriculum. His students not only learn about wetlands; they also raise money for restoration projects. In the past eight years, students have had a hand in restoring 43 basins totaling 460 acres of water. The Centennial WPA, named to honor the Refuge System's centennial, may well be the largest - unless students undertake a yet bigger challenge next year. ♦



Katie Goodwin, refuge operations specialist at the Morris Wetland Management District, Minn., shows the recently completed box weir on the Centennial WPA. (USFWS photo)

"Not a Day I Didn't Look Forward to Work"

"Four Long-Tenured Veterans Retire"



Jim Tisdale was joined by his wife, Jacquie, at the dedication of Noxubee Refuge's visitor center. Jim was instrumental in securing funding and public support for the building. Jim and Jacquie are shown on the building's back deck, overlooking Bluff Lake. (USFWS photo)

"In the early years, we lived almost entirely on military surplus," recalled **Jim Tisdale**, who retired from the Refuge System Dec. 31, 2003, after 41 years of service. "We made regular trips to the nearest military bases. I remember buying our first new 'dozer and we just sat back and admired that rascal for a long time."

"Now, we still fuss about the budget, but we're all driving pretty new vehicles," he summarized. "That's a big change."

Tisdale is one of four long-tenured Refuge System employees who are taking about 145 years of experience as they retire from the USFWS in late 2003 and early 2004.

Manager at Noxubee NWR, Miss., since 1982, Tisdale, who got his degree in forestry and wildlife from Mississippi State University, spent some years traveling throughout Region 4 until he decided to stay in Mississippi for the long haul. "I'm a member of the Noxubee Friends group," said Tisdale, "so they won't be entirely rid of me once I retire."

Region 4 also lost **Vicki Grafe**, manager of Lacassine NWR, La., since 1992, who was one of the first female refuge manager in the region when she took over leadership of Cross Creeks NWR, Tenn., in 1983. A 34-year veteran of the Refuge System, Grafe vividly remembers being told during her initial interview that the Refuge Manager Trainee Program just couldn't physically accommodate a female at the facility.

That's changed, but other challenges persist.

Vicki Grafe, manager of Lacassine NWR, La., since 1992. (Courtesy of Vicki Grafe)

"I remember managers who took me aside to say that the law enforcement requirements were a drawback – that I just wouldn't be safe," recalled Grafe with a laugh. "That was when the only women in a field station were either outdoor recreation planners or office assistants. But I ended up being a collateral law enforcement officer for over 17 years."

"Society demanded change," she continued. "Women demanded change. Enough determined, stubborn women entered the system, and people eventually saw they could do the manager's job. It helped everybody because when women got into the refuge management system, it made it a more rounded organization."

"I would like to encourage any woman considering it to go for it," she continued. "I believe there is no more rewarding resource career out there!"

The high points of her career, according to Grafe, were becoming a project leader, receiving the Secretary's Stewardship Award and, more importantly, being a member of such a "large, caring refuge and Service family."

Ron Bisbee, who retired Dec. 3, 2003, as project leader for the Texas Mid-Coast Refuge Complex after 26 years at the refuge, talks about the work almost as a family relationship. A 33-year veteran of



"I believe there is no more rewarding resource career out there!"

the USFWS, Bisbee lauds the loyalty that reverberates within the Refuge System.

“The spirit was handed down by a group of tremendously dedicated managers who invented the Refuge System in the 1930s,” Bisbee stressed. “They instilled that spirit in managers of my era, and it’s being carried on by the younger managers. People feel it is a privilege to work for the Refuge System, and they work their bones off.”

Bisbee, who waited to retire until the Refuge System celebrated its 100th year, believes that growing public awareness and use have been welcome changes. “We really were a hidden treasure 33 years ago,” he recalled. “Our growing public awareness has been good for funding.”

Great Dismal Swamp NWR, Va., biologist **Ralph Keel**, retiring Feb. 2, has served on eight or nine refuges since he began his career in 1965, right out of college. He lauds the Refuge System for upgrading

the training offered to managers and biologists, and especially in law enforcement.

“When I started, they just gave me a badge and a copy of the refuge regulations. I provided my own gun,” he recalled. “They didn’t really know whether you could shoot or not.” He also cites the greater training in fire management available in recent years.

Although Keel is retiring from the Refuge System, he is not moving. With his wife planning to teach for several more years in Virginia Beach, he will be volunteering with local grassroots organization and perhaps working part-time.

All the retirees may echo Tisdale’s outlook: “After 41 years of getting up and going to work every morning, it’ll be a hard habit to break. There wasn’t a day that I didn’t look forward to getting to work.” ♦

“People feel it is a privilege to work for the Refuge System, and they work their bones off.”



Richard H. Johnson, regional review appraiser with the Division of Realty in Region 7, received the Rudolph Dieffenbach Award, one of three awards presented annually by the Division of Realty.

The National Realty Awards Program, initiated in 2001, recognizes Realty staff, USFWS employees, partner organizations, and others for outstanding contributions to the Refuge System’s land protection mission.

Division of Realty Honors Three

Johnson was recognized for his outstanding work ethic and ability to produce prodigious amounts of high quality work. He has not only made major contributions to the Region 7 land acquisition program, but also assisted Regions 3 and 6, and the Bureau of Land Management and National Park Service in Alaska. The award is named for the man who managed the Branch of Lands from 1929-1947 and served as the first secretary of the Migratory Bird Conservation Commission.

The Land Legacy Award went to the Habitat and Population Evaluation Team (HAPET), of the FWS Bismarck Field Office. Team Leader Ron Reynolds accepted for the team. The HAPET office brought the use of sophisticated Geographical Information System (GIS), computer modeling to the evaluation of real estate for habitat acquisition, as well as the production of new Arc-View extension software,

developed to aid wetland and soils mapping for wetland and grassland easement acquisition. With the GIS tools provided by the HAPET office, and the cooperative work done with Ducks Unlimited, the USFWS’s Small Wetlands Acquisition Program has been greatly enhanced.

Finally, the National Land Protection Award went to Brad Meiklejohn of The Conservation Fund’s Alaska Office. The award honors individuals, private groups, corporations or state and local public agencies for their partnership with the USFWS in land protection. Under Meiklejohn’s leadership, the organization has acquired and then donated more than 47,000 acres of inholdings for expansion of the Alaska Peninsula, Izembek, Kenai, and Kodiak refuges. The lands are valued at more than \$10 million. ♦



Refuges Are Important Bird Areas



ownership. National parks, for example, only provide 13 percent while national forests and grasslands provide 21 percent. About 60 percent of the IBA areas are on lands owned by the federal government.

Humboldt Bay NWR, Calif., for instance, provides habitat for the short-billed Dowitcher and short-eared owl. Stillwater NWR, Nev., is home to green-winged and cinnamon teal ducks, and the greater sandhill crane finds refuge at Grays Lake NWR, Idaho. Ultra-light aircraft have been used to teach the endangered whooping crane to migrate from Necedah NWR, Wisc., to wintering grounds at Chassahowitzka Refuge in Florida.

For more information about the study, go to <http://www.abcbirds.org/iba/>. ♦

*Humboldt Bay NWR, Calif.
(Photo by Blake, Tupper Ansel)*

One-third of the Globally-Important Bird Areas are on wildlife refuges, according to a new study released Nov. 19, 2003, by the American Bird Conservancy (ABC). Of the 508 areas ABC designated, 163 are national wildlife refuges.

A Globally-Important Bird Area (IBA), provides habitat either on a year-round basis or during seasonal migrations. To receive an IBA designation, an area must have a significant presence of certain rare, declining, or range-restricted birds, or large concentrations of migratory species.

The Refuge System provides 54 percent of the IBA areas within federal

One-third of the Globally-Important Bird Areas are on wildlife refuges, according to a new study released Nov. 19, 2003.



Bird-watching group. (USFWS photo)

Memorial to Heroes

A temporary memorial in Shanksville, Penn., honors Rich Guadagno, manager at Humboldt NWR, Calif., who died alongside 39 others aboard United Flight 93 on Sept. 11, 2001, as passengers fought terrorists to regain control of the Boeing 757 on the day when other terrorists slammed two airliners into the World Trade Center. Guadagno's father, Jerry, serves on the 15-member Flight 93 Advisory

Commission, charged with making recommendations to the Department of the Interior by September 2005 about a permanent memorial. The Flight 93 memorial site will be administered as a unit of the National Park System. A corps of 40 local residents volunteer as "ambassadors" at the temporary memorial to answer questions from thousands of visitors each week. (USFWS Photo by David Klinger) ♦



Wood Storks Thrive at Harris Neck

The first 18 endangered wood storks found Harris Neck NWR, Ga., in 1988 all by themselves. Since then, a carefully crafted program - set in motion by Savannah Coastal Refuge biologist John Robinette, refuge staff and a host of partners - has culminated in 400 nests and a record-setting 856 chicks fledged in Summer 2003.

Harris Neck, now the largest wood stork nesting colony in Georgia, consistently had 100 to 150 nests each year, but growth didn't take off until some imaginative planning took hold.

Working with other USFWS divisions, Robinette, who received the Endangered Species Recovery Champion Award for his pioneering work on the wood stork, brought together private and public partners on behalf of the tall bird that is renowned for its beauty in flight.

The recovery plan centered on meticulously constructed impoundments and islands, covering 40 acres, that protect chicks from predators and provide plenty of food. In addition, 150 artificial nesting platforms, built on 20-foot posts, have made Harris Neck the perfect breeding ground for wood storks. Cypress trees, planted in 1994, are now large enough to support natural nesting activities.

The Harris Neck program enlisted various USFWS divisions: Ecological Services helped design the colony area and impoundments, conducted surveys and banded the birds. Fisheries and Habitat Conservation and Hatcheries raised fish and stocked feeding ponds. The Georgia and South Carolina departments of natural resources helped with research, nesting platform construction, and stocking the feeding ponds.

Equally important were the private partners: ITT Raynier donated \$5,000 for the water delivery system. Shearhouse Lumber, a small Savannah company, sold the nesting platform poles for their costs. Armstrong Atlantic State University supplied technicians and interns. The

Savannah River Ecology Laboratory analyzed data and published nearly a dozen papers to help others working with wood storks. Ducks Unlimited constructed nesting islands in places where the platforms couldn't be built. Even the local florist, Carlstedt Florist, sold artificial ficus leaves at cost to make the platforms resemble trees.

"Because we have an excellent food supply, the young birds leave Harris Neck in excellent condition," stressed Robinette. "They are heavier than most fledglings. They are in better condition and so have a greater chance of survival."

Wood storks were listed as endangered in 1984, when only 5,000 nesting pairs were counted, down from an estimated 20,000 nesting pairs in the 1930s. About 9,000 pairs exist today.

"One of the best things to emerge from this project was the partnerships," noted Robinette. "It's really been a Fish and Wildlife Service family affair." ♦



Biologist John Robinette handles wood stork. Photo by John Carrington, Savannah Morning News



Wood storks at Harris Neck NWR, Ga. (USFWS photo by J. and K. Hollingsworth)

"Because we have an excellent food supply, the young birds leave Harris Neck in excellent condition."



Marilyn Gamette, interpretive specialist for the Sacramento Refuge Complex, Calif., leads one portion of field trip. (Photo by Don Polen)



Awed at a Very Young Age

Winner of National Award

When the 400-plus seventh graders from Chico Junior High School finished their field study and habitat restoration project at Sacramento NWR, Calif., Dec. 12, 2003, they joined about 4,000 of their predecessors who, over the past decade, never failed to be awed by the sight of the resources they had, until then, just studied in textbooks.

“They may never come to a refuge again,” says Denise Dachner, refuge outdoor recreation planner, “but, with this program, they had a chance to explore, absorb, touch, be a part of it. In the process, they will become more informed citizens, people who are more environmentally aware and more knowledgeable about the Refuge System. Planting a tree is really a sidebar to the real story.”

Chico’s Wetlands Project, brought to life by teacher Don Polen, won one of 15 national “Take Pride in America” awards presented Sept. 26, 2003. “Take Pride in America” is a national partnership that aims to inspire a new generation of volunteers to improve national parks, wildlife refuges, cultural and historic sites

and other recreation areas. Polen came to Washington, D.C., to accept the award.

Chico’s program encourages youngsters to be natural resource stewards by focusing a month-long curriculum on freshwater wetland ecosystems, capped by six field studies: wildlife identification, bird behavior investigation, food production calculations, invertebrate analysis, habitat/refuge management, and diseased bird necropsy. The program takes an interdisciplinary approach, so social science, English and science teachers participate as well as others.

The students are taken to the refuge over four days in groups of 100, supervised and assisted by staff, parents, and other volunteers. Ducks Unlimited, the California Waterfowl Association, the California Rice Commission and River Partners are among the organizations that have provided classroom speakers and assistance.

“It takes a lot of manpower, but it has a major impact on the kids,” observes Polen. “Compared to a normal classroom, students are 100 percent more attentive on the refuge. Sometimes, I think the parents get more out of it than the kids,” he continued. “Each year, the parents want to participate again, even if they don’t have students at the school anymore.”

The impact appears to last for years. “I’ve run into students eight years after they’ve left, and they still talk about the wetlands,” Polen smiles. ♦



Students from Chico Junior High School, Calif., estimate how much food can be produced on the refuge for wildlife as part of their field trip. (Photo by Don Polen)

The impact appears to last for years. “I’ve run into students eight years after they’ve left, and they still talk about the wetlands.”

A Sense of Wonder

“To Observe with Accuracy”

“Environmental education activities in a classroom are wonderful. Learning about the environment on the Internet is great,” says Mary Timm, environmental educator at Tetlin NWR, Alaska, and the 2003 winner of the Sense of Wonder Award. “But when you can get a youngster out on a refuge, or just to wander in the woods, then they start to appreciate the land. That’s how you develop stewardship.”

That philosophy has been put into action during the past 11 years that Timm has been environmental educator at Tetlin, which serves a culturally diverse population of about 1,400 people in Tok and six Native and turn-of-the-century villages. Cited by the USFWS for her environmental education work, Timm translates her passion for outdoor adventures and her gifts for music and art into outdoor classrooms that kids find just plain fun.

Timm’s environmental education program has concentrated on the seven schools that make up the Alaska Gateway School District – spanning an

area twice as large as New Hampshire. But her impact goes beyond the 120-mile radius she is assigned. Schools as far as Fairbanks, about 200 miles away, have participated.

Twelve years ago, the refuge’s environmental education program centered around the USFWS fire curriculum for Alaska. The fire management officer periodically worked with some classes. The former outdoor recreation planner would visit classrooms when requested. Teacher requests for information and materials were fulfilled. A few summer camps were offered.

For the past 10 years, the refuge has had a full-blown curriculum for high schoolers, including summer classes in fire science and ornithology for which students can get academic credit. These 10-week courses, with much of the coursework completed through independent study, feature field work with refuge staff, labs, classes, field trips and lots of reading.

An array of summer overnight camps, for ages 10 and older, has been hugely popular as have day camps, which serve students from high school down to youngsters enrolled in the HeadStart program for disadvantaged youth. Last summer, for the first time, parents could join their children at an overnight camp. Three-day canoe habitat camps are also a big draw.

How “Cool” It Was

Music and art play a huge role in all programs – from singing “Birds Are Flying South Today” to the tune of

Environmental education by observation.
(USFWS photo)



Mary Timm with young face-painted friend. (Photo courtesy of Mary Timm)

“Old MacDonald’s Farm” to face painting at carnivals. “When you’re painting a kid’s face, you have three to five minutes of face-to-face interaction,” notes Timm. “You can have a pretty good exchange during those minutes.”

One of the most popular overnight camps is “Observing Nature Through Art,” which asks youngsters not to become artists, but to become diligent observers. “I’m not looking for Impressionistic art,” stresses Timm. “I want them to observe with accuracy.”

Those touched by one of the environmental education programs have learned about wetland ecology, bird migration, Arctic wildlife, endangered species, and more. But most importantly, they have learned the wonder of natural resources in their daily lives.

“During my first year on the refuge, I took a group to our migratory bird banding station. One typical teenage girl thought nothing was ‘cool,’” recalls Timm. “This past fall, I took another class for bird banding, and this girl’s daughter and husband came along.

“Turns out she remembered just how ‘cool’ it really was, and she wanted to give her daughter the experience,” Timm laughs. ♦



Some Victories in Nutria Battle

By Kathy Reshetiloff

More than 5,000 nutria have been removed from Blackwater NWR, Md., as of July 2003, protecting 13,000 acres of wetland during the second phase of the Maryland Nutria Project, which began trapping the invasive species in 2002. As part of the project, supported by 26 state and federal organizations and agencies, biologists are testing the value of sediment spraying and planting of 3-square bulrush and other plants.

Since the aquatic rodent from South America was introduced in the United States in 1943 for fur farming, nutria have been wreaking havoc on marshlands critical to the wildlife and water quality of Chesapeake Bay. Nutria have destroyed more than 7,000 acres of marsh at Chesapeake Marshlands Refuge Complex, Blackwater Unit. Thousands of acres outside the refuge have also been affected.

Nutria's excavation of marshland for food results in the loss of nesting habitat for waterfowl, including black ducks, which are declining; wetland birds, including the state-listed black rail; and a variety of songbirds including Coastal plain swamp sparrows and seaside sparrows.

Although eagles, foxes and coyotes may prey on nutria, these predators just can't control nutria numbers. In recent years, the population has exploded to an estimated 50,000 to 75,000 in Dorchester County, Md., alone.

Federal and state agencies in 1998 launched a Nutria Management Team, which grew into the Maryland Nutria Project, supported by the office of Congressman Wayne Gilchrest (R-MD), among others.

The project's first phase, which focused on assessing nutria populations at three sites, including Blackwater Refuge, determined that nutria breed all year, have limited home ranges, and that their activity peaks in the spring and fall. One study found that marshes recover if nutria are removed before the area is converted to mud flats.

Although results from the Maryland Nutria Project are encouraging, more resources and more trappers are needed. "Only a continued commitment will ensure complete eradication of nutria from Chesapeake Bay and Delaware Bay watersheds," said Don Murphy, Coastal Program Leader, Chesapeake Bay Field Office.

For more information contact Dan Murphy, 410-573-4521, or Blackwater Refuge Manager Glenn Carowan, 410-228-2692. ♦

Kathy Reshetiloff is a writer-editor at the Chesapeake Bay Field Office, Md.



The invasive nutria. (USFWS photo)



RefugeUpdate

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