



Inside

Celebrating 20 Years of Science on the M/V Tiglax, page 5

Kevin Bell is honored as Captain of the largest ship operated by the National Wildlife Refuge System.

Focus on... A River Runs Through It, pages 8-15

Rivers on refuges are managed for recreation, habitat restoration, water rights and sheer beauty.

The Fight Against Giant Salvinia, page 18

Caddo Lake National Wildlife Refuge in Texas is fighting a weed that can travel three-quarters of a mile in 24 hours.

Awards, page 21

From protecting the land to going "green," awards recognize excellence.

Ten New Refuge Friends Groups:

- Columbia Gorge Refuge Stewards (Washington)
- Friends of Deer Flat National Wildlife Refuge (Idaho)
- Amigos de la Sevilleta (Sevilleta National Wildlife Refuge, New Mexico)
- Refuge Friends, Inc. (Minnesota Valley National Wildlife Refuge)
- Friends of Trempealeau Refuge (Wisconsin)
- Supporters of St. Vincent National Wildlife Refuge (Florida)
- Friends of Southwest Louisiana Complex National Wildlife Refuges
- Friends of Mackay Island National Wildlife Refuge (North Carolina)
- Friends of Wallkill River National Wildlife Refuge (New Jersey)
- Friends of Rocky Flats National Wildlife Refuge (Colorado)

RefugeUpdate

November/December 2007 Vol 4, No 6

National Wildlife Refuges Return Economic Benefit Along with Wildlife Values



The Refuge System generated almost \$1.7 billion in economic return for regional economies in 2006, including money spent on wildlife observation, birding and photography. (USFWS)

The National Wildlife Refuge System – with 548 national wildlife refuges spanning nearly 97 million acres – has long been regarded as the world’s finest network of public lands dedicated to the conservation of wildlife and wildlife habitat. Now, the 2006 *Banking on Nature* study shows that it is also a significant economic engine for neighboring communities.

The Refuge System generated almost \$1.7 billion in economic return for regional economies, according to the study, which looked at 80 national wildlife refuges. The economic benefit is almost four times the \$383 million allocated to the Refuge System in fiscal year 2006. As the spending flowed through the economy, 26,798 private sector jobs were

created, generating about \$543 million in employment income.

“We’ve always known that national wildlife refuges enrich Americans’ lives in ways that are substantial, if not easily measured,” said U.S. Fish and Wildlife Service Director H. Dale Hall. “Now we can point to solid economic research that shows the Refuge System, while admirably fulfilling its conservation mission, also repays us in dollars and cents. That goes far above its mandated mission to guarantee that wild creatures will always have a place on the American landscape.”

The *Banking on Nature* report clearly shows that people will travel to visit national wildlife refuges that are not in



H. Dale Hall

From the Director Igniting a Passion

I don't follow fashion, but I'm told the new catch phrase among some opinion makers and cultural pacesetters is, "Green is the new black." Retailers like Wal-Mart are setting up stores to use less energy; hotels and motels are advertising themselves as environmentally responsible; and even some fashion shows have replaced the traditional red carpet with a green one and are featuring clothing made of sustainable fabric.

The "green revolution" is encouraging because it indicates the conservation message the Fish and Wildlife Service and others have been spreading for more than 100 years is taking hold across America. But we're not reaching everyone. An analysis by Pennsylvania State University researchers found that most Americans generally recognize the importance of environmental issues and their concern

for the environment is reasonably consistent across several decades, but high school seniors aren't among them.

In a survey of about 18,000 students, the researchers discovered what they called "a startling, precipitous decline" from 1976 to 2005 in reports of their conservation behaviors. Seniors in 2005 weren't as willing to change their behavior as were young people in the late 1970s. They are happy to endorse efforts to protect the environment, but they aren't willing to make a personal commitment. According to the analysis, they are also less likely than youth of past generations to believe resources may be scarce in the future.

If conservation has a prayer in the future, we need to help these young folks find a passion for nature and the outdoors. So what can we do?

In fact, refuges are already doing a lot. More than 760,000 youngsters participated last year in environmental education programs on 375 national wildlife refuges. Consider Fran McTamane, who we profile on page 15 in this issue. Her leadership at San Francisco Bay National Wildlife Refuge Complex has touched tens of thousands of students. She has played a key role in scores of projects, conducting summer camps for youngsters from economically disadvantaged neighborhoods and helping to produce a Salt Marsh Manual for educator-led field trips that is a model for environmental education programs across the country.

Fran is proof not only that one individual can make a difference, but also that environmental education is critical. As we embark on our Children and Nature Initiative, we expect environmental education to be central. Our national wildlife refuges are already models for some of the finest programs offered anywhere. Whether through schools and scouting groups or during festivals and other special events, national wildlife refuges are places where we can connect children with nature and ignite a passion to last a lifetime. ♦



Geoff Haskett

Chief's Corner One Person at a Time

The most recent *Banking on Nature* report, detailed on the front page of this newsletter;

brings great news to national wildlife refuges. To summarize the report, we created about \$4 in economic return for every \$1 we received in the fiscal year 2006 budget. Communities that surround national wildlife refuges saw a measurable economic pay-back, including creation of about 27,000 private sector jobs.

This is one of many benefits that stem from the National Wildlife Refuge System. But economic return is not

the most important story. What really matters can be seen on the land, not just the wildlife and habitats being restored to health, but also in the experience of tomorrow's conservation stewards.

Litchfield Wetland Management District in Minnesota reported that more than 30 Boy Scouts have donated about 240 hours, right in the heart of the Prairie Pothole region. They've worked hard, but they've also had fun. They've encountered skunks, bats, turtles, frogs, snakes and lots of bugs they think are "cool." Their volunteer work on the WMD brought them Scout badges and an important connection to the land.

— continued on pg 23

RefugeUpdate

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Marine Debris Initiative: A Call to Can It



Laysan albatross are too often found surrounded by marine debris – including buoys – on Midway Atoll National Wildlife Refuge, where First Lady Laura Bush found carcasses of infants who had ingested things like cigarette lighters and bottle caps. (David Patte/USFWS)

The White House announced on November 2 a Marine Debris Initiative that includes a \$200,000 grant for a Midway Atoll Marine Debris Coastal Monitoring Project. The grant will fund additional research on marine trash around Midway Atoll and Hawaiian Islands National Wildlife Refuges, which include the new Papahnaumokukea Marine National Monument in the Northwest Hawaiian Islands (see *Refuge Update* Sept-October 2006).

The scale of marine debris ranges from hundreds of tons of small plastics covering entire shoreline landscapes to large, abandoned vessels wrecked on Refuge System coasts and reefs. Seabirds, sea turtles, marine mammals and other fish and wildlife species suffer critical ingestion/digestion problems from marine debris, including Styrofoam fragments and suspended plastics that are washed off the land or dumped into the sea.

With 174 coastal national wildlife refuges, including those bordering the Great Lakes, the National Wildlife Refuge System faces significant challenges in

managing marine debris. The Refuge System includes about 30,000 coastal miles, 20 million coastal acres, seven million ocean acres with three million acres in coral reef ecosystems. The Refuge System also has 300,000 Congressionally-designated marine wilderness acres on 34 refuges.

The Midway Atoll grant is being provided to the Friends of Midway Atoll by the

National Fish and Wildlife Foundation, the Dow Chemical Company, the National Oceanographic and Atmospheric Administration (NOAA) and the U.S. Fish and Wildlife Service. Midway Atoll refuge manager Barry Christenson says the research will quantify the types of debris while Dow Chemical will help identify the sources of plastic debris.

“With better understanding of the source,” explained Christenson, “an education campaign can be much more effective.” He added that cleaning is an ongoing effort until education can reduce or eliminate the plastic debris.

During the announcement of the Initiative, First Lady Laura Bush drew on her visit to Midway Atoll in March to illustrate the problem. “We became very fond of these little albatross, but we also saw the carcasses of a lot of infants who had ingested cigarette lighters and toothbrushes and bottle caps and toys and every single type of plastic that we all use every day. This could be a cigarette lighter somebody dropped on a street somewhere in the United States . . . and it slowly washed through

the drains out into the oceans and then finally ended up at the Northwestern Hawaiian Islands.”

Marine Debris Trash Increases Five Percent a Year

A new report from the nonprofit Ocean Conservancy says marine debris from both ocean- and land-based activities has increased across the United States by more than five percent a year since 2001.

The newly-launched Marine Debris Initiative is a multifaceted, national and international approach to identify, prevent and reduce the problem. The NOAA Web site, <http://marinedebris.noaa.gov/about/welcome.html>, is a first step in a program that not only brings together state and local authorities, the private sector and international partners, but also helps educate school children and others about their roles in solving the problem. There will also be kiosks in the new Ocean Hall opening next year at the National Museum of Natural History in Washington, D.C. The Initiative calls for development of marine debris action plans to better understand the problem and explore long-term solutions to remove hundreds of tons of harmful debris.

Interior Secretary Dirk Kempthorne said during the launch of the Initiative that “the pollution at Midway Island comes from all of us. Litter from our neighborhoods travels by stream and by river to the ocean and from there, currents carry it around the world.”

“Whether we live on the shore or not,” added the First Lady, “all of us have the obligation to care for these amazing natural resources.” ♦

Summer Drought May Give New Life to Ding Darling Refuge

One of Southwest Florida's most popular wildlife refuges is barely surviving," said a local television report about J.N. "Ding" Darling National Wildlife Refuge on Sanibel Island. The culprit? "Our partners have identified 17 species of algae within the Caloosahatchee estuary," said former refuge manager Rob Jess.

The algae carpet the waterways, smothering the sea grass that is critical habitat and food source for the many species of migratory birds. Even mammals like the manatee and the porpoise depend upon sea grass.

Artificially regulated freshwater released into the Caloosahatchee directly affects water quality and encourages algae growth. Too much freshwater (or too little) and its timing can debilitate the fragile estuarine ecosystem and its dependent wildlife. Multiple hurricanes in 2004 caused the water levels in Lake Okechobee to swell; in 2005, the South Florida Water Management District and U.S. Army Corps of Engineers began regulated releases of water from the lake to control flooding.

Algae thrived on the heavy nutrient-laden water and gradually covered the bottom and the surface of the estuary. The algae decrease the available light for sea grasses. The grasses attempt to grow through the algae, but it is often so thick that the plant eventually dies. "We've lost 60 to 70 percent of the sea grass on the refuge since 2005," says Jess. "On a positive note, in 2006-2007, the lack of high water releases because of the drought has actually helped the estuary grasses begin to recover. But we don't yet see the acres upon acres of sea grasses that we saw prior to 2005."

The sea grasses are critical to the success or failure of this marine ecosystem as they hold and are utilized by invertebrates that are then eaten by

birds and fish. The grasses are also a nursery for a large range of fish species on which nesting ospreys depend. Osprey nesting numbers have dropped dramatically because there isn't enough mullet or food available near their traditional nesting areas on Sanibel Island. Fledging rates have declined from a historic high of 123 in 2003 to 45 this year.

Dry Weather is Good News

Jess says the summer drought was the best news so far for the sea grass and the refuge. Artificial water releases during the summer were minimal so the sea grasses had time to regenerate without competition from new algal blooms. But long-term solutions need to be developed since the estuary can't depend only upon drought.

One solution might be a storm water treatment area where water can be naturally filtered of the nutrient-rich sediment before it flows into the estuary. "Another approach," said Jess, "is to look within our own use of water. Sanibel and Captiva Islands as well as other communities in South West Florida are already implementing restrictions so reclaimed water is used by companies that fertilize lawns. It's a start."

The Algae Task Force was established to address water issues and includes the City of Sanibel, Lee County, Sanibel Captiva Conservation Foundation, the refuge and several other conservation



The summer drought has actually helped sea grasses begin to rebound from a toxic blanket of algae at Ding Darling National Wildlife Refuge in Florida. Longer term solutions are needed to maintain the health of this fragile estuarine ecosystem and its dependent wildlife. (George Gentry/USFWS)

organizations. The task force is gathering funding to initiate studies that will define the issues more clearly and recommend viable solutions. Several proposals from scientific and collegiate laboratories are under review.

The task force is also leading efforts to educate the public about the links between the refuge and the Everglades. The health of J. N. "Ding" Darling Refuge and its estuarine environment are dependent on the health of the Everglades watershed, which encompasses the Kissimmee River, Lake Okechobee and the Caloosahatchee River. "We have worked to educate the public about the issues. Our tram tours and many of our volunteers talk about the many causes of the algae problem and its impact on the habitat. An informed public is a smart public," says Jess. ♦

Happy Anniversary to the Research Ship M/V Tiglax



Kevin Bell, Captain of the research ship M/V Tiglax, was awarded the Department of Interior Honor Award for Meritorious Service during 20th anniversary celebrations for the ship at Alaska Maritime National Wildlife Refuge. (USFWS)

The M/V Tiglax – the Unangan or Aleut word for eagle – celebrated its 20th anniversary this year as the largest ship operated by the National Wildlife Refuge System. During anniversary celebrations this fall in the ship’s home port of Homer, Alaska, Captain Kevin Bell received the Department of the Interior’s Honor Award for Meritorious Service.

Bell has been a crew member on the Tiglax since it was first commissioned in 1987 for the Alaska Maritime National Wildlife Refuge. Working his way up to captain from his first job as cook, Bell was recognized by the Department for his “many years of outstanding seamanship and exemplary support of international maritime conservation programs for the U.S. Fish and Wildlife Service.” More than 200 scientists, crew members, volunteers and staff joined Bell for the celebration. Almost 700 visitors came from Homer and the surrounding area to tour the ship.

From oil spills and daring rescues to saving endangered species and adding

to our knowledge base, the Tiglax has seen a lot of action. The ship contributed to the recovery of the Aleutian cackling goose, which came off the endangered species list in 2001. The Tiglax was involved in all aspects of the project, from supporting fox trappers who made the islands safe for geese to transporting young goslings and reintroducing them to their historic range. Data collected by researchers on the Tiglax documented the collapse of sea otter populations in southwest Alaska.

The ship is also a floating research platform to study ocean conditions near critical seabird and marine mammal breeding colonies in the Gulf of Alaska and the Bering Sea. Watching for change is critical to understanding species decline and possible causes, including climate change. The Tiglax has been on the scene of the two biggest oil spills affecting refuge lands – the Exxon Valdez in 1989 and the Selendang Ayu in 2004. The Tiglax’s job in those spills was assessing damages to wildlife and refuge lands.

Brought Such Goodness to our Community

Qawalangin tribal member Janice Krukoff has vivid memories of working on the Tiglax during the 2004 spill. Initially, said Krukoff, “I felt out of place, especially with all those who had such wonderful degrees in science, fisheries and animal wildlife. But within hours, I felt I was part of the family. To this day, I will not forget the wonderful experience working with so many people who brought such goodness to our community, our local tribe and the residents of Unalaska.”

Archeologists from universities, the Bureau of Indian Affairs and the Service have used the Tiglax to access the village sites of the earliest inhabitants of the Aleutians. Much has been learned about early Aleut life from the digs and archeological mapping conducted by these scientists. As recently as this summer, refuge and National Park Service employees traveled on the Tiglax to World War II battlefields in the Aleutians and documented guns and other remnants of the war. In 1988, the Tiglax brought home the remains of the last missing soldier from World War II. His body was discovered by field biologists on remote Buldir Island, 43 years after he disappeared.

The Tiglax has seen its share of wild Bering Sea water but, according to Captain Bell, “We’ve never had our windows knocked out.” The ship has been involved in several rescues. Crew members Bob Schulmeister and Marcia Macone received a Citation for Valor from the Department of the Interior for pulling a mariner off a burning ship in Dutch Harbor in 1989.

In a typical season, the Tiglax may sail to islands from southeast Alaska to the far western end of the Aleutian Chain and into the Bering Sea, traveling 15,000 to 20,000 nautical miles. To learn more about the Tiglax, visit <http://alaskamaritime.fws.gov/Tiglax.htm>. ♦

Conserving Terns in the Changing Great Lakes

Seney National Wildlife Refuge in Michigan has developed a strong working relationship with owners of land on which two of the largest colonies of common terns are found – the Coast Guard and Sand Products, Inc. Together they are safeguarding a species of Conservation Priority as listed by the U.S. Fish and Wildlife Service. The two colonies are found on the shores of Lake Michigan and Lake Huron near Seney Refuge.

Much of the original credit for initiating the partnership goes to former refuge manager Mike Tansy, who saw that he needed to step off refuge lands to help these birds. “He was able to reach out to the larger community,” explains Francesca Cuthbert, a biologist at the University of Minnesota who has studied the common terns and other colonial waterbirds for several decades.

Coast Guard Protects its Terns with Pride

A large Coast Guard vessel is moored to a small pier where the terns nest. In 2003, Cuthbert and others found that the site was stable and not affected by changing water levels in the Great Lakes, but no young were produced. Coast Guard crew members on all-night patrol saw skunks and cats easily making their way to the nesting site. They began trapping the predators, but Seney Refuge staff realized a better solution was necessary.

In 2004, Seney Refuge and the Coast Guard built what refuge ecologist Greg Corace calls the “most highly secured common tern colony” in the Great Lakes. An electrified chain link fence now keeps out most mammalian predators. “It’s impressive,” says Corace, “many young have survived.” Corace counted 145 common tern nests this year, the most he has counted in several years. Reproduction rates also seem to be dramatically improved.

Creating Habitat that is Kind to Terns

Protecting the common terns at the Sand Products site is a trickier proposition. The problem is not fur, but feathers: competition with ring-billed gulls for nesting space. Historically, common terns were much more abundant in the Great Lakes region. Gulls and terns use the same basic habitat and space, but gulls – like pigeons – adapt well to humans. Their populations continued to grow in spite of industrialization. The terns prefer more tranquil nesting spots.

Large ships coming to load industrial sand from Sand Products tie up to huge round posts sunk into the water, called cells. Terns and gulls nest on the little islands created on top of these cells, and the gulls usually win the competition for scarce space, especially since they are more tolerant of all the shipping and loading activity. Sand Products has a permit to control the gulls, but Corace said that hasn’t eliminated enough of the competition to help the terns.

Initially the refuge worked with the company to remove vegetation that was growing on top of the cells. Ring-billed gulls still out-competed the terns, so now the refuge and Cuthbert are ready to try another tack. They want to put a grid of monofilament fishing line across the top of each cell, a technique employed elsewhere with positive results. Terns are small enough to drop through the cross-hatched filament lines and incubate their eggs – gulls are too big to do that.

Cuthbert says common terns are very receptive to management, but the work can be labor intensive and the tern colonies must be carefully monitored to detect problems. She is heartened, even excited, by such different groups of people “willing to work with new colleagues with different ideas to solve the problem. We are all energized when we feel we are working as a team to save these rare and beautiful birds.” ♦



Gulls and common terns compete for nesting space on the little islands on top of these “cells” in shipping channels near Seney National Wildlife Refuge in Michigan. The refuge is working with university researchers and Sand Products, the owner of the cells, to make the habitat more appealing to the terns. (Francine Cuthbert)

A New Vision for Managing the Future of Alaska Refuges

“If we are ever going to be fully successful in engaging rural residents in wildlife conservation, we need to develop local, professional talent,” says Mike Rearden, former manager of Yukon Delta National Wildlife Refuge in Alaska. Rearden is doing just that as he helps to launch a program with the University of Alaska’s Alaska Native Science and Engineering Program (ANSEP) to interest native Alaskans in fish and wildlife biology and management while they are still in high school.

Rearden left his refuge manager position in late October under the Intergovernmental Personnel Act Mobility Program to work fulltime with ANSEP on the University of Alaska campus in Anchorage.

The program began last summer when five young men from four local villages came to Yukon Delta Refuge right after their high school graduation. All had been accepted into the ANSEP program. They were selected through an application and interview process by ANSEP employees because of their strong academic records as well as their motivation to continue their education in science. Rearden expects the program to grow to 20-25 students every summer.

The students spent a month living in tents, collecting biological data. “This type of work is a natural for them,” said Rearden. “They all grew up in small Alaska Native communities where subsistence use of fish and game is vitally important.” During the summer, they split their time working at the Salmon Rivers Observation Network field station on the refuge and at a weir on the Kwethluk River, where they worked with Fisheries and U.S. Geological Service biologists. One student worked with the Alaska Department of Fish and Game on the Kuskokwim River. After the month, students flew to Anchorage to complete an advanced math course with other ANSEP students before

beginning classes at the University of Alaska, either in Anchorage or Fairbanks.

Rearden is working with ANSEP director Herb Schroeder to recruit students and find annual funding for the summer program, which Rearden considers key to acclimating rural students to the larger university community.

Funding from a variety of federal, state and nonprofit sources – including, for example, the Arctic Yukon Kuskokwim Sustainable Salmon Initiative, a federal program administered by the state – provides scholarships and will support the high school portion of the program, including supplying high end computers that each student must assemble.

High Standards, Qualified Scientists

“This program has very high standards and ultimately will turn out very well qualified scientists,” explains Rearden. “It is likely that providing a high quality education in science to students who have cultural understanding, can speak Native languages and have natural observational skills will provide the Service and other agencies with exceptional employees.”

Interested high school sophomores will be groomed for possible careers in science through summer internships with fish and wildlife biologists and assignments with various agencies immersed in science and field work, including national wildlife refuges.



Joe Pete, a student in the University of Alaska’s Alaska Native Science and Engineering Program, removed a chum salmon from the Kwethluk River weir at Yukon Delta National Wildlife Refuge in Alaska. (USFWS)

“Good mentors will be key to a successful program,” says Rearden. During the summers in the ANSEP program, students will work with a variety of agencies and organizations, immersed in science and field work.

While there is no requirement for students to work for particular agencies when they graduate, Rearden hopes the program will persuade students to continue to live in rural areas, perhaps helping to fill positions that experience high turnover on Alaska refuges. Those who choose to work in an urban area will offer a bush perspective.

“The program does not guarantee anyone a job, but it does provide students with the opportunity to apply for jobs. I expect most of them will want to return to the bush. It’s a lifestyle that is familiar, and most have strong family ties. I think having professionally educated Native scientists, working in rural Alaska and elsewhere, will be very beneficial to conservation in Alaska.” ♦

FOCUS . . . *On A River Runs*

The River That Runs Through Four States and One Refuge

“No other natural resource in New England can inspire the public to protect our natural heritage and forge private-public partnerships for conservation like the Connecticut River.” As part of the current Comprehensive Conservation Planning process at Silvio O. Conte National

Wildlife Refuge, this workbook comment answered the question, “What do you value most about the Connecticut River and its watershed?”

The Connecticut River watershed covers 7.2 million acres in Massachusetts, Vermont, Connecticut and New Hampshire and is home to more than 2.3 million people. The refuge was established in 1997 to conserve diverse native plant, fish and wildlife

species and habitat, but the vision was established six years earlier with a law that charged the U.S. Fish and Wildlife Service with studying the Connecticut River watershed and creating a refuge that visionaries recognized could well be very different than others in the Refuge System.

Deputy refuge manager Beth Goettel and others saw that land acquisition alone could not protect or enhance the diversity of species in the watershed, so the refuge’s earliest goals were to involve the people of the watershed, especially landowners and land managers, in environmental education programs and cooperative management projects. “The Conte Refuge approach,” explained Goettel, “is an effort to engage partners to accomplish the purposes of the refuge, to encourage citizens to understand and

The Silvio O. Conte National Wildlife Refuge was established to conserve wildlife and habitat in the Connecticut River watershed, which includes New Hampshire, Vermont, Connecticut and this view from Mt. Toby in Massachusetts. (USFWS)



Housing of A Different Kind along the Detroit Riverfront

by Greg Norwood

Amidst the industrial operations along the banks of the Detroit River, a colony of more than 300 bank swallows has found a temporary home. The swallows used their feet, heads and wings to dig about 300 nesting holes into a 4,000-ton pile of industrial dolomite, a compound used in construction.

Although this isn’t the first time this species has used artificial structures for nesting, no bank swallow colonies of this size have been nesting in the Detroit River area for many years. According to the Michigan Breeding Bird Atlas, only six other bank swallow colonies have

been found in recent years in Wayne County, which includes Detroit.

Considerable improvements in environmental quality have occurred in the Detroit River over the last 35 years, and the Detroit metropolitan area is gaining an international reputation for its public-private partnerships for conservation. The rewards can easily be seen in the rich diversity of wildlife that frequent this industrial heartland and the Detroit River International Wildlife Refuge.

Bank swallows, a protected migratory bird in the U.S. and Canada, are known for digging their nests in rock quarries

care about the problems wildlife and habitats face.”

Explaining the refuge’s multi-pronged project approach to refuge management, Goettel quotes David Dobbs, who wrote in Vermont Life magazine, “Conte Refuge recognizes what very few big conservation efforts do: that in a world where ecosystems die by a thousand cuts, the appropriate prevention and cure will be similarly multifaceted – a thousand bandages and shields.”

For the first two years, Conte Refuge used most of its \$750,000 annual appropriation to fund projects all over the watershed, including assistance to individual landowners, numerous cooperative agreements, including one to improve fish habitat on the Salmon River, and projects to improve water quality (through better land use planning) or fish passage elsewhere in the watershed. “The thousand bandages and shields may appear to be a random assortment of

projects,” said Goettel, “but they are not. All of the projects help accomplish the refuge’s purposes and goals.”

Invasive Plant Atlas of New England

One of the best known projects is the Invasive Plant Atlas of New England, a partnership among Conte Refuge, the University of Connecticut and the New England Wildflower Society. The Web-accessible atlas documents the existence and spread of more than 100 invasive plants in the area; many are now banned from further nursery trade. In its earliest years, Goettel says the refuge’s invasive education workshops reached the owners of more than three million acres of private land.

This approach of funding multiple projects to serve the multiple needs of the vast watershed changed dramatically in 1999 when the refuge purchased 26,000 acres in the Nulhegan Basin area of New Hampshire, and when the refuge’s three education

centers opened shortly thereafter. Managing the new division and centers required money for staff and operations.

Goettel expects the CCP to include both traditional land acquisition as well as non-traditional refuge activities, such as landscape-scale technical assistance to landowners and education targeted to people who make zoning decisions or work with land trusts. “Issues Workbooks” were distributed publicly as part of the CCP process and mailed to 2,000 individuals and the managers of the 390 towns throughout the watershed so people could identify critical watershed issues, rank the tools they would use to address those issues, and recommend key audiences for public education. “To the extent we can inspire citizens,” says Goettel, “we can help forge this partnership. The key role for us is to lead.” ♦

and sand or gravel pits. The ephemeral nature of the species’ natural nesting venues of muddy banks, sand dunes and lakeshores makes this species well-adapted to finding alternatives like the soft dolomite.

“We Were Pleased to Limit Operations”

The Detroit River nesting colony was in dolomite owned by Detroit Bulk Storage on property leased from U. S. Steel at the confluence of the Detroit and Rouge rivers. If this pile of dolomite were to be disrupted during the key nesting period, about a thousand young could be lost. When refuge staff informed company officials about the importance of not disturbing the nests, Noel Frye, vice president of Detroit Bulk Storage said, “When we were made aware of the bank swallow nests, we were most pleased to limit our operations in the area and even

place newly arrived material in another location to protect the swallows during their critical nesting period.”

Female bank swallows incubate for 13 to 15 days at which time the chicks hatch in early summer. All swallows were completely gone from the area by early September. They depart for over-wintering habitats in Suriname, Brazil, and southern



The Detroit River International Wildlife Refuge in Michigan worked with U.S. Steel and Detroit Bulk Storage to protect nests dug by bank swallows in piles of soft industrial dolomite on the river banks. (USFWS)

continued pg 17

FOCUS . . . *On A River Runs*

A grant from the state of New Mexico will be used to restore the legendary Pecos River in Bitter Lake National Wildlife Refuge in New Mexico. The project will re-connect sections of the winding river. (John Magera/USFWS)



Recreating a Healthy River at Bitter Lake National Wildlife Refuge

by Paul Tashjian

The Pecos is a legendary river in American cowboy stories.

Now it is little more than a ditch for most of its course in central New Mexico and Texas.

The U.S. Fish and Wildlife Service, in partnership with the World Wildlife Fund and the New Mexico Interstate Stream Commission, has

now received a \$518,500 state grant to restore six miles of the Pecos River as it runs through Bitter Lake National Wildlife Refuge near Roswell, New Mexico. We now have a chance to improve an ecosystem that is barely hanging on.

Old school flood control methods channelized the Pecos River into narrow chutes during the 1940s and 1950s. Without the shrubs and other plant life of a fully functioning floodplain and riparian habitat, the diversity of wildlife species was minimal. The four-year river restoration project will bring back a richly diverse riparian community to the Pecos River.

The grant will fund the second phase of a large restoration project that

Brook Trout Come Home to Minnesota Valley

by Chuck Traxler

On a hot day in June, more than 60 people gathered at the Bass Ponds area of Minnesota Valley National Wildlife Refuge to see something that had been missing for more than 50 years. They stood alongside the cold, clear water of an unnamed, groundwater-fed stream to watch 1,450 native brook trout fingerlings dart across the gravel bottom.

Volunteers had excitedly carried the two-inch trout to the stream in pails and gently released them into the cold water.

The project began in 2005 after refuge biologist Vicki Sherry and fishery biologist Scott Yess of the La Crosse Fishery Resource Office conducted fishery surveys. Sherry found historical records indicating that brook trout

thrived in the stream until at least the 1940s. Between the 1940s, when trout were last known to be in the stream, until the 1970s when it became part of the refuge, the stream and surrounding landscape had many uses. The stream itself was actually diverted at one time to provide a water source for a warm water fish hatchery operation. Could this stream – in the middle of the city – be suitable for trout once again?

According to Sherry, “Until we took a closer look, refuge staff always assumed that the stream was likely degraded from either surface or stormwater runoff. Instead it appears that we have a jewel in the middle of the city that we all can enjoy.” The surrounding topography and underground water source seems to have shielded the stream from pollution.

includes removing invasive tamarisk as well as floodplain levees, lowering floodplains, re-connecting sections of the river that had been cut off from each other, and establishing native plants. The restoration's first phase, being coordinated by the U.S. Bureau of Reclamation, involves dredging sections of an oxbow-shaped lake so that it will once again be connected to the river and restoring roughly 1.5 miles of river habitat. The new funding from New Mexico's River Ecosystem Initiative will enable restoration of an additional six river miles within the refuge.

Diverse Habitats in Slow Backwaters and Swift Channels

Historically, the Middle Pecos River was a wide, sediment-laden, braided river with a diversity of habitats, ranging from slow backwaters to swift main channel settings. These habitats were

maintained by natural flooding, which moved sediments between the channel and the floodplain. This dynamic relationship sculpted a wide channel, moved sediment from the floodplain back into the channel, and formed new floodplains with channel sediment. Animal species took their cues from the seasonal movement of water and sand.

Like many rivers in the West, Pecos River's historic functions have been disrupted in order to ensure water supply and safety. The construction of upstream reservoirs allowed greater control of natural upstream flows to meet agricultural and interstate compact obligations and provided flood protection for downstream communities.

North of Bitter Lake Refuge, many of the river's historic floodplain functions remain intact. Here is some of the best

habitat in eastern New Mexico for native fish, including the federally listed Pecos bluntnose shiner, rare migratory birds such as the yellow billed cuckoo, unique amphibians such as the spiny soft-shelled turtle, and native riparian plant communities.

Bitter Lake Refuge sits at an ideal location for river restoration. Quality habitat can be both created and enhanced within a perennially flowing portion of the river that connects to this quality habitat further north.

The project seeks to restore the traditional ebb and flow of the river. This will improve habitat on the refuge for the Pecos bluntnose shiner, attract more birds, mammals, reptiles, amphibians and fish, remove 100 acres of invasive plants, reduce flood risk for downstream properties, reduce fire risks, and

continued pg 22

Minnesota Valley National Wildlife refuge manager Patricia Martinkovic said that "the fact that a trout stream exists here, surrounded by more than two million people, demonstrates the value and importance of habitat protection within urban refuges like Minnesota Valley."

Organizing Partners

Sherry quickly began assembling an army of partners, including the Minnesota Department of Natural Resources, Trout Unlimited, the Izaak Walton League, Sierra Club, Lower Minnesota Watershed District, local schools and nearby businesses. In addition, adjacent landowners including the City of Bloomington, Metropolitan Airports Commission and the only remaining private landowner adjacent to the stream also joined the cause.

Sherry enlisted the partners to help with small restoration projects along the stream and its surrounding habitat to prepare it for stocking. Garbage such as tires, old furniture, concrete

and car parts, was removed along with invasive plant species. Several areas will be planted with native vegetation next spring.

Looking Toward the Future

The refuge is working closely with the Minnesota Department of National Resources to determine if the stocking succeeds. If the trout do well, the stream will be stocked for the next several years. Things looked promising on a cool day in late September when a small crew from the refuge and the Minnesota Department of Natural Resources visited the stream. Not long after the sampling began, the first trout swam into the sampling net. And then another, and another, sometimes four or five flopping trout came out with each netting attempt – some already up to eight inches long.

"This is extremely positive," said Sherry. "These fish have survived a tough summer and shown this stream has great potential. But, they still have a tough

road ahead of them, including a long cold winter coming very soon."

If the trout survive, the stream would become one of only nine streams in the

continued pg 17



Minnesota Valley National Wildlife Refuge biologist Vicki Sherry stocks brook trout into a stream on the refuge in June 2007. (USFWS)

FOCUS . . . *On A River Runs*

“Whiskey’s for Drinkin’ Water’s for Fightin’”

How much water does a river need to sustain an ecosystem? If you divert water from a river to manage wetlands for waterfowl and shorebirds, will there be enough water left for fish and other aquatic resources? These are critical questions for national wildlife refuges in the west, where water is often a scarce and highly regulated resource.

Chad Karges, deputy project leader at Malheur National Wildlife Refuge in the southeast corner of Oregon, wrote recently that “in the high desert region of southeast Oregon, the old western adage of whiskey’s for drinkin’, water’s for fightin’ remains as true today as it was when Europeans first settled the region in 1872.” (*Special Report: Countering Resource Challenges and Building Community Bridges*)

“In the past, Malheur Refuge took water when needed. As various demands for water increase,” explains Karges, “people look very close at who is legally entitled to the water. Refuges throughout the west are coming under increasing levels of scrutiny concerning our use of water.”

Historically, Malheur Refuge operated under a traditional summer time irrigation, domestic and livestock water right to meet the refuge’s management objectives. In 1999, the state of Oregon asked the refuge to clarify how the water was being used in the Blitzen Valley Unit in order to make certain that the refuge is in compliance with Oregon state water law. This led to the submission of two water right applications to accurately depict how Malheur Refuge uses water. The applications addressed timing,



A River Recreation Management Plan at Fort Niobrara National Wildlife Refuge in Nebraska manages public use on the river to provide a quality, wildlife-dependent experience. (USFWS)

Managing Fun on a River

The plan is doing its job. We can focus on other refuge issues,” says Kathy McPeak, refuge biologist at Fort Niobrara National Wildlife Refuge in Nebraska, two years after the refuge put in place a River Recreation Management Plan (RRMP) that elicited a stream of comments.

Seventy-six miles of the Niobrara River have been designated a National Scenic River; nine miles flow through the refuge. It is ranked among the top 10 canoeing rivers in the country by Backpacker magazine. In 2007, the refuge hosted visitors from every state in the nation and several foreign countries. National Geographic listed the refuge’s hometown – Valentine – as one of the top 50 adventure towns in the country.

With all these accolades, it is no wonder that the number of visitors soared. The

number of people canoeing, kayaking and tubing the Niobrara River within the refuge steadily increased from several hundred people in the early 1970s to a peak of more than 31,000 people in 1997. The majority of these visits took place on weekends in July and August. Along with the rising numbers of pleasure seekers came alcohol and drug violations. The refuge began aggressively enforcing alcohol regulations in 1999. That same year the refuge completed its Comprehensive Conservation Plan, which called for a detailed management plan for river recreation.

In 1999, a moratorium on new outfitters was established. The 11 outfitters then using the refuge canoe launch received special use permits to continue operations. The refuge is the preferred launch site from nearby Valentine and



Malheur National Wildlife Refuge in Oregon depends on having the right amount of water at the right time to meet its wildlife management objectives. (Kit Carson)

volume, place and purpose of use by allowing water to be used for “wildlife refuge management” on a year-round basis. The applications immediately

sparked controversy within the local ranching community.

“Anytime you talk about water in Oregon,” says Karges, “you are going to get people’s attention. There was a perception that the refuge was going to take more water and do new things with it. Private landowners were also worried that they would not have enough water to meet their current and future needs.”

A Foundation of Communication

A strong foundation built on effective communication played a significant role in the permit granted to the refuge for the new water right. In recent years, the refuge has been building relationships with landowners, conservation groups and government agencies. This led to a collaborative process called the High Desert Partnership. The Partnership fostered an atmosphere of trust and allowed for discussions about the complex water issues.

Ultimately, the refuge and private landowners reached agreement on conditions for current and future water use. The refuge is able to meet current management objectives with added flexibility for the future while at the same time addressing needs of private landowners.

continued pg 19

the gateway to the most scenic portion of the Niobrara River.

A new outfitter who was denied a permit because of the moratorium took the refuge to court. The court ruled in favor of the U.S. Fish and Wildlife Service, but also told the refuge to complete a river management plan.

The CCP had identified river floating on the refuge as a compatible public use activity when carefully managed. The refuge held a public meeting to gather feedback on its river management. “It was clear that the biggest issues we faced were how to deal with outfitters and how many people to allow on the river,” wrote deputy project manager Bernie Petersen in the Refuge System’s *Countering Resource Challenges and Building Community Bridges*.

A Plan that Works

The new plan finally went into effect in February 2005. In 2006, the number of visitors suing the river was a comfortable 10,000. The plan also manages public use on the river for a natural resource experience rather than a “party” experience. It caps the number of people on the river annually and by day of the week and encourages river traffic to avoid early mornings, late afternoons and evenings to minimize wildlife disturbance. Outfitters must now submit a prospectus every three years to continue launching from the refuge. “It is not a right to do it forever,” explains McPeak. “Outfitters have to say why they want to be an outfitter and how they will provide a quality service. It’s a privilege to outfit on the river.”

McPeak says the RRMP provides consistent rules that focus on a quality wildlife-dependent experience: seeing a white-tailed deer and her fawn standing in the middle of the river drinking water; having a beaver swim by and splash you as it flips its tail and goes underwater; hearing the chatter of common yellowthroats in the shrub habitat along the river; watching a bobcat scurry up the tall river bank, wondering if the bison on the bluff above the river can get in the river. “You can have a solitary experience if you choose. If you want to float with a group you can do that. There’s a range of opportunity aided by a plan that provides stability and continuity to managing the river.” ♦

In Remote New Mexico, Focus on Research and Learning



Sevilleta Refuge and LTER staffs relocated prairie dogs to artificial burrows on three plots, but steady predation from American badger and kit fox and extreme drought in 2006 took their toll. (USFWS)

by Renee Robichaud

Ninety-nine research projects will be carried out at Sevilleta National Wildlife Refuge in New Mexico this year by 15 educational institutions and five government agencies, supported by more than \$13 million in funding. Primary investigators from around the world will conduct experiments in such areas as plant ecology, climate, zoonotic disease, geologic mapping, avian ecology and hydrology.

By the end of 2007, more than 1,700 schoolchildren and teachers will have participated in refuge-sponsored environmental education programs and field trips. They come from the small communities of Veguita and Lemitar; the larger towns of Belen and Socorro, Albuquerque, and even the Alamo Indian Reservation more than 85 miles away. The refuge's educational laboratory is a top-notch facility, complete with microscopes, computers and an animal specimen collection. Researchers enrich the environmental education program by co-sponsoring teacher workshops, leading field trips and teaching some programs.

In 1988, the refuge agreed to host the Long Term Ecological Research (LTER) program, funded by the National Science Foundation. One of 24 LTER locations in the United States, the Sevilleta LTER is the only one on a national wildlife refuge. The research community has access to a unique outdoor laboratory, and the refuge benefits from the wealth of knowledge provided by the research.

On Behalf of Gunnison's Prairie Dogs

In the wake of urban development, researchers and the refuge entered a collaboration in 2005 to relocate more than 450 Gunnison's prairie dogs to refuge grasslands from a colony in Santa Fe. Gunnison's prairie dogs have declined by over 90 percent across their range due to habitat loss, extermination attempts and disease. Prairie dog colonies not only help grassland ecosystem health, but also provide food and shelter to other species and fertilize and aerate soil that increases plant protein content and digestibility for other grazing animals.

Sevilleta Refuge and LTER staffs relocated the prairie dogs to artificial burrows on three 10,000-meter plots. The colony quickly established natural burrow systems, but steady predation from American badger and kit fox and extreme drought in spring 2006 took their toll. As a result, research objectives took a backseat to establishing a thriving colony. More animals may have to be relocated over the next two to three years.

The refuge hosts several projects that seek to answer scientific questions by manipulating the natural environment. One experiment examines the effects of rainfall manipulation on grassland, shrubland and grassland-shrubland ecotones. Metal and plastic structures shield multiple research plots from summer precipitation, while metal piping and pumps add artificial rain to others. The manipulated plots are compared to control plots that experience only natural precipitation.

Another experiment scrutinizes nighttime warming. Over the past 50 years, nighttime warming has occurred twice as fast as daytime warming; the trend is expected to continue. Automated metal frames roll out special aluminum fabric at night over small plots. The fabric traps radiant heat and increases temperatures. These plots are then compared to control areas.

New Facilities, Expanding Visions

Sevilleta Refuge and the University of New Mexico are building a new facility that will have 18,000 square feet of laboratories, offices, conference rooms and classrooms. The facility will complement existing facilities, including eight houses that now lodge up to 48 people. The Socorro Soil and Water Conservation District has provided funding for an outdoor classroom near refuge wetlands, where schoolchildren will be able to conduct their own experiments and participate in hands-on wetland education programs.

Refuge manager Terry Tadano is justifiably proud of both the science and the education that take place on the refuge. He says, "Sevilleta Refuge provides a great opportunity for scientists to conduct ground-breaking research, while instilling curiosity in youth destined to become tomorrow's environmental leaders." ♦

Renee Robichaud is a wildlife refuge specialist at Sevilleta National Wildlife Refuge in New Mexico.

Frances McTamaney: Creating Emotional Connections to Nature



The 2007 Sense of Wonder Award winner is Frances McTamaney, environmental education specialist at San Francisco Bay National Wildlife Refuge Complex. (USFWS)

in the North Bay at San Pablo Bay National Wildlife Refuge, one for Farallon National Wildlife Refuge off the California coast and one for Ellicott Slough National Wildlife Refuge on Monterey Bay. Each program is distinct and tailored to specific management issues and the needs of the local communities.

Through McTamaney's leadership, more than 15,000 students are reached annually and another 120,000 students in the surrounding area have been provided the opportunity to connect with nature. She conducted summer camps for many children from economically disadvantaged neighborhoods who ordinarily would not have had a chance to visit the refuge.

“If I had influence with the good fairy who is supposed to preside over the christening of all children, I should ask that her gift to each child in the world be a sense of wonder so indestructible that it would last throughout life.”

Rachel Carson

Helping Adults and Children Discover the Salt Marsh

This year, a story McTamaney used with puppets during refuge field trips was turned into a full-fledged children's book, *A Home for Salty* by Stephanie Stuve-Bodeen, an example of her dedication to creating an emotional connection to a local endangered species. “Salty” is an endangered salt marsh harvest mouse, and children are asked whether Salty would find her home “in the quishy, icky mudflats, the winding, watery slough, or the plump, pickleweed salt marsh.”

McTamaney was one of three core team members who produced a Salt Marsh Manual for educator-led field trips. Now in its fifth edition, the 320-page manual has become a model for the Service's environmental education programs across the country and used by other governmental and non-governmental agencies. The guide includes the natural history of the San Francisco Bay estuary, tips on how to conduct refuge field trips, and pre/post and on-site activities.

McTamaney also served on the original design and development team for two national Service environmental education courses: “Developing Teacher Training” and “Environmental Education Methods.” She has instructed sessions of those courses for 15 years. Her reach extends beyond even beyond the Service as a long-time leader within the Mid-peninsula Environmental Educators Alliance, a collaborative forum. ♦

2007 Sense of Wonder Award Winner

First as a U.S. Fish and Wildlife Service volunteer and temporary employee, then as a permanent employee beginning in January 1986, Fran McTamaney has played a key role introducing children to nature as an environmental education specialist at the San Francisco Bay National Wildlife Refuge Complex. Now as she retires and begins the next chapter of her life, McTamaney has been honored with the Sense of Wonder award for excellence in environmental education.

Environmental education in the Service was in its earliest stages when McTamaney began her career. “Virtually everything she initiated and carried through to completion was creative, original and significantly advanced the Service's interpretive and EE programs,” says San Francisco Bay Refuge visitor services chief Karla Tanner.

Under her guidance, the environmental education program expanded beyond one location in the South Bay on Don Edwards San Francisco Bay National Wildlife Refuge to include a program

Around the Refuge System

Alaska

The top of a precipitous rock island in the Alaska Maritime National Wildlife Refuge became a graveyard for nesting murrens until it was accidentally discovered by hikers. The trap door on the roof of a World War II gun emplacement had been propped open years ago, allowing the murrens nesting on the roof to fall through. The birds were unable to fly out through the narrow gun slats and the gun emplacement became a death trap. Adventurers who were jumping from boat to cliff in the rough seas of



the Gulf of Alaska scaled the rocks and reported the seabird death trap to refuge authorities. Refuge staff closed the trap door with wire mesh and added a warning to future human visitors not to disturb the site. There are also plans to drill escape holes in the concrete bunkers. Refuge staff also found a stash of World War II era acid batteries that is being removed by the Army Corps of Engineers. World War II rolled over Alaska Maritime Refuge leaving numerous structures, contaminants and ordnance. The Corps is responsible for cleaning former defense sites.

Six Congressmen Honored

Six Congressmen who have shown extraordinary support for the National Wildlife Refuge System were honored

by the Cooperative Alliance for Refuge Enhancement (CARE) during an October 10 reception in the Cannon House Office Building Caucus Room. The evening reception, which drew about 300 guests, was jointly sponsored by CARE and the U.S. Fish and Wildlife Service.

The six honored were Congressmen Norman Dicks of Washington; Todd Tiahrt of Kansas; Ron Kind of Wisconsin, Jim Saxton of New Jersey; Mike Thompson of California; and Michael Castle of Delaware. Kind and Saxton are chairs of the Congressional Wildlife Refuge Caucus, which now has more than 130 members in the House of Representatives. Thompson and Castle are co-chairs of the Caucus. All those honored were particularly supportive of the Refuge System during deliberations on the fiscal year 2008 budget.

Earlier this year, CARE recognized two members of the Wisconsin Congressional delegation, Senator Russ Feingold and Representative Ron Kind, for their visionary leadership and steadfast support of the National Wildlife Refuge System. They were honored in August at the Trempealeau National Wildlife Refuge in August. The Wisconsin awards were presented by Jim Eddy, President of the Friends of the Upper Mississippi Refuges and Dan McGuinness, Director of Audubon's Upper Mississippi River Campaign.

Missouri

Nineteen alligator gar are once again cruising the slow-moving backwater swamps and rivers of Mingo National Wildlife Refuge. The fish have not been documented on the refuge since the 1970s. Habitat loss and excessive hunting are blamed for the decline of the alligator gar, which can grow to 100-300 pounds at full maturity. A joint effort by the Missouri Department of Conservation, Mingo National Wildlife Refuge and the Neosho, Tishomingo and Private John Allen National

Fish Hatcheries contributed to the reintroduction project. When the fish were released in May, they were 12 to 30 inches long and carried external and internal tags for future identification. Some of the fish also have radio transmitters. Mingo Refuge manager Kathleen Burchett expects this year's fry to reach maturity within 11 years. "As successful spawns occur, a viable alligator gar population on the refuge will once again be established. For visitors to the Mingo Wilderness Area, this means an opportunity to see the second largest freshwater fish in the central and southern U.S. return to its native habitat."



Nineteen alligator gar have been reintroduced into their native habitat in the backwater swamps and rivers of Mingo National Wildlife Refuge in Missouri. (USFWS)



A record number of trumpeter swan cygnets hatched on the National Elk Refuge this season. (USFWS)

Wyoming

A record number of trumpeter swan cygnets hatched on the National Elk Refuge this season. This year's total of 18 cygnets is six more than the previous record of 12 cygnets in 1989. Trumpeter swans establish lifelong mates when they are about three years old and nest the following year, choosing nesting sites close to the water. The higher productivity may be due to an early spring, leaving refuge waterways ice-free about three weeks earlier than average. Birds had better access to forage and were in better physical condition at the time of nesting, which can lead to more viable eggs and more swans hatched per pair. Refuge biologist Eric Cole monitored this year's class of cygnets through fledgling stage in the fall. All 18 fledged successfully.

Delaware

Bombay Hook National Wildlife Refuge celebrated National Wildlife Refuge Week with a new twist on the old scavenger hunt. Families were invited to participate in a nature scavenger photograph search anytime over a two-week period. Families received 10 clues about wildlife and habitat on the refuge. As each designated area was located, families took a photograph of themselves at the site.

"As you drive the auto-tour route look for a structure that used to hold corn. Now it provides safe nesting places for owls. Take a family picture in front of the structure," was one clue.

"At the end of a trail you will find steps to climb and at the top you will find out how an impoundment is managed for the different seasons of the year. Take a family picture in front of the sign."

Completed photo collections were turned in to the Bombay Hook Visitor Center. Up to 50 families who completed their photo collections were to receive a one-year entrance pass to the refuge.

Colorado

Some of the six million tons of concrete and asphalt runways from the old Stapleton Airport in Denver have made their way to Rocky Mountain Arsenal National Wildlife Refuge. The refuge will use two million tons of "staplestone" as a biota barrier. Supervisory wildlife refuge specialist Vic Elam explains that the material will cover landfills where contaminated soil has been placed. It is designed to act as a barrier to prevent animals from burrowing and exposing the contaminants.

Brook Trout Come Home to Minnesota Valley

— continued from pg 11

Minneapolis/St. Paul metropolitan area that still have trout. After the September sampling, Sherry said, "Our ultimate goal is to have a self-sustaining population of native brook trout in this stream, and today's positive assessment gets us a big step closer to realizing that goal." ♦

Chuck Traxler is public affairs specialist in the Midwest Region.

Housing of a Different Kind

— continued from pg 9

Sinaloa to northeast Guerrero in Mexico.

For those fortunate enough to live near the banks of the Detroit River, there are bald eagles and peregrine falcons soaring over the Detroit River and canvasback ducks thriving amidst "flurries" of Bonaparte's gulls. World record walleye are being caught, and lake sturgeon are returning to their spawning grounds. Clearly, all of this is further evidence of ecological recovery in this industrial heartland.

In the case of the bank swallows, the refuge made company officials aware of the significance of the swallow nests and the critical period when they need to be undisturbed; the companies did the rest. Nesting bank swallows peppering the sky around U. S. Steel and Detroit Bulk Storage are yet another example of the dedication of these industrial partners in working with the Detroit River International Wildlife Refuge and other agencies to protect our natural heritage. ♦

Greg Norwood is biological science technician at Detroit River International Wildlife Refuge.

Refuge Joins Fight Against Giant Salvinia

by Mark Williams

When an invader struck the Jeems Bayou of the 30,000-acre Caddo Lake in 2006, organizations and individuals on the Texas side of Caddo Lake formed the Giant Salvinia Community Response Project to fight its aggressive migration into this vulnerable western part of the lake, where Caddo Lake National Wildlife Refuge is located. Now the fight has expanded, as a Working Group established by the Texas legislature seeks new and improved ways to fend off the attacker in both Texas and Louisiana.

The deadly invader? The floating, rootless aquatic plant giant salvinia.

Caddo Lake is the largest naturally-formed lake in the south, providing habitat for a diverse plant and animal population. About half the lake lies in northeastern Texas; the other half is in northwestern Louisiana. Parts of the lake and the refuge are recognized under the Ramsar Treaty as a “wetland of international significance.”

Refuge biologist Paul Bruckwicki and I became involved in the community-based effort organized by the Greater Caddo Lake Association, a longstanding non-profit organization formed to protect Caddo Lake and its wetlands from industrialization and promote wise conservation practices at the lake.

From Brazil to South Carolina to Texas and Louisiana

Salvinia was brought to the United States from Brazil by aquarium collectors in the early 1990s. From South Carolina, it has traveled to lakes and creeks from California to Colorado, Florida, Texas and even Hawaii. Caddo Lake boaters reportedly followed one patch of salvinia that traveled three-quarters of a mile in 24 hours. It is now estimated that more than 1,100 acres of Caddo Lake on the Louisiana side are heavily infested with giant salvinia. So far, the salvinia has not impacted wildlife on the refuge in Texas.

By January 2007, an estimated 300 to 350 acres in Jeems Bayou were infested with giant salvinia. Heavy rains and flooding moved substantial amounts of the plant into other parts of the lake, including Big Green Brake and Tar Islands, located along the state line.

The Cypress Valley Navigation District, created by the Texas legislature to maintain Caddo Lake for boat navigation, obtained permission from U.S. Army Corps of Engineers to construct a two-mile-long containment net barricade from the north shore of the lake to the south shore. Volunteer and paraprofessional spray and removal teams have worked almost daily since March to maintain the barricade and remove giant salvinia plants that would otherwise have migrated into the western half of the lake. Teams also patrol the protected side of the barricade to spray and remove new giant salvinia infestations that escape the containment zone through two openings for boat traffic.

The refuge has supported the project in a variety of ways, including serving as a staging area for handling barricade materials, placing warning signs on the water for boaters and anglers to clean their equipment, and instituting other giant salvinia control operations. The refuge also provides a secure location for testing some control measures, including thermal treatment. The Service supplements local funding and state appropriations.



Texas Congressman Louie Gohmert pulls salvinia from Caddo Lake during a visit to Caddo Lake National Wildlife Refuge. The Texas legislature has created a Working Group to identify new and better ways to wage war against this aggressive invader. (USFWS)

In August, Texas Congressman Louie Gohmert led a tour through the refuge for Louisiana Congressman Jim McCreery and Paul Hoffman, deputy assistant secretary for fish, wildlife and parks in the Department of the Interior, and a number of other federal and state agency officials involved in invasive aquatic plant control. These officials are now members of a Working Group which is now seeking ways to expand the local project onto both sides of the lake.

The refuge's support of the Caddo Lake Giant Salvinia Community Response Project is more than just good community relations. This group represents all the Texas community groups and organizations that are performing first responder functions such as spray & removal and containment to prevent giant salvinia from reaching the refuge's shoreline boundaries. Caddo Lake Refuge is proud to play an important role in the fight against giant salvinia and consider our involvement to be a necessary part of our mission. ♦

Mark Williams is manager of Caddo Lake National Wildlife Refuge.

Whittlesey Creek

Invasive species do not recognize arbitrary boundaries, so in 2005 Whittlesey Creek National Wildlife Refuge in Wisconsin joined with the Forest Service and the Northern Great Lakes Visitor Center to create a model Invasive Free Zone on 720 acres, which includes a diversity of habitat types and invasive species. The land is owned about equally by the Refuge System, the Forest Service and private landowners, who have granted access to manage invasive species.

The refuge's Invasive Plants Management Plan acknowledges that "becoming and remaining entirely invasive-free is unlikely... The project strives to drastically reduce invasive populations so that minimal maintenance is required to control them." During the past year, more than 100 acres have

been treated for 11 species, including buckthorn, honeysuckle, purple loosestrife and reed canary grass. Two small areas totaling about 50 acres have actually been declared invasive free.

Landowners and others have learned about invasives through mailings, workshops and interpretive programs have at the Northern Great Lakes Visitor Center in Ashland, which is a cooperative project operated by a group of private organizations and government agencies, including the U.S. Fish and Wildlife Service. ♦

Fifty acres of Whittlesey Creek National Wildlife Refuge in Wisconsin have been declared free of such invasives as purple loosestrife. (USFWS)



"Whiskey's for Drinkin', Water's for Fightin'" — continued from pg 13

Permit to Permanent Right

Before the new water right becomes permanent, the refuge must prove to the state that it can meet conditions placed on the permit. Many of the permit conditions are activities the refuge is

already obligated to address as part of normal business such as maintaining adequate river flows and managing water quality.

The most time consuming condition involves state fish passage and

screening requirements. Almost all of the refuge's water delivery system, including the main diversion dams, were constructed during the 1940s by the Civilian Conservation and do not meet today's scientific standards for fish passage/screening. The refuge has been addressing these deficiencies for many years but remaining corrections will cost several million dollars, so it could be several years before the refuge is able to fulfill this permit condition.

The Future

Karges says the water rights process will serve the purpose of Malheur Refuge by improving habitat for a wide spectrum of fish and wildlife species that are dependent upon water from the Donner and Blitzen Rivers. He adds that the relationships and trust built through this complex process has helped position the Service to expand its conservation mission far beyond the boundaries of Malheur Refuge. ♦



Rivers in the west provide a scarce and highly regulated resource—water. Malheur National Wildlife Refuge in Oregon worked cooperatively with adjoining landowners and the state to create a refuge water right that meets the needs of the wildlife and people. (Barbara Wheeler Photography)

Mini-Joint Venture on Lostwood National Wildlife Refuge

by Mike Graue

A new partnership between a local rancher and Lostwood National Wildlife Refuge in North Dakota became a mini-joint venture in 2007 as the refuge sought to implement grassland management within a block of the refuge that had not been previously grazed. Prior to this, the tools for active management within Lower Lostwood Lake were limited to prescribed fire and haying.

Lack of suitable water kept livestock off this unit of refuge land, so if grazing were to become a realistic management tool, refuge staff needed to come up with funding to replace old, nonfunctioning wells. In December 2004, Lostwood Wetland Management District Complex, the North Dakota Game and Fish Department, Ducks Unlimited, North Dakota Natural Resources Trust and private landowners applied for a \$10,000

North American Wetland Conservation Act (NAWCA) grant for replacement wells.

Once funding for the wells was in place, we discussed the mini-joint venture grazing system with a local cattle rancher. The proposed agreement would allow the rancher to graze 2,313 acres of refuge land for multiple years, with the understanding that he would rest 1,548 acres of his range land during the same time. The rancher entered into a Wildlife Extension Agreement through the Partners for Fish and Wildlife Program.

The plan – which began this year – calls for cows to enter the refuge around mid-May and graze until the first week in September, just before the state upland bird hunting season begins. Approximately 300 cows with their calves will rotate through four grazing units. Cows will graze each unit for a specified amount of time, depending on the pasture

size and vegetative composition, and then rotate to a new pasture every two to three weeks. Each pasture will be given at least 35 days of rest before being grazed again to allow the grass to grow new leaf area for photosynthesis, forage for the herd and wildlife cover.

Benefiting Wildlife Beyond Refuge Boundaries

With conventional grazing, ranchers are allowed to graze a unit on the refuge, but typically continue to graze their own pasture. Implementing this mini-joint venture provides an ideal demonstration area for the landowner to see how his own grassland responds to rotation grazing and rest. The net benefits to wildlife occur inside and outside the refuge boundary.

One of the big benefits of the mini-joint venture is that private land gets an opportunity to rest, allowing plant and wildlife communities to rejuvenate. The rancher's pastures will have a chance to restore seed beds and promote plant diversity while slowing the encroachment of invasive grasses such as Kentucky bluegrass, fescue and smooth brome on the refuge. Both the refuge and the rancher should have good stands of native grasslands by resting one property while grazing the other.

Success can be judged in a number of ways. Refuge staff will sample vegetation to see if we have reduced invasive grass species and expanded native species. Staff will also be able to locate any noxious weeds, such as leafy spurge and Canadian thistle, more easily after grazing has reduced the grass canopy and removed grass litter. We have not only increased our management capabilities but also solidified a relationship that extends grassland management capabilities beyond the boundaries of our refuge fences. ♦

Mike Graue is private lands biologist with Partners for Fish and Wildlife.



Cattle graze on Lostwood National Wildlife Refuge in North Dakota as part of a grassland management agreement with a local rancher. (USFWS)

Awards for Protecting Land and Going Green



Alaska Peninsula/Becharof National Wildlife Refuge received a 2007 Department of the Interior Environmental Achievement Award for going green in the land of ice and snow, including the use of solar energy and environmentally-friendly spray to melt ice on walkways. (Donna Dewhurst/USFWS)

The mission of the National Wildlife Refuge System is to administer a national network of lands and waters – about 97 million acres of land at this point. Each year, the U.S. Fish and Wildlife Service Division of Realty honors people and organizations who have made significant contributions to protecting that land.

The 2007 National Land Protection Award has been presented to the **Papio-Missouri River Natural Resource District** in Nebraska. In 1996, this local conservation agency donated 2,000 acres to establish Boyer Chute National Wildlife Refuge near Omaha. Natural Resource Districts in Nebraska assess taxes and apply conservation practices that benefit soil, water and other natural resources within their districts. The Papio-Missouri River Natural Resources District went well beyond this basic mission to restore riparian wetlands, native vegetation and such recreational facilities as hiking trails, fishing access and educational interpretation.

Working in partnership with the U.S. Army Corps of Engineers, the District restored wetlands along the Missouri River that were lost when the Corps

channelized the river for navigation half a century ago. Creation of the Boyer Chute Refuge restored a river side-channel to its original condition without affecting navigation on the main river. The refuge now has 4,040 acres of floodplain woodland, tallgrass prairie and wetland habitat to benefit Missouri River fish, migratory birds and other species.

The Mountain-Prairie Region's nomination of the Papio-Missouri River Natural Resources District praised the District as a "local government entity that displays the foresight and creativity of a non-profit conservation organization...the District demonstrated skill in utilizing local tax receipts to match private, state and federal grant funding for over eight million dollars in real estate, habitat and infrastructure value contributed to the national Wildlife Refuge System."

William McCoy, manager of Patoka River National Wildlife Refuge in Indiana has been honored with the 2007 Land Legacy Award, which honors significant contributions to the Service's land acquisition systems, operations or mission. Relentless in his pursuit of funding for the refuge, McCoy was praised for his accumulated knowledge of the local market that allows him to take advantage of realty opportunities.

McCoy uses "innovation and partnerships in a mosaic of land acquisition strategies," said refuge supervisor Jon Kauffeld. "He has dealt with abandoned oil facilities and the coal industry with equal ability and aplomb...making

dramatic improvements in the wildlife habitat that resulted in dramatic wildlife response."

Patoka River National Wildlife Refuge was established with 25.55 acres of land in 1995. Since then, more than 6,000 acres have been added while McCoy has been refuge manager. The acquisition of the Old Ben Coal Company property led to restoration of 150 acres of wetland habitat for the endangered least tern. "Waterfowl use of this area has been spectacular!" exclaims Kauffeld.

Solar Power in Alaska?

Alaska Peninsula and Becharof National Wildlife Refuges, 300 miles southwest of Anchorage, use solar panels to power generators for radio communication, lights, computers and other electronic equipment. For their diligence, the refuges have been honored with a 2007 Department of the Interior Environmental Achievement Award.

Typically, hazardous materials and other waste must be barged or shipped out of King Salmon, Alaska. Local recycling opportunities were minimal and federal suppliers did not offer green products in sufficient quantities to make shipping to Alaska cost effective. But the green team at Alaska Peninsula and Becharof Refuges persevered, enlisting the local community to recycle aluminum cans and use the proceeds to purchase playground equipment for King Salmon Elementary School. The refuges found affordable energy-efficient light bulbs, nontoxic cleaning solvents, retread tires and recycled paper products. An environmentally-friendly spray is used on walkways instead of ice melt-type products and the janitorial service uses green products to clean the offices.

The Interior Department awards recognize exceptional achievement in waste/pollution prevention and recycling, green purchasing, environmental management systems, sustainable design, alternative fuel and environmental stewardship. ♦

National Wildlife Refuges Return—*continued from pg 1*



More than 37 million people visited national wildlife refuges in 2006. (USFWS)

their communities. About 87 percent of refuge visitors come from outside the local area.

According to the Refuge Annual Performance Plan, more than 37 million people visited national wildlife refuges in 2006.

Methodology

The Banking on Nature study looked at 80 national wildlife refuges, and only analyzed refuges that received more than 1,500 visitors annually. Additionally, only national wildlife refuges in the “lower 48” states were evaluated. No refuges in either Alaska or Hawaii, among other places, were included in the study. Therefore, the Banking on Nature study estimates that 34.8 million people visited wildlife refuges – a figure smaller than actual visitation.

In calculating economic return, the Banking on Nature report included expenditures for lodging and air travel,

some expenditures for food and gasoline, and just 40 percent of spending for sporting goods – on the assumption that sporting goods purchased for national wildlife refuge trips will later be used for recreation in other places.

The report looked at six recreational activities: freshwater fishing, saltwater fishing,

migratory bird hunting, small game hunting, big game hunting and non-consumptive activities – such as bird watching.

Among its other findings, the report noted:

- About 82 percent of total expenditures came from non-consumptive recreation; that is, recreation other than hunting and fishing on national wildlife refuges. Under the National Wildlife Refuge System Improvement Act, national wildlife refuges offer six “priority public uses,” including hunting and fishing. The other four are wildlife observation, wildlife photography, environmental education and interpretation.
- The Southeast Region – with such popular attractions as Okefenokee, J.N. “Ding” Darling and Pea Island National Wildlife Refuges – had the most visitors

in Fiscal Year 2006. The region also generated the most jobs, at 7,381.

- Chincoteague National Wildlife Refuge in Virginia generated the most recreational visits (about 7.5 million) as well as the most jobs, at 3,766, and the most economic benefit, at \$315.4 million, with \$155.42 returned for every \$1 in budgeted expenditures.

Many other national wildlife refuges also had marked returns for their budgets. Don Edwards San Francisco National Wildlife Refuge, for example, had more than 1.5 million visits in 2006 and returned \$43.55 for every \$1 in federal budget expenditures. Bombay Hook National Wildlife Refuge in northeastern Delaware – with 271,000 visitors in 2006 – returned \$23.38 for every \$1 in budgeted expenditures and was responsible for 198 private sector jobs. Muscatatuck National Wildlife Refuge in south central Indiana – spanning just 7,800 acres – returned \$21.56 for every \$1 in budgeted expenditures and created 48 private sector jobs.

The National Survey of Fishing, Hunting and Wildlife-Associated Recreation, published every five years by the U.S. Fish and Wildlife Service, found that more than 87 million Americans, or 38 percent of the United States’ population age 16 and older, pursued outdoor recreation in 2006. They spent \$120 billion that year pursuing those activities. About 71 million people observed wildlife, while 30 million fished and 12.5 million hunted. ♦

Recreating a Healthy River at Bitter Lake National Wildlife Refuge—*continued from pg 11*

enhance recreational opportunities like birdwatching and wildlife observation.

The grant was made possible by the 2007 River Ecosystem Restoration Initiative, a one-time funding opportunity under the state’s Year of Water agenda. The project’s successful bid for state funding

was buoyed by support from Chaves County, the Carlsbad Irrigation District and the Friends of Bitter Lake National Wildlife Refuge.

We hope this project demonstrates how river ecosystem improvement can be accomplished within the reality of

a very limited water supply and the requirements of interstate compacts. ♦

Paul Tashjian is a hydrologist with the National Wildlife Refuge System in Albuquerque, New Mexico.

Three Arch Rocks Refuge Celebrates Centennial

by Amy J. Gaskill

In pioneer days, the natural abundance of a young United States seemed boundless. By the early 20th century, Americans had hunted bison and elk to near extinction, silenced nesting birds to use their showy feathers for high fashion, and drained countless marshes for farmland. However, the exploitation did not go unnoticed.

Far-sighted citizens and leaders, including President Theodore Roosevelt, acted on the belief that America's wildlife heritage should be protected. In 1907, just four years after he established the first national wildlife refuge, Roosevelt designated the first Pacific Coast refuge at Three Arch Rocks in Oregon.

The need to designate Three Arch Rocks as a protected wildlife area was brought to Roosevelt's attention by Oregon wildlife photographer William Finley, who produced spectacular photos with his childhood friend Herman Bohlman. In June 1901 and again in June 1903, they climbed the wind- and sea-swept rocks on the beach in the town of Oceanside to photograph wildlife. During their first expedition, they witnessed target shooters on a tugboat killing Steller sea lions for their skins and oil and blasting seabirds for sport. Finley wrote that the "beaches were littered with dead birds following the Sunday carnage."

In 1903, the men waited out 19 days of storms, heavy fog and tumultuous



Three Arch Rocks National Wildlife Refuge, the first refuge west of the Mississippi, celebrates its centennial this year. (David Pitkin/USFWS)

sea on a desolate Pacific Ocean beach before they could load a dory with food, a tent, water, clothing and photographic equipment and row toward the rocks. Over the next two weeks, the men took some of the first photographs of nesting seabirds, collected eggs and specimens, and documented some of the life history of the birds.

A few months later, during a personal audience with President Roosevelt, who was well acquainted with Finley's renowned photos, Finley spread the photographs on a table. Roosevelt found them so compelling that he exclaimed, "Bully, bully, we'll make a sanctuary out of Three Arch Rocks." Four years later, Roosevelt designated Three Arch Rocks as the first national wildlife refuge west of the Mississippi River.

Today, Three Arch Rocks Refuge is one of the nation's smallest designated Wilderness Areas, comprised of three large and six smaller rocks totaling 15 acres. The three largest rocks provide habitat for more than 100,000 nesting seabirds. Seal Rock, on the east side of the refuge, is the only pupping site on the Oregon north coast for the threatened Steller sea lion.

The rocks provide habitat for Oregon's largest breeding colony of tufted puffins. They nest on the Oregon coast from May to August. The refuge also supports the largest breeding colony of common murrelets south of Alaska, in addition to auklets, gulls, petrels, oystercatchers and cormorants. ♦

Amy J. Gaskill is an external affairs specialist in the Pacific Region.

Chief's Corner One Person at a Time—continued from pg 2

Now, when they get to Litchfield WMD, the Scouts don't see just grass and trees. They recognize big bluestem, lead plant, blazingstar, buckthorn, sumac and boxelder. They learned how monarchs migrate, and saw woodcocks and northern leopard frogs. They are beginning to understand what land stewardship means in practice and what it means in the long run for our nation's health.

The message of environmental concern and stewardship is spreading. Litchfield WMD received more volunteer hours in 2007 than it had in the last 10 years combined. People are invested in conservation. As Litchfield WMD staff work on projects along a busy highway, they get a honk and a wave from passersby who appreciate what is being done for wildlife conservation.

It is hugely important that these Boy Scouts in Litchfield, Minnesota, and

millions of youngsters across the country can become land stewards through our Children and Nature Initiative and our refuge environmental education programs. The next time a neighbor comes across the folks from Litchfield WMD improving habitat along a busy highway, they may well do more than give the thumbs up sign. They may stop the car and ask how they can help. That's when we know that we are changing the world, one person at a time.

Whatever Happened To...

Ivory-billed Woodpecker

The comment period has ended for a U.S. Fish and Wildlife Service recovery plan for the ivory-billed woodpecker, spotted in 2004 – the first time in more than 60 years – on the Cache River National Wildlife Refuge in eastern Arkansas. The recovery plan, released in August, focuses on learning more about the woodpecker's status and ecology. There will be additional searches and habitat surveys in the Cache and White River Basins, conservation planning aimed at preserving or creating the conditions needed to support the woodpecker, management of sensitive areas and protection of any rediscovered populations of ivory-billed woodpeckers.

“The opportunity to recover this icon of the ornithological world cannot and should not be passed over,” said Sam Hamilton, regional director for the Southeast Region. Ivory-billed woodpecker habitat is thought to be mainly the remaining hardwood swamps and associated pine uplands with abundant dead trees, like the bottomwood forests of Cache River Refuge. Historically, the bird was found in extensive, mature forests throughout the southeast.

There is currently no additional restriction on public access to areas on the Refuge.

Educational efforts are underway to inform the general public, hunters, anglers and birders about how to report possible sightings. Strategically located kiosks on the refuges let hunters, anglers, and birdwatchers know about this elusive bird and its habitat. Brochures, designed primarily for the hunters using the refuge, provide identification characteristics and contact information in case of an encounter. The Cache River Refuge also completed two important land acquisitions in 2005 and 2006 to benefit the ivory-billed woodpecker, waterfowl, songbirds and many other bottomland hardwood species.

Oil and Soybean Spill at Alaska Maritime National Wildlife Refuge

Almost three years later, the owners of the freighter *Selandang Ayu*, which spilled 66,000 tons of soybeans and 340,000 gallons of fuel within the Alaska Maritime National Wildlife Refuge, have pleaded guilty to violating the Refuse Act of 1899 and the Migratory Treaty Act. The plea agreement called for the shipping company to pay \$10 million in fines in addition to

paying for the cleanup. One million dollars will go the National Fish and Wildlife Foundation for seabird restoration work at Alaska Maritime Refuge; another three million dollars will pay for a risk assessment to identify shipping hazards on sea routes that go through the refuge.



Search team member Bobby Harrison in 2004 hung a decoy on a tree bordering the Cache River Refuge. (Mark Godfrey/The Nature Conservancy)

The spill in December 2004 killed several thousand seabirds and several marine mammals. At least 29 bird and three mammal species were oiled, including harlequin ducks, crested auklets and murrelets. ♦

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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